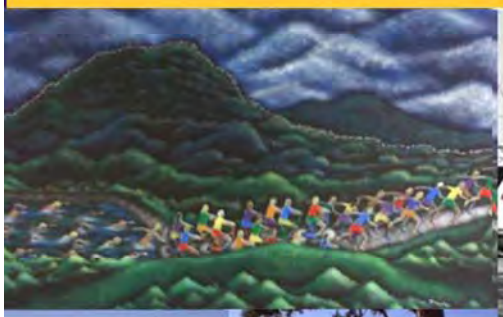

KINGS MOUNTAIN
OPPORTUNITY
THE HISTORICAL CITY
NORTH CAROLINA
INC. 1874

COMPREHENSIVE BICYCLE PLAN

FOR THE CITY OF Kings Mountain

December, 2011

Centralina Council of Governments

Division of Bicycle & Pedestrian Transportation
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

KINGS MOUNTAIN NORTH CAROLINA

KINGS MOUNTAIN
NORTH CAROLINA

Funded by

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Kings Mountain City Council:

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Don C.	Drew Kinney	Susan Leonhardt	Mary Zugelder
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Tommy Hall	David Jackson	Joni Smith	
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KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

EXECUTIVE SUMMARY

Current Bicycle CONCERNS

- **Inadequate on-road bicycle facilities**
  Aside from a few newer roads constructed within Kings Mountain, the City has no bicycle facilities. Many of the roads in and around the City are of insufficient width for bicyclists to share with vehicles.

- **Inadequate off-road bicycle facilities**
  Other than the recreational Gateway Trail, which offers no connection to destinations, there are currently no off-road bicycle facilities in Kings Mountain. In order to reach most destinations of interest, bicyclists must use the streets, and many of those streets offer no bicycle facilities or adequate width for safe bicycling.

- **On-street parking**
  While on-street parking is a great benefit to downtown retail businesses and pedestrian life, it can inhibit bicycle use with perceived or potential danger, particularly on highly trafficked streets.

- **Traffic**
  The City sees a considerable amount of vehicular traffic and has experienced vehicle-bicycle accidents. Downtown traffic conditions in particular present challenges for bicyclists.

- **Aesthetics**
  Many areas throughout the City have been cited as needing visual improvements in order to make the area more attractive to potential bicycle traffic.

Bicycle Plan GOALS

- Bring about a safe bicycling experience through improvements that target strategic but unsafe sections of roadway and construction of safe off-road bicycle facilities.
- Create bicycle connections to popular places like schools, businesses, downtown, and neighborhoods, and with that reinforce the connectedness and integrity of the community.
- Make safer ways across gaps and around barriers (e.g. railroad and highways)
- Provide both on-road and off-road bicycle facilities to serve all segments of the population, with opportunities for commuting, recreation, healthy exercise, scenic enjoyment, and relief from automobile traffic.
- Enhance opportunities for economic development and significant community events.
- Minimize the burden on city services and resources, working within the constraints of existing physical conditions, parking, and right-of-way, and making the best use of available funding opportunities.

Specific Bicycle Barriers and Constraints

- **Norfolk Southern Railway** corridor divides the City into east and west with the division running through the center of Downtown. Opportunities to cross the tracks when a train is passing are limited.

- **Interstate 85** effectively forms a southeastern edge to the City with only two points of crossing within the City limits currently available to bicycle use.

- **US 74 Bypass** forms a northern boundary across the City, dividing a significant part of the community from the Downtown.

- **Shelby Road** is equipped with paved shoulders wide enough for safe bicycle use. But the shoulders give out east of this point and make safe bicycle passage impossible from Kings Mountain Boulevard to Kings Street.

- **Kings Mountain Mica Company Quarry** and other industrial properties occupy a substantial area within the City stretching a length of nearly three miles that are presently off-limits to bicycles.

- **Kings Mountain public parks** do not currently permit bicycle use.

- **Battleground Avenue** is very narrow in some segments (as little as 21 feet) and unsafe for bicyclists.

- **King Street** provides the longest uninterrupted east-west connection through downtown, but sees a high volume of traffic, has frequent curb cuts, and is otherwise not conducive to bicycle use.

Recommended Actions

1. **Form a stakeholder-based Kings Mountain Bicycle Committee (KMBC)** to ensure that the Bicycle Plan remains in the forefront of public awareness, that it is implemented through ordinance changes, grant opportunities, and as development occurs in the private and public sectors, and that it is updated as needed.

2. **Implement plan recommendations through local land development:**
   1.) Citing adopted plans when making land use decisions
   2.) Updating the City Zoning Ordinance
   3.) Emphasizing infill and mixed-use zoning
   4.) Requiring green space with priority for trails and bicycle lanes
   5.) Identifying and constructing bicycle lanes within subdivisions where such lanes have been designated.
   6.) Requiring the inclusion of bicycle facilities in development plans
   7.) Increasing internal and external neighborhood connectivity

3. **Coordinate with NCDOT on new road construction,** actively evaluating every resurfacing project for the potential of adding paved shoulders or bicycle lanes.

4. **Prepare for grants and project participation** by regularly setting aside funds to use as local match for relevant recreation, transportation and safety related grants and cost-sharing for enhancements to NCDOT projects.

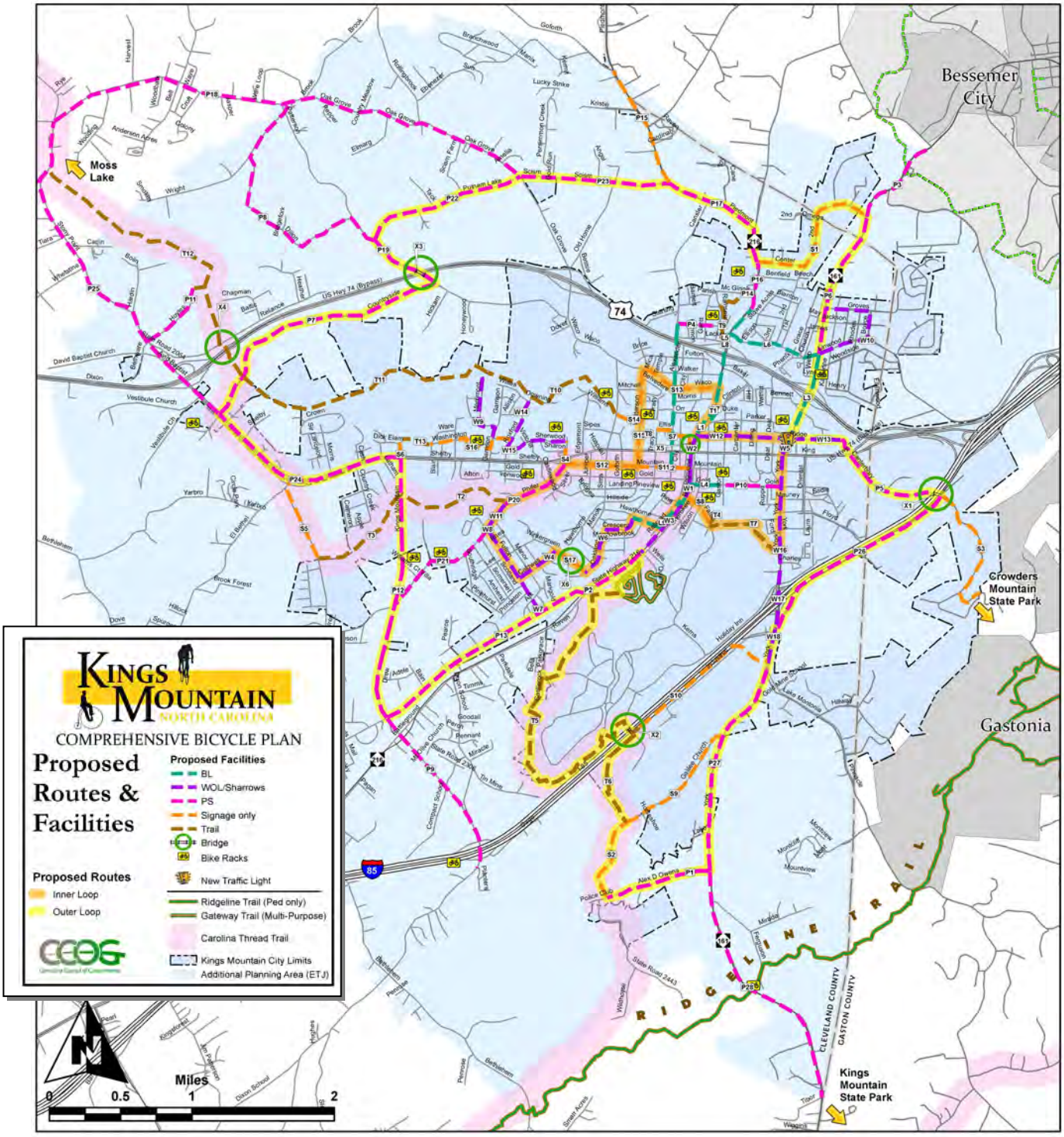
5. **Coordinate with neighboring municipalities and surrounding counties.** Opportunities for implementing local plans can be strengthened through cooperative regional efforts.

Recommended Programs

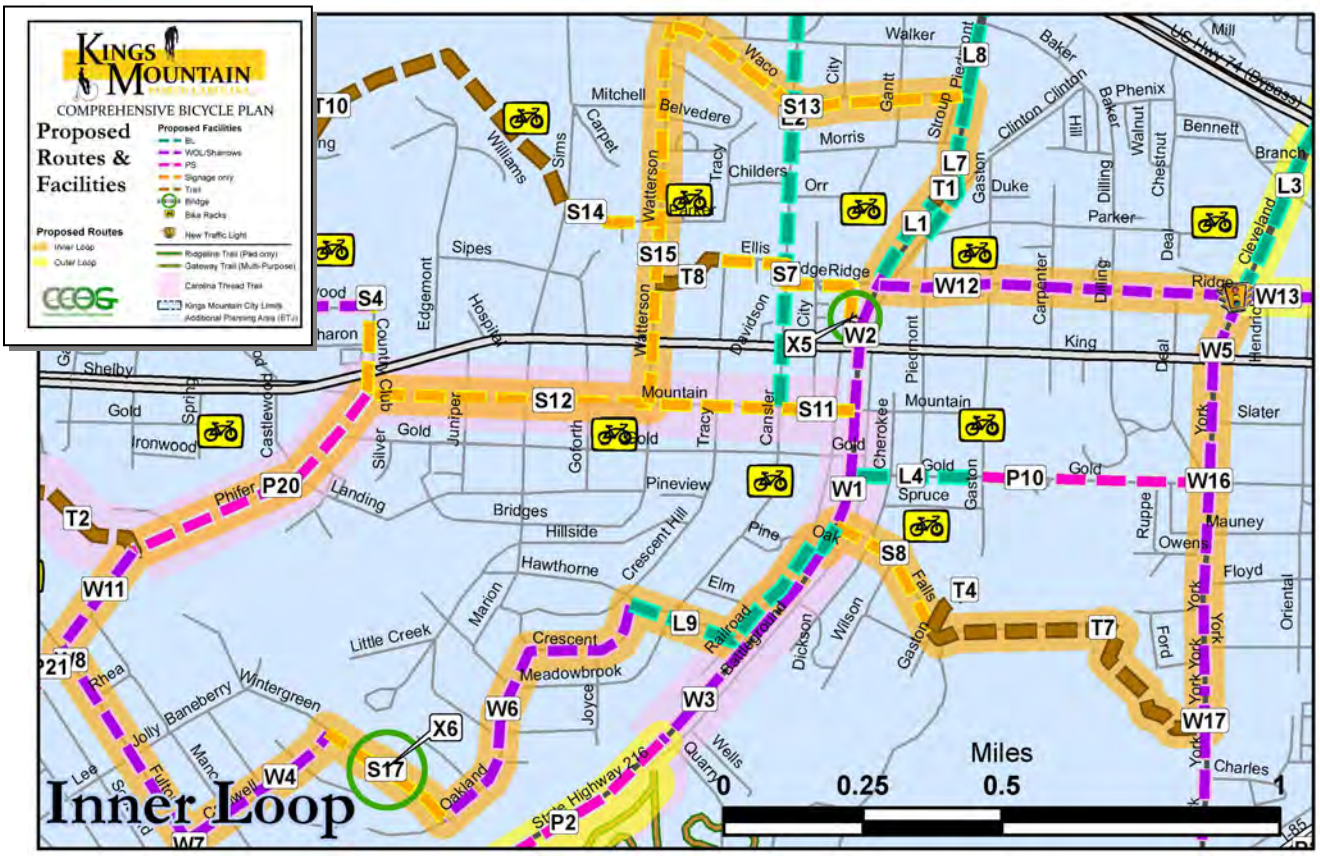
1. **Wayfinding & Signage**
   Wayfinding signs are destination guide signs that help locate destinations such as civic and cultural buildings, commercial centers, historic landmarks, sport attractions, or a visitor center. Any level of bicyclist will feel more comfortable on a trip if they have a good idea of where they are at various points, and when they must turn to find their destination. In addition to the guidance they provide bicyclists, wayfinding signage can also serve to remind motorists that they share the road with bicyclists.

2. **Bicycle Safety Programs and Helmet Initiatives**
   Many cyclists, especially children, lack a basic safe bike handling skills. Bicyclists need to know their rights and responsibilities on the road, be aware of hazards, and know the skills of safe cycling.

3. **Bicycle Rack Initiative**
   The availability of bike parking encourages the use of bicycles. The Initiative includes initial installation of bike racks and lockers, the Request a Rack Program, and other complementary programs.



Proposed Routes & Facilities



Proposed Facilities Downtown

LOCATION		IMPROVEMENTS		COSTS			RANKING
		Proposed Facility	Recommendations	Distance		Construction $ Estimate	Project Scoring
Street/Project Name	Proj. No.		(Proposed Actions)	feet	miles		Total points
Battleground	W1	WOL	Signage only	1280	0.24	$500	11
Battleground	W2	WOL	Widening, grading	2440	0.46	$231,061	11.5
Beason Creek	T2	Trail	Trail	4600	0.87	$653,409	12
Cleveland	L4	BL	Restriping, median, trees	3340	0.63	$474,432	14
Kings Mountain	P12	PS	Signage only	9830	1.86	$1,862	11
Mountain	L7	BL	Restriping	1950	0.37	$5,540	13
N. Elementary	T9	Trail, BL	Trail, Striping	2300	0.44	$392,045	12
Potts Creek 1	T10	Trail	Trail	6000	1.14	$852,273	12
Potts Creek 3	T12	Trail	Trail	11,750	2.23	$1,669,034	13
Potts Creek crossing	X4	Bridge	Suspended bridge	500	0.09	$142,045	13

Highest Priority Projects List

Section 1: PLAN OVERVIEW

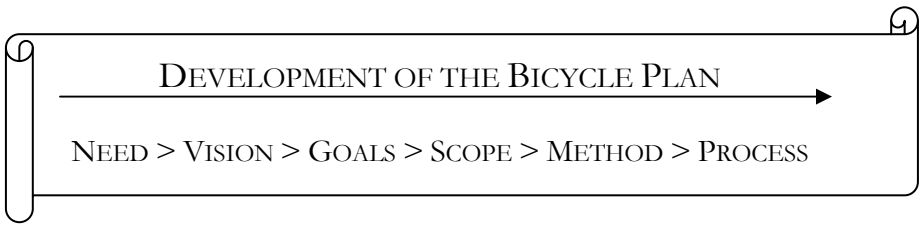
1.1 Realizing the Vision

NEED

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

- Formidable physical barriers such as highways, railroad lines, and busy internal streets, along much of the City's length, present real challenges for bicyclists. Significant barriers include: The Norfolk-Southern Railroad line, I-85, US 74 (bypass), Battleground, York Road, and Kings Street (US 74 Business).
- Traffic volumes and speeds: Kings Street (most direct path), manufacturing areas, schools during commuting hours
- Narrow non-standard (old) road widths
- Conflicts w/ on-street parking: Piedmont, Gaston, Gold, Mountain. Angled parking favored by merchants. Parking issue downtown.
- Lack of existing bicycle facilities
- Aesthetics: RR overpasses. Beautify w/ landscaping, but the RR doesn't want that.
- Blind corners and busy streets
- Insufficient street lighting

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



VISION

Throughout its formation, the Kings Mountain Bicycle Plan has been guided by the Vision for the community expressed by the Steering Committee. Taken from discussion points during the Committee's first meeting, the vision for Kings Mountain can be summed up as:

A socially connected, and economically thriving community with small town integrity; where everyone can safely and conveniently travel about, and enjoy a healthy lifestyle of exercise and recreation amidst the scenic beauty of the City and its natural surroundings

In order to attain this Vision, an ongoing coordinated effort must be undertaken to preserve the elements of the vision that exist, and guide the community's growth in a direction that will further achieve and maintain the Vision. The charter for this effort is the Kings Mountain Bicycle Plan.

GOALS

As the Plan is embraced and utilized in the ways described in its Purpose Statement, the City's Vision for a bicycle-friendly environment can be realized. This process will occur both through solving immediate concerns and achieving the City's expressed long-term goals:

- Provide for a safe bicycling experience through improvements that target strategic but unsafe sections of roadway and construction of safe off-road bicycle facilities.
- Provide bicycle connections to popular places like schools, businesses, downtown, and neighborhoods, and with that reinforce the connectedness and integrity of the community.
- Provide safe ways across gaps and around barriers (e.g. railroad and highways)
- Provide both on-road and off-road bicycle facilities to serve all segments of the population, with opportunities for commuting, recreation, healthy exercise, scenic enjoyment, and relief from automobile traffic.
- Create opportunities for economic development and significant community events.
- Minimize the burden on city services and resources, working within the constraints of existing physical conditions, parking, and right-of-way, and making the best use of available funding opportunities.

PURPOSE

This Comprehensive Bicycle Plan is intended to serve the City as:

- A compelling tool to promote the City's bicycle vision
- An effective source for the education of decision makers and the general public about the value and methods of making Kings Mountain a bicycle-friendly community
- A clear blueprint for the revision of City policies and ordinances that address development in order that all will support the same unified goals
- A comprehensive guide to the implementation and improvement of bicycle routes and amenities
- A firm basis for seeking financial assistance in the form of grants and other support from various outside sources in furthering the Plan's implementation

SCOPE

The area addressed in this bicycle plan includes the incorporated area of Kings Mountain City, and its Extra-Territorial Jurisdiction.

In order to meet these goals for this area, the Bicycle Plan examines a broad range of bicycle-related issues and recommends actions that address them in a comprehensive manner, including:

1. Policy and ordinance revision
2. Participation programs and initiatives
3. Comprehensive system planning
4. Facility standards and guidelines
5. Project identification and prioritization
6. Project specific planning and development process
7. Cost estimation
8. Funding and local budget recommendations
9. Project implementation and construction
10. Maintenance
11. Project evaluation process

METHOD

This Plan was developed using the methodology below, approved by the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation.

Task 1: Gather relevant documents relating to bicycle concerns in the City.

Task 2: Determine the project scope, schedule, points of contact with municipal staff; identify stakeholder groups, potential Steering Committee members, target meeting dates and planning budget

Task 3: Conduct a physical survey of the City and gather additional input on bicycle conditions from the community. Road data includes posted speeds, number of lanes, paving widths, on-street parking and existing bicycle facilities.

Task 4: Create composite maps of existing conditions showing current facilities and traffic conditions.

Task 5: City Council appoints the project Steering Committee to guide, provide additional stakeholder input, and review the development of the Plan.

Task 6: Conduct Stakeholder Interviews on bicycle needs and preferences.

Task 7: Conduct an interactive public meeting to review initial Stakeholder input with the general public, obtain feedback, and gather additional input from the public on bicycle and mobility issues and concerns.

Task 8: Review the public meeting results with the Steering Committee and solicit input on project prioritization.

Task 9: Facilitate a second public meeting to review preliminary Bicycle Plan, addressing how input received through previous public processes has been incorporated into the draft Plan, and solicit input on project prioritization.

Task 10: Prepare the Draft Plan using input from the Stakeholders and citizen comments.

Task 11: Submit the draft plan for preliminary review and comment.

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

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

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

PROCESS

In 2009, the City of Kings Mountain was awarded a $37,500 matching Bicycle Planning Grant by the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Bicycle Transportation (DPBT) for the creation of a comprehensive bicycle plan. The City then selected Centralina Council of Governments to develop the plan. Working with Steve Killian, Director of Planning & Economic Development, and Marcie Campbell, City Planner, Centralina guided the City through a thorough, public-input driven planning process, involving a steering committee to oversee the elements of the plan. The steering committee members represented a variety of local interests including:

- Police department
- Business community
- Transportation
- Health and medical fields
- Local government
- Schools
- Resident bicycle enthusiasts
- Public Library

1.2 Benefits of Bicycling

"The bicycle is the most efficient machine ever created: Converting calories into gas, a bicycle gets the equivalent of three thousand miles per gallon."
~ Bill Strickland, The Quotable Cyclist

"Bicycling is a big part of the future. It has to be. There's something wrong with a society that drives a car to work out in a gym."
~ Bill Nye, the Science Guy

"Chasing records doesn't keep me on my bike. Happiness does."
~ Lance Armstrong after his third Tour de France victory

"I thought of that while riding my bicycle."
~ Albert Einstein on the theory of relativity

Communities that recognize the many advantages of bicycling for their citizens and visitors are intentional about providing the facilities that help make bicycling safe, practical and enjoyable. Such improvements would help make the Kings Mountain community healthier, more vibrant and a more attractive place to live, visit, work and own a business. Consider some of the direct benefits of the bicycle lifestyle in these various categories:

1. **Local Economy**

   Investments in a community through bicycle-oriented improvements can yield economic results, and offer valuable incentives to prospective residents and businesses. Communities that offer bicycle-friendly features like mixed-use zoning, on road and off-road bicycle facilities, and associated traffic calming measures, tend to increase in property values and private investment along previously automobile-dominated roads. Areas with transportation choices such as biking and mass-transit can be more economically productive and competitive, while those that are limited to the automobile tend to have reduced regional economic development. Multiple nationwide studies indicate parks, greenways, and trails increase the resale value of nearby properties by 5 to 20 percent. (Mecklenburg County Park and Recreation web site, 2006)

   The North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation (DBPT) commissioned a study in 2003 to assess the value of their investment in bicycle facilities. The Institute for Transportation Research and Education (ITRE) at North Carolina State University conducted the study in the northern Outer Banks region because of its existing high levels of bicycling activity and presence of an extensive system of special bicycle facilities. Researchers surveyed bicyclists riding on the bicycle facilities — paths and wide paved shoulders — and also obtained data from self-administered surveys of tourists at three visitors' centers in the region.

Over the ten years prior to the study, an estimated $6.7 million of public funds was spent to construct off-road paths and add wide paved shoulders to roads in the region, from Corolla south to Nags Head and west to Manteo.

The study concluded:

- Bicycling activity in the northern Outer Banks provides substantial economic benefits to the area — an estimated $60 million annually.
- The bicycle facilities in the area are an important factor for many tourists in deciding to visit the region.
- Three-fourths of study respondents indicated that more bicycle facilities should be built, and nine out of 10 surveyed believe state and federal tax dollars should be used to do it.

The complete study is available at: http://www.ncdot.gov/bikeped/researchreports/

2. Public Health

Fitness experts agree that regular daily activity is the key to good health. According to the Center for Disease Control, 50% of adults in the United States fail to get the recommended amount of physical activity for good health. As many as 300,000 premature deaths occur each year in this country because of physical inactivity. The League of American Bicyclists reports that just three hours of bicycling per week can reduce the risk of heart disease and stroke by 50%. As bicycling becomes a more significant part of daily life in Kings Mountain, this will yield healthier lifestyles and ultimately impact community health care costs in a positive manner.

3. Safety

Drivers familiar with a community learn which streets are generally more populated with bicycle traffic. The more bicycles likely to be encountered, the more cautious most drivers are apt to be. In this way, bicycle activity is self-protective. The more bicycles using a street, the safer that street becomes for bicycles.

4. Youth Friendly

In one generation, the percentage of U.S. children who walk or bike to school has dropped by 70%, while childhood obesity has tripled (Centers for Disease Control). When communities are bicycle-friendly, young people are free to rely less on parents to drive them to school and other activities. As young people become accustomed to biking, they are also less likely to depend on automobiles for short trips as they grow older. With a more complete system of on-road bicycle facilities, multi-use trails, and other bicycle amenities helping to connect a mix of significant destinations within close proximity of each other, bicycling becomes a safer and more reasonable option, particularly to those who need it most.

5. Friendly to Underprivileged Populations

Another group for whom bicycle friendliness means independence are those who cannot afford their own personal automobile. According to the 2001 National Household Travel Survey (NHTS), one in 12 U.S. households does not own an automobile. For them, mobility is severely limited in communities that are designed around the car. Walkable communities maximize the independence and mobility in ways that auto-dependent communities cannot.

6. Improved Environment

A bicycle-friendly environment will contribute positively to air quality by reducing unneeded vehicular trips. During the first few minutes of vehicle operation, emission rates are at their highest. Reductions in the number of short vehicle trips can therefore provide relatively large pollution emission reductions. The World Watch Institute has found that a four-mile commuting round trip by bicycle (instead of automobile) keeps about 15 pounds of pollutants out of the air.

7. Transportation

After walking, bicycling is the most affordable and efficient transportation system available. Half of all trips in urbanized area are three miles or less, easy distances for bicycling. And more than half of all Americans live less than five miles from where they work according to Bicycling magazine.

8. Recreation

Perhaps the most obvious benefit of bicycle-safe streets and trails is the recreational asset to the community. Bicyclists in the nation outnumber skiers, golfers and tennis players combined. Among home buyers, walking and biking trails are ranked as the most desired amenity, ahead of ball parks and outdoor pools (National Home Builder Survey, 2004).

Section 2: CURRENT CONDITIONS & TRENDS

2.1 KINGS MOUNTAIN AT A GLANCE

The **City of Kings Mountain** is a small town at the foot of Kings Mountain. Located primarily in Cleveland County, the City straddles the Cleveland County line and abuts the cities of Gastonia and Bessemer City to the east and Shelby to the west. Much of its area is wedged between I-85 to the south and NC 74 on the north. Kings Mountain lies roughly 11 miles east of Shelby, and 28 miles west of Charlotte. Currently, the total incorporated municipal area is a little more than eight square miles. Kings Mountain is situated in the piedmont region and rests about 1000 feet above sea level. Most of the terrain of Kings Mountain is gently rolling.

The City of Kings Mountain has Extra-Territorial Jursidiction over a broad area (over 40 square miles), extending from the interchange of I-85 with US 74 and US 29, in Cleveland County, westward approximatley seven miles to almost one mile past the US 74/Shelby Road interchange. The ETJ stretches about 7.5 miles from its northern extent by Ike Brooks and Goforth Roads, to Bethlehem Road and York Road less than a mile from the South Carolina border.

The physical conditions and layout of the City, including all existing bicycle facilities described in this section, are shown on the **Existing Conditions** and **Analysis Maps** in **Section 7**.

History

Kings Mountain's motto is "The Historical City." Originally known as White Plains and settled by W.A. Mauney, the City took on its present name from its proximity to the area where the historically pivotal Revolutionary Battle of Kings Mountain was fought five miles south. Mining for iron ore and gold began in the area in the 1830's. The Charlotte-Atlanta Railway came through in the early 1870s and the City was incorporated in 1874. By this time, various industrial developments were established there, including the Dilling sawmill on North Piedmont Avenue. In 1888, Kings Mountain's first cotton mill was built. Other cotton mills followed as did the construction of mill villages close by. Nearly 400 of the mill houses still exist today. According to the Kings Mountain Historic Inventory, the City's best historic architecture is concentrated in the downtown along three adjacent east-west streets: King, Mountain, and Gold, and three north-south streets: Battleground, Piedmont and Cleveland.

Population
According to the US Census Bureau's 2005-2009 American Community Survey (ACS) 5-year estimates, the 2009 population of Kings Mountain was 11,335. In 2008, the Office of State Budget and Management's official population estimate for Kings Mountain was 11,175, having grown 15.3% since the 2000 census. The 2009 median resident age was 39.8, up from 38.1 from just the previous year. The 2009 median household income was $38,382.

By 1992, approximately 9.4% of the City's area and 8.1% of its population was located in Cleveland County, according to the Kings Mountain Land Development Plan. The total area was recorded in that plan as 5.56 square miles, and surrounded by its ETJ of 11.5 miles.

Employment
Many of the employment centers in Kings Mountain are industries located along the north and south sides of the I-85 corridor. Other concentrations of industries are located along US 74 Bypass at Shelby Road (US 74 Bus.) and at Waco Road, and at points along the railroad including the Herndon Access area to the north in Gaston County, at US 74 between Linwood Road and Baker Street, and along Railroad Avenue south of Gold Street. Additional business corridors in the City include King Street and Shelby Road (Bus. 74), and York Road from King Street to I-85. The core downtown area stretches east-west from Gaston Street to Cansler Street, and north-south from King Street to Gold Street.

Commuter traffic
The American Community Survey 5-year estimates indicate that the average Kings Mountain resident (over 16) spends 23 minutes commuting to work. Almost 90% of them drive to work alone, while another 8% carpool. Of the remaining approximately 2%, about half of those walk while the other half work at home. There are no forms of transit to use in the City. Eleven people in the survey (0.2%) claimed they used "other means" to get to work, which may indicate some current minimal bicycle use for commuting.

Vehicle Ownership
The 2009 American Community Survey estimates that over 11% of households in Kings Mountain do not own a vehicle (compared to the national average of 8.8%). Another 31% of households in the City have only one vehicle. These numbers have not changed significantly in Kings Mountain since the 2000 U.S. Census.

Road System
Kings Mountain's downtown grid street pattern is typical of historic communities in America. This rectilinear network primarily runs parallel to King Street (Bus. 74) and perpendicular to the Norfolk Southern Railroad. The Railroad corridor bisects the City between Battleground Avenue and Railroad Avenue. The grid begins to loosen further away from the core of downtown but still retains a highly connective nature with relatively few dead ends. The network degrades with the more newly developed subdivisions within the City which exhibit the low connectivity typical of their era. Development along Crocker Road north of Phifer Road provides one example, where cul-de-sacs dominate, leaving fewer choices of route for both drivers and bicyclists.

As of 2006, there were nearly 95 miles of roads within Kings Mountain's corporate limits. Of this count, about 56 miles are locally maintained while the remaining 31 miles are maintained by NCDOT. The streets in Kings Mountain are primarily public. The subdivision ordinance requires public streets in all new subdivisions. Included in these counts are almost four miles of US 74 By-Pass and four miles of Interstate 85 that are state maintained. State Roads in or adjacent to Kings Mountain include I-85, US 74, NC 161 and NC 216. Highways I-85, US 74, US 29 and NC 161 intersect in Kings Mountain and connect the City to the region.

Gateway Corridors

The **Kings Mountain Land Development Plan 2020 (LDP)** describes seven major gateway corridors into the City:

1. U.S. 74 Business from U.S. 74 By-Pass to Battleground
2. I-85 to West 74 to U.S. Business 74 (Exit 10-B) into King Street to Battleground
3. N.C. 161 from Lewis Farm Road to U.S. 74 Bypass to King Street
4. N.C. 161 (York Road) from Wiggins Lane area to King Street
5. N.C. 216 from the I-85 intersection to South Battleground to Gold Street
6. N.C. 216 from Chestnut Ridge Church Road Area to N. Piedmont to Kings Street
7. Dixon School Road/Kings Mountain Boulevard I-85 (Exit 4) to Shelby Road (74-Business)

The LDP examines each of these corridors in great detail. Its recommendations are described in **Section 3** of this Plan. Below are some observations included in the LDP (p.32) regarding current conditions pertaining to the presence of bicycle facilities, number of travel lanes, development patterns, scenic and historic value, and general aesthetics that affect the bicycle environment of each of the corridors

1. **U.S. 74 at the U.S. 74 By-pass and Shelby Road Intersection to Battleground**
   - Begins as 4-lane divided highway with a large green median separating the two sections of the road. At the approach to the intersection of 74 Business (Shelby Road) and Phifer Road, US 74 becomes a two-lane road, following King Street.
   - A triangle piece of property holds a brick monument which presents the Battle of Kings Mountain and a "Welcome to Kings Mountain" sign. The site has received landscaping improvements from time to time.
   - The bridge that spans the railroad is listed on the National Register of Historic Places and serves to give an elevated view of the downtown main street area.
   - This approach to Kings Mountain shows evidence of unorganized sprawling development dominated by used car lots, typical non-landscaped shopping centers, a lack of development standards.

2. **I-85 to West 74 to U.S. Business 74 (Exit 10-B) to King Street to Battleground**
   - Exit 10-B off I-85 is a wide, four-lane, elevated exit providing the motorist (no bicycles allowed at this point) with a very scenic view of the lush, green countryside and Crowders Mountain.
   - All in all the area is attractive with the exception of several deteriorated commercial buildings and residences. The mixture of the newer and well maintained institutional buildings, historic residential structures and two successful restaurants make it an interesting and attractive gateway.

3. **NC 161 From Lewis Road to US 74 Bypass to King Street**
   - Industrial uses predominate at the border of the study area. Just outside of the study area is FMC Mining Industries.
   - Street lighting begins at James Street and N. Cleveland Avenue.

4. **N.C. 161 (York Road) from Wiggins Lane area to King Street**
   - Great view of Crowders Mountain State Park. The countryside is lush and green with rolling hills.
   - The road is wide and may be capable of supporting bike lanes, as it is already designated a NCDOT "Share the Road" (with bikes) facility.
   - Approaching Oak Mountain Road and Ferguson Drive one crests the ridge line from Crowders Mountain to the Kings Mountain, site of the revolutionary war battle.
   - On the west side of the road are two city owned lakes, Davidson Lake (not visible from the road) and City Lake (barely visible from the road).
   - (Includes) brown informational sign stating the distance to the three state and national parks.
   - (Continuing north is) Lake Montonia Road, a portion of which is on the Scenic By-Ways system of North Carolina.
   - From this point, towards I-85 the highway changes to a four lane road complete with sidewalks. Woodlake Parkway departs to the east, a major industrial service road and also a NCDOT "Share the Road" facility.
   - The I-85/York Road Bridge has a bike lane facility on either side.
   - Just past Broadview Street … the road becomes a three lane facility.
   - North along York Road …uncut weeds or weeds sprouting in broken pavement are evident. … Pavement predominates in this area, with parking being provided immediately at the edge of the road pavement. A lack of parking spaces makes area a traffic hazard, as motorists are allowed to pull in and out of the property at any point since no curbs are evident.

5. **NC 216 from the City Limits North to Gold Street**
   - NC 216 becomes a two lane highway… just north of the industrial corridor located on the section of NC 216 highway between Grover and Kings Mountain.
   - Continuing northward the arterial area generally parallels the Northfolk-Southern Railway on the west side of the road.
   - The entrance to the largest quarry pits is in this area.
   - Along this stretch of NC 216 is some un-kept property where weeds proliferate and piles of old concrete create an eyesore… Landscaping is encroaching and overgrowing the sidewalk and curb areas.
   - Several homes in the area are notably attractive and are create a contrast to the steep railroad embankment opposite them.
   - Visible, just as Gold Street is approached are the two wall murals depicting historic quality and natural beauty in Kings Mountain.
   - This entranceway, because of the need for repairs to buildings, removal of building debris and paving of parking lots does not enhance a visitor's impression of Kings Mountain as they approach the Downtown area.

6. **NC 216 to North Piedmont**
   - Southward along NC 216, the area has a distinct rural flavor with nice vistas, homes, and trees.
   - In the portion of NC 216 from US 74 to Battleground, a proliferation of retail and industrial uses abound …and the old depot which is currently home to the Kings Mountain Arts Society.
   - Maintenance of the Norfolk Southern Railway right-of-way leaves much to be desired. The banks consist of overgrown weeds and severely eroded banks. The planting of specific species of plants to prevent further erosion is needed to provide an attractive alternative to the visual blight of the railroad banks but not allowed by railroad officials.

7. **Kings Mountain Boulevard I-85 (Exit 4) to Shelby Road (74-Business)**
   - As one leaves the Interstate at Exit 4 …the intersection is not attractive and reminds one of the run down commercial development on older US highways, pre-Interstate era or poor commercial development often seen along parallel access roads before zoning was adopted. The area is in need of redevelopment.
   - On the north side of the intersection … the area becomes more rural.
   - As one goes further north the shoulders on the new section of road are very steep and may prevent or delay future development that must access the highway.
   - There is a signal light at the South Battleground (and) Margrace Road.
   - North of Phifer Road are steep shoulders.
   - All in all the entranceway has some exceptional aesthetic appeal with long vistas, mountains in the background, wooded expanses and open fields. Detracting from that is the I-85 intersection which needs redevelopment.

Current Bicycle Facilities – On-road

Some newer roads in Kings Mountain feature paved shoulders wide enough to safely accommodate bicycle traffic. Paved shoulders with bicycle warning signage stretch north-to-south entering the City along Stony Point Road, continuing along Shelby Road, then turning onto Kings Mountain Boulevard down to Dixon School Road past the I-85 interchange. Paved shoulders line York Road southward beginning at Lake Montonia Road.

Current Bicycle Facilities – Off-road

The **Kings Mountain Gateway Trail** entrance is located at 807 South Battleground Avenue, at the intersection of Quarry Road, ½ mile south of downtown. Phase I of the multi-use trail facility consists of a central trail and two loops in a wooded park with picnic tables and other amenities. Phase I is considered to be about 1/3 of the total project. The Trail is designed to ultimately connect the City to Crowders Mountain State Park, Kings Mountain State Park, Kings Mountain National Military Park, the Overmountain Victory Trail and the Appalachian Trail. The first two miles of the facility opened in November 2009. It is now a popular recreation destination for

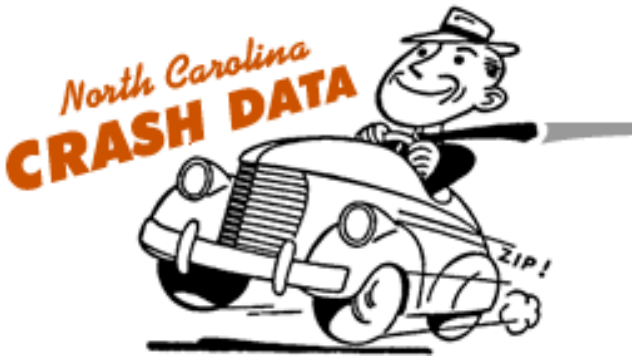
Kings Mountain Gateway Trail

bikers, hikers, and walkers.
http://www.kmgatewaytrails.org/

The physical conditions and layout of Kings Mountain, including all existing bicycle facilities described in this section, are shown on the **Existing Conditions** and **Analysis Maps** in **Section 7.**

Bicycle Crashes

The NC Department of Transportation Mobility and Safety Division has record of sixteen accidents in Kings Mountain involving bicyclists since 1990. Those accident reports include one fatality, and ten possible or evident injuries, one of which was disabling. The other five involved property damage alone. The location of these incidents were scattered, but a higher portion of them occurred on Gold Street, Phifer Road, Battleground Avenue and NC 161. For the location of all of these incidents, see the Traffic Conditions Map in **Section 7**.



Public Opinion

The Kings Mountain Bicycle Plan public survey launched online and made available throughout the formation of the Plan collected results from 98 individuals. The responses indicate that few to none of the participants currently use a bicycle to commute to school or to work, or for other strictly transportation purposes. Rather, the bicycle is almost exclusively utilized for recreation or exercise. The most common reason given for not riding a bike was out of concern for personal safety. When asked about how to increase bicycle use in Kings Mountain, most agreed that more on-road and off-road facilities, such as bike lanes and greenways, would have the most impact, as opposed to increased safety enforcement or programs. The survey participants indicated they were much in favor of increased public funding of such facilities.

For complete survey results, see **Appendix A.23**.

2.2 ORIGIN-DESTINATION POINTS

For the areas referred to below, refer to the Destination Map in **Section 7**.

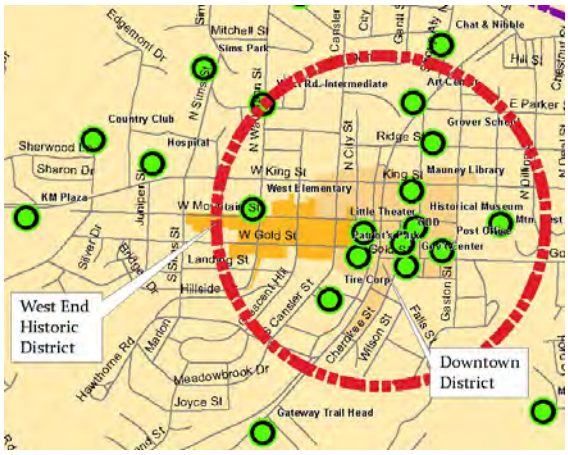
Downtown

Within Kings Mountain's "Downtown" area are clustered many of the City's most significant destinations, as identified by the stakeholders of this plan. For purposes here, this area includes both the designated "Downtown Overlay District" as well as the "West End Historic District, and any additional area within a ½ mile radius from the central intersection of Mountain Street and Battleground Road. This interconnected clustering of desirable destinations creates a concentration of activity convenient to bicyclists. Among the popular destination points located here are various civic and recreational destinations, including:

- U.S. Post Office
- Historical Museum
- Mauney Library
- Patriots Park
- Kings Mountain Government Center
- Little Theatre
- The Art Center
- Mountain Rest Cemetery

As well as numerous churches, restaurants, retail stores, offices, residential neighborhoods, and three public schools:

- Grover School
- West Elementary School
- West Road Intermediate School



Destinations in downtown Kings Mountain (½ mile radius shown in red)

Immediate Urban Area

For analysis purposes in this plan, an "immediate urban area" has been loosely defined by an ellipse that includes the portion of the City that lies within the envelope of US 74 to the north, I-85 to the south, and the western-most neighborhoods within the City limits. Many neighborhoods are located within this area, along with restaurants, some major employment centers, and a cluster of schools that include:

- Kings Mountain Intermediate School
- Kings Mountain Middle School
- Kings Mountain High School

Destinations in the "immediate urban area" of Kings Mountain (shown within purple)

Other noteworthy destinations within this area include:

- Gateway Trail Head
- YMCA & Deal Park
- Sims Park
- Kings Mountain Country Club
- Kings Mountain Hospital and associated medical centers
- The Senior Center
- Kings Mountain Plaza
- Westgate Plaza

City Limits

Significant portions of Kings Mountain extend beyond the above defined area, but considerable barriers limit access to these areas by bicycle. To reach neighborhoods such as Northwood & Phenix Mill, and a number of retail and major employment centers within the City, one must cross either I-85 or US 74, with limited choices of where to do so. Some significant destinations in these areas include:

- The Citizens Service Center
- North Elementary School
- East Elementary School
- Mac's Grocery
- Linwood Produce
- City Lake

Surrounding Region

A number of destinations of regional significance lie outside of the City limit or within island annexations, but they are still within a reasonable distance easily from Downtown for many bicyclists. Aside from employment centers and neighborhoods, other noteworthy destinations include:

- Davidson Lake
- John H. Moss Reservoir
- Kings Mountain
- Crowders Mountain
- Kings Mountain Travel Center
- Ingles Grocery

Scenic and recreational amenities in Kings Mountain inspire local enthusiasm for bicycling and draw visitors to the area. Some of the exceptional destinations are described in the City's Land Development Plan, 1995:

- **Davidson Camp** is a Boy Scout Camp located along NC 161 adjacent to Davidson Lake, about three miles south of downtown.
- **John H. Moss Reservoir** is a man-made reservoir of about 1500 acres and over 50 miles of shoreline. Its nearest point lies about seven miles northwest of downtown. While the Lake area lies outside of the Kings Mountain ETJ, it is owned by the City. The area features camp sites and camping facilities including a bathhouse and showers.
- **Kings Mountain National Military Park**, at over 4,000 acres, is the nation's third largest military park. It is located approximately five miles south of the City.
- **Kings Mountain State Park** lies adjacent to the Military Park. With over 6,000 acres, it offers camp sites, shelters, lake swimming, and hiking trails.
- **Crowders Mountain State Park** continues along the ridge to the northeast. Its 2,364 acres include more hiking trails, shelters, camping sites, and breathtaking views from Kings Pinnacle and the peak of Crowders Mountain.

2.3 SPECIFIC BICYCLE BARRIERS AND CONSTRAINTS

Barriers to bicycle travel can exist in the form of natural features such as surface water or steep terrain, or man-made features, including cul-de sacs, limited access roadways, and inaccessible land development. While some barriers present a complete physical or legal impasse, others may be semi-permeable in that, while they can be physically crossed, they impose a significant hazard or psychological deterrent.

Bicyclists must negotiate some significant barriers in Kings Mountain. The following is a list of those most challenging and pervasive barriers to bicyclists in and around the City.

Norfolk Southern Railway
Like many older towns in the Carolinas, Kings Mountain grew up along a railroad line. The Norfolk Southern Railway was built in 1872. Today, that railroad corridor divides the City into east and west with the division running through the center of Downtown. Trains pass routinely through the City on a daily basis. Opportunities to cross the tracks when a train is passing are limited. Of the streets that cross the railroad, only King Street and adjacent South Railway Bridge do so above grade in the downtown area. Dixon School Road and Bethlehem Road provide two additional above-grade crossings approximately three miles south of downtown. These roads provide the sole physical connection across the tracks when a train is passing. The number of at-grade crossings may decline as Norfolk Southern decides to close them one at a time.

Interstate 85 effectively forms a southeastern edge to the City with only two points of crossing within the City limits currently available to bicycle use - York Road and Canterbury Road - and one additional crossing within the ETJ at Dixon School Road. An opportunity for additional bicycle and pedestrian crossing exists by way of the old mining bridge that is currently closed, located by Kings Creek. See "Existing Bridge noted in Gateway Trail plan in **Appendix A.8** and **A.9.**

US 74 in Kings Mountain

US 74 Bypass forms a northern boundary across the City, dividing a significant part of the community from the Downtown. Physical crossings exist at Cleveland Road, Piedmont Avenue, Cansler Street, and Waco/Oak Grove, with an additional connection using Shelby Road just west of the City limits. Another physical connection exists under the highway through the Potts Creek drainage structure, but that structure is currently not suitable for bicycle or pedestrian use.

Shelby Road provides an important east-west connection through the City from the terminus of Kings Street at Phifer Road, to US 74 Bypass and beyond. From Kings Mountain Boulevard westward, Shelby Road is equipped with paved shoulders wide enough for safe bicycle use. But the shoulders give out east of this point and make safe bicycle passage impossible from Kings Mountain Boulevard to Kings Street.

The **Kings Mountain Mica Company Quarry** and other industrial properties occupy a substantial area within the City, stretching from York Road to Tin Mine Road - a length of nearly three miles - between I-85 and Battleground Avenue. Though this area is presently off-limits to bicycles, the Gateway Trail Plan proposes trail facilities to provide a connection across this mile-wide swath. See **Appendix A.8** and **A.9**.

Kings Mountain public parks and Deal Park (leased by the YMCA) have signs at their entrances clearly indicating that bicycles are not permitted.

Battleground Avenue (State Highway 216) connects the downtown area to Kings Mountain Boulevard and provides the only connection to the Gateway Trail Head. However, this critical corridor is very narrow in some segments (as little as 21 feet) and unsafe for bicyclists, especially in the busy area from Falls Street to Margrace Road. The posted speed for this road segment south of Hawthorne Street is 45 mph.

Sign at Sims Park

King Street provides the longest uninterrupted east-west connection through downtown. Together, East and West King Street run approximately two miles through the City. However, this central corridor is not conducive to bicycle use. As the City's primary business route (74 Business), it serves a high volume of traffic and has frequent curb cuts which serve the business sites that line the north and south sides of the street. The posted speed limit is 35 mph, but typically sees speeds in excess.

King Street looking eastward toward the Cleveland Avenue intersection

2.4 GENERAL ANTI-BICYCLE CONDITIONS

The problem areas described above focus on specific locations, but they are all part of a larger system that requires attention on a number of fronts. The general conditions listed below each exert a negative influence on the community and limit bicycle activity. Each may contribute in some way to the reality or perception that biking is not as safe, practical or enjoyable as it should be. Each may inhibit citizens who find themselves with few choices of transportation, from making a necessary or desired trip on a bike. Each may discourage those on the cusp of a decision between biking and driving, to take their bike.

1. **Inadequate on-road bicycle facilities**
   Aside from a few of the newer roads constructed within Kings Mountain, the City has no bicycle facilities. Many of the roads in and around the City are of insufficient width for bicyclists to share with vehicles.

2. **Inadequate off-road bicycle facilities**
   Other than the recreational Gateway Trail, which offers no connection to destinations, there are currently no off-road bicycle facilities in Kings Mountain. In order to reach most destinations of interest, bicyclists must use the streets, and many of those streets offer no bicycle facilities or adequate width for safe bicycling.

3. **On-street parking**
   While on-street parking is a great benefit to downtown retail businesses and pedestrian life, it can inhibit bicycle use with the potential danger of vehicle doors suddenly opening into the path of a bicyclist, particularly on highly trafficked streets such as Piedmont, Gaston, Gold, and Mountain. Angled parking is sometimes favored by merchants as it allows greater numbers, but this orientation poses an even greater hazard to bicyclists and is not as favorable to pedestrians as parallel parking. Back-in diagonal parking presents a safer option for bicyclists and drivers, though it requires additional maneuvering skills on the part of drivers.

Marked parallel parking serving businesses on Battleground Road

4. **Traffic**
   The City of Kings Mountain notably sees a considerable amount of traffic. Aside from I-85 and US 74 Bypass, which carry between 40 and 50 thousand vehicles per day passing through the City limits, downtown traffic conditions present challenges for bicyclists. Current Average Annual Daily traffic

counts for York Road increase to 13,000 as it approaches King Street. US 74 Business sees 11,000 to 13,000 within the city limits. The intersection of King Street and York Road/Cleveland Avenue is the busiest intersection. Battleground Avenue sees up to 6200 vehicles per day at King Street. Outside of downtown traffic eases off and it is notably much easier to get around; however, there are still some critical intersections where high volumes of traffic could present problems. Phifer Road provides a connection between downtown and three major schools. At the junction of Phifer with the Downtown grid at West Mountain and Gold Streets, traffic reaches 6200 vehicles per day. Numerous bicycle accidents have been reported along Phifer and Gold Streets since 1992.

5. **Aesthetics**
   As is stated repeatedly in the Kings Mountain Land Development Plan, there are many areas throughout the City where visual blight is notable. The Norfolk-Southern Railroad corridor running through the center of downtown provides one example of where visual improvements are needed.

6. **Lighting**
   Both steering committee and general public reported unease about lighting in the City, saying they felt conditions were not favorable for bicycling at night.

2.5 UNIQUE OPPORTUNITIES

Kings Mountain offers many features inviting to bicyclists. Other bicycle-friendly elements and trends in the City may be less obvious but have an even more profound impact on Kings Mountain's walkability in the present and near future. Each of these features deserves a spotlight in order that their value can be more clearly understood, and their characteristics preserved, enhanced and drawn upon as the City continues to develop.

1. **A centralized downtown core**
   As a historic city, Kings Mountain has grown around a tight-knit grid of streets. Many desired destinations are located close together in a well connected pattern of streets. This classic arrangement provides a convenient and inviting setting for bicycle life.

2. **Overlay Districts**
   These districts are in place to "protect and enhance the economic and aesthetic appeal and orderly development of properties…while at the same time maintaining traffic efficiency and safety." All of the districts call for street trees and increased street connectivity. The NC 161 Overlay additionally provides for trails (where applicable) and bike facilities at the right-of-way, designed in accordance with NCDOT standards and installed accordingly as part of the development.

3. **Scenic countryside**
   Though the nearby majestic mountains lure bicyclists out into the countryside, one does not have to leave the City to see them. Crowders Mountain and Kings Mountain dominate the eastern and southern skyline. While gentle rural landscapes extend north and west.

4. **The Gateway Trail**
   Kings Mountain's current greenway includes over 2 miles of trail. The trailhead facilities on Battleground Road include a welcome center with restroom facilities, water fountains, trash receptacles and parking for 30 vehicles. Other amenities include picnic tables, a map kiosk, and bike racks. See **Appendix A.8** and **A.9** for more details.

Rural landscape of Dillon Road

Kings Mountain Gateway Trail

5. **Additional Local and Regional Greenway Opportunities**
   In addition to the current Gateway Trail, the City has further opportunities to develop its greenway network. Both Potts Creek and Beason Creek could potentially provide significant east-to-west connections, particularly through the use of the sewer right-of-way corridors that follow both creeks. Both creeks are designated as part of the regional Carolina Thread Trail. Additional trail opportunities exist in other parts of the City that would also form useful bike connections. An expanded greenway network utilizing these corridors could serve many significant destinations identified within this plan.

Building upon these assets of the City, **Section 4: General Recommendations** of the Kings Mountain Bicycle Plan outlines specific strategies to meet the community's bicycle goals.

Section 3: EXISTING POLICIES, PLANS & PROGRAMS

3.1 Current Ordinance

While existing physical conditions have the greatest impact upon the City's current biking conditions, the City's land development policy – which guides how the City grows and develops – will ultimately have the greatest impact as they influence future biking conditions. City land development policy is examined here in terms of how well it supports the bicycle-friendly goals recorded at the outset of this Plan. Those goals in summary are:

1. Target unsafe sections of roadway.
2. Provide connections to popular places.
3. Provide safe ways across gaps and barriers.
4. Provide both on-road and off-road bicycle facilities for commuting, recreation, exercise, and scenic enjoyment.
5. Create opportunities for economic development and community events.
6. Minimize the burden on city resources and make best use of available funding opportunities.

The various land development policy documents are examined with respect to the issues that most directly affect and pertain to bicycling conditions. These issues include:

1. Mixed-use development
2. Street connectivity
3. General multi-modal provisions
4. Lane and shoulder width
5. Driveway curb-cuts
6. Traffic speed, volume and heavy vehicles
7. Greenways, multi-use trails and parks

A brief explanation of each issue and how it affects bicycling conditions is provided in this section as each subject is explored within adopted City ordinances, including the Kings Mountain Zoning Ordinance and the Kings Mountain Subdivision Ordinance. The same issues are also examined in the City's existing plans in the following section. Specific recommendations for revisions to current policy to better support the goals stated above are provided in **Section 4.5: Policy Recommendations**.

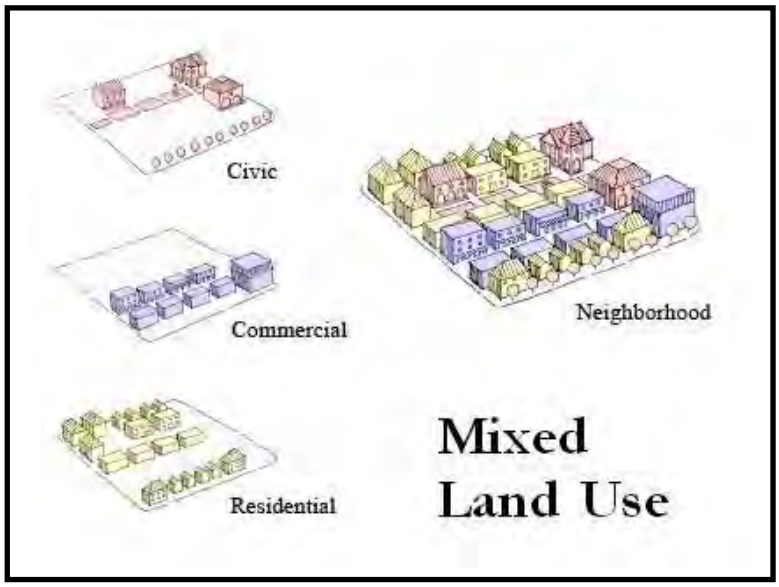
Kings Mountain Zoning Ordinance (KMZO) was adopted in 1996 and last amended June 30, 2009. The Ordinance provides descriptions of fourteen zoning districts and nine overlay districts. The KMZO standard district regulations primarily impact the City's bicycling environment through rules that govern land-use, building setbacks, and development densities. The overlay districts, however, contain additional provisions pertinent to the bicycle environment. In addition to an Historic District (HD) and a Flood Damage Prevention District, seven corridor districts are specified. These districts are intended to "protect and enhance the economic and aesthetic appeal and orderly development of properties adjacent to and within the vicinity of certain major thoroughfare corridors in the City, while at the same time maintaining traffic efficiency and safety." (Section 6.16 (3)a). The corridor overlay districts include:

(i) Kings Mountain Downtown Protection, Preservation & Enhancement District (KMDPPED)
(ii) US 74 Shelby Road Divided Highway Overlay District (74 SRDHOD)
(iii) US 74 Business King Street Gateway Protection Overlay District (74 KGSPOD) East
(iv) US 74 Business King Street Gateway Protection Overlay District (74 KGSPOD) West
(v) NC 161 York-Cleveland Business Overlay District (161 YCBOD)
(vi) York Road Gateway Protection Overlay District (YRGPOD)
(vii) Waco Road & US 74 Intersection Inclusive Overlay Protection District (WRUS74IOD)

For a map of these districts, see the zoning maps provided in **Section 7** and **Appendix A.12**.

Kings Mountain Subdivision Ordinance (KMSO) was adopted in 1996. The KMSO provides comprehensive guidance for new residential subdivisions in the City. The provisions of this ordinance most conducive to bicycle travel govern street connectivity.

POLICY ISSUES:



Issue 1: Mix-Use Concentrated Development

When various land uses are mixed together in close proximity – for instance: residences, commercial establishments and civic buildings – a greater number of destinations of various types can be reached without reliance upon automobiles, being within a reasonable cycling (or walking) distance of the areas where people live (One can quickly bike to the corner store, for instance). Conversely, lower-density, linear patterns of development - characteristic of urban sprawl - tend to discourage the use of bicycles as a means of transportation.

Fourteen Zoning districts are specified within the current Kings Mountain Zoning Ordinance (KMZO). Each of these districts is briefly described in the KMZO Article V, *Establishment of Zoning Districts*, Section 5.2. The Table of Permitted and Conditional Uses in Article VII (Section 7.1), provides a lists various uses and indicates which zones the use is permitted by right or by condition. The possible use classifications are based on 1987 SIC descriptions, which is organized by use then district.

The KMZO has a variety of districts that facilitate mixed-use, including commercial districts with housing components and office districts with housing components. The latter may be used for transitions from commercial uses and industrials uses into conventional housing uses. There are also provisions for mixed use developments under PUD special requirements.

Uses permitted in the overlay districts are all subject to being permitted by the underlying district (KMZO p. 53b).

See the zoning maps provided in **Section 7** and **Appendix A.12** for zoning districts and zoning overlays.

Issue 2: Street Connectivity

Connectivity is a measure of how well a roadway (or trail network) provides route alternatives between origins and destinations. In layman's terms, good connectivity means providing a variety of convenient ways to get from point A to point B. The traditional grid-style street layout of older towns, exemplified by Kings Mountain, provides an excellent degree of connectivity. Streets are highly interlinked, intersections are closely spaced between short blocks, and there are few dead-ends. Communities with high connectivity are more bike-friendly because destinations are within easier reach with more choices of routes. A connected network of streets also gives drivers more choices of vehicular routes, decreasing vehicular congestion by dispersing traffic. When more streets interconnect, local vehicular traffic can take shorter routes and avoid busy arterial roads, as can bicycles.

Street patterns near Atlanta, Georgia displaying extremely poor connectivity

Street connectivity can be compromised both by limiting access points into and out of subdivisions, and by limiting the number of opportunities that streets intersect within them. Block length provides one measure of connectivity, as longer blocks leads to a decrease in connectivity. Over the last few decades, many residential developments were designed with fewer street intersections in favor of incorporating more cul-de-sacs. Cul-de-sacs were initially used to avoid extreme terrain that would prohibit streets from connecting. However, development practices grew to rely upon them, even on flat land, as a way of discouraging traffic in front of individual homes. This practice turns public throughways into semi-private drives that dead-end into semi-private courts. While this arrangement does reduce non-residents cutting through the neighborhood, it also gives residents very limited options. Traffic can back up into the neighborhood during rush hour, as everyone tries to get out by the same street onto busy arterial roads. Emergency vehicle access and efficiency is also severely limited. Kids going to school, events, or just wanting to visit friends in neighboring subdivisions must travel much greater distances on bicycle or on foot - often along busy main thoroughfares - or be driven by an adult.

Street Connectivity is encouraged in the KMZO in its description of the Overlay Districts. These Districts call for sidewalks, street trees, and increased street connectivity.

In the KMSO Executive Summary, in its description of Article III on page 5, it states:

> "New streets are to be planned to extend both existing and projected streets KMSO that good functional streets are created. They must positively impact on the City's existing system (3.5). To that end the streets must conform with the Thoroughfare Plan and also with other streets in the subdivision and nearby. … Cul-de-sacs are permitted if necessary, but not encouraged."

Block lengths are addressed in Section 3.3 (p.13):

> "Blocks shall not be less than 400 feet not more than 1,320 feet in length."

However, the KMSO Executive Summary, as it refers to Section 3.3, sets the maximum block length at 1,200 feet. Both sections of the KMSO require blocks to be wide enough for two tiers of lots.
Section 3.5 of the KMSO prescribes Streets and Street Improvements. This section contains a number of requirements intended to promote connectivity. Specifically (on pp.14f):

3) Conformance with Adjoining Street System

The planned Street layout of a proposed Subdivision shall be compatible with existing or proposed Streets and their classifications on adjoining or nearby tracts.

4) Access to Adjoining Property

Where in the opinion of the City Council it is desirable to provide for Street access to adjoining property, proposed Streets shall be extended to the boundary of such property.

5) Reserve Strips, Half Streets and Private Streets

Reserve strips and non-access easements adjoining Street rights-of-way for the purpose of preventing access to or from adjacent property, (except those required to prevent access to Thoroughfares) and half-Streets shall not be permitted under any condition. Private Streets shall be permitted only in specific developments as may be permitted by the Zoning Ordinance.

7) Cul-de-sacs

a. Cul-de-sacs should not be used to avoid connection with an existing Street, to avoid the extension of a thoroughfare or collector Street, or to avoid connection to adjoining property.

b. Cul-de-sacs should not extend for significant lengths unless necessitated by such factors as topography, property shape, property accessibility and/or land use relationships.

The KMZO provides for increased and more intentional connectivity through its Thoroughfare Protection Districts (TPD).

Section 6.16 (3) (i) (b) vii) (p. 53-J)

vii) Public Street Connectivity. Proposed public streets shall be extended to the boundary of developments for connection to existing streets on the boundary of adjoining property or for future connection. Cul-de-sacs shall not be used to avoid connection to adjoining property. In general cul-de-sacs shall not be used to deny access to development on the boundary of property except where necessitated by topography or to provide separation of unlike or incompatible uses.

This same standard is included in the other corridor districts.

(i) Kings Mountain Downtown Protection, Preservation and Enhancement District (KMDPPED)

Issue 3: General Multi-modal Provisions

The City has established overlay districts in its downtown and along a number of its primary corridors. The City Zoning Ordinance (Section 6.16(3)) states that the Thoroughfare Protection Districts (TPs) are in place to "protect and enhance the economic and aesthetic appeal and orderly development of properties … while at the same time maintaining traffic efficiency and safety of travel."

The York-Cleveland Business Overlay District (YCBOD) and the York Road Gateway Protection Overlay (YRGPOD) (Section 6.16(3) e. (iv.) & (v.)) both include:

(x) Multimodal Provisions. Development shall be designed and shall provide for alternative means of transportation including pedestrian sidewalks and trails (where applicable) and bike facilities at the right-of-way. These shall be designed in accordance with NCDOT standards and installed accordingly as part of the development.

The Downtown Overlay District includes this statement of goals for its creation:

Design Guidelines for Downtown Kings Mountain

The Downtown Kings Mountain overlay district was adopted in order to meet the following goals:

Goal 1: Preserve the small-town, unique character of Downtown Kings Mountain
Goal 2: Complement the existing historic architecture
Goal 3: Encourage streetscape design that is inviting and on a human scale
Goal 4: Communicate the community's vision for the downtown area

The boundaries of the overlay district follow the borders of the Kings Mountain Municipal Service District.
Guidelines are intended to convey desirable elements. They are recommendations and not requirements, unless public financing is involved in the construction or rehabilitation of the building. Standards identified are requirements and enforced through the City's Zoning Administration Department.

The Downtown Overlay District includes specific guidelines for street treatment that favor bicycle use:

Streetscape Design

Objective: The streetscape should be uniform so that it acts to provide continuity throughout the downtown.

Guideline: When making improvements to private property, including the addition of benches, trash receptacles, fencing, bike racks, or trash enclosures, owners should match the surrounding styles.

Standard: When a redevelopment project disturbs existing streetscape elements those items must be replaced with approved Downtown Kings Mountain streetscape elements.

Issue 4: Lane & Shoulder Width

"Any roadway not specifically prohibited to cycling is a bicycle facility. But not all existing roadways necessarily make good bicycle facilities." (Richard C. Moeur, P.E., L.C.I. Bicycle Facility Design, April 2004, http://www.richardcmoeur.com/docs/bikepres.pdf). Road improvements specifically designed for bicycle use include bike lanes, wide outside lanes (also known as wide curb lanes), and paved shoulders. Typically, bike lanes and paved shoulders require four feet of minimum clear width; however, paved shoulders as little as 12 inches wide can still offer some degree of refuge for bicyclists. Wide outside lanes are appropriate on travel lanes of 14 to 16 feet.

The KMSO Section 3.5 2) states that "The final determination of classification of streets in a proposed subdivision shall be made by the City Council." The minimum standards for each classification are contained in Appendix II (p. A10) of the KMSO. Some of these street standards include lanes with

generous widths sufficient for retrofitting bicycle lanes (71-D2, 71 D-5) or wide outside lanes (71-D4), but none of the details depict any facilities specifically intended for bicycles.

Street design cross-sectional standards in the KMSO require shoulders of no more than ¼" per foot slope for all streets and roads. Minimum widths for shoulders required on streets with curb and gutter range from 4.0' to 6.5', with the single exception of the standard 71-D2 (14.5' lane width) which allows a shoulder minimum of 1.5'. For non-curbed and guttered roads, shoulders are required between the edge of pavement and the top of ditch. Collector streets require a 6' minimum, and minor streets a 5' minimum.

Issue 5: Driveway Curb Cuts

Activity at driveways and intersections presents an increased safety risk for bicyclists. "70% of bicycle/motor vehicle crashes occur at intersections and driveways." (Richard C. Moeur). Exercise of control and coordination of driveways and intersections is known as access management. The purpose of access management is to strategically and fairly provide vehicular and non-vehicular access to land development while, at the same time, preserving the safety and efficiency of the transportation system. Proper access management not only helps to reduce traffic congestion and improve the appearance of roadway corridors, it makes the roads safer for drivers, pedestrians, and bicyclists.

In the KMZO Article IV: General Provisions, Section 4.18 requires that all entrances and exits to public streets be placed and constructed in accordance with the NCDOT policy on Street and Driveway Access. Public street access to individual parcels is required in the KMZO according to Section 4.3:

Section 4.3 Street Access

No building, structure or use of land shall be established on a lot nor shall any lot be created that does not abut upon a public street as defined herein to which it has legal access for a distance of not less than forty (40) feet. Provided, the following exceptions shall apply to the access requirement:

(1) The access requirement shall not apply to lawfully existing lots of record with a minimum of thirty-five (35) feet of frontage on a dedicated but not maintained street.

(2) The access requirement shall not apply to developments exempt from the public street access by Article VIII.

(3) The access requirement shall not apply to lots created prior to June 25, 1996 which contain the minimum square footage for the zoning district, have minimum frontage of twenty (20) feet on a recorded easement and said easement provides permanent access between the lot and a maintained public street or a dedicated but not maintained street.

However, the KMZO places stricter standards on driveway locations in its Thoroughfare Protection Districts (TPD). Article VI, Section 6.16 (3) iv) requires minimum distances between new driveways.

iv) Vehicular Driveway Access to Kings Mountain Boulevard. Any lot of record in the Thoroughfare Protection District in existence on the effective date of this section shall be allowed one driveway access point notwithstanding the provisions of the section that my prohibit such access; provided, however, that two or more lots under common ownership shall be considered one lot and shall comply with the requirements of this section. The maximum number of driveway access points shall be as follows:

Thoroughfare Frontage	Driveway Access Points To Thoroughfare
0 – 299	1
300 – 999	2
1000 or more	3

53-H

(i) Kings Mountain Boulevard Thoroughfare Protection Districts. (KMBTPD)

Except where access would be denied, driveways shall be located at least 200 feet from the center of the line of any street intersecting the Thoroughfare and shall be located at least thirty feet from a side property line, except where a mutual joint access agreement exists which provides for a shared driveway for adjoining owners. Driveways on the same property shall be not less than 120 feet apart, measured along the right-of-way from center of driveway to center of driveway. Corner lots and tracts will be permitted one less driveway access points to the thoroughfare unless shared driveways are used on the thoroughfare access points or the frontage of the corner lot is less than 200 feet on the road intersecting with the thoroughfare road as measured from the edge of the thoroughfare's right-of-way.

In any case where residential development through the subdivision process would otherwise be eligible for three or more driveway access points and where the developer is willing to modify such access points through innovative design solutions, such development may be eligible for the density bonus as set forth in Special Requirement 8, Subsection 6 of Article VII.

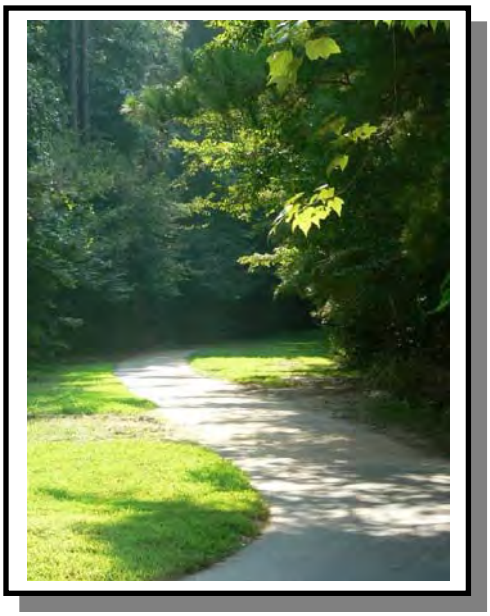
Section (ii) regarding the US 74 Shelby Road Divided Highway Overlay Districts (74 SRDHOD) is similar.

The reduced vehicular access means that bicyclists traversing these corridors will not be faced with as many potential points of conflict with motorized vehicles.

Issue 6: Traffic: Speed, volume and heavy vehicles

As described in the City's general Book of Ordinances, Kings Mountain has jurisdiction over the local (non-state) roads within its network. These roads and their attributes are depicted on the maps in **Section 7**. Neither the KMZO nor the KMSO contain any additional language affecting local posted speeds.

Issue 7: Greenways, Multi-use Trails & Parks



Typically, greenways and trails permit most non-motorized means of travel, including bicycles. These facilities help meet a broad scope of bicycle-friendly goals. They provide practical alternative connections as well as scenic and recreation opportunities. Greenways can increase adjacent property values and attract new business. They can serve as locations for civic events, and provide a transportation infrastructure at a fraction of the cost of roadways.

While the KMSO requires sidewalk installation as part of new subdivisions (Section 3.10), it does so only along street frontage within the street right of way to extend the existing sidewalk pattern. It contains no additional requirements for internal non-vehicular circulation improvements (sidewalks or multi-use paths).

Typical park area rules in Kings Mountain: No Bicycles.

The KMZO includes no related requirements as part of its standard zones. The overlay districts descriptions call for sidewalks, street trees, and increased street connectivity – features that directly favor pedestrian usage – they make no allowances for bicycle use. However, the NC 161 Overlay provides for trails (where applicable) and bike facilities at the right-of-way. It requires that these be designed in accordance with NCDOT standards and installed accordingly as part of the development.

Public parks within the City of Kings Mountain are currently posted as allowing no bicycles. These restrictions are also found in the Kings Mountain Family YMCA park rules. The City no longer has a recreation department.

3.2 Existing Plans & Proposed Projects

KINGS MOUNTAIN LAND DEVELOPMENT PLAN 2020

The Kings Mountain Land Development Plan (LDP), known as the 2020 Plan, is currently under development. It is scheduled for adoption by Summer 2011. The LDP covers issues directly influencing the bicycle environment, particularly in its sections on transportation and downtown development. There are many stated goals and strategies that could directly influence the bicycling environment in a positive way. These are broken out by topic similarly to the previous ordinance review.

Issue 1: Mix-Use Concentrated Development

The objectives described in the LDP promote mixed-use concentrated development:

> Use best development practices to ensure good community development, not sprawl, the achievement of public purposes, but not at the expense of market considerations.

The LDP strongly supports mixed-use development, stating in Section VII (p. 58):

> Zoning in the downtown area should promote a good mix of commercial, office and service uses to the public. Mixed uses within a particular building should also be allowed, such as residential uses above ground-floor retail space. But the zoning Ordinance should also protect the integrity and character of established single-family areas surrounding the retail core.

LDP Downtown Development Recommendations specifically advocate mixed-use:

- 7. Promote a convenient and economically viable central business district which provides a good mix of commercial, office, and service needs to the public.
- 16. Revise the Zoning Ordinance to allow mixed uses in the downtown area, where residential units could be allowed above ground-level retail or office uses.
- 62. Use this Strategy Plan to market infill sites to developers for housing and or mixed-use developments.
- 66. Mixed use and residential can be accommodated in infill sites and areas for new development. Residential should be developed in upper floors above existing businesses.

And in Section VII addressing transportation, p.48:

- Concentrate commercial development in compact centers or districts to reduce transportation miles and make the development more accessible by alternative transportation modes.

A number of the LDP's Key Issues (Section IV) concern higher density, mixed use land planning:

- Mixed uses are not planned.

- There is a general lack of green space and park sites preserved for future use as such; both of which could be developed together with adjoining residential, commercial or industrial development.

- The City lacks a plan to deal with the redevelopment of empty commercial large boxes.

Issue 2: Street Connectivity
Along with specific new road recommendations (p.48), the LDP Transportation Section (VII) makes many general recommendations to increase connectivity (p.46), including:

> Require subdivisions to have at least two means of ingress and egress. Every subdivision must allow access from/to the adjoining property to make connectivity better and cut down on the amount of driveways and roads connecting to the larger collector road. Access right-of-ways can be offered for dedication and then used in the future when property is developed.

The section recommends some related best development practices:

> Practice 1: Design the street network with multiple connections and relatively direct routes.
> Practice 2: Space through-streets no more than a half mile apart, or the equivalent route density in a curvilinear network."

Other specific recommendations include (p.48):

- Develop a "connector" road plan that would allow for the connection of large collectors and arterials in an incremental fashion as development in those areas progresses.
- Widen Phifer Road and improve its alignment between the school areas and the Kings Mountain Boulevard and include bike lanes and sidewalks

Issue 3: General Multi-modal Provisions (Includes Issue 4: Lane and shoulder width)
The commitment of Kings Mountain to a bicycle-friendly environment is clearly spelled out in the goals of the LDP. Among them:

> The City of Kings Mountain will promote an efficient and safe comprehensive transportation system that includes alternative transportation modes such as bike facilities, pedestrian improvements and trails to move people and goods through a well-coordinated transportation network in an environmentally sensitive manner.

In order to accomplish this, the LDP recommends:

> Review all development proposals with design standards in mind that promote the public's safety. Such standards need to cover lighting, visibility, shoppers, children, elderly, other pedestrians, and bicyclists.

LDP Section VII includes many provisions for multi-modal transportation helpful to bicyclists (pp. 46f). Best development practices listed include:

- Practice 9: Provide networks for pedestrians and bicyclists as good as the network for motorists.
- Practice 10: Provide pedestrians and bicyclists with shortcuts and alternatives to travel along high-volume streets.
- Practice 11: Incorporate transit-oriented design features.
- Practice 12: Establish Transportation Development Management programs at employment centers.

In addition, LDP Section VII recommends the following (p. 47):

- Create and implement streetscape plans on major arterial roads and other significant entrances to the city. Examples include York Road, Cleveland Avenue, Kings Street, Shelby Road, Battleground Avenue, North Piedmont Avenue, Sims Street and Cansler Street.
- Update the Comprehensive Greenway, Bikeway and Pedestrian Improvement Plan to include the revised locations of the Gateway trail system. Implement the plan to expand the existing … bike lanes from 8 miles to 16.5 miles.
- Improve the use of the transportation systems by installing appropriate way finding signs.
- Add demarcated bike lanes along NC 161.
- Develop incentives for the use of Traditional Neighborhood Development Street Design Guidelines promulgated by NCDOT for subdivisions to encourage and accommodate alternate transportation modes, make for safer movement and reduce vehicle miles traveled. This may mean also changing ordinance to accommodate trails, alleys, and lanes in new developments.
- Demarcate bike lanes where ever feasible and likely to contribute to a bike facility that connects a significant portion of transportation area.

Further recommendations in the Environmental Quality and General Planning portion of the LDP (p.90) include:

- Create a vicious or dangerous dog ordinance to protect pedestrians and bicyclists, thereby making it safer and more likely this type of transportation alternative will be successful.

Included among the specific road project recommendations in the LDP is found:

> (2) Widen Phifer Road and improve its alignment between the school areas and the Kings Mountain Boulevard and include bike lanes and sidewalks

Issue 5: Driveway Curb Cuts
The LDP recommends access management strategies to improve safety.

- Minimize curb-cuts on major traffic arteries to reduce traffic congestion and accidents.

Issue 6: Traffic Speed, Volume and Heavy Vehicles
The LDP suggests a number of best development practices in its Transportation Section (VII) that serve to lower traffic speed.

- Practice 3: Use traffic calming measures liberally.
- Practice 4: Keep speeds on local streets down to 25 mph.
- Practice 5: Keep speeds on arterials and collectors down to 35 mph (at least inside communities).
- Practice 6: Keep all streets as narrow as possible and avoid more than four travel lanes wide.

The LDP also makes specific recommendations in response to excessive speed conditions on certain streets.

- Reduce speed on Battleground Avenue in the downtown area from 45 mile per hour to 25 miles per hour.

Issue 7: Greenways & Multi-use Trails

The LDP encourages the development of greenways for transportation uses and many other benefits (pp. 47f):

> Use greenways to provide safe and efficient alternative transportation linkages between recreational stets, open spaces, residential areas, employment centers, educational and cultural facilities and other activity centers while at the same time encouraging citizen wellness, protecting environmental assets, maintaining a contiguous urban forest ecosystem, controlling storm water runoff, protecting cultural and historical resources, protecting open spaces, woodlands and wetlands and finally enhancing the beauty of the area to encourage tourism, economic development and improving the living environment of the citizens.
> Update the Comprehensive Greenway, Bikeway and Pedestrian Improvement Plan to include the revised locations of the Gateway trail system. Implement the plan to expand the existing sidewalk system form 12 miles to 19.5 miles and bike lanes from 8 miles to 16.5 miles and trails and greenways from 1 mile to 21.9 miles.

CONCEPT PLAN FOR REVITALIZATION OF DOWNTOWN KINGS MOUNTAIN, NC

This 30-page presentation study was prepared and presented by Arnett Muldrow and Associates et al. 2007. It addressed many downtown issues and made a number of recommendations affecting the bicycle environment, including:

- A "road diet" for Battleground Avenue with reduced lane widths
- Improving street lighting
- Improving connections across the railroad corridor
- Providing a greenway or bike lane link from downtown to the Gateway Trail on Battleground Avenue

KINGS MOUNTAIN LAND DEVELOPMENT PLAN (1995)

This Plan was developed by Centralina Council of Governments. It was initiated by City Council in 1992 as an update to the City's Land Development and Community Facilities Plan, originally adopted by City Council in 1965, and updated in 1974 and again in 1977. The guiding vision for the Plan of the City was that of a "bedroom community with a balance of retail, industrial and residential development." Some of the needs cited that most directly affect the development of bicycle facilities (including multi-use trails) include:

- frontage roads along I-85
- widening of Phifer Road
- bikeways and trails
- historic preservation and historic districts
- natural buffers of farm land around the City
- balanced land use pattern
- revise zoning and subdivision ordinance
- support local small business in the Downtown area
- foster restaurant diversity and more shopping opportunities
- improve community recreational facilities
- more bikeways
- protect small animal habitat
- extend public sewer system to John H. Moss Reservoir area

KM COMPREHENSIVE GREENWAY, BIKEWAY AND PEDESTRIAN IMPROVEMENT PLANS

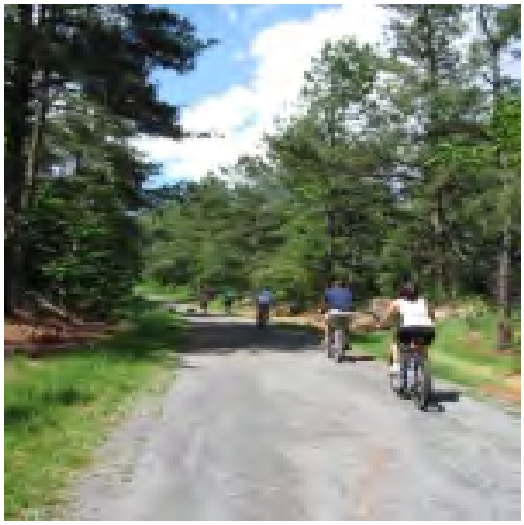
This Plan was initiated as a result of the Kings Mountain Gateway Community Project which envisioned the City as the "gateway" to a number of prominent regional attractions, such as the Kings Mountain State Park, the National Military Park, and Crowders Mountain State Park. The intent was to preserve open space, promote bikeways and walkways, enhance the quality of life, and attract business and industry. Its recommended bicycle improvements are intended to provide for both recreation and transportation needs, linking key "focal points throughout the city that ultimately connect to the parks to the south and eventually to regional sites." Among the Plan's stated goals are:

- Make travel safer for pedestrians and bicyclists.
- Extend existing sidewalks and greenway / trail system.
- Create design standards and construction specifications.
- Link downtown to the parks and their trails.
- Link the neighborhoods to downtown.

The Plan includes guidelines for bicycle facilities, recommending widths for bike ways and multi-use trails. Strongly suggested among its measures for implementation, is the inventory of utility easements for possible shared use as a trail. It further recommends making changes to the zoning and subdivision ordinances in order to increase connectivity and provide safe transportation alternatives.

KINGS MOUNTAIN GATEWAY TRAIL

The City of Kings Mountain, Kings Mountain National Battlefield Park, the Crowders Mountain State Park, and the South Carolina Kings Mountain State Park initiated the Gateway Community effort with the River Trails Conservancy through the National Park Service. Out of this effort, trails connecting the City of Kings Mountain (downtown) to the parks were identified. Their effort was taken over by the Kings Mountain Gateway Trails Inc. when it was formed in 2005.



Kings Mountain Gateway Trail

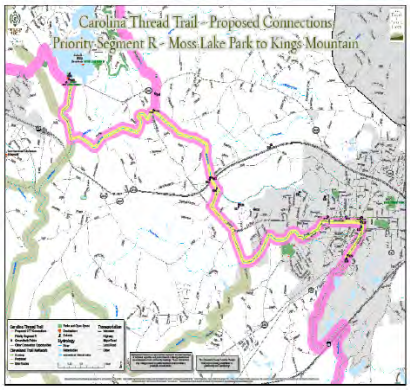
Plans for a 2.8 mile extension are underway to continue of the current facility to I-85. It is intended that the Kings Mountain Gateway Trail eventually connect the City of Kings Mountain to Crowders Mountain State Park, Kings Mountain State Park, Kings Mountain National Military Park, the Overmountain Victory Trail and the Appalachian Trail. According to the Kings Mountain Gateway Trail website (http://www.kmgatewaytrails.org/) the greenway will ultimately reach 8 to 10 miles, and become part of the Carolina Thread Trail. The facility will include a paved trail, soft-packed gravel trail and single-track mountain biking trails. It is intended that the Gateway Trail provide recreational opportunities to people in the surrounding region, enhance economic development for the local community, and provide a venue for citizens to link to one another and the rich history and natural wonder of the region. It will provide a venue for nature exploration, education in science and history and for community events.

CAROLINA THREAD TRAIL

The Carolina Thread Trail (CTT) is a proposed regional network of multi-purpose greenways, serving 15 counties and over 2 million people. This greenway system will eventually link communities and attractions throughout the region by connecting smaller trail systems throughout its bi-state area. The Trail will help preserve natural areas and be a place for exploration of nature, culture, science and history. The City of Kings Mountain is located on the proposed Carolina Thread Trail alignment in the approved Greenway Master Plans for both Gaston County and Cleveland County. See **Appendices A.3** and **A.5.**

The City of Kings Mountain and its Gateway Trail are cited in the Carolina Thread Trail Master Plan for Cleveland County Communities as one of seven regional destinations in the County connected by the proposed CTT. The Master Plan was adopted by the City of Kings Mountain in December, 2009. Two CTT segments in Cleveland County meet within Kings Mountain. Segment "R" comes from the direction of John H. Moss Reservoir and follows Potts Creek into the City, then follows Countryside, Shelby, and Crocker Roads to join Beason Creek. It reaches downtown by way of Phifer and Mountain, then turns south on Battleground until joining up with the Gateway Trail, which is designated as CTT Segment "S" in the Cleveland County Plan. The proposed Segment "S" crosses I-85 and continues on to the Ridgeline Trail.

FIGURE E - JOHN H. MOSS LAKE RESERVOIR TO KINGS MT. PRIORITY ROUTE



Map from the Cleveland Co. Greenway Master Plan

The Carolina Thread Trail Master Plan for Gaston County Communities was adopted in March 2009, and was most recently updated in February 2011. The Plan includes connections to Crowders Mountain State Park as well as nearby Bessemer City. It also recommends a route that reaches the Kings Mountain area by way of a utility corridor running parallel and south of I-85. The route crosses Canterbury Road and continues potentially on to York Road.

KEEP IT MOVIN' GASTON - 2035 LONG RANGE TRANSPORTATION PLAN (LRTP)

The Gaston Urban Area Metropolitan Planning Organization (MPO) adopted this comprehensive plan on March 23, 2010. While the City of Kings Mountain is not a member of the MPO, LRTP recommendations will nonetheless influence subsequent planning and construction in the immediate area of Kings Mountain.

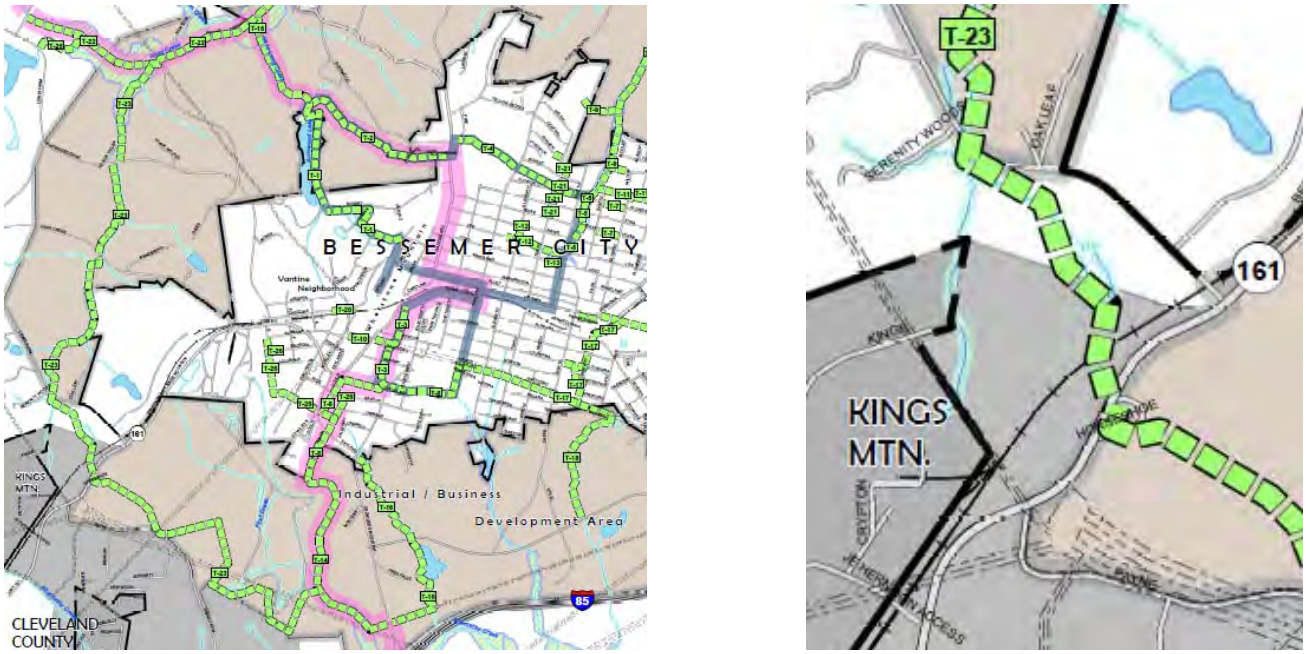
The LRTP addresses bicycle and greenway facilities. Section 7.2.3 Bicycle Facilities includes a map of recommended bicycle routes for Gaston County. This Bike Route Network map (Fig. 7-17), adopted in the September 2001 TAC meeting, indicates connections to Crowders Mountain from the east and north.

The Bicycle Plan section (8.1) of the LRTP recommends route connections to the Carolina Thread Trail to the northeast of the City. The Thread Trail connects with a proposed multi-purpose trail along the

southwest side of Bessemer City, which crosses into the Kings Mountain ETJ. This trail is part of a network of multi-purpose paths proposed in the 2010 adopted Bessemer City Pedestrian Plan.

BESSEMER CITY PEDESTRIAN PLAN

Bessemer City adopted its pedestrian plan in April, 2010. This Plan, by Centralina Council of Governments, includes a network of multi-purpose paths which encircle and intersect downtown Bessemer City. One such proposed path named - the "Furnace Trail", named for the historic furnace on Long Creek Road - runs along the southwest side of the City and briefly crosses into the Kings Mountain ETJ at Bessemer City Kings Mountain Highway (NC 161). The Furnace Trail (designated as project "T-23" in the BC Pedestrian Plan) intersects the Carolina Thread Trail at Crowders Mountain Road and Whitesides Dairy Road.



Bessemer City Pedestrian Plan – portion of proposed multi-purpose trail map with proposed "Furnace Trail" (project T-23).

THE GASTON COUNTY BIKE TRAIL NETWORK

The City of Gastonia Planning Department produced this plan of designated bike trails in 2001. The plan covers all of Gaston County. Five different bike routes are recognized, in addition to greenways and some "unmarked connectors". Various destinations of interest are also shown. Two of the five routes terminate in Kings Mountain. One connects the City to Mount Holly, the other to Crowders Mountain. An unmarked connector route circling about the northwest end of the County begins and ends in Kings Mountain. A number of destinations are designated in Kings Mountain, including a museum, schools and parks. See **Appendix A-4.**

In addition to municipal and county policy, a number of Federal and State guidelines apply to bicycle planning and facilities. See **Appendix A.24**.

Projects

Transportation Projects scheduled in the North Carolina Transportation Improvement Plan (TIP) for Kings Mountain included Kings Mountain Boulevard, which serves as a north-south connector from US 74 Business, at Dick Elam Road (SR 2031) to I-85 at Dixon School Road. This project was completed in 2006. Another TIP project, the automatic railroad warning devices at Hawthorne Road on the Southern Railroad Crossing was removed from the TIP list because the crossing was done away with because of liability issues for the City. York Road from King St. to I-85 is still on the TIP.

3.3 Current Programs, Events & Funding

A vision of Kings Mountain as a "gateway community" began in 2000 with a collection of local government officials, city staff, and park superintendents. Area stakeholders, including residents, local businesses, and the Chamber of Commerce were led by the River and Trails Conservancy staff. In 2005, **Kings Mountain Gateway Trails Inc.** was formed. The group orchestrated a feasibility study in 2006 for connecting downtown to area parks by a trail system. Conservation easement documents were signed the following year by area mining companies, Chemetall Foote and Martin Marietta, and by the Weir and Consortium Properties. This provided property for the trail head and Phase I of the project, and an additional four miles of trail and a bridge crossing I-85 for Phase II to be completed over the next two years. Three grants were received for the project in 2008, including a PARTF for $500,000, AAT for $5,000, and an RTP grant for $75,000. These were accompanied by gifts of materials, labor and monetary donations. Construction of the current facility commenced in 2009.

As a member government of the **Lake Norman Rural Planning Organization** (LNRPO), Kings Mountain participates in transportation planning initiatives for the region, and enjoys the benefits and resources available through the LNRPO. One of those benefits has been assistance in applying for the NCDOT Bicycle Planning Grant that funded the development of this Plan.

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

The **Over the Mountain Triathlon** celebrated its 12th year in 2011 with a 30 mile bike ride from John H. Moss Reservoir to Patriots Park in downtown Kings Mountain. Endurance Magazine selected Over the Mountain as the "Best Olympic Triathlon Event" in the state. The course is described as both challenging and beautiful. It is the largest one-day sporting event in Cleveland County, with over 500 participants, bringing significant economic impact to Kings Mountain. For additional information, see:
http://www.shelbystar.com/articles/mountain-51800-triathlon-kings.html

"Press on Toward the Prize"
John Hargis, 2001

Section 4: GENERAL RECOMMENDATIONS

4.1 Overview of the Existing System

KEY ISSUES IN THE BICYCLE COMMUNITY

GENERAL DESCRIPTION

The current bicycle system in and around Kings Mountain consists primarily of the existing roadways, and the off-road multi-use path Gateway Trail facility. The Bicycle Facilities map (**Section 7, Map 4**) indicates where additional improvements exist that are specifically designed and intended for bicycle use. These facilities are limited to "Share the Road" signage along the York Road south of I-85, and paved shoulders with "Share the Road" signage along York Road from Lake Montonia Road south to the ETJ limit. Another continuous stretch of paved shoulders with accompanying signage runs along Stony Point Road/Shelby Road and the recently constructed Kings Mountain Boulevard. The relative suitability of all streets and roads in Kings Mountain in terms of safety are indicated in the Bicycle Suitability Analysis map (**Section 7, Map 11**).

Recommendations:

As road improvements are scheduled, refer to the **Proposed Projects List** in **Section 6** and the **Proposed Routes & Facilities Map** in **Section 7** to incorporate recommended improvements in those projects.

CONNECTIVITY

There are roughly three gridded neighborhoods demonstrating high degrees of connectivity within Kings Mountain. The downtown grid extends from Oriental Ave. (on the east side) to Phifer Road, and from Parker Street south to Gold Street. The Linwood neighborhood north of US 74 Bypass extends roughly from Boyce Street westward to Grace Street, and Groves Street southward to Henry Street. And the Fulton Road Area runs from Margrace Road to Phifer Road, and from Manor Road to Pinehurst Drive. Other areas of moderate connectivity exist within the City, primarily to the north and south of the West End district, and north of US 74 Bypass between Cleveland Avenue and Cansler Street. All of these areas offer some degree of refuge to bicyclists, allowing them to traverse portions of the City while avoiding more highly travelled roads. Additional description can be found in **Section 2: Road System**.

Recommendations:

The potential for increased connectivity between and within these neighborhoods should be explored, both in terms of increased street connections, and off-road trail opportunities. Where many existing streets terminate due to topographic challenges such as stream valleys, the potential exists for off-road connections to follow these floodways or cross them at strategic locations.

BARRIERS

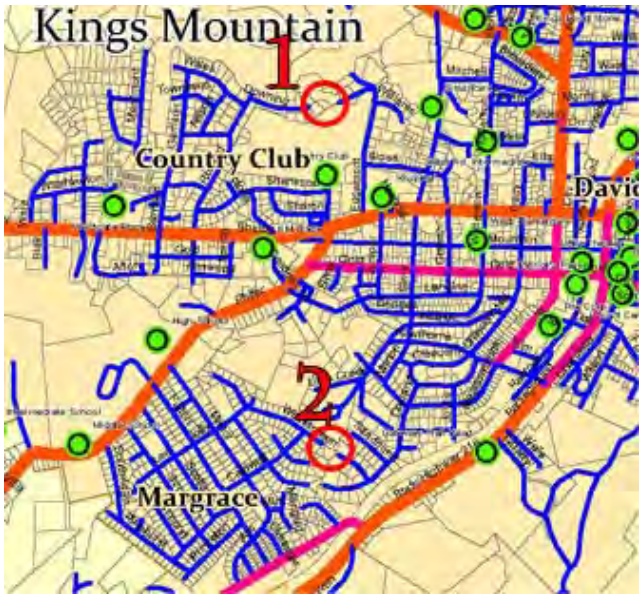
While the barriers enumerated in **Section 3** of this plan pose challenges to bicyclists navigating Kings Mountain, there are opportunities to improve existing ways of passage over, under, or around them. Opportunities to improve existing connections or create new ones across these most pervasive barriers should be maximized. This includes improving existing overpass and underpass facilities along I-85 and US 74 Bypass, at grade and overpass crossings of the Norfolk Southern Railway, and at grade crossings of Shelby Road at prominent intersections. This plan also recommends utilizing existing infrastructure to develop a new below grade crossing of US 74 Bypass, and a refurbished above grade crossing of I-85. For details, see **Section 5.7** and **6.1**.

In addition to these primary barriers, other barriers are addressed in the local street system.

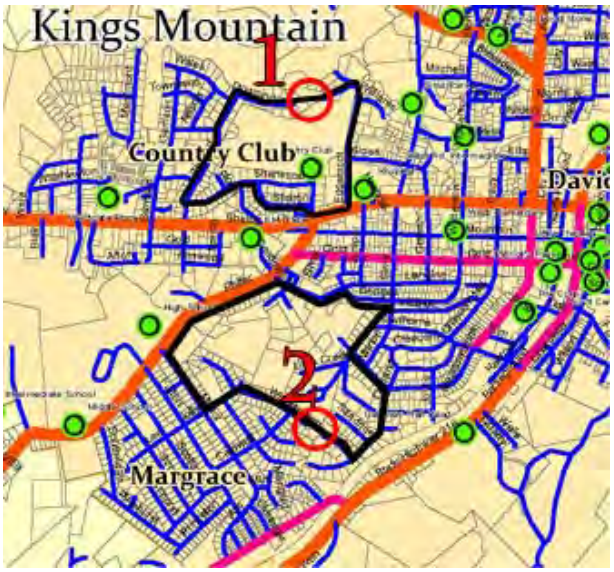
In order to estimate the relative significance of the various barriers in the current system, a number of variables can be factored in: destinations or populations affected, cost of facilities needed, public requests for the facility, etc. However, to evaluate the barriers purely in terms of the logistical impediment they pose, a few measureable factors should be considered. One such factor is the distance required to travel (by bicycle) between two points: the "**travel distance**" (or Td), compared to the **actual distance** (Ad) between those points; in other words, how far one has to go out of their way to get from point "A" to point "B", versus the distance "as the crow flies." This degree of impediment, or "**barrier deflection**" (BD) can be calculated as:

BD = Td - Ad

The higher the value of BD, the more the traveler is deflected from a straight course as they try to reach one point from the other. When there is no barrier to overcome, Td and Ad are the same and the BD value = 0.



Comparing Barrier 1 with Barrier 2



Travel distances around Barriers 1 and 2

Two significant barriers within the Kings Mountain local road system are identified here for comparison. Barrier 1 is located in the Country Club area between Edgemont Drive & Downing Court. Barrier 2 is located in the Margrace and West End neighborhoods, between Huntingtowne Drive and Wintergreen Court. Both barriers are located in residential neighborhoods. Both barriers have topographical challenges. In order to compare these two barriers in terms of their physical affect on the system, the deflection value can be measured for each.

In the case of Barrier 1, for a resident of Edgemont Drive to bicycle to an address on Downing Court, they must leave the local neighborhood street network and utilize US 74 Business, a minor arterial road with a 35 mph speed limit that sees traffic volumes in excess of 10,000 vehicles per day. The actual distance (Ad) between the ends of the two roads at Barrier 1 is approximately 250 feet. The total travel distance (Td) required in order to reach one side of the barrier from the other, utilizing US 74 for a minimum distance, equals 9,770 feet. The deflection of Barrier 1 is therefore calculated as:

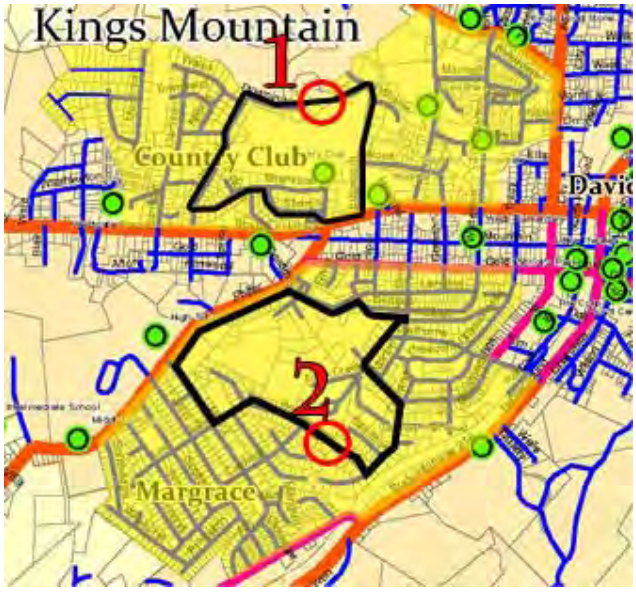
BD1 = Td - Ad = 9770' – 250'
= 9520' or 1.80 miles

In other words, Barrier 1 can require a bicyclist to travel as much as 1.8 miles out of their way on an alternative route to reach their destination, and be forced to utilize a segment of road with significant traffic.

In the case of Barrier 2, the actual distance of the interruption due to the barrier is similar, about 260 feet. But the shortest available route between one end point and the other is 12,130 feet (2.3 miles)!

BD2 = Td – Ad = 12,130' – 260'
= 11,870' or 2.25 miles

A comparison of the two deflections caused by these barriers shows that, while both are substantial, Barrier 2 imposes a greater burden on the traveler, requiring them again to utilize a minor arterial road (Phifer Street) for part of their journey. Limited to this consideration alone, construction of a bridge facility for bicycle and pedestrian use over Barrier 2 would provide more "bang for the buck" than a similar facility for Barrier 1.



Areas in yellow are most affected by Barriers 1 and 2

The area and population most significantly affected by the barrier can also be evaluated. This area is approximated by identifying the edge formed by the surrounding streets of higher road classification. The edge is defined in this manner because:

a. It will likely conform to the recognizable edge of the neighborhood;
b. It will likely offer the least complex and quickest alternative route back into the neighborhood.
c. These streets are not likely to be crossed by the bicyclist to reach the destination due to their higher vehicular speeds and volume.

In addition to the higher classified streets, other natural and man-made barriers may also help define the affected area, or "**barrier zone**" (BZ); in such cases, parcel lines can provide the actual boundary. Once this zone is defined, it can be easily measured. However, this measurement alone does not reveal the negative value of the barrier in terms of the potential number of users affected.

In order to better account for the volume of potential usage in the affected zone, an approximation can be made based upon the number of residential parcels or multi-family dwelling units within that zone. Major destinations in the proximity will also add to the significance of the barrier; however, the majority of affected users may be limited to residents from within the other side of the affected zone, as those travelling from outside of the zone will more likely utilize the higher classified streets. In general, the higher the number of affected residents, the more significant the barrier is to the system, and the more useful a bridging of that barrier would be. Note: a cursory visual examination of the density of parcels can quickly reveal the relative significance of these barriers. The density of the street pattern may also provide a quick evaluation tool for approximating this value.

Once the number of dwelling units or parcels within the barrier zones has been counted, the "**barrier population**" (BP) of various barriers can be determined. How these populations are affected by each barrier, and to what degree, can be calculated by combining the values of barrier deflection, barrier zone and barrier population. This overall "**barrier value**" (BV) is derived using:

$$BV = BP * BD^3/BZ$$

This formula accounts for a number of factors involved in considering the detrimental effect (or negative value) of a barrier:

- The barrier value (BV) is directly related to the number of residents affected (BP) and additional travel length (or deflection) necessitated by the barrier (BD).
- As the barrier zone (BZ) increases, there are more residents in the zone that are less affected by it, or will need to travel a decreasing portion of it.
- As connectivity of the affected area increases, more choices of path are available and the barrier deflection decreases, though the barrier area may still be large.
- As fewer people reside near the barrier, the impact or negative value of the barrier decreases.

- If the barrier deflection is expressed in mile units, the barrier zone is in square miles, and the resulting barrier value is expressed in a conceptual term "user-miles". The number of user-miles indicates that a given number of people are being forced to travel various distances out of their way.

Applying the formula to the barriers identified above:

BV1 = BP1 * $BD1^3/BZ1$
= 625 * $(1.80 \text{ mi.})^3/.9217$ sq. mi.
= 625 * 5.832 $mi^3/.9217$ sq. mi.
= 3,955 user-miles

BV2 = BP2 * $BD2^3/BZ2$
= 935 * $(2.25 \text{ mi.})^3/.9079$ sq. mi.
= 935 * 11.39 $mi^3/.9079$ sq. mi.
= 11,730 user-miles

Though the areas affected by each barrier (BZ) are nearly equal, the Barrier 2 zone has a greater residential density, and the barrier itself creates a greater deflection in the travel path. Its barrier value (BV) is nearly three times as high as that of Barrier 1. This indicates that bridging Barrier 2 would bring more benefit to more people than bridging Barrier 1, whether they choose to walk or bike. And while the Barrier 1 zone includes some prominent destinations and the Barrier 2 zone does not, the majority of residents outside Barrier 1 zone can access those destinations more directly from paths that do not encounter the barrier and would therefore not significantly benefit from a bridging of that barrier.

Recommendations:
Provide bicycle and pedestrian connections across identified barriers. These projects are identified in **Section 6.1** as **X-1** through **X-6** in the **Proposed Projects List** and the **Proposed Routes & Facilities Map**.

GENERAL SAFETY CONDITIONS

Many factors directly influence the safety of bicycling conditions in the City and its surroundings. Reported crashes provide one clue to where conditions may be less than optimal, but these isolated instances do not directly reveal the various physical elements that detract from a safe bicycling environment.

High crash areas

The occurrence and severity of reported crashes involving bicycles from 1990 through 2010 are depicted on the Traffic Conditions Map **(Section 7, Map 10)**. The pattern of reported crashes is not significantly clustered at any particular intersection, but it does indicate certain corridors that are higher-risk for cyclists. These corridors include:

- **NC 216** – one fatality and one possible injury between downtown and the Gateway Trail Head
- **Phifer Road** – one possible injury and one property damage (likely a damaged bicycle) between the schools and the Margrace Neighborhood.

- **Gold Street** – one evident injury and one property damage within one block on either side of NC 161, and one disabling accident at Sims Street.

Other evident injuries have occurred as a result of bicycle crashes in the City, including one on NC 161 at the Montonia intersection, and another just off NC 161 on Benfield Road near North Elementary School. Additional possible bicycling injuries have occurred on 2nd Street, Sims Street, and Margrace Road. Mountain Street has also seen bicycle damage.

Highway Crossings

The various highway crossings that allow access into the City across US 74 and I-85 have been constructed over various years with various design standards. The newer overpasses feature barriers that reach a height sufficient to prevent cyclists from accidentally falling off the bridge structure. These newer facilities include the N. Piedmont and Stony Point overpasses over US 74, along with the NC 161 and Dixon School Road overpass over I-85.

Canterbury Road over I-85

A number of older bridges, however, feature rails that are shorter and may present a hazard to cyclists. These overpasses include:

- Oak Grove over US 74
- Patterson over US 74
- Canterbury over I-85

Recommendations:

The Patterson and Canterbury Road overpasses are integral to recommended bike routes in this plan. Oak Grove is not. Recommendations for overpass rail treatment are located in **Section 6: Facility Standards**.

Rails on North Piedmont Avenue bridge crossing US 74 Business

Along with the rail improvements noted above, other improvements are needed to enable additional safe crossing opportunities for I-85 and US 74. These include utilizing the storm drainage structure under US 74 Bypass just east of the US 74 Business intersection, and the existing "Gateway Bridge" over I-85. Recommendations for these projects are located in **Section 6: Facility Standards**.

Railroad Crossings

The Norfolk Southern Railway is a dominant feature running the length of Kings Mountain. As most crossing opportunities are at-grade, the railway presents a substantial safety hazard for bicycle traffic. There are only two above-grade crossings within the City, and only two more within its ETJ.

Downtown Hazards

Additional hazards particularly in the downtown area that affect bicycling conditions, as noted by citizens of Kings Mountain include:

- Street Lighting
- Traffic volumes and speeds
- Narrow older streets
- On-street parking
- Blind corners

4.2 Corridor Recommendations

CONNECTING THE BICYCLE COMMUNITY

A number of corridors throughout the City currently or could potentially serve as important routes for bicycle users. Though lesser routes through connected neighborhood streets can provide safe, low-traffic alternatives through some parts of town, these primary and secondary corridors provide the main connections through the City, and will be favored particularly by more experienced riders and visitors. Though each of the corridors described here currently provide some degree of refuge and utility for bicyclists, each could be improved to serve as safe, useful and attractive bicycle routes. A map of the proposed corridors is located in **Section 7: System Maps**. Refer to **Section 3.1** for descriptions of the zoning overlay districts, and **Section 4.5** for related policy recommendations. Additional physical descriptions for these corridors can be found in **Section 2.1**. For detailed descriptions of all individual project recommendations, refer to **Section 6: Project Recommendations**.

Three **primary corridors** help provide connections to regional destinations:

1. **US 74 Business** - Kings to Shelby Road to Stony Point Road (E to W) Connection to Gastonia & Moss Lake
2. **NC 161** – Bessemer City Road to Cleveland Ave. to York Rd. (N to S) Connection to Bessemer City & Kings Mountain State Park
3. **NC 216** – N. Piedmont to S. Battleground. (NW to SW) Connection to Cherryville & Kings Mountain Military Park

Four **secondary corridors** help connect destinations both inside and outside the City limits:

4. **School & Town Route** - Gold to Mountain to Phifer (E to SW) Connection to downtown & schools
5. **Phenix Mill/Northwood** - Linwood Road to N. Piedmont to Lackey to Bridges (E to W) Connection from Ike Brooks Road to Cansler Street
6. **The Boulevard** - Kings Mountain Boulevard to Shelby Road
7. **The Lake Connector** - Stony Point Stony Point Road to Oak Grove Road

Each of these corridors are described and evaluated in the following terms:

- Destinations they primarily serve
- Land use and transportation policies and ordinances that directly affect their use
- Existing physical conditions and the types of facilities they offer bicyclists
- Links these corridors provide to other corridors and proposed routes
- Highway projects that are currently scheduled for each corridor
- Specific project recommendations for improving these corridors
- Potential alternative routes appropriate for safe bicycle travel

Within the following corridor descriptions, certain low-volume alternative routes are suggested for improvements appropriate for "bicycle boulevards". For more information on these strategies, see: http://www.bicyclinginfo.org/faqs/answer.cfm?id=3976 .

US 74 Business Corridor

The US 74 Business Route is the primary east-west connection through Kings Mountain. As a result of the construction of the US 74 Bypass, US 74 Business begins at the eastern urbanized end of the City, at Canterbury Road, near the Gaston County line. It runs through the middle of the City, and rejoins US 74 Bypass at a point just west of the City limit but within its ETJ. US 74 Business includes Kings Street until King merges with the Mountain Street alignment to become Shelby Road, and terminates at US 74 Bypass. The total distance it traverses is approximately five miles.

King Street near York Road

Destinations & Land Use:

The King Street segment features the greatest density of destination points along the street for this corridor. Amongst the many small businesses that line King Street in the Central Business District, east of the railway, are located civic destinations such as the William Mauney historic home, the Mauney Library, the McGill Filling Station, Mountain Rest Cemetery, and the Patrick Senior Center. Many other downtown destinations lie within only a couple of blocks of King Street. As King crosses the railway, residential uses dominate. The hospital complex is located in this area at Juniper Street. Just north of King Street, the Davidson School neighborhood stretches from Cleveland Avenue westward across the railway. The West End neighborhood lies to the south of this portion of King Street.

Past the hospital, King Street bends one block south to become Shelby Road. Both the Kings Mountain Plaza and Westgate Plaza shopping centers are located on Shelby, along with a number of dining spots and other small businesses interspersed with residential properties and subdivisions. The Country Club neighborhood lies just north of the eastern portion of Shelby Road. To the west, just before US 74 Bypass, Ingles Market is located within an area that is largely industrial.

Existing policy:

In addition to zoning and other land use regulations governing all properties in the City and its Extra-territorial Jurisdiction (ETJ), the City has enacted a total of eight corridor overlay districts to further guide development. King Street is covered by the US 74 East Corridor Overlay District, with additional coverage by the Downtown District Overlay from east of North Gaston Street to west of Cansler Street. The NC 161 Corridor Overlay also overlaps King Street at its intersection with York Road. The US 74 Business West Overlay stretches from Country Club Road to Country Creek Drive.

Facility description:
King Street traverses a highly connected, historic section of downtown, with intersections every 600 feet. East of rail line (and Battleground Road), King is characterized by frequent curb cuts, and numerous signs and utility poles. West of the rail line, the street takes on a greener, more residential character. King Street is three lanes wide for its entire length, with a center turn lane, and curb and (sometimes) gutter. Outside lanes run 11'-12' wide. Sidewalks, with a narrow planter strip along all but its most intensively paved area adjacent to York Road, persist along the south side of the road westward until the hospital between Sims and Juniper Streets, and along the north side until Country Club Road. The posted speed limit is 35 mph. There are no warning signs pertaining to bicycles. Conditions for bicycles are poor due primarily to narrow lane width, heavy traffic, and frequent curb cuts.

Continuing west of Kings Street, Shelby Road possesses a completely different character. Its six lanes are divided by a 12'-24' center grassed median. Lanes are 11 feet wide. This segment is still posted as 35 mph, but conditions encourage speeding. Bicycle safety conditions are poor on Shelby Road from King Street to Kings Boulevard due to narrow lane width, heavy traffic, and travel speeds.

West of Kings Boulevard, posted speeds on Shelby Road jump up to 55 mph, but bicycle safety conditions for mature riders improve with the addition of paved shoulders and bicycle-related signage.

Connections:
The US 74 Business Corridor passes through a highly connected street grid on the east side of the City, transitioning to a poorly connected west side. Both the NC 161 and the NC 216 corridors intersect US 74 Business. Phifer Road and Kings Mountain Boulevard minor corridors also connect with it. The King Street segment of this corridor is recommended for inclusion in the Inner and Outer Loops. The Shelby Road segment is recommended for inclusion in the Outer Loop. See **Section 4.4** for additional description of the Inner and Outer Loops.

Scheduled projects:
The Cleveland County Comprehensive Transportation Plan calls out a need for bicycle facility improvements of the segment of Shelby Road from El Bethel Road to Countryside Road. There are no other road improvement projects in the current or draft STIP for this corridor.

Retrofits and alternate routes:
While US 74 Bypass provides a continuous east-west passage through the City, conditions for bicycle use is primarily poor. However, a number of favorable alternative routes run closely parallel to this corridor.

From Canterbury Road to Battleground Avenue, East and West Ridge Street provide a safe, low volume alternative through the Davidson School neighborhood and is recommended as a bike boulevard. West of Battleground, Mountain Street offers safer conditions through a tree-lined West End Historic District

neighborhood. West Elementary School and the Joy Performance Center are located along this proposed route. Upon reaching Phifer Road, two alternative east-west routes are proposed.

To the north of Shelby Road, Country Club Road connects Mountain Street to a chain of streets in the Country Club neighborhood. Bike boulevard improvements are recommended for this alternative route in order to provide for a safer bicycle connection to Westgate Plaza. With the addition of a 150' trail from the Plaza to Washington Street, and a 1,100' trail from Ware Street to Woodhaven Lane, the connection can be completed to Shelby Road at the Kings Mountain Boulevard intersection, where conditions are once again favorable.

South of Shelby Road, Phifer Road provides a connection to Kings Mountain Boulevard; however, this alternative route requires a nearly 2 and ¾ mile detour from the corridor. Instead, a new greenway is recommend that would connect Phifer Road to Kings Mountain Boulevard much further north along Beason Creek. This segment of proposed trail is included as part of the Carolina Thread Trail route through Kings Mountain. This proposed route deviates from the corridor only 1.6 miles and would serve the three public schools located just south of the Creek.

Bike racks are recommended along the corridor at Grover and W. Elementary Schools, the Country Club, Kings Mountain Plaza, Westgate Plaza, and Ingles.

NC 161 Corridor

The NC 161 Route serves as the primary north-south connector through the City. Heading north along 161, downtown Bessemer City is less than five miles from downtown Kings Mountain. To the south, NC 161 reaches the entrance to Kings Mountain State Park in six miles. Within the study area, the NC 161 Corridor includes Bessemer City-Kings Mountain Highway from Lewis Farm Road at the northern most extent of the ETJ, south across the county line to Cleveland Avenue, then across King Street onto York Road. The corridor crosses I-85 and continues to the southern tip of the ETJ and at the Gaston County line less than one mile from the South Carolina border. The total length of the corridor described is 7.5 miles.

York Road south of King Street

Destinations & Land Use:
The corridor divides neatly into three segments with distinct characters. Bessemer City-Kings Mountain Highway is primarily rural industrial; Cleveland Avenue quickly becomes urban and continues this pattern into York Road north of I-85. York Road south of I-85 exhibits a rural character.

Beginning on the north end of the corridor, industrial sites occupy lands adjacent to the Bessemer City-Kings Mountain Highway – in particular the Buckeye complex. There is also an active drive-in theatre. As Cleveland Avenue enters the City, it passes through the neighborhood of Northwood and Phenix Mill. Linwood Produce makes up part of a small business area at the intersection of Linwood Road. East Elementary School lies just south, adjacent to the US 74 interchange. Just south of the interchange is a recreational complex made up of Deal Park and the YMCA. The Davidson neighborhood lies just beyond. As Cleveland Avenue approaches and crosses King Street, small businesses continue past Gold Street. At that point, major employment centers pop up, interspersed with some remaining single-family homes. A few industrial uses continue south of I-85, but generally the land becomes more rural. City Lake, Davidson Lake, and a Ridgeline Trail trailhead are all located in this southern part of the corridor.

Existing policy:
Commercial and industrial zoning follows much of the corridor, until it leaves the City to the south into residential zoning. The NC 161 Corridor Overlay stretches from the City limit just north of Groves Street, to I-85. From there the York Road Gateway Overlay follows York Road to Lake Road. Refer to **Section 4.5** for related policy recommendations and coordination with Cleveland County for properties outside of the Kings Mountain ETJ.

Cleveland Avenue
between Church and Grove Street

Facility description:
Bessemer City-Kings Mountain Highway is a two-lane road roughly 22 feet wide. The shoulders are not paved but are fairly evenly graded for the most part. Cleveland Avenue does provide some isolated narrow paved shoulders. South of Linwood Avenue, Cleveland becomes a four-lane road approximately 50 feet wide, with curb and gutter, and sidewalk with a narrow grass strip on the west side. As it continues south to pass under US 74 Bypass, Cleveland Avenue widens to 66 feet with a center median and turn lanes. Cleveland Avenue gradually tapers back to a 50 foot width by the Ridge Street intersection, but retains its four lane configuration. Isolated segments of sidewalk abut portions of the east curb. A few isolated patches of woods approach the edges but

there are no street trees. The speed limit is posted at 35 mph. There are no warning signs pertaining to bicycles. Conditions for bicycles are poor due primarily to narrow outside lane width and speeding traffic.

South of Ridge Street, the last block of Cleveland Avenue takes on the strip commercial character of King Street, which continues on York Road in a largely uninterrupted manner until the I-85 overpass. York is three lanes wide with a curb line interrupted frequently with driveways into small businesses. Outer lanes are approximately range from 12 to 14 feet wide. The speed limit is posted at 35 mph. Bicycle safety conditions suffer from frequent curb cuts and heavy traffic.

York Road crosses over I-85 on a five-lane bridge, with wide outside lanes and sidewalks. The posted speed limit increases to 45 mph. This road configuration continues south and is marked with Share-the-Road signs. One-half mile south of I-85, York Road includes paved shoulders and bicycle warning signage. After another one-half mile, the posted speed increases to 55 mph but bicycle safety conditions for mature bicyclists are relatively safe due to the paved shoulders and signage.

Connections:
NC 161 crosses both major and minor east-west corridors in the City, including the Phenix Mill/Northwood corridor at Linwood Road, US 74 Business, and the School & Town route at Gold Street. Cleveland Avenue forms part of the Northwood and Phenix Mill street grids to the north of US 74 Bypass, and the Davidson School grid north of US 74 Business. The 161 Corridor provides the only connection to the Ridgeline Trail within the limits of the City's ETJ. The majority of this corridor is recommended for inclusion in the east side of the Inner and Outer Loops (**Section 4.4**)

Scheduled projects:
There are no road improvement projects in the current STIP for this corridor.

Retrofits and alternate routes:
Major improvements are recommended for this corridor, including a road dieting project from Linwood Road to East Ridge Street (refer to **Section 5.1** for road dieting considerations) and a new traffic signal at the intersection of Cleveland Avenue and East Ridge Street. See individual project recommendations in **Section 6** for detailed descriptions of improvements. Refer to MUTCD Part 4 for consideration of a new highway traffic signal at Ridge Street and Cleveland Avenue.

No alternative routes are suggested for this corridor.

Bike racks are recommended at East Elementary School, the Ridgeline Trailhead, and the YMCA.

NC 216 Corridor

North Battleground Ave. at the Art Center

The NC 216 corridor is the longest of the three major corridors traversing Kings Mountain, at nearly 9.5 miles. Beginning at the Gaston County line at the northern end of the ETJ, NC 216 on County Line Road merges with Goforth Road and continues in a southeast direction, following North Piedmont Avenue until it merges with Chestnut Ridge Road. From there, NC 216 heads south and parallels NC 161 about ½ miles to the east. North Piedmont crosses the railway and terminates at North Battleground Avenue. From here, the corridor will hug the east side of the railway, running through the business district as South Battleground, and continuing southwest all the way until it merges with US 29 at I-85. Here the corridor leaves the Kings Mountain ETJ but continues along South Battleground/US 29/NC 216 reaching an island annexation of the City before NC 216 turns south to cross I-85 and the South Carolina border, to continue toward the Kings Mountain National Military Park.

Destinations & Land Use:

The corridor begins at Moore's (Three-Point) Market and Grill at the county line, then passes by the Shell Food Mart in a rural area of farm fields. In 1.5 miles, the corridor bends south and enters the City and the neighborhood of Phenix Mill. Located here along North Piedmont Ave. within a few blocks of one another are the Citizens Service Center, Mac's Grocery and North Elementary School. Crossing US 74 Bypass, the NC 216 Corridor enters the neighborhood of Davidson School. A number of small businesses line this section of North Piedmont, including the Chat & Nibble Restaurant. On North Battleground, the old train depot has been converted to an art center. As the corridor passes through the downtown, it essentially becomes the City's "Main Street" where many prominent commercial and civic destinations are clustered. South of the downtown, and past the Tire Corporation complex, NC 216 passes adjacent to the West End and Margrace neighborhoods. The Gateway Trail Head visitors facility is also located on NC 216. Martin Marietta facility is located on NC 216 at Bethlehem Road, just inside the ETJ.

Existing policy:

North of the US 74 Bypass, NC 216 is mostly residential. Southward, much of the NC 216 corridor is industrially zoned. But as the corridor passes through the downtown business district, it briefly enters two overlay districts: the US 74 Business East Corridor Overlay, and the Downtown District Overlay. Further to the southwest, NC 216 enters the Kings Mountain Boulevard Thoroughfare Protection Overlay. Refer to

Section 4.5 for related policy recommendations and coordination with Cleveland County for properties outside of the Kings Mountain ETJ.

Facility description:
NC 216 enters the county as a two-lane road, roughly 23 feet wide, with shoulders that are not paved and tending to slope at a noticeable grade. Brief patches of 6"-12" paved shoulder appear periodically. The speed limit is posted at 35 mph. Conditions for bicycles are poor due primarily to narrow outside lane width and speeding traffic. There are no warning signs pertaining to bicycles.

Facility conditions do not improve until the road begins to widen near Fairview Street at Mac's Grocery. Here the lanes broaden to between 14 and 16 feet, curbs are apparent, and sidewalks begin with narrow planting strips. At Linwood Avenue, NC 216 expands to four lanes. The posted speed limit remains at 35 mph. There are no warning signs pertaining to bicycles. Conditions for bicycles are poor due primarily to speeding traffic.

NC 216 crosses over US 74 Bypass on a bridge that features outer lanes of 12 to 14 feet and four foot sidewalks bordered by high metal rails. The bridge presents little safety challenge for bicyclists.

As NC 216 reenters the City grid, it continues to be lined by curb and sidewalks with intermittent planting strips. The eastern lane width varies from 11 to 13 feet, but the western lane, even with parallel parking in segments, provides ample width for safe bicycle passage. Commercial buildings that line the street have minimal setbacks, which tend to slow traffic and increase bicycle safety.

Crossing the railway, North Piedmont merges with North Battleground Avenue, and the posted speed limit drops from 35 to 25 mph. The eastern lane of North Battleground is about 14 feet wide, and the western lane as much as 18 feet. But between the street and the railway, the old depot provides a parallel path opportunity. In addition to the 850 linear feet currently paved, another 250 foot section that is currently unimproved links to the North Piedmont Avenue intersection. From the south end of the paved depot area, the street width provides a safe connection as far as the Southern Railway Bridge, but then pinches down as it approaches King Street, with a low rail between the street and the steep slope down to the railway.

The two-block segment from King Street south to Gold Street is a very commercial urban in character. It features diagonal, right angle, and parallel parking in segments to serve the adjacent businesses on the east side.

South of Falls Street, parking adjacent to travel lanes ceases. Posted speed increases once again to 35 mph, then quickly to 45 mph just two blocks south at Hawthorne Street. At this point, the width of lanes begins to narrow and bicycle safety conditions are severely worsened.

Conditions do not improve along the corridor except in only brief segments where paved shoulders exceed 6 inches width; that is until the point where the alignment was changed to join the new Kings Mountain Boulevard ¼-mile away. Here 4-feet wide paved shoulders are provided. Pre-improvement conditions return ¼-mile on the west side of the Boulevard and continue until the merger with US 29, which is a four-lane, median divided highway. NC 216 leaves US 29, and turns south as a 2-lane road to cross I-85.

Connections:
NC 216 crosses both major and minor east-west corridors in the City, including Linwood Road, US 74 Business, and Gold Street. North Piedmont Avenue forms part of the Phenix Mill street grid to the north of US 74 Bypass, and the Davidson School grid north of US 74 Business. NC 216 bisects the historic downtown grid of Kings Mountain parallel to the railway. South of the downtown, and past the Tire Corporation complex, NC 216 provides a connection for the West End and Margrace neighborhoods to the Gateway Trail visitors facility and to downtown. Finally, NC 216 crosses the Kings Mountain Boulevard corridor before leaving the City's ETJ. The segment of the Corridor on North Piedmont Avenue from Scism Road to Center Street lies within the Outer Loop, as does the segment on South Battleground from the Gateway Trailhead to Kings Mountain Boulevard. The Outer Loop also includes portions of NC 216 from Waco Road to King Street, and again for a short length from Falls Road to Oak Street. See **Section 4.4** for a description of the Inner and Outer Loops.

Scheduled projects:
There are no road improvement projects in the current STIP for this corridor.

Retrofits and alternate routes:
Some of the recommended bicycle facilities in this Plan could provide opportunity for parallel courses to the NC 216 corridor and allow bicyclists to wind through neighborhood streets with generally safer conditions.

North of Mountain Street, this includes the proposed Cansler Street bike lanes, which can be accessed from NC 216 by McGinnis Street to the North Elementary Greenway to Bridges Street, or by Waco Road, or by Ridge Street across the Southern Railway Bridge, and back to NC 216 by the Mountain Street proposed bike lane.

South of Mountain Street, an alternative route through the West End and Margrace neighborhoods involves taking Oak Street to Railroad Avenue to Hawthorne Road to Meadowbrook Road to Oakland Street to Huntingtowne Drive, across the proposed bike and pedestrian bridge to Wintergreen Court to Caldwell Street to Fulton Road to Margrace Road to Kings Mountain Boulevard, which then shortly connects back to NC 216. Bike boulevard improvements are recommended for this alternative route.

Despite these opportunities for safe alternatives close to the NC 216 Corridor, the improvements described in this Plan to NC 216 facilities themselves are still strongly recommended. NC 216 provides a direct route through the City that reaches many major destinations. However, this Plan does not include recommendations for NC 216/South Battleground Avenue south of the Margrace Road intersection. There are also no on-road improvements recommended for the segment of NC 216 by the Art Center. Instead, the project recommendations go off-road into the Art Center itself. See **Section 4.3**: **Focus Area 2** for a detailed description of proposed treatment for the Art Center area.

Bike racks are recommended along the corridor at the Citizens Service Center and the Art Center; and can already be found at the Gateway Trailhead.

School & Town Corridor

This secondary corridor spans a significant distance through the City, connecting York Road to Kings Mountain Boulevard over a travelled distance of 3 & ¼ miles. Beginning at York Road, the corridor follows Gold Street westward, crosses the railway, then jogs north one block on Railroad Avenue to follow Mountain Street westward onto Phifer Road, and then all the way to Kings Mountain Boulevard.

Phifer Road south of Landing Street

Destinations & Land Use:

As the name suggests, the corridor connects many of the area schools to the downtown. Phifer Road is home to Kings Mountain High, Middle, and Intermediate Schools, while West Elementary School is also located on the Route on Mountain Street between Goforth and Watterson. The route travels through the residential neighborhood of West End, and along the edge of Margrace. It also provides an efficient connection to both the Country Club and Davidson School neighborhoods. Also included along this corridor are many downtown civic, recreational and commercial destinations.

Existing policy:

The School & Town Corridor passes through primarily residential zoned land. It also enters the Downtown District and the West End Historic District. It also terminates at the NC 161 Corridor Overlay and the Kings Mountain Thoroughfare Overlay.

Facility description:
From York Road to near Gaston Street, Gold Street is a narrow road with 10 foot lanes and narrow grass shoulders. At Gaston, the road widens to include a turn lane. Curb and gutter is added, along with a north side sidewalk and planting strip. Crossing Gaston Street, Gold Street converts to four lanes and remains so until terminating in a T at South Battleground Road. To remain on the corridor, a bicyclist must veer onto South Battleground Avenue before crossing the railway at grade. Visibility is slightly hindered at the crossing by the grade over the railway. Once across the railway, the corridor travels one block north on South Railroad Avenue to join Meeting Street. This series of four intersections is quite complex. The bicyclist must contend with multiple lanes of traffic, on-street parking, drivers distracted by downtown sites, and periodic railroad activity. There are no designated bicycle lanes, or warning signs.

Mountain Street provides the connection from Railroad Avenue to Phifer Road. It is a two-laned, 32-feet wide street with curbs, sidewalk, planting strips, traffic signals, on-street parking, and street trees. This segment is also recommended as an alternate route for a portion of US 74 Business. Bicycle safety conditions are relatively good for school-aged bicyclists, but could be improved by the addition of bike lanes and warning signage.

Phifer Road is a 26-feet wide road connecting Mountain Street to Kings Mountain Boulevard. From Mountain Street it features a sidewalk and planting strip on its west side. Much of the adjacent land is sparsely developed. The posted speed of 35 mph is reduced to 25 mph as Phifer Road crosses Beason Creek into the school zone. Here curb and gutter is introduced as well as a turning lane into the High School. At Maner Road, the curb and gutter disappear on the east side. Within a block, there is no curb and gutter on either side, but the sidewalk continues with a very narrow planting strip on the west side. Grassed shoulders slope noticeably. At Southridge Drive, Phifer Road bends westward. The sidewalk leaves the street to join the Middle School parking lot. A west side curb reemerges as does a second westward bound lane, which becomes a turn lane. As the road leaves the school zone, it reverts back to a 2-lane facility with grassed shoulders until the intersection with Kings Mountain Boulevard. Bicycle safety conditions along Phifer Road are relatively unsafe for school-aged bicyclists due particularly to the narrow paved lanes and the lack of warning signage.

Connections:
The School & Town Corridor connects the NC 161 Corridor to the Kings Mountain Boulevard Corridor. In so doing, it crosses the NC 216 corridor and merges for a segment with the recommended alternate for the US 74 Business Corridor. The School & Town Route forms part of the proposed Inner Loop. See **Section 4.4** for additional description of the Inner and Outer Loops.

Scheduled projects:
There are no road improvement projects in the current STIP for this corridor.

Retrofits and alternate routes:
No on-road alternative routes are suggested for this corridor, but a significant opportunity exists for an off-road multi-purpose route to serve the school complex utilizing the designated Carolina Thread trail route along Beason Creek between Phifer Road and Kings Mountain Boulevard. The route can continue westward along the Creek to follow the Thread Trail to Crocker Road. Significant on-road improvements are recommended for the entire length of the corridor.

Bike racks are recommended along the corridor at the Post Office, the Government Center, the Little Theater, West Elementary School, and the Middle and High schools along Phifer Road.

Phenix Mill/Northwood Corridor

This secondary corridor serves the northeast section of the City, from East End Avenue at the eastern City limit, to North Cansler Street. It spans the width of the City's incorporated area north of the US 74 Bypass in a total length of 1.8 miles. It follows Linwood Road from its eastern end in the Northwood neighborhood, makes a brief southward jog on North Piedmont, enters the North Elementary School zone via Lackey Street, then continues westward on Bridges Road until Cansler Street.

North Elementary School on Ramseur Street

Destinations & Land Use:
The corridor connects the Northwood and Phenix Mill neighborhoods to the North and East Elementary Schools, and to businesses at the Linwood and Cleveland Avenue intersection. Industrial uses dominate the south side of Linwood between Phenix Street and Phillips Drive.

Existing policy:
The NC 161 Corridor Overlay crosses over Linwood Road. Aside from the businesses concentrated there, and the industrial zone to the west, the Corridor is zoned residential.

Facility description:
Linwood Road is primarily a 2-lane facility with curb and gutter. From the eastern City limit, the pavement is 34 feet wide and features on-street parking. East of NC 161 the speed limit is posted as 35 mph. West of NC 161, the posted speed drops to 25 mph and the width of pavement eventually decreases to 22 feet, losing the curb. Linwood Road crosses the railway at grade, and veers left onto a wider 30-foot facility with a sidewalk and planting strip on the north side. Approaching N. Piedmont Avenue, Linwood broadens to 4 lanes with curb and gutter and sidewalks on both sides. Linwood Road terminates at N. Piedmont Avenue.

The intersection is signalized and features a striped crosswalk on N. Piedmont. The turning radii are very wide, as is the intersection itself. Visibility is quite limited from the south as N. Piedmont curves.

The portion of the Corridor along N. Piedmont is only 350 feet in length with a speed limit of 35 mph. The pavement is 52 feet wide with 4 lanes, curb and gutter, narrow planting strip and sidewalks on both sides. The Corridor continues west for one block on Lackey Street, which for this segment measures 34 feet wide, features curb and gutter, and a speed limit of 25 mph. The Corridor turns north on Ramseur for one block, then follows Bridges Street until it ends at N. Cansler Street. These latter two streets are typically 22 feet wide with no curb. The speed limit is set at 35 mph for Bridges Road.

Connections:
To its north side, the Phenix Mill/Northwood Corridor feeds into two neighborhoods that are well connected internally. The corridor also crosses the NC 161 corridor, which provides a connection to the Outer Loop.

Scheduled projects:
There are no other road improvement projects in the current or draft STIP for this corridor.

Retrofits and alternate routes:
An alternative route recommended for a segment of this corridor involves an off-road multi-purpose path through the North Elementary School property. The path would depart from Lackey Street east of the residence, follow the eastern edge of the south field, cross the interior drive that provides the connection to Bridges Street, cross in front of the school building, and connect to McGinnis Street. On-street improvements are recommended for the remainder of the corridor.

Bike racks are recommended along the corridor at Linwood Produce and N. Elementary School.

Kings Mountain Boulevard

The Boulevard Corridor

To the west of the City lies a relatively recent facility that provides a consistent, bicycle-friendly corridor, from US 74 Business at Shelby Road, to I-85. Its total length is three miles.

Destinations & Land Use:
This corridor is largely undeveloped, but it does lie adjacent to a single-family residence subdivision, an apartment complex, and the Kings Mountain school complex in the Phifer Road area. The corridor also provides a connection to the Kings Mountain Travel center, just south of I-85.

Existing policy:
The entire corridor is included in the Kings Mountain Boulevard Overlay. It also enters the US 74 Business West Overlay at its northern extent. North of NC 216, the corridor lies within residential zoning. South of NC 216, the zoning is predominantly industrial, with an area of commercial south of I-85.

Facility description:
Beginning at US 74 Business, Kings Mountain Boulevard is a 2-lane road with 2-foot to 4-foot wide paved shoulders on both sides. Posted speed limit is 55 mph. These conditions remain until approaching I-85 on Dixon road, where the paved shoulder begins to deteriorate to a 6-inch band. Once across I-85, narrow paved shoulders persist to the Travel Center. With the consistent run of wide paved shoulder, conditions are quite favorable for mature cyclists but, due to the higher vehicular travelling speeds, the facility is not safe for less experienced riders.

Connections:
The Boulevard serves to connect the US 74 Business Corridor, as well as its recommended alternate route joining at Dick Elam/Shelby Road, to the School & Town Route. The Outer Loop follows Kings Mountain Boulevard from US 74 Business to Margrace Road. The corridor also provides a connection to the proposed Carolina Thread Trail along Beason Creek, and one of the few connections across I-85. See **Section 4.4** for additional description of the Inner and Outer Loops.

Scheduled projects:
Dixon School Road (SR 2487) and Kings Mountain Blvd (SR 2487) are scheduled to be widened to a four lane divided boulevard from I-85 to Shelby Road (US 74 Business) in the STIP.

Retrofits and alternate routes:
No on-road alternative routes are suggested for this corridor. With the existing paved shoulders along most of the corridor, only additional signage is recommended with some minor widening in some locations.

Bike racks are recommended along the corridor at the Intermediate School and Kings Mountain Travel Center.

The Lake Connector

Continuing north past the US 74 Bypass, Shelby Road becomes Stony Point Road. From this point, the John H. Moss Reservoir (Moss Lake) is roughly four miles distant. The first of those miles is within the City ETJ. About one mile further, Stony Point Road intersects with Oak Grove Road. In total, The Lake Connector Corridor stretches 2¼ miles, terminating at Oak Grove Road.

John H. Moss Reservoir (Moss Lake)
Photo from city-data.com

Destinations & Land Use:
This corridor is primarily rural in nature, with some single family residences and mobile homes. At the junction of US 74 are an industrial use, Bethware Elementary School, and a church. Crossroads Music Park is also located on Stony Point, just south of Potts Creek.

Existing policy:
Besides the single industrially-zoned parcel, the corridor is completely zoned residential. Refer to **Section 4.5** for recommendations concerning residentially zoned properties, and coordination with Cleveland County for properties outside of the Kings Mountain ETJ.

Facility description:
Beginning at US 74 Bypass, Stony Point Road is a 2-lane facility with 2-foot paved shoulders on both sides. The posted speed limit for the entire corridor is 45 mph. With the consistent run of paved shoulders, conditions are quite favorable for mature cyclists but, due to the higher vehicular travelling speeds, the facility is not safe for less experienced riders.

Connections:
The Lake Connector is the City's link to the Reservoir. The route is used is part of the Over the Mountain Triathlon. It also links to the US 74 Business Corridor and the Carolina Thread Trail.

Scheduled projects:
There are no road improvement projects in the current STIP for this corridor.

Retrofits and alternate routes:
The northern portion of the Lake Connector corridor - from Potts Creek to Oak Grove Road – follows the adopted Carolina Thread Trail alignment, which continues westward to the Reservoir. An off-road alternative route is recommended which continues along the proposed Thread Trail alignment along Potts Creek. The creek crosses Stony Point Road 0.35 miles south of the Oak Grove Road intersection and runs about ½ mile to the east of Stony Point Road. Potts Creek continues into the City, providing a potential trail connection to as far as Sims Street, but where the Creek crosses under Countryside Road, there is opportunity for the bicyclist to use Countryside to rejoin the US 74 Business corridor. This alternative route includes 2.2 miles of multi-purpose trail together with 0.3 miles of on–road route utilizing Countryside, for a total of 2½ miles. To establish the connection across US 74 Business, the Potts Creek trail passes under the highway, utilizing one of the three existing box culverts and a raised or cable-suspended bridge, or similar. Another potential connection exists between this alternative route and Stony Point Road using Hoyles Road. This connection would require some on-road improvements and an 800-foot trail. Existing paved shoulders should be widened to four feet, and additional signage is recommended along Stony Point Road.

4.3 Focus Areas Recommendations

KEY LOCATIONS IN THE BICYCLE COMMUNITY

Certain locations within the study area will benefit from more detailed planning considerations for bicycle use. These areas are in prominent locations, with key destinations in their vicinity, and connections to multiple bicycle corridors. They also present challenges due to their complex traffic patterns, peculiar road geometries, and physical constraints. These areas of potential high use are described below in terms of their value as attractors for bicycle traffic as well as their existing facilities (bundled under the term "assets"), and the safety considerations and design constraints they pose ("challenges"). The list of proposed design treatments included for each focus area have been generated from planning level analysis only. More detailed engineering analysis is required before physical alterations are made.

For additional details on the facility improvements proposed, see **Section 5: Facility Standards & Guidelines**, **Section 6: Proposed Projects List**, and **Section 7: Proposed Routes and Facilities Map**.

Focus Area 1: South Battleground Avenue from Mountain Street to Oak Street intersections

Assets:

- Commercial, civic, entertainment and recreational destinations, near residential areas and industrial employment center
- Intersection of a North-South and an East-West corridor
- Intersects Inner Loop (**Section 4.4**)
- Downtown CBD with Downtown District Overlay has Main Street feel with minimal front yard building setbacks, sidewalk, street trees set in planters
- Three existing traffic lights
- Intersection of collector roads
- Striping includes stop lines, crosswalks, directional arrows, parking lines
- Raised curbs
- Public art in view
- Street lights

Challenges:

- Complex 150' offset intersection with multiple collision points
- 3 and 4-lane roads

South Battleground Avenue at the Gold Street intersections

- Multi-directional on-street parking (parallel, diagonal and perpendicular)
- Vehicular traffic (roughly 6000 AADT), including heavy truck traffic
- Downtown pedestrian activity
- Adjacent railroad R-O-W

Proposed Treatment:

This combination of intersections forms the junction of two proposed road improvement projects recommended in this plan. Redesign elements are described here for all road segments and intersections:

- Convert perpendicular and diagonal parking along the west side of South Battleground Ave. to parallel parking orientation to increase safety and permit additional lane width for bicycle improvements. Alterations to existing bulb-outs on west side of Battleground Avenue may be required to permit proposed bike lanes.
- Restripe South Battleground Avenue to permit Sharrow lanes from Mountain Street to Oak Street, parallel parking on both sides from Mountain Street to East Gold Street, and parallel parking on the west side only from East Gold Street to Falls Street.
- Within the intersections of South Battleground with East and West Gold Street, add Sharrow intersection crossing markings oriented between the proposed South Battleground bike lanes to provide a continuous visual connection to guide bicyclists and remind motorists of bicycle traffic (See sample detail in **Section 5.4**). These markings are required only on the side of each T-intersection that is crossed by traffic. Bike lanes should continue uninterrupted on the opposite side. Wide outside lanes shall extend north of Mountain Street to Ridge Street.
- Manage access to the commercial use on the southeast corner of the southern intersection by extending the curb line south along South Battleground Ave. to permit a standard 2-lane wide egress located as far from the Gold Street intersection as permissible. Narrowing this egress point will improve safety conditions for all modes of traffic.
- Add appropriate signage to indicate: presence of bicycle riders (Share the Road), bike lanes ahead, bike lanes ending, and Inner Loop way finding signs to serve at the Falls Street and Oak Street intersections.

Proposed Sharrows markings on South Battleground Ave., Downtown

Focus Area 2: Art Center

Kings Mountain Arts Center

Assets:

- A primary cultural activity center for the City (Southern Arts Society, Inc.)
- Intersection of a north-south and an east-west bicycle corridor
- Location on the Inner Loop (See **Section 4.4**)
- Near Grover School, commercial centers and residential neighborhood
- Existing traffic light
- Expansive off-street paved and un-paved areas (1,100 feet by up to 80 feet wide) presents opportunities for off-street path
- Street lights

Challenges:

- Two acute angled intersections (N. Piedmont and Parker with N. Battleground)
- Located on minor arterial road with vehicular traffic at roughly 5200 AADT, including heavy truck traffic
- Adjacent railroad R-O-W serving railway and railway maintenance staging area
- Narrow road pavement on N. Battleground adjacent to south portion of Art Center area
- Off-street pavement is worn

Proposed Treatment:

This focus area includes a proposed road improvement project and two off-road projects recommended in this plan. Redesign elements are described here for each road segment, intersection, and the off-road paved area and open space.

- Provide bike lanes on N. Piedmont Ave. from East Parker Street to Waco Road. Use wide outside lanes where pavement width does not permit bike lanes. Avoid including width of gutter in bike lane width even if gutter is paved over. But if necessary in order to obtain adequate width, additional maintenance will be required to maintain asphalt over concrete gutter pan.
- Provide off-street striped bicycle lane/path along north-south length of paved Art Center area. Coordinate installation (striping and signage) with off-street parking lot repaving schedule. Continue Inner Loop (**Section 4.4**) by linking to East Ridge Street WOL with signage. Signage should also continue link southward toward downtown.
- Install off-street multi-use trail from north Art Center driveway to N. Piedmont Ave. at railway crossing. Coordinate with Norfolk-Southern Railway for easement use and to align trail near the street edge to avoid railroad periodic maintenance staging area.

- Indicate off-street bicycle path and continuation of Inner Loop (**Section 4.4**) in Art Center with directional way finding signage at the three street entrances to the Art Center for bicyclists on N. Battleground Ave., and at beginning of multi-use trail at N. Piedmont Ave.
- Install bike racks at Art Center adjacent to primary building.
- Consider the use of sharrows in the short-term along North Piedmont from Ridge to Parker until construction of the off-road facility.
- Install additional appropriate signage to indicate: presence of bicycle riders, direction to off-street path, bike lane begin and end, Inner Loop way finding signage at intersection of Ridge Road.

Focus Area 3: Cleveland Avenue and Linwood Road intersection

Assets:

- Neighborhood commercial destination near school, employment centers and residential areas.
- Intersection of a north-south and an east-west bicycle corridor
- Location on the Outer Loop (**Section 4.4**)
- Location in NC 161 Corridor Overlay
- Existing traffic lights
- Intersection of collector roads
- Striping includes stop lines, crosswalks, directional arrows
- Raised curbs
- Street lights

Linwood Produce on Cleveland Avenue

Challenges:

- Acute angled intersection
- Vehicular traffic (roughly 6400 AADT) including heavy truck traffic
- Multiple lane intersection
- Adjacent driveways create multiple collision points
- Numerous egress points (driveways)

Proposed Treatment:

This intersection marks the junction of four proposed road improvement projects recommended in this plan. Redesign elements are described here for each of the four legs of the intersection:

SOUTH:

- The Cleveland Avenue bike lane project involves reducing the four lanes of Cleveland Ave. on the south side of the intersection to two lanes with a median and bike lanes.

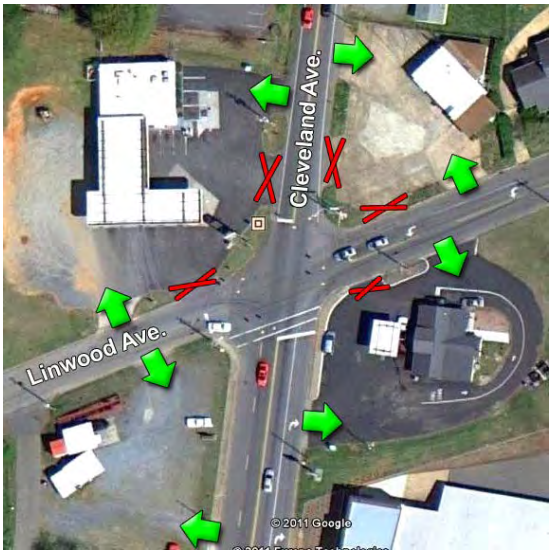
- Use standard AASHTO bike lane/right turn lane configuration at the Linwood intersection.
- Provide a shared bicycle/pedestrian refuge island in the proposed median at the intersection.
- Place appropriate signage to indicate: presence of bicycle riders, bike lane ending, Outer Loop way finding.

WEST:

- The Linwood Avenue bike lane project requires lane striping and signage. Where the existing road width does not permit bike lanes, use wide outside lane, or widen road.
- Manage access to the commercial use on the northwest corner of the intersection by closing the egress point closest to the intersection, in order to improve safety conditions for all modes of traffic.
- Place appropriate signage to indicate: presence of bicycle riders, bike lane ending, Outer Loop way finding

NORTH:

- Paved shoulders for this portion of Cleveland Ave. may require some widening of pavement and grading.
- Manage access to the commercial uses on the northwest and northeast corners of the intersection by closing the two egress points closest to the intersection, in order to improve safety conditions for all modes of traffic.
- Place appropriate signage to indicate: presence of bicycle riders, Outer Loop way finding



Closing driveways in vicinity of the Cleveland and Linwood Avenue

EAST:

- Wide outside lanes on Linwood Ave. are compromised for a short distance by the addition of the turn lane at the intersection.
- Manage access to the commercial uses on the northeast and southeast corners of the intersection by closing the two egress points proximal to the intersection, in order to improve safety conditions for all modes of traffic.
- Place appropriate signage to indicate: presence of bicycle riders, Outer Loop way finding

As the bike lanes do not cross the intersection, there are no additional improvements recommended for the intersection interior.

4.4 Route Recommendations

GUIDING THE BICYCLE COMMUNITY

Bicycle routes are designated preferred courses for cyclists to reach significant destinations or to ride for enjoyment or exercise. In the case of Kings Mountain, two bicycle routes have been included in the overall facility network: the Inner Loop and the Outer Loop. The alignments of these routes were selected in order to provide continuous riding loops for cyclists that would help meet the goals of the Plan, namely:

- Provide for a safe bicycling experience
- Connect cyclists to popular places like schools, businesses, downtown, and neighborhoods
- Create ways around barriers
- Provide both an on-road and off-road bicycle experience
- Serve all segments of the population with opportunities for commuting, recreation, healthy exercise, scenic enjoyment, and relief from automobile traffic
- Foster economic development
- Utilize existing facilities

The Inner Loop's 7.5 mile length encompasses the downtown area and connects many key destinations and neighborhoods. The Outer Loop, along its 24 mile length, provides more of a scenic and recreational experience. Both Routes utilize a full variety of facility types, much of which requiring only minimal improvements. The two routes connect at the intersection of Cleveland Avenue and Ridge Street and, so in a sense, form a figure-8. The proposed alignments for both routes are shown in **Section 6: Proposed Routes & Facilities Map**, and are described below:

Inner Loop

East Ridge > Canterbury > cross 85 > frontage road > York Rd > cross 85 > York Rd >

- Martin Marietta Materials driveway > utility easement > quarry road >Falls > wooded path to S. Gaston
  (as the ultimate route)
- or: E. Gold (as a preliminary route)

> E. Gold (connect to **Gateway Trail**) > S. Battleground > W. Mountain (**Carolina Thread Trail**) > Sims (connect to potential **Potts Creek Trail**) > W. Parker > Childers > Cansler > W. Ridge > N. Railroad > little bridge (closed to vehicular traffic) > Battleground > E. Ridge (end)

Inner & Outer Loop Route arrangement

Outer Loop

Kings Mountain Blvd (connect to potential **Beason Creek Trail**) > Shelby Rd > Countryside > Patterson > cross 74 > Putnam Lake > Scism > N. Piedmont > Center > 2nd / Herndon Access > BC KM Hwy / Cleveland (161) > cross 74 > E Ridge (joins **Inner Loop**) > Canterbury > cross 85 > frontage road > York Rd > Galilee Church > proposed **Carolina Thread Trail** on Kings Ck > cross 85 via old bridge > **Gateway Trail** > E. Gold > S. Battleground > W. Mountain > Phifer (connect to potential **Beason Creek Trail**) > Kings Mtn Blvd.

Often, such bicycle routes are keyed to a user map. See **Sections 5.9 & 5.15** for further details.

4.5 Policy Recommendations

DEVELOPING A BICYCLE COMMUNITY

A community cannot effectively implement plans to achieve a vision without guiding principles in place. These principles are codified into a body of policy, which gives direction to the community as it determines the most effective and appropriate strategies for implementing projects. Policy also guides the selection of programs and spending priorities.

With the adoption of its Comprehensive Bicycle Plan, the City of Kings Mountain has official policy that specifically identifies the location of proposed on-road and off-road bicycle facilities. The Plan specifies where these bicycle improvements are to be placed, how they are to be designed, and the publicly-driven priority for when they are to be installed. This Plan and other related policy should be consistently referenced when making larger transportation and land use decisions.

The Plan is based upon the following guiding principles. These same principles should guide how the Plan is implemented:

i. Make bicycling a viable transportation option by providing bicycling facilities that connect important destinations to neighborhood and regional bicycle routes, bicycle lanes, greenways and multiple-purpose paths.
ii. Adopt land use practices that support mixed residential/non-residential zoning, connectivity between adjacent land use and neighborhoods, and infill development to give bicyclists of all skill levels a realistic opportunity to use their bicycles as a viable means of transportation.
iii. Encourage the addition of amenities that make biking pleasurable and practical such as landscaping, traffic calming, public restrooms and showers, lockers, bicycle racks, and recreational facilities.
iv. Create an atmosphere where motorists are familiar with driving near bicyclists, where bicyclists are comfortable riding near motorists, and where the many physical and operational obstacles that bicyclists currently face are corrected.
v. Promote awareness of the wide-ranging benefits of bicycling throughout the community.
vi. Designate, design and modify appropriate streets to accommodate automobiles and bicyclists together. Collector roads may require bicycle lanes and other design modifications, whereas lower speed and volume roads may not require any modifications.
vii. Consider the provision of bicycle facilities as a legitimate element on all new and existing streets before resurfacing, street widening or construction projects are undertaken.
viii. Set aside land for paths/trails in new development.
ix. Revise City ordinance to reflect the above principles in the manner appropriate for the community.

With a view to these guidelines and in order to achieve the stated community vision and goals which form the basis of this Plan, the following actions are recommended.

1. **Form a stakeholder-based Kings Mountain Bicycle Committee (KMBC)**.
The KMBC should represent a wide variety of interests and populations in the City. Members should include representatives of the business community, long-time residents, and residents of recent residential developments. Various areas of expertise represented by the KMBC should include:

- Transportation
- Downtown Commerce
- Industry
- Health, Fitness & Recreation
- Safety and crime prevention
- Education
- Tourism
- Environment
- Engineering and Design
- Public outreach

The purpose of the KMBC is to ensure that the Bicycle Plan remains in the forefront of public awareness, that it is implemented through ordinance changes, grant opportunities, and as development occurs in the private and public sectors. The KMBC should also help assure that the Bicycle Plan is updated as needed to reflect changing conditions and bicyclist needs, and is integrated with other planning processes. The group can serve to advocate, monitor, facilitate, and educate. The KMBC should also ensure that citizens are alerted of planning efforts, changes in facilities, and upcoming construction that will affect the bicycling environment of the City.

Implementation Strategy:
City staff shall recommend a list of candidates to the City Council, who shall then appoint KMBC members and invest them with the authority and charge to pursue the Committee's purpose stated above. It is recommended that the KMBC include a City elected official.

2. **Implement Plan Recommendations through Local Land Development**
The City can promote the construction of bicycle facilities through a variety of methods involving land use regulations. A summary of suggested implementation tools follows (many of which are already in place to some degree):

1.) Citing Adopted Plans When Making Land Use Decisions
North Carolina's general statutes do not mandate strict adherence by local governments to their adopted land use and transportation plans. The general statutes were amended, however, in 2005 to require that all local governments consider these plans when making their land use decisions and to include "a statement of consistency" with all zoning changes. Thus, this Study upon adoption should be given the same weight and attention as any other locally adopted comprehensive plan, land use plan, transportation plan or small area plan. The City should incorporate the Plan's recommendations in all future site plan approvals.

The approved Comprehensive Bicycle Plan should also be cited and considered when the City issues "conditional use" or "special use" permits. Most communities that issue these permits have a finding of fact in their land use regulations that states something akin to "the proposed

use must be in harmony with the land use plan and any other adopted plan for the physical development of the community."

2.) Updating local zoning ordinance document

Although the Kings Mountain Zoning Ordinance was updated as recently as June, 2009, its format still largely reflects the original type-written document adopted in 1996. An updated, more user-friendly ordinance can be part of a strategy to better communicate zoning regulations to the development community, design professionals, citizens, and business owners, and make the ordinance easier to administer.

Implementation Strategy:

- Review current zoning districts to ensure they support City objectives.
- Create a modern, concise list of uses with a corresponding use/zoning district matrix.
- Revise the zoning ordinance document to make it is easier to use, clearer, more cohesive, and more concise. Interactive, user-friendly zoning ordinances can include color graphics, navigation tabs, and hyperlinks.
- Include additional and updated discussion of City goals and objectives within the zoning ordinance.
- Consider creation of a Unified Development Ordinance for the City and its ETJ.
- Review zoning approval processes and procedures including the level at which action is taken on zoning applications to ensure the process is commensurate with the impact of the proposal and the amount of discretion available.
- Update development standards, definitions, findings, and administrative provisions.
- Revise the City's website to make the online zoning ordinance easier to use. This could include providing a name or explanation for each of the Zoning Ordinance sections in addition to the Article number.

3.) Infill Zoning

Downtown Kings Mountain (having been built prior to the 1950s) was developed with the pedestrian (and bicyclist) in mind with blocks being relatively short in length and laid out in a basic grid pattern. Lot sizes here tend to be small, and a mix of uses lies within close proximity, easier to reach by foot or bicycle. Modern forms of development stand in stark contrast to these practical conventions. In place of a grid of local and interconnected streets, wide and heavily traveled collector roads designed primarily for the automobile, as opposed to the bicyclist or pedestrian, serve as the only means of connection. Bicycling on such heavily travelled roads, even with a dedicated bicycle lane, can be uninviting if not physically dangerous.

In recent years, communities have realized the great economic development potential that exists with redevelopment of older areas. Allowing and accommodating development in these "infill" areas through appropriate land use regulations is not only a plus for the community as a whole, but a benefit to the pedestrian and bicyclist.

4.) Mixed-Use Zoning

In recent years, an increasing number of local governments have become more willing to allow for a mixture of uses where persons could theoretically live, shop and work all within a relatively small geographic area, thereby making bicycling and walking more feasible modes of transportation. Such mixed zoning arrangements can take many forms:

(1) mixed-use developments on a large scale (e.g. Birkdale in Huntersville) or on a small scale with storefronts on the ground floor of buildings and residential units on upper stories; or,

(2) zoning districts that allow and encourage residential uses and non-residential uses to locate near each other

The end result of either of these arrangements is increased opportunity for getting around by means other than the automobile. This is of particular importance in the downtown and other commercial areas. Encouraging or requiring such development supports non-vehicular travel and creates an environment where bicycling is a preferable mode of travel.

5.) Required Green Space with Priority for Trails and Bicycle Lanes

In addition to the recommended on-road facilities, many of the links recommended in the Bicycle Plan are by way of proposed greenways. Creek lands, particularly those within utility right-of-ways and existing parks can be most readily utilized.

North Carolina's General Statutes (NCGS 160A-372 for cities and NCGA 153A-331 for counties) allow local governments to mandate the dedication of open space in subdivisions. In lieu of open space dedication, local governments can mandate that a fee be paid. Those fees may be used by that local government for recreation and open space purposes only.

Local governments are now starting to give more emphasis to bicycle and greenway plans by stating that if such an adopted plan shows a trail crossing the property to be subdivided, land for such trail must be set aside (as opposed to allowing a fee to be paid or substituting other lands to be dedicated for recreational purposes). Such language gives lands for greenways, bicycle or multi-purpose trails higher consideration than other types of land to be set aside or constructed.

6.) Identification and construction of bicycle lanes within subdivisions where such lanes have been designated.

As mentioned earlier, one of the best means of ensuring the installation of bicycle lanes is to incorporate the recommendations from this Plan into the local land use documents. The Plan calls for the creation of bicycle lanes and related improvements on certain roads. To ensure that those road segments will NOT be overlooked in the future, the City should reference the adopted plans and require their construction when adjoining properties are subdivided or developed in the future. In certain instances this can necessitate additional right-of-way, which can be required by the City or NCDOT.

7.) Bicycle Amenities

A growing trend in land use regulations is the requirement for the installation of facilities for bicyclists (e.g., bicycle racks) for new or expanded civic land uses (e.g., libraries, city/town halls, community centers, schools, etc.) as well as uses that attract large numbers of persons (e.g., shopping centers).

8.) Public Transportation

Making concerted efforts to locate civic uses along or near transit lines (or Park & Ride locations) will certainly increase their utilization by bicyclists and others who might not otherwise have access to vehicular transportation. This can be accomplished by amending local land use regulations to give preference to such uses along transit lines (i.e., making them uses by right as opposed to conditional uses, by relaxing off-street parking requirements, lowering development fees, etc.).

9.) Street and Neighborhood Connectivity

A growing trend in recent years has been to limit (or in some cases, eliminate) the use of cul-de-sacs and to mandate (unless physical factors dictated otherwise) that new subdivisions connect or have stubs for future connection with adjacent properties. Fewer cul-de-sacs and more interconnections give pedestrians, bicyclists, and drivers, more options for completing a trip.

Implementation Strategy:

1. In order for the City to implement these strategies, they must be specifically allowed in the local land use regulations. Many of City's regulations and current policy documents complement and can work directly in tandem with the Bicycle Plan. Review adopted policies, particularly those cited in the Bicycle Plan, Section 2. Resolve any conflicts that exist between these documents and current ordinance.
2. Identify the complementary goals, any common funding strategies, and potential private partners. Discuss priorities, strategies and responsibilities with all pertinent municipal staff, planning board, the KMBC and elected officials.
3. Locate proposed facilities according to the Bicycle Plan with minimum deviation from alignments shown.
4. Ensure that all new development respect planned or proposed corridors for greenways.
5. Establish partnerships with local corporate entities, citizen action groups, and regional public organizations (such as Centralina COG)
6. Target specific projects for funding and implementation efforts.
7. Engage the public and development community with education campaigns and open house events.

3. New road construction: coordination with NCDOT and LNRPO

Most bicycle-related improvements occur within state-maintained right-of-way along state-owned roads. NCDOT has well-established policies and regulations regarding the implementation of bicycle plans. In 2009, the NCDOT Board of Transportation approved a "Complete Streets" policy that, among other

things, incorporates multimodal alternatives in the design and improvement of all appropriate transportation projects within a municipality or county unless exceptional circumstances exist, and should be referenced by municipalities and counties when conducting site plan reviews and making other land use decisions. This policy will work very well for traditional capital improvement projects, but it is unclear how effective it will be regarding maintenance projects.

It is recommended that the City, through the Lake Norman Rural Planning Organization (LNRPO), actively coordinate with NCDOT in the evaluation of every resurfacing project for the potential of adding paved shoulders or bicycle lanes, and alert the affected neighborhood where the adding of such facilities is feasible and within the scope of a resurfacing project. The City should consider the opportunity to contribute to the cost of the project in order to provide paved shoulders or bicycle lanes consistent with an approved plan.

4. **Grant and Project Participation Funding Preparation**
Counties and municipalities are often unable to apply for grants or cost-sharing with NCDOT because of the short advance notice. But communities that budget a set-aside amount each fiscal year for the local match are thereby able to rapidly and more successfully respond to grant announcements. The City is encouraged to regularly set-aside funds to use as local match for relevant recreation, transportation and safety related grants and cost-sharing for enhancements to NCDOT projects. This strategy will minimize the opportunities lost for lack of a local match.

5. **Coordinate with neighboring municipalities and surrounding counties.**
The City can determine what happens within its corporate limits and extra-territorial jurisdiction, but not what happens outside its jurisdiction. Bicycle routes are often part of regional networks and, as such, require regional coordination. The Kings Mountain Bicycle Plan features seven routes or corridors that leave the City's limits and ETJ. These routes enter either into the Cleveland or Gaston County jurisdictions, or the ETJs of Bessemer City or Gastonia. In some cases, Kings Mountain proposed projects connect with neighboring local or regional plans, such as the Bessemer City Furnace Trail, or the Carolina Thread Trail. Opportunities for implementing local plans can be strengthened through cooperative regional efforts.

Implementation Strategy:

1.) The KMBC should monitor regional trail efforts – particularly the Carolina Thread Trail – and assist City staff with grant application efforts.
2.) City staff and the KMBC should establish strong ties with similar interest groups and land development staff in neighboring jurisdictions. Monitor development of properties just outside the Kings Mountain ETJ to ensure that proposed off-road trail improvements are included in rezoning and permitting agreements.

4.6 Program Recommendations & Initiatives

FOSTERING A BICYCLE COMMUNITY

Bicycle facilities, old or new, will receive greater use if certain programs are in place to promote and encourage bicycling activity, especially for new cyclists. Many such programs are already in existence throughout the country. These programs and initiatives can help increase bicycle use and make it safer, and assist the City's efforts to decrease traffic congestion, reduce the environmental impact of motor vehicles and support healthy lifestyles.

1. Wayfinding & Signage

Wayfinding signs are destination guide signs that help locate destinations such as civic and cultural buildings, commercial centers, historic landmarks, sport attractions, or a visitor center. Any level of bicyclist will feel more comfortable on a trip if they have a good idea of where they are at various points, and when they must turn to find their destination. In addition to the guidance they provide bicyclists, wayfinding signage can also serve to remind motorists that they share the road with bicyclists.

Signs must be clear, easy to find and read from a distance, aesthetically appropriate and have a uniform set of words/symbols on them to easily let the bicyclist (as well as motorists and pedestrians) know that they are on a bicycle route. G.S. 136-30 addresses signage on the state highway system. NCDOT does not currently allow wayfinding for bicyclists along NCDOT-maintained facilities.

Typical Wayfinding Sign

Wayfinding signs should be located along designated bicycle routes and major bicycle corridors at decision points, such as major intersections.

The Federal Highway Administration's (FHWA) Manual of Uniform Traffic Control Devices (MUTCD) defines nationwide standards used by road managers to install and maintain traffic control devices on all streets and highways. The FHWA recently updated the MUTCD in 2009. These updates allow way-finding signage for bicycle routes that show the direction arrow, destination and bike route delineation through an all in one sign as compared to the previous standard that separates these elements. Whichever sign standards are used for the Bicycle Route, they must be consistent, whether the roads are maintained by NCDOT, or by a municipality.

A useful complement to route signage is bicycle map brochure. These can provide information to guide novice cyclists to less-traveled routes and identify favorable routes for touring cyclists. Bicycle map brochures are a tool to promote alternative transportation or provide a guide to recreational opportunities.

For more information, see the NCDOT webpage:
http://www.ncdot.org/bikeped/projectdevelopment/signing_mapping/

2. **Bicycle Safety Programs and Helmet Initiatives**
   Many cyclists, especially children, lack a basic safe bike handling skills. Bicyclists need to know their rights and responsibilities on the road. Additionally, bicyclists must be aware of the special hazards and know the skills necessary for safe cycling. The International Bicycle Fund (IBF) is an independent, non-profit organization offering many programs on bicycle education, enforcement and safety awareness. For more information, visit: http://www.ibike.org/education/safety-programs.htm.
   Additional safety information is available through the DBPT website at:
   http://www.ncdot.gov/bikeped/safetyeducation/

3. **Bicycle Rack Initiative**
   This Plan recommends bicycle racks at a number of strategic destination points throughout the City. For a complete listing of those locations, see **Section 6.2** and refer to the **Proposed Routes & Facilities Map** in **Section 7.**

   Increased availability of bike parking encourages the use of bicycles. A Bicycle Rack Initiative includes initial installation of bike racks (and lockers), a Request a Rack Program, and other complementary programs such as Ride & Play.

   After the City initially installs bicycle racks, as recommended in the Bicycle Plan (See **Section 4.2 Corridor Recommendations**, **Section 5.13 Facility Standards & Guidelines**, and **Section 7: Proposed Routes & Facilities Map**) the Request a Rack Program allows commercial businesses, offices and industries without adequate bicycle parking to request a bike rack and installation at a shared cost with the City (or at no cost for non-profit organizations). Bicycle racks are installed at the request of the property owners. Requests are made using a form that includes information on Bicycle Rack Placement requirements and considerations.

   A Ride & Play program rewards those who shop and visit area businesses on bike. By presenting a Ride and Play card on a cycle visit to participating businesses, cyclists can receive discounts and special services.

   For sample forms and more information about bicycle rack initiatives, see:
   http://www.1800234ride.com/wpbtmi/bikeinitiative.html

NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) website has many additional education, encouragement and enforcement program ideas and resources to help promote bicycling and educate drivers, pedestrians and cyclists on safe practices. Some of the initiatives featured at their website include:

- Bicycle Helmet Initiative
- Share the Road Initiative – including license plates and posters
- Information guidebooks and manuals for public education
- Safety education materials

See details at: http://www.ncdot.org/bikeped/safetyeducation/

Bicycle Safety Enforcement

Bicyclists share the full rights and responsibilities on the roadway as motor vehicle drivers and are subject to the same regulations. 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.
- Wear a bicycle helmet on public roads, public paths and public rights-of-way if the bicyclists is under 16 years old
- Secure child passengers in a child seat or bicycle trailer if under 40 pounds or 40 inches

For the complete set of North Carolina laws related to the operation of bicycles, plus other information on the rights of bicyclists on the road, and other guidelines, see
http://www.ncdot.gov/bikeped/lawspolicies/laws/

The League of American Bicyclists

The League was founded in 1880 as the League of American Wheelmen. According to the League, bicyclists, known then as "wheelmen", were challenged by rutted roads of gravel and dirt and faced antagonism from horsemen, wagon drivers, and pedestrians. In their effort to improve riding conditions, more than 100,000 cyclists from across the United States joined the League to advocate for paved roads. The success of the League in its first advocacy efforts ultimately led to our national highway system.

Today the League offers a number of programs, including the Bicycle Friendly Community program (see: http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/),
and numerous educational opportunities: http://www.bikeleague.org/programs/education/

Section 5: FACILITY STANDARDS & DESIGN GUIDELINES

Any road, bridge, tunnel or trail is potentially a bicycle facility. To varying degrees, bicycles will be ridden wherever they are permitted (limited access highways being one example of where they are not). Each of these facilities should therefore be designed, constructed and maintained with bicyclists in mind. However, as most road facilities are designed to accommodate motorists as well, safety precautions must be made in their design and in their use if they are to be safely shared.

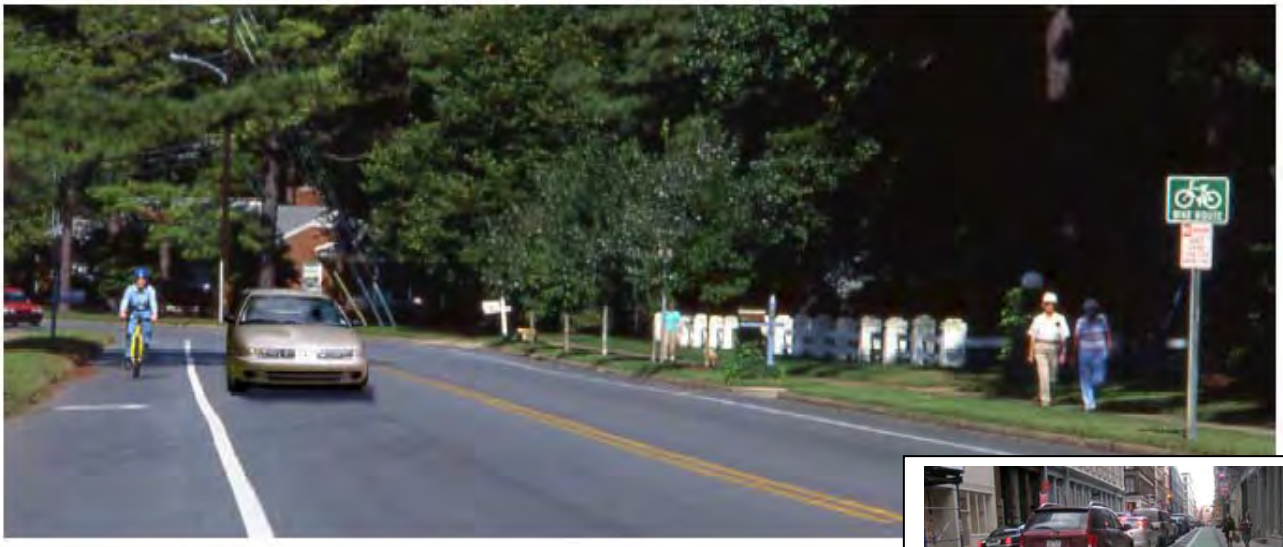
There are various design strategies for making roads and trails safe for the various types of users that share them. The selection of these strategies depend upon a number of key factors, including the width of pavement, the width of right-of-way, the design speed and posted speed limit, the average amount of daily traffic, and the function and setting of the facility.

NCDOT adheres to AASHTO, MUTCD and the North Carolina Bicycle Facilities Planning and Design Guidelines. Not all guidelines provided in this document (e.g. NACTO) are correspondingly recognized in AASHTO and/or MUTCD, so certain treatment proposed in this resource may not be permitted on state roads.

Typical strategies intended to guide motorists, bicyclists, and pedestrians into safe shared use of the roadway involve a combination of these main design elements: pavement, striping, signage, and lights.

CONTENTS:

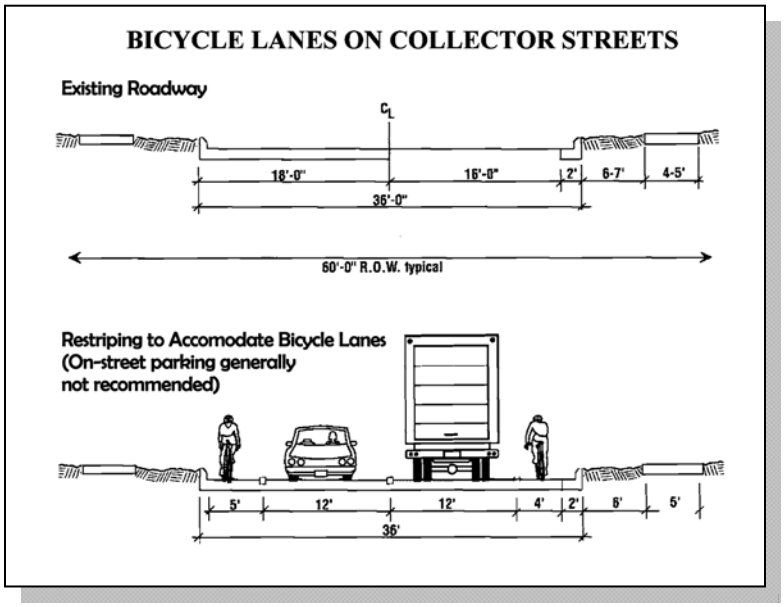
5.1 Striped Bicycle Lane & Road Dieting



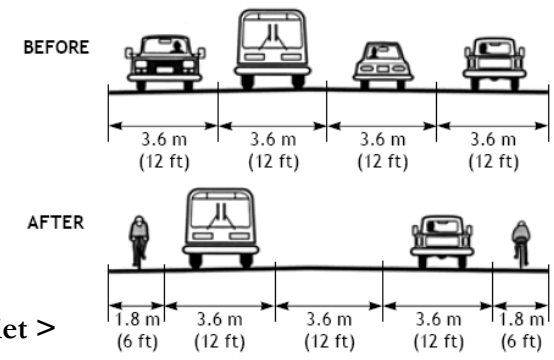
Description:
A portion of a road reserved for preferential or exclusive use by bicycles through striping, signing, and pavement markings at least four feet wide, not including concrete gutter pan.

Recommended for:

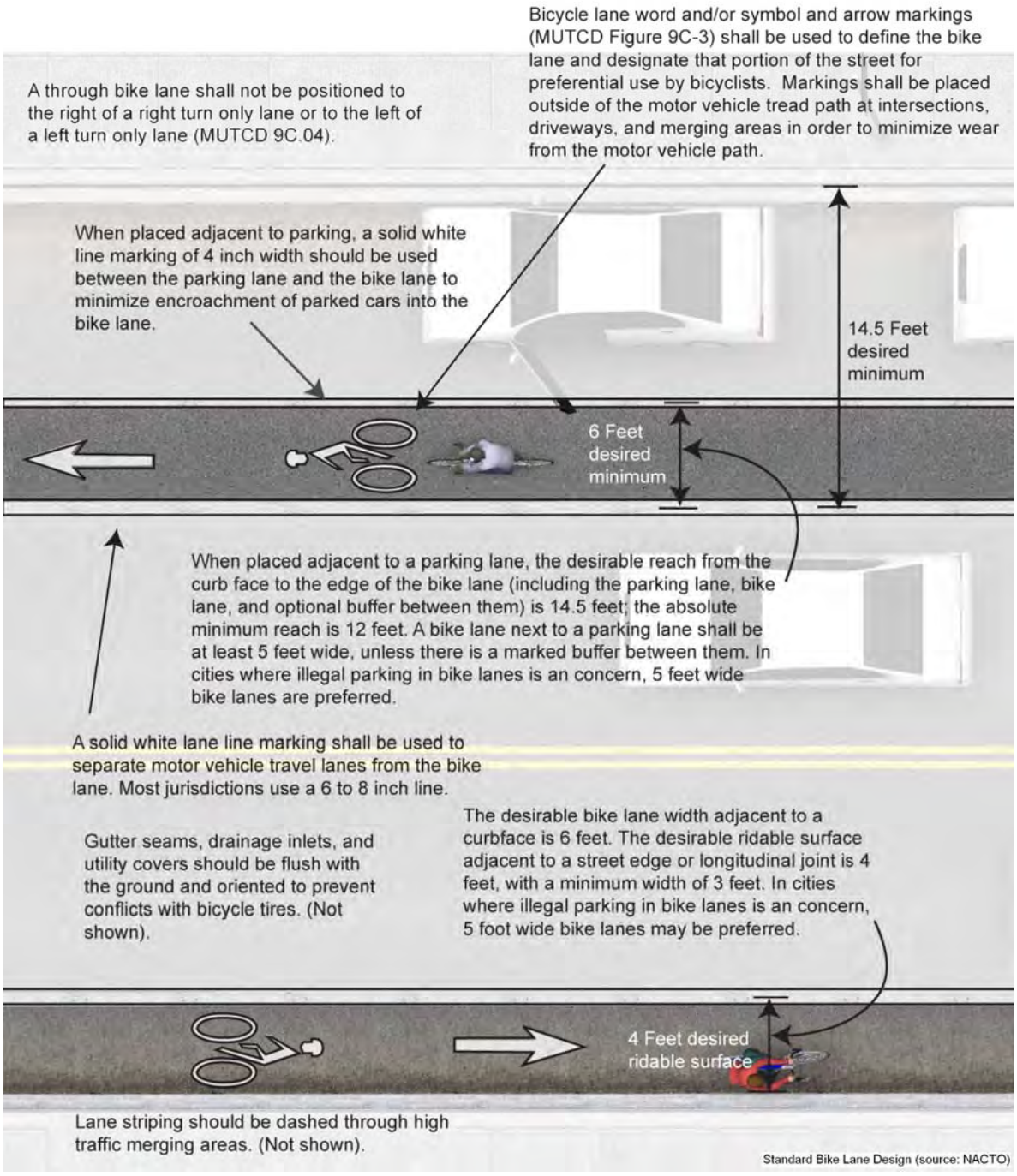
- Urban roads with curb and gutter
- Med. to high volume collector and arterial roads with curb and gutter



Road Dieting
Some streets can be retrofitted to allow sufficient width for bike lanes. This action requires evaluation of current lane widths, traffic volumes, and street classification. See more at:
http://www.smartgrowthonlineaudio.org/np2007/310c.pdf



Typical road diet >



Note:

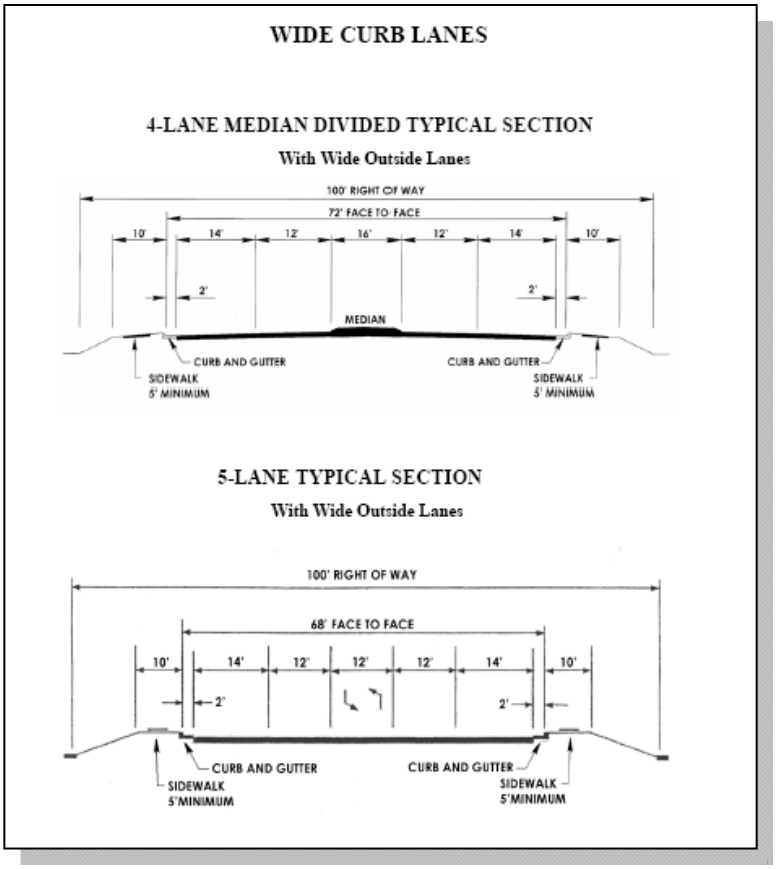
- Standards vary. NCDOT requires a 13 to 15 ft. width from curb face to outer edge of bike lane, when bike lanes are adjacent to parking.
- Bike lanes are generally not suitable along streets with a high number of commercial driveways.
- For more information on bicycle lanes and bicycle lane/intersection design, see: http://www.ncdot.org/bikeped/download/bikeped_projdev_Facil_Planning_Guide_Chapter-5.pdf

5.2 Wide Outside Lane (WOL)

Description:
Wide outside lanes are comprised of extra width on a widened through lane closest to the curb and gutter. They allow motorists to move safely past slower moving bicyclists without changing lanes. Dedicated right turn only lanes are not used for wide outside lanes.

Recommended for:

- Four-lane roadways divided by a median or a center turn lane
- Low to medium volume local collector roads
- Wide roadways with curb & gutter where bike lanes are not feasible



5.3 Paved Shoulder

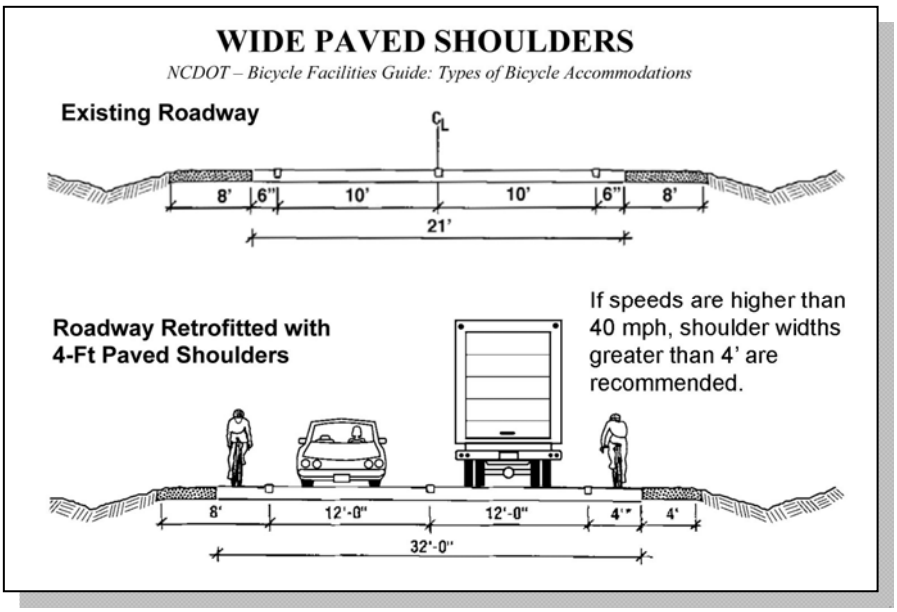
Description:
A paved shoulder is that part of the highway that is adjacent to the vehicle lanes of the highway on the same level. A wide paved shoulder features at least 4 feet of additional pavement width in order to more safely accommodate bicycles. A four-foot wide shoulder can be striped as a bike lane with a bicycle logo installed on the lane.

Recommended for:

- Rural roadways
- Secondary roads without curb & gutter with a limited number of driveways and intersections

Note:

- For roadways with speeds higher than 40mph and high ADT, wider shoulder widths are recommended.
- If rumble strips are installed, wide paved shoulders must maintain an unobstructed 4' width of bike accommodation.

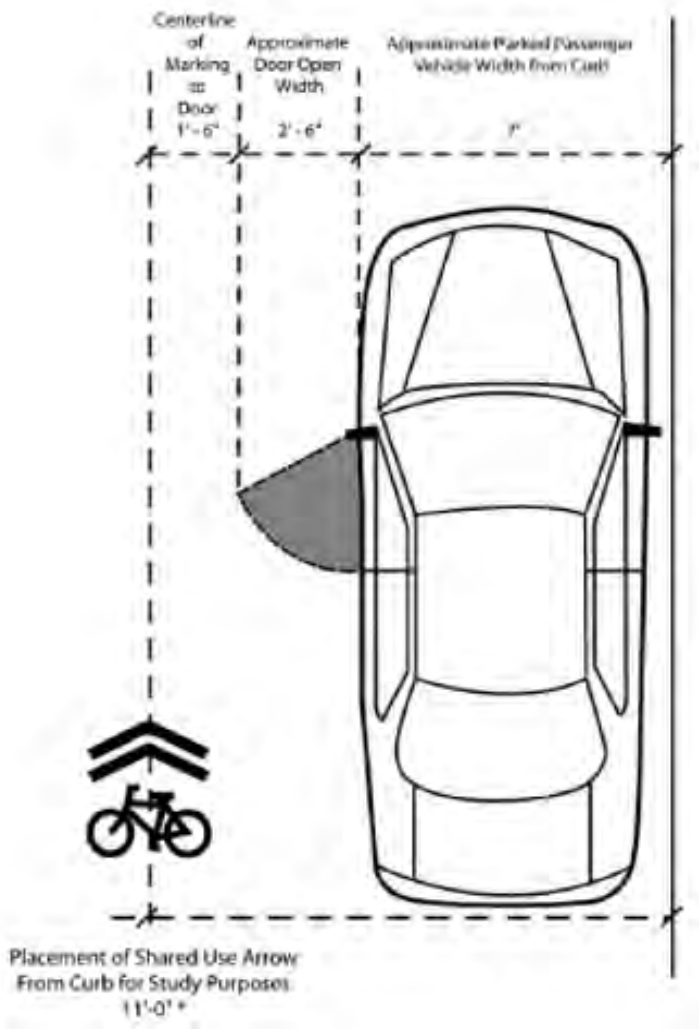


5.4 "Sharrows" & Bicycle Boulevards

Shared Lane Markings

Also known as SLMs, or "sharrows", these striped road markings indicate a shared lane environment of bicycles and motor vehicles. The sharrow lane marking is not a facility type, as it does not designate a particular part of the roadway for the exclusive use of bicyclists. But they have a variety of uses to support a bikeway network:

- Alerts drivers to the potential presence of bicyclists and shows the lateral position bicyclists are likely to occupy within the street.
- Indicates the safest path for bicycle users through difficult or hazardous situations, such as adjacent to parked cars, or through busy or complex intersections.
- Provides wayfinding along bike routes.
- Advertises the presence of bikeway routes to all users.



Design Considerations:

- Maximum speed for sharrow use: 35 mph.
- In locations without on-street parking, sharrows should be placed 4 ft. from curb face or edge of pavement.
- The frequency of markings along a street should correspond to the difficulty bicyclists experience taking the proper travel path or position. Sharrows used to bridge discontinuous bicycle facilities or along busier streets should be placed more frequently (as little as 50 feet) than along low traffic bicycle routes (250 feet or more).

Bicycle Boulevards

Bicycle boulevards are shared roadway facilities along low-volume streets that have been optimized for bicycle travel through traffic calming and diversion, signage and pavement markings, and intersection crossing treatments. For information on Bicycle Boulevards, see: http://www.bicyclinginfo.org/faqs/answer.cfm?id=3976

Typical Applications for Sharrows:

- Adjacent to parallel parking: sharrows can help keep bicyclists out of the "door zone."
- Where lanes are too narrow for striping of bike lanes
- Across signalized intersections, particularly through wide or complex intersections where the bicycle path may be unclear
- Along roadways with bike lanes
- Across driveways and Stop or Yield controlled cross-streets
- Where typical vehicle movements frequently encroach into bicycle space

Intersection Crossing Markings

Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection, and provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.

Sharrows at an intersection (requires NCDOT approval)

Use of sharrows in critical intersections raises awareness for both bicyclists and motorists to potential conflict areas. White dashed markings without sharrows may serve as adequate warning in areas where cyclists/motorist conflicts are not a major concern. White dashed markings minimize undue materials and maintenance costs. However, for areas where conflicts may be of greater concern, use of the sharrows may be a preferred option.

Sharrows in intersections are intended to indicate that through bicyclists have priority over turning vehicles or vehicles entering the roadway (from driveways or cross streets). Sharrows can also guide bicyclists through the intersection in a straight and direct path. In T-intersections, sharrows at only the front of the intersection may be necessary.

5.5 Median Refuge Island

Median refuge islands are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings. On two-way streets, crossings are facilitated by splitting movements into two stages separated by the direction of approaching vehicle traffic. For bicycle facility crossings of higher volume or multi-lane streets, increased levels of treatment may be desired, such as bicycle signals.

Median Refuge Island at intersection

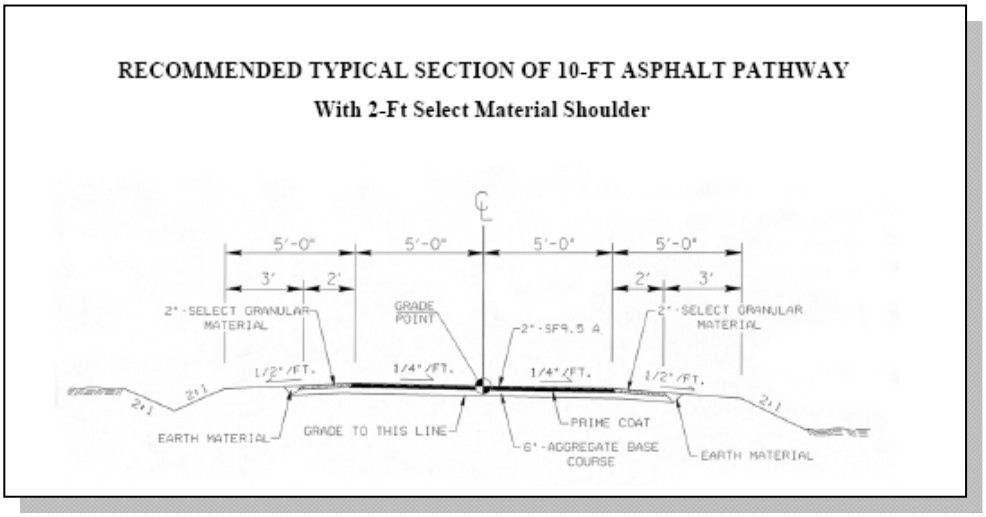
Mid-block Median Refuge Island

5.6 Shared-Use Path

The Gateway Trail in Kings Mountain

Description:

A pathway physically separated from motor vehicle traffic, within highway right-of-way or private easements or right-of-way. Multi-use pathways include bicycle paths, rail to trails or other facilities built for bicycle and pedestrian traffic. Travel surface is ten feet wide, with two-foot shoulders on either side. Total facility width is usually 20 feet.



Recommended for:

- Floodplains, sewer easements, public land
- Scenic corridors where easements or right-of-way may be obtained

Multi-purpose Trails – particularly in and near populated areas - should be composed primarily of pathways that can accommodate a variety of user types, including walkers, runners, bicyclists, and other non-motorized users. These multi-purpose paths must meet certain design criteria to simultaneously accommodate these different needs. Clearance dimensions are critical. Width of pavement should be maintained at ten feet, with two feet improved shoulders on both sides. Deviations for very short distances may be acceptable when existing conditions do not physically permit standard trail width, but paved trail surfaces must maintain at least 6 ft. in width to allow accessibility for maintenance equipment (ATV type). Pavement types may vary between conventional or pervious concrete, asphalt or crusher fines. Maximum slope shall not exceed 8%. Maintain a vertical clearance of 10 ft. (8 ft. minimum). All trails should be maintained with a 5 ft. cleared area from the edge of the trail on each side. Trails should be pitched to drain with a 2% minimum grade. Paving materials may vary in specific locations.

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

Trail/Roadway Intersections

Intersections between shared use paths and roadways require great care to ensure a balance of safety, convenience and comfort. Trail users prefer not to make frequent stops at every driveway and intersection, especially where crossing traffic volumes are minor. But dangerous conflicts between motor vehicle traffic and trail users must be avoided.

Pavement marking and signs at intersections should direct users to cross at clearly defined locations and warn them that crossing traffic should be expected. Familiar signs and marking as those used on roadways (STOP and YIELD signs, stop bars etc) should be used on trails as needed. In addition, flashing warning lights, zebra-style or colored pavement crosswalks, raised crosswalks, signals, and neck-downs/curb-bulbs may also be needed in some instances, though these can be costly facilities to install and maintain. See the example of a Motion Activated Warning System in **Section 5.12: Signalization**.

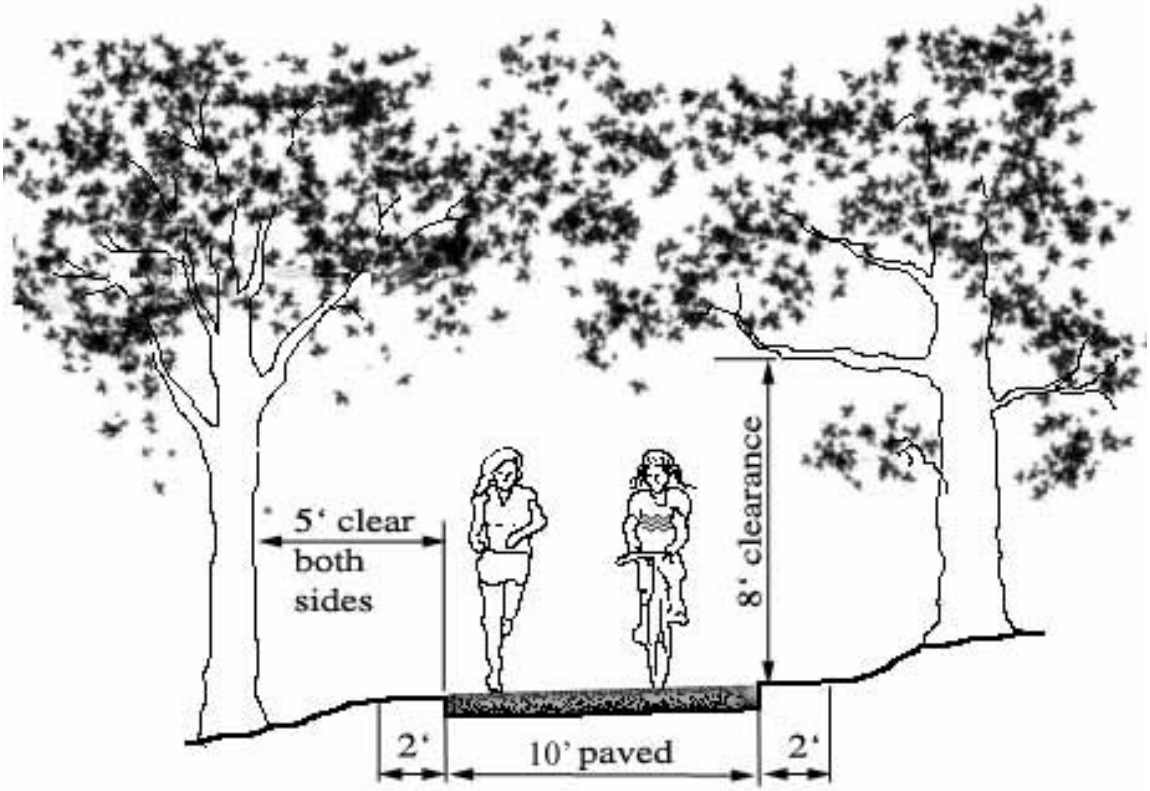
For more information, see:
http://www.bicyclinginfo.org/engineering/paths-principles.cfm

Elements of trail planning:

- Context: cultural and geographic
- Destinations and access
- Adjacent land use
- Environmental concerns
- Utilities
- Public involvement
- Coordinating agencies/permitting
- Maintenance

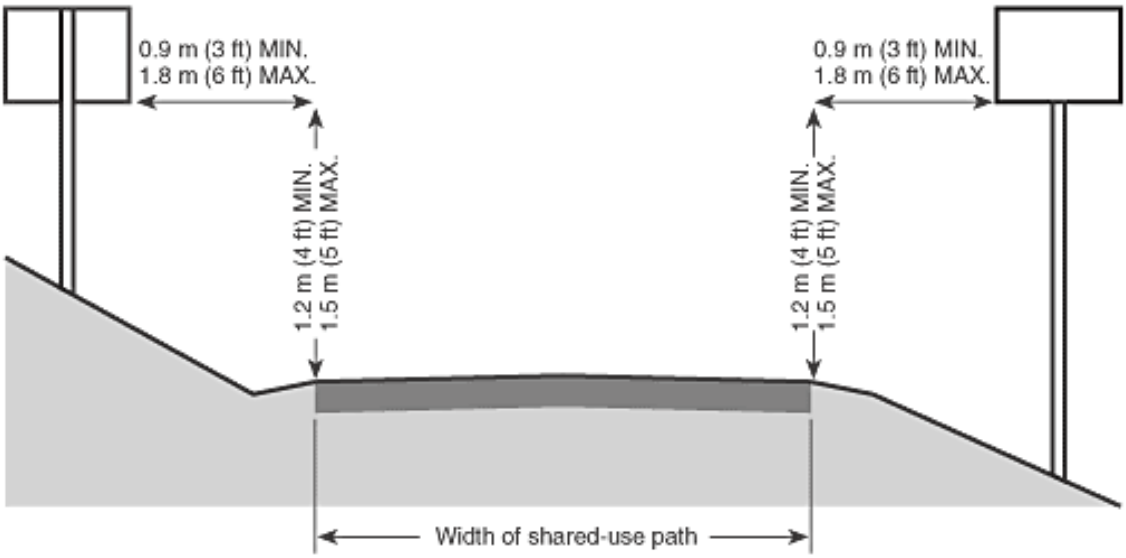
Elements of trail design & construction

- Land acquisition
- Clearing & demo
- Grading
- Trail layout
- Typical sections
- Accessibility
- Intersection crossings
- Signage
- Landscaping
- Structures
- Furnishings



Shared-use path typical cross-section

Figure 9B-1. Sign Placement on Shared-Use Paths

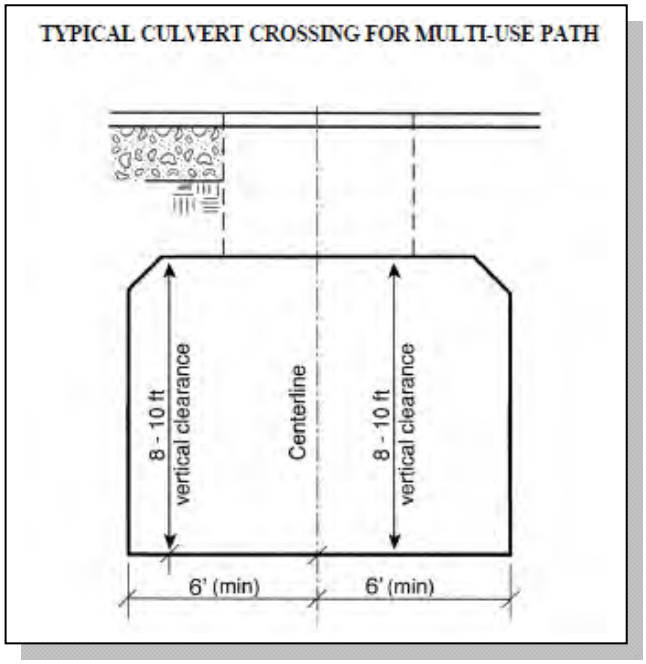


From the Manual of Uniform Traffic Control Devices

5.7 Grade-Separated Crossing & Drainage Grates

Description:
Grade-separated crossings can be a bridge or an underpass that provides continuity of a bicycle/pedestrian facility over or under a barrier. These facilities may be specially constructed, or make use of an existing culvert or vehicular bridge.

Grade-separated crossings can be expensive and difficult to implement. For these reasons, advance planning, identification of a source of funds, and a compelling purpose and need are primary factors in obtaining approval for construction.



Recommended where:
A bicycle route meets a barrier, but continuity is critical and well justified. Barriers may include high volume multi-lane roadway, an active multi-track railroad, a stream, or an environmentally sensitive wetland

Potts Creek under US 74

Bridge Rail Retro-fit

Bridge rails and bridge rail retrofits must meet Federal Highway Administration (FHWA) standards. Bicycle-safe bridge railings are to be used on bridges where protection of bicyclists is deemed necessary. Such rails must be in accordance with the American Association of State Highway and Transportation Officials (AASHTO) specifications and in accordance with FHWA guidelines. The required minimum height of a railing used to protect a bicyclist is 48 inches, measured from the top of the riding surface to the top of the rail. In cases where existing railings are below this height, consideration should be given to retrofitting an additional bicycle railing to the top, bringing the total height to 54 in.

The FHWA Bridge Division is available to assist when details for raising rail heights are required. For further guidance, visit:
http://www.ncdot.org/bikeped/download/bikeped_projdev_Facil_Planning_Guide_Chapter-4.pdf

Rails on some Kings Mountain highway overpasses - such as Canterbury Road over I-85 (pictured here) - do not currently meet FHWA height standards for bicycle use.

FHWA approved highway overpass
(N. Piedmont over NC 74)
featuring high railing, sidewalks, and paved shoulders

Drainage Grate Design

It is critical for bicyclists, that drainage grate slots along road curbs be perpendicular to the travel path so that bicycle wheels will not snag.
For detailed information, refer to:
http://www.ncdot.gov/bikeped/projectdevelopment/drainage_grate_design/

5.8 At-Grade Railroad Crossing

At-grade railroad crossings pose two common problems for bicycle traffic. First, if the tracks cross the roadway at less than 45 degrees, a bicyclist's front wheel may be diverted by the rail or trapped in the flangeway, causing loss of steering control. Second, a rough crossing – at any angle – may cause wheel damage or may cause a bicyclist to crash.

Angled crossings

Where railroad tracks cross roads or bikeways at-grade at an acute angle, consideration should be given to the following design options:

1. As shown in **Figure 4-2**, widening the approaching roadway, bike lane or shoulder will allow the bicyclist to cross at approximately 90 degrees without veering into the path of vehicular traffic. Widening should be no less than 6 feet (8 feet optimal).
2. On low-speed, lightly-travelled railroad tracks, commercially available flangeway fillers can eliminate the gap next to the rail (**Figure 4-3**). The filler normally fills the gap between the inside rail bed and the rail. As a train wheel rolls over it, the flangeway filler compresses. This solution, however, is not acceptable for high-speed rail lines, as the filler will not compress fast enough and **the train may derail**.
3. In some cases, abandoned tracks can be removed, eliminating the problem.
4. If no other solution is available, warning signs and pavement markings should be installed in accordance with the MUTCD. While there is no approved sign for this specific situation, a W11-1 warning sign with an appropriate sub-plate message (e.g., BIKES CROSS AT RIGHT ANGLE) may provide sufficient warning for bicyclists.

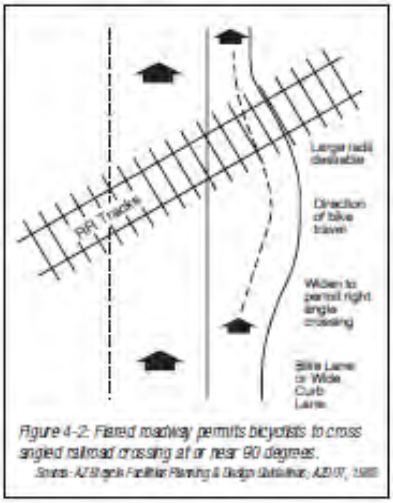


Figure 4-2: Flared roadway permits bicyclists to cross angled railroad crossing at or near 90 degrees.

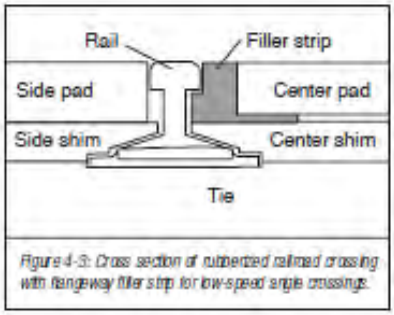


Figure 4-3: Cross section of rubberized railroad crossing with flangeway filler strip for low-speed angle crossings.

Rough perpendicular crossings

Rough or uneven perpendicular crossings can also cause control problems and equipment damage for bicyclists. When regular maintenance does not solve the problem, the best long-term solution may be to install a rubberized crossing (**Figure 4-4**). Such crossings generally consist of a concrete base with a rubberized surface. While these are relatively expensive to install, there are significant savings in long-term maintenance costs because of their stability.

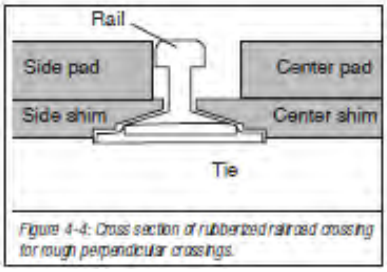
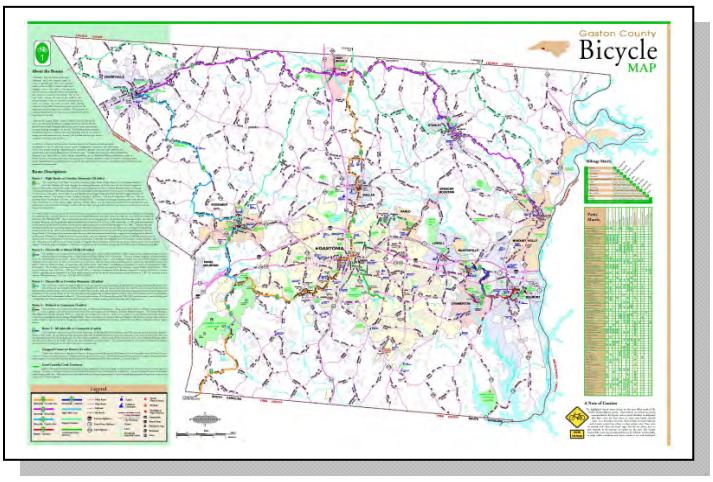


Figure 4-4: Cross section of rubberized railroad crossing for rough perpendicular crossings.

5.9 Bicycle Route

Description:

The MUTCD defines a designated Bicycle Route as "a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route signs, with or without specific bicycle route numbers." A Route can be made up of a variety of on-road and off-road facilities. Routes ideally form closed loops and interconnect with other routes. Factors to consider in design include: traffic volumes, speed limits, roadway width, roadway condition, grade, curvature, etc.



Recommended for:

- Low speed and low volume roads
- Areas of scenic, historic or recreational interest
- Connection of multiple destinations of interest
- Connection with regional or state bike routes

5.10 Signage

The various kinds of signage serve various functions. **Warning and regulatory signage** can alert drivers to reduce speeds and to warn bicyclists to use extra caution. **Directional signage** gives bicyclists the information they need to navigate safely on and off-road. **Wayfinding signage** provides direction to specific destinations or guides bicyclists as they use special bicycle routes.

Too much signage, however, can produce visual "clutter" and can encourage complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance. The distance is dependent upon the road speeds. It is imperative that all signs be properly located so as not to obstruct bicyclists or pedestrians, and the visibility triangles of motorists.

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

It is recommended that municipalities adopt consistent and descriptive graphics to identify bicycle routes. This signage system would assure bicyclists that they are safe and will not encounter gaps in facilities along these routes.

Maintenance of signage is as important as other facility maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for bicyclists.

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

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

Figure 9B-2. Regulatory Signs and Plaques for Bicycle Facilities

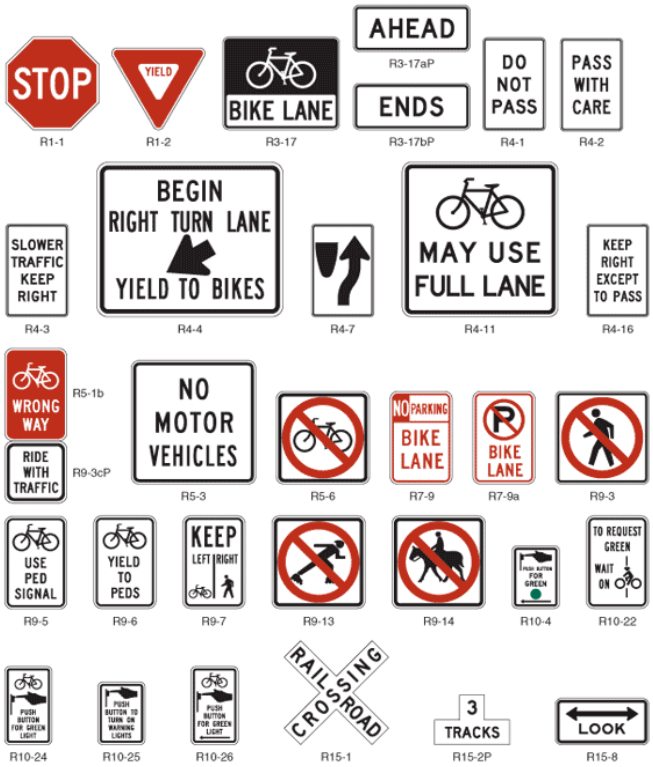
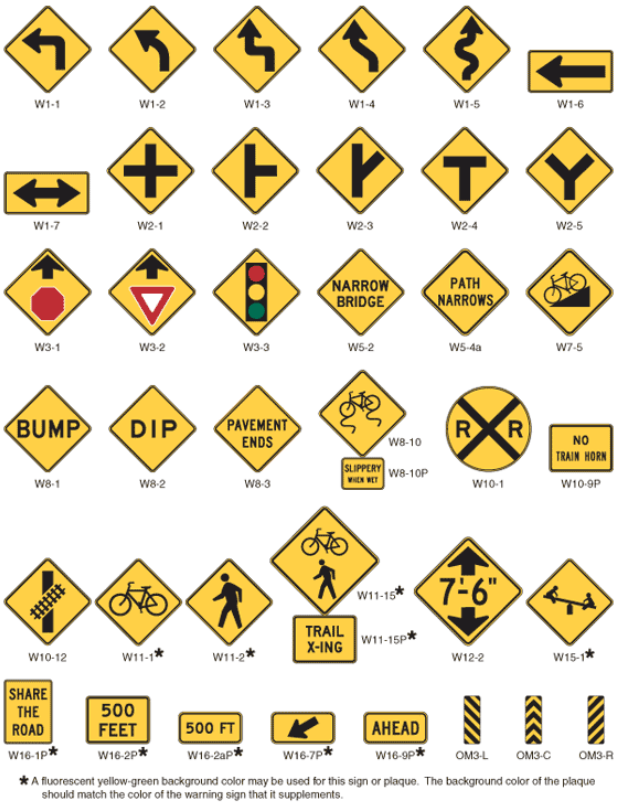


Figure 9B-3. Warning Signs and Plaques and Object Markers for Bicycle Facilities



Regulatory Signage

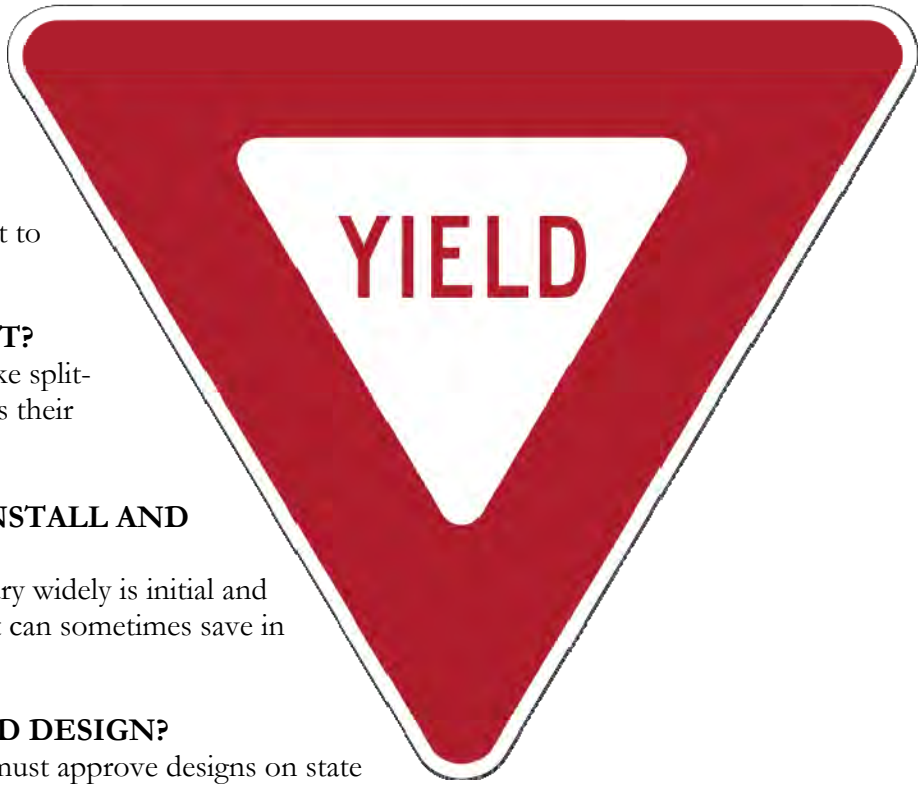
Direction & Warning Signage

Share the Road

This sign helps make motorists aware that bicyclists might be using road, and that they have a legal right to it. It is typically placed along roadways with high levels of bicycle usage but relatively unsafe conditions for bicyclists. The "Share the Road" sign is especially useful where a significant number of bicyclists use a roadway that by its nature is not designated as a bicycle route, but which is an important connection for bicycle transportation. For additional information, see:
http://www.ncdot.gov/bikeped/safetyeducation/signing/

DESIGN & PLACEMENT

Strategies for signage designs are constantly being updated, but when selecting the optimal design for a particular segment of road or trail, it is prudent to consider the following questions:



IS IT VISIBLE?
How far distant must the warning be apparent to users travelling at various speeds?

IS IT RECOGNIZABLE?
Will drivers and bicyclists know what to do when they see it?

DOES IT COMMAND RESPECT?
Drivers and bicyclists constantly make split-second decisions about what requires their attention and what can be ignored.

IS IT COST EFFECTIVE TO INSTALL AND MAINTAIN?
Safety improvement elements can vary widely is initial and ongoing costs. Higher costs upfront can sometimes save in the long run.

IS IT AN ALREADY APPROVED DESIGN?
NC Department of Transportation must approve designs on state roads. Standard signage is often more recognizable.

DOES IT FIT THE CHARACTER OF THE LOCATION?
Some strategies are more suited to urban versus rural settings, etc.

IS IT EXCESSIVE?
Are the users visually overloaded with an excessive amount of warning indicators?
Are the rights and needs all user types taken into account rationally and fairly?
Is the precaution necessary?

5.11 Striping

Pavement markings are used to make bicycling safer. Generally the markings are used to designate lane separation, indicate an assigned path or correct position for the bicyclist, and for information about upcoming turning and crossing maneuvers. The *Manual of Uniform Traffic Control Devices* (MUTCD) is the national standard for all pavement markings. Part 9 focuses on "Traffic Controls for Bicycle Facilities."

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

Care in the placement of painted markings will increase their longevity. For example, avoid placement of markings near driveways or other locations, particularly those with high truck traffic, to avoid wear from tires.

5.12 Signalization

Signals, or traffic control devices, affect all users of an intersection; therefore, they should be designed with vehicles, bicycles and pedestrians in mind.

Most traffic signals are installed based on vehicular traffic considerations, but some high-volume pedestrian circumstances warrant traffic signals themselves. Judgment must be used on a case-by-case basis. For example, the immediate presence of parks, recreational paths, or schools, increase demands. There may also be latent demand if a destination is not currently accessible, but could become so with new facilities or redesign.

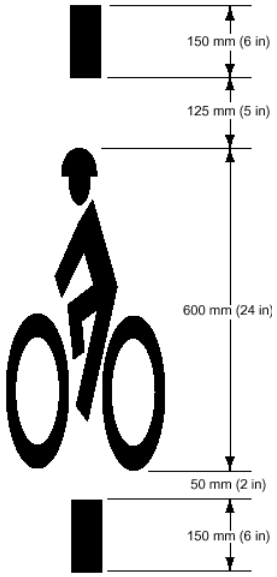
Countdown signals
Though primarily a pedestrian safety measure, countdown signals can also aid cyclists by warning them of the amount of time available to cross an approaching intersection. They also let stopped cyclists know how much time they have to rest and make adjustments.

Traffic signals can, however, inadvertently lead to an increase in accidents. Excessive delays caused by poorly timed signals may incite unsafe behaviors in all user types. Another common design flaw that can be particularly dangerous for cyclists involves signal actuator mechanisms.

Actuator Loops
Most traffic lights are now actuated by loops of electrical wire buried in the pavement. The loops operate as metal detector antennas, sensing the presence of vehicles overhead. But these devices work very unreliably for bicyclists particularly for bicycles with nonmetallic wheels and a nonmetallic frame, and most bicyclists do not even know what they are or how to trigger them. Often, the loops are buried under a new layer of pavement and invisible.

One solution is to turn up the sensitivity at the signal control box until the actuator will detect a bicycle traveling along the loop wire, and to mark the location wire with the MUTCD symbol and sign shown here. The actuator loop can also be arranged in a "quadrupole" pattern or "California D-type" loop, which is more sensitive directly overhead while avoiding false triggering from adjacent lanes.

R10-15



MUTCD traffic sensor symbol

For information and standards regarding pedestrian signals for crosswalks, refer to the MUTCD, chp. 4E: PEDESTRIAN CONTROL FEATURES. Part 4 of the MUTCD has complete information regarding the installation of highway traffic control signals.

Motion Activated Warning Systems

These systems can serve where off-road trails intersect roadways. When triggered by trail activity, these devices flash warning beacons to signal approaching motorists of trail users near the intersection, without altering the existing flow of traffic. As cyclists on the trail approach the intersection, instead of having to get off the bike and press a button (which cyclists are unlikely to do), the motion-sensor will pick up the approach and trip the yellow flashing light, directed toward the cars. A red flashing light is directed toward the trail, warning cyclists and pedestrians to stop. This solution is ideal for mid-block crossings or intersections. Active warning systems are more effective than 24-hour flashes that motorists come to ignore over time. Drivers will know that the yellow light will be blinking ONLY when a cyclist is approaching the intersection (therefore they are far more likely to obey the signal).

Such devices can be equipped with trail counters to provide data of trail use. Solar energy with battery backup systems can be used to power the signal.

For an example of this system, visit www.crossalert.com, or see a video of the signal:
http://www.crossalert.com/movie/index.html

Motion Activated Warning System

5.13 Bike Racks

Bike racks encourage bicycle usage by providing security for bicycles at destinations where bicyclists choose to park their bikes. The presence of a bicycle rack can encourage potential riders to a location.

Design Considerations:

- Rack designs can vary widely, but should be attractive to encourage use by cyclist and property owners.
- Racks must allow the bike frame and wheel(s) to be locked securely.
- Racks must support the bicycle frame and not hold the wheel.
- Racks should be built from heavy duty, weather & tamper resistant materials.
- Most racks are misused to some degree. Look for racks that provide the same opportunity for security whether the bike is on the end or middle of the rack.
- Locate racks next to entrance doors and in line of site of a window.

5.14 Street Lighting

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

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

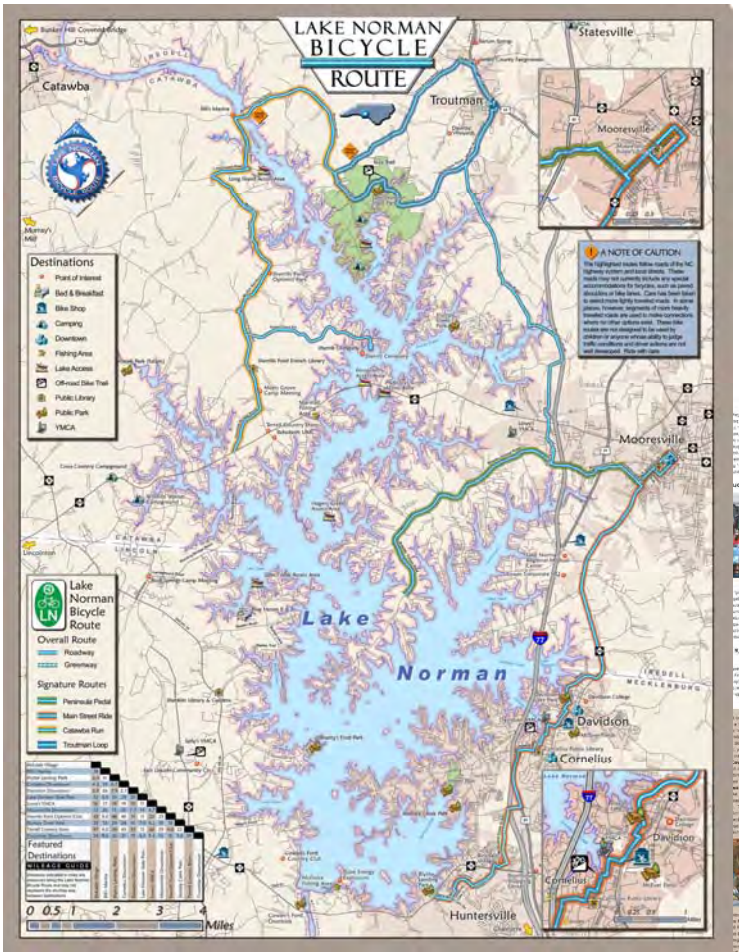
Style
Light fixtures, as well as other on-street facilities, like street furniture, can add much in terms of street aesthetics and reinforce community identity. The Plan recommends using a particular style of street lighting fixture appropriate for the City's identity and coordinate this choice with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

5.15 Bicycle Maps

One of the most common questions a bicyclist asks is "where can I safely ride my bike"? A good bicycle map will answer this question. Bicycle maps can provide information to guide novice cyclists to less-traveled routes, help an experienced cyclist get around unfamiliar parts of town or identify suitable routes for touring cyclists. A bicycle map can be a tool to promote alternative transportation, improve cyclists' safety, or provide a guide to recreational opportunities.

Bicycle mapping and signing projects provide a low-cost way to improve the safety of cyclists by directing them to roads that are more suited for bicycling. Bicycle maps can also make an excellent tool for promoting bicycling.

Map Content
Bicycle maps can vary widely to suit promotional purposes and to represent the character of the community. However, bicycle maps should convey the following basic information:



- Map scale and north arrow
- Designated routes shown graphically
- Text description of each route
- Prominent destinations and points of interest along routes
- General local history
- Bicycle riding tips and safety information

5.16 On-street Parking

On-street parking is essential to downtown business and helps make streets friendlier for pedestrians. But it also helps to calm traffic. Drivers tend to slow down when they sense potential conflict with vehicles suddenly moving into the traffic lane. On-street parking can be easily monitored and controlled, and can provide a source of revenue.

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

1. **Parallel parking** permits drivers a clear view of oncoming traffic. And it requires the least amount of additional right-of-way depth to accommodate parked cars. It is also most favorable for pedestrians.

2. **Diagonal or angle parking** allows a greater ease in maneuvering into a space with fewer steps than parallel parking, but it is the most accident-prone on-street parking arrangement commonly used, as it requires a person leaving a parking space to back out into traffic, often without a good view of approaching cars, pedestrians or bicyclists. **Back-in diagonal parking** requires additional maneuvering skill but provides some advantages over back-out diagonal parking:
    i. Children are directed to the sidewalk and shielded by the door.
    ii. Easier to unload and load trunk at the sidewalk.
    iii. Sight visibility is improved for drivers and cyclists.

3. **Perpendicular parking** has many of the disadvantages of angled parking but requires the even more depth in right-of-way.

Resources

North Carolina Bicycle Facilities Planning & Design Guidelines
North Carolina Department of Transportation
Division of Bicycle & Pedestrian Transportation (DBPT)
1 Wilmington St., Raleigh, NC 27601-1453
http://www.ncdot.gov/bikeped/

Manual on Uniform Traffic Control Devices (MUTCD)
Published by the U. S. Department of Transportation
Washington, DC, 2009.
Available at http://mutcd.fhwa.dot.gov

NACTO Urban Bikeway Design Guide
Part of the Cities for Cycling initiative to provide state-of-the-practice solutions to help create complete streets that are safe and enjoyable for bicyclists.
National Association of City Transportation Officials (NACTO)
1301 Pennsylvania Ave. NW #350, Washington, DC 20004
nacto.org

Guide to the Development of Bicycle Facilities
The American Association of State Highway Transportation Officials (AASHTO)
Available from AASHTO at www.aashto.org/bookstore/abs.html

bicyclinginfo.org
Pedestrian & Bicycle Information Center
and
BIKESAFE
U.S. Department of Transportation Federal Highway Administration (FHWA)

Section 6: PROJECT RECOMENDATIONS

6.1 Proposed Projects List

The Comprehensive Bicycle Plan contains both general recommendations for policy and infrastructure changes, as well as recommends specific bicycle facility projects. These facility projects include striped bicycle lanes, wide outside lanes, paved shoulders, off-road multi-purpose trails, bridge and tunnel crossing improvements, all associated facilities, and project segments that require only bicycle-related signage. Each of the projects is signified by project number on the **Proposed Routes & Facilities Map** found in **Section 7**. Many of the recommended projects are referenced in **Section 4.3: Focus Areas**, which describes their context in more detail.

The **Proposed Projects List** describes each of the individual projects in the following terms:

Location – including the street name or project name, project number, geographic starting and ending points

Improvements – describes the project's purpose in terms of context or need served, the existing conditions and pavement width, the proposed facility type, specific actions required to create the facility, and a cross-sectional description of lane striping. The lanes are illustrated in terms of standard vehicular travel lanes (L) and center lanes (CL), parallel parking lanes (PP), and bicycle lanes (BL).

Costs – The length of each project segment is provided in units of feet and mileage. The unit cost of construction is listed and factored with the facility length to derive the project construction cost. An estimate of the annual project upkeep is also provided. All costs are based upon estimates current with publication of this plan.

Funding – Each project is designated according to its eligibility for funding for potential sources. If a project follows the adopted Carolina Thread Trail plan, it may make a good candidate for future Thread Trail grants. Projects that fall within the radius of eligibility of a Safe Routes to School qualifying school are indicated (only a small number of projects do not). Projects eligible for CMAQ and Powell Bill funds are also indicated.

Ranking – Project prioritization is an important component of this plan. The process of prioritization is described in **Section 6.2**. Projects are ranked as High, Medium or Low, according to the total points they received in the scoring process. Scoring is based upon the votes it received from the steering committee and the public, as well as how well the project satisfied publicly determined values including: safety, linking key destinations, scenic value, improving school commutes, and improved links across significant barriers or system gaps.

Each of the facility projects are recommended in this plan is described in detail in the **Proposed Projects List** and depicted on the **Proposed Routes and Facilities** map in **Section 7**. The ten highest ranked projects - based upon their total project scoring points - are listed below. Each of these projects received a total project score of greater than ten points.

LOCATION		IMPROVEMENTS		COSTS			RANKING
		Proposed Facility	Recommendations	Distance		Construction $ Estimate	Project Scoring
Street/Project Name	Proj. No.		(Proposed Actions)	feet	miles		Total points
Battleground	W1	WOL	Signage only	1280	0.24	$500	11
Battleground	W2	WOL	Widening, grading	2440	0.46	$231,061	11.5
Beason Creek	T2	Trail	Trail	4600	0.87	$653,409	12
Cleveland	L4	BL	Restriping, median, trees	3340	0.63	$474,432	14
Kings Mountain	P12	PS	Signage only	9830	1.86	$1,862	11
Mountain	L7	BL	Restriping	1950	0.37	$5,540	13
N. Elementary	T9	Trail, BL	Trail, Striping	2300	0.44	$392,045	12
Potts Creek 1	T10	Trail	Trail	6000	1.14	$852,273	12
Potts Creek 3	T12	Trail	Trail	11,750	2.23	$1,669,034	13
Potts Creek crossing	X4	Bridge	Suspended bridge	500	0.09	$142,045	13

TOP 10 PRIORITY PROJECTS

6.2 Proposed Bicycle Rack Locations

Approximate locations of recommended bicycle racks are indicated on the **Proposed Routes and Facilities** map in **Section 7**. Additional information regarding bicycle racks is located in **Section 5.13**. These locations include:

West Elementary School
Patriots Park
Government Center
Post Office
Grover School
Art Center
Sims Park
Deal Park
East Elementary School
North Elementary School
Citizens Service Center
Country Club
Westgate Plaza
Kings Mountain Plaza
Kings Mountain High School
Kings Mountain Intermediate School
Kings Mountain Middle School
Ridgeline Trail head on York Road

Additional information regarding bicycle racks is located in **Section 5.13**.

KINGS MOUNTAIN COMPREHENSIVE BICYCLE PLAN

PROPOSED PROJECTS LIST

LOCATION				IMPROVEMENTS						COSTS					FUNDING				RANKING									
															Potential Sources				Project Priority	Project Scoring								
Street/Project Name	Proj. No.	From	To	Purpose	Existing Conditions	Pvmt. Width	Proposed Facility	Recommendations	Striping	Distance		Const'n Unit Cost	Construction $ Estimate	Annual Upkeep	CTT	SRTS	CMAQ	Powell Bill	(H) High (M) Medium (L) Low	Total points	Key linkages (yes=1)	Steer'g Cmte. Votes	Public Votes	Safety Value	School links	Destinati on links	Scenic Value 0/1
				Need served or connection made	(Along majority of segment)	feet		(Proposed Actions)	Proposed Layout (west - east)	feet	miles	$ per mile															
2nd, Center & Herndon	S1	N. Piedmont	NC 161	Outer Loop	asphalt	20	Signs	Signage only		5830	1.10	1,000	$1,104	$1,104		●	●		M	**5**	0	0	2	2	0	1	0
Alex D. Owens	P1	York	SR 2443	Outer Loop	asphalt	22	PS	Widening		4000	0.76	300,000	$227,273	$1,515					M	**6**	0	1	0	2	0	2	1
Alex D. Owens	S2	Alex D. Owens	Galilee Church	Outer Loop (CTT)	gravel	16	Signs	pvmt. as needed		3300	0.63	1,000	$625	$625	●				M	**6**	0	1	0	2	0	2	1
Art Center	L1	Ridge	Art Center Trail	Inner Loop	asphalt	0	BL	Striping		850	0.16	15,000	$2,415	$322		●			M	**6**	0	1	0	2	1	2	0
Art Center Trail	T1	N. Piedmont	Art Center	Inner Loop	gravel	0	Trail	Trail		350	0.07	750,000	$49,716	$530		●			M	**8**	0	0	1	3	1	3	0
Battleground	P2	Quarry	Margrace	Outer Loop	asphalt	22	PS	Widening, grading, 35mph		2700	0.51	500,000	$255,682	$1,023		●			L	**2**	0	0	1	0	0	1	0
Battleground	W1	Mountain	Falls	Downtown (CTT)	C&G, parking	38	WOL/Sharrows	Restriping, all parallel pkg	PP+Sh+L+L+Sh(+PP)	1150	0.22	15,000	$3,267	$436	●	●			M	**9**	0	1	1	1	0	6	0
Battleground	W2	Mountain	Ridge	Downtown	C&G	26	WOL	Signage only		1280	0.24	minimum	$500	$100		●			H	**11**	0	2	1	1	1	6	0
Battleground	W3	Falls	Quarry	Gateway (CTT)	C&G E side	24	WOL	Widening, grading		2440	0.46	500,000	$231,061	$462	●	●			H	**11.5**	0	6	2	1.5	0	2	0
BC-KM (NC 161)	P3	Herndon Access	Lewis Farm	Regional	asphalt	23	PS	Widening		3640	0.69	300,000	$206,818	$1,379		●	●		M	**5**	1	0	2	0	0	2	0
Beason Creek	T2	Phifer	Kings Mountain	Schools (CTT)	wooded	0	Trail	Trail		4600	0.87	750,000	$653,409	$6,970	●	●			H	**12**	0	0	2	3	3	3	1
Beason Creek	T3	Kings Mountain	Crocker	Schools (CTT)	wooded	0	Trail	Trail		4220	0.80	750,000	$599,432	$6,394	●	●			H	**10**	0	0	4	3	1	1	1
Bridges	P4	Cansler	Ramseur	Schools	asphalt	20	PS	Widening		1680	0.32	300,000	$95,455	$636		●			M	**6**	0	1	1	2	1	1	0
Caldwell	W4	Fulton	Wintergreen	Inner Loop	C&G	26	WOL	Signage only		1700	0.32	minimum	$500	$100		●			L	**2**	0	0	0	2	0	0	0
Cansler	L2	Mountain	Bridges	Downtown	4 lane C&G	46	BL	Road Diet	BL+L+CL+L+BL	5300	1.00	15,000	$15,057	$2,008		●			M	**5.5**	0	1	1	0	0.5	3	0
Canterbury	P5	Senior Ctr.	Woodlake	Outer Loop	asphalt	23	PS	Widening		4500	0.85	300,000	$255,682	$1,705		●			M	**7**	0	0	1	1	0	4	1
Canterbury	S3	Woodlake	City Limits	Regional	asphalt	20	Signs	Signage only		5600	1.06	1,000	$1,061	$1,061		●	●		M	**5**	1	0	1	1	0	1	1
Canterbury	X1	Canterbury	Canterbury	Outer Loop	low rail	23	Bridge	Rails/fence		300	0.06	528,000	$30,000	$200		●	●		M	**8**	1	3	1	0	0	2	1
Cleveland	W5	King	Ridge	Inner Loop	C&G	42	WOL	Signage only		650	0.12	minimum	$500	$100		●			L	**1**	0	0	0	0	0	1	0
Cleveland	P6	Herndon Access	Linwood	Outer Loop	asphalt	22	PS	Widening		5470	1.04	300,000	$310,795	$2,072		●	●		M	**5**	0	1	2	0	0	2	0
Cleveland	L3	Linwood	E. Ridge	Outer Loop	C&G	50	BL	Restriping, median, trees, light	PP+BL+L+CL+L+BL	3340	0.63	750,000	$474,432	$1,265		●			H	**14**	0	7	2	0	1	4	0
Country Club	S4	Mountain	Sherwood	Neighborhood	C&G	38	Signs	Signage only		850	0.16	minimum	$500	$100		●			M	**7**	0	0	2	2	0	3	0
Countryside	P7	Shelby Rd (74)	Patterson	Outer Loop (CTT)	asphalt	24	PS	Signage only		10,400	1.97	1,000	$1,970	$1,970	●	●			M	**7**	0	1	1	2	0	3	0
Crescent & Oakland	W6	Hawthorne	Huntingtowne	Inner Loop	C&G	34	WOL	Signage only		3180	0.60	1,000	$602	$602		●			L	**3**	0	0	1	2	0	0	0
Crocker El Bethel	S5	Beason Creek	Shelby Rd (74)	Regional (CTT)	asphalt	20	Signs	Signage only		3360	0.64	1,000	$636	$636	●	●			L	**1**	0	0	0	1	0	0	0
Dick Elam	S6	US-74	creek	Neighborhood	asphalt	20	Signs	Signage only		680	0.13	minimum	$500	$100		●			L	**2**	0	0	0	2	0	0	0
Dillon-Patterson-Wright	P8	Putnam Lake	Oak Grove	Scenic	asphalt	20	PS	Widening		10430	1.98	300,000	$592,614	$3,951		●			L	**4**	0	0	1	2	0	0	1
Dixon School	P9	Margrace	truck stop	Regional	PS	22	PS	Widening - minor		6780	1.28	50,000	$64,205	$2,568		●			L	**5**	1	0	1	1	0	1	1
EllisCanslerRidgeRR	S7	Tracy	N. Railroad	Downtown	C&G	0	Signs	Signage only		1760	0.33	1,000	$333	$333		●		●	L	**2.5**	0	0	0	2	0.5	0	0
Falls	S8	Gaston	Battleground	Inner Loop	asphalt	22	Signs	Signage only		1210	0.23	1,000	$229	$229		●			L	**3**	0	0	0	2	0	1	0
Fulton	W7	Margrace	Caldwell	Neighborhood	C&G	30	WOL/Sharrows	Signage only		1480	0.28	5,000	$1,402	$280		●		●	L	**4**	0	0	0	2	0	0	0
Fulton	W8	Caldwell	Phifer	Inner Loop	C&G	30	WOL/Sharrows	Signage only		2200	0.42	5,000	$2,083	$417		●		●	M	**7**	0	0	1	2	2	2	0
Galilee Church	S9	York	Alex D. Owens	Scenic	asphalt, gravel	24	Signs	Signage only		5000	0.95	1,000	$947	$947					M	**6**	0	1	1	1	0	2	1
Garrison Merrimont	W9	Suzanne	Potts Creek	Neighborhood	C&G	30	WOL	Signage & trailhead		3080	0.58	5,000	$2,917	$1,000		●			L	**3**	0	0	0	2	0	1	0
Gaston	T4	Falls	Gaston	Downtown	wooded	0	Trail	Trail		620	0.12	100,000	$11,742	$939		●			M	**5**	0	0	0	1	3	0	1
Gateway 1	T5	Gateway Trail	I-85	Outer Loop (CTT)	wooded	0	Trail	clearing & trail const'n		15,200	2.88	750,000	$2,159,091	$23,030	●	●			M	**7**	0	0	1	3	0	2	1
Gateway 2	T6	I-85	Galilee Church	Outer Loop (CTT)	rough paths	0	Trail	clearing & trail const'n		4000	0.76	750,000	$568,182	$6,061	●	●			M	**7**	0	0	1	3	0	2	1
Gateway Bridge	X2	I-85	I-85	Outer Loop (CTT)	fenced bridge	20	Bridge	Refurbish		240	0.05	750,000	$34,091	$200	●	●		●	M	**6**	1	0	2	0	0	3	0
Gold	P10	York (161)	Gaston	Downtown	asphalt	20	PS	Widening		2160	0.41	300,000	$122,727	$409		●		●	M	**9**	0	1	2	0	0	6	0
Gold	L4	Gaston	Battleground	Downtown	C&G	44	BL/Sharrow	Restriping	BL+L+CL+L+BL	1140	0.22	15,000	$3,239	$432		●			M	**5**	0	0	0	2	1	2	0
Hoyles	P11	Stoney Pt.	Potts Ck. Trail	Schools	asphalt	32	PS	Widening & (800') Trail		3550	0.67	330,000	$221,875	$2,500		●			M	**5**	0	0	0	1	2	0	2
Industrial	S10	York	Gateway Bridge		asphalt, wooded	20	Signs	Signage & (250') Trail		6400	1.21	325,000	$393,939	$1,600		●			H	**10**	0	3	2	3	0	1	1
Kings Mountain	P12	Shelby	Margrace	Outer Loop	PS	34	PS	Signage, some minor widening		9830	1.86	1,000	$1,862	$1,862		●			H	**11**	0	1	2	1	3	3	1
Lackey	L5	N. Piedmont	NES trail	Schools	C&G	34	BL	Restriping	BL+L+L+BL	270	0.05	15,000	$767	$102		●			L	**4**	0	0	0	2	1	1	0
Linwood	L6	N. Piedmont	Cleveland (161)	Neighborhood	asphalt	32	BL	Restriping	BL+L+L+BL	3600	0.68	15,000	$10,227	$1,364		●			M	**6.5**	0	0	1	0.5	2	3	0
Linwood-Boyce-Groves	W10	Cleveland	Cleveland	Neighborhood	C&G partial	36	WOL	Signage only		4600	0.87	1,000	$871	$871		●			M	**5.5**	0	0	1	1.5	1	2	0
Margrace	P13	S. Battleground	Kings Mountain	Outer Loop	asphalt	20	PS	Widening		8780	1.66	300,000	$498,864	$3,326		●			L	**4**	0	1	2	1	0	0	0
Martin-Marietta Tr.	T7	Martin-Marietta	Gaston	Inner Loop	wooded	0	Trail	Trail		3350	0.63	750,000	$475,852	$5,076		●			M	**8**	0	0	2	3	0	2	1
McGinnis	P14	NES North Trail	N. Piedmont	Schools	asphalt	0	PS	Widening		500	0.09	300,000	$28,409	$189		●			M	**5**	0	1	0	0	1	3	0
Mountain	S11	Battleground	Watterson	Downtown (CTT)	C&G	32	Signs	Signage only	BL+L+L+BL	1950	0.37	1,000	$369	$739	●	●		●	H	**13**	1	2	1	2	1	5	1
Mountain	S12	Watterson	Phifer	Inner Loop (CTT)	C&G	32	Signs	Signage only	BL+L+L+BL	2670	0.51	1,000	$506	$1,011	●	●		●	M	**9**	0	2	2	1	1	3	0
Mt. Zion Trail	T8	N. Watterson	Tracy	Downtown	field	0	Trail	Trail		720	0.14	750,000	$102,273	$1,091		●			M	**8**	0	0	2	3	1	1	1
N. Elementary	T9	Lackey	McGinnis	Schools	woods, field, asphalt	0	Trail, BL	Trail, Striping		2300	0.44	900,000	$392,045	$3,485		●			H	**12**	0	0	4	3	1	3	1
N. Piedmont	P15	Scism	Goforth	Regional	asphalt	24	PS	Widening		4700	0.89	300,000	$267,045	$1,780		●			L	**3**	1	-2	2	0	0	2	0
N. Piedmont	L7	E. Parker	Waco	Inner Loop	C&G	36	BL	Restriping		750	0.14	15,000	$2,131	$284		●			L	**4**	0	0	2	0	0	2	0
N. Piedmont	P16	Center	Fairview	Neighborhood	asphalt	22	PS	Widening, restriping		1770	0.34	300,000	$100,568	$670		●			M	**6**	0	1	1	0	1	3	0
N. Piedmont	L8	Waco	Fairview	Major Connection	C&G	34	BL	Restriping	BL+L+L+BL	3230	0.61	15,000	$9,176	$1,223		●			M	**8**	1	2	1	0	1	3	0
N. Piedmont	P17	Scism	Center	Outer Loop	asphalt	22	PS	Widening		4920	0.93	300,000	$279,545	$1,864		●			L	**4**	0	2	1	0	0	1	0
Oak Grove	P18	Scism	Stoney Point	Regional	asphalt	24	PS	Widening		18,620	3.53	300,000	$1,057,955	$7,053					M	**6**	0	1	2	0	0	2	1
Oak-RR-Hawthorne	L9	Falls	Crescent	Inner Loop	asphalt	30	BL	Restriping	BL+L+L+BL	2600	0.49	15,000	$7,386	$985		●			M	**6**	1	0	1	2	0	2	0
Parker	S13	N. Sims	N. Watterson	Schools	asphalt	30	Signs	Signage only		950	0.18	minimum	$500	$100		●		●	M	**6**	0	0	1	2	1	2	0
Patterson	P19	Countryside	Putnam Lake	Outer Loop	asphalt	24	PS	Widening		2800	0.53	300,000	$159,091	$1,061		●			L	**3**	0	1	2	0	0	0	0
Patterson	X3	Patterson	Patterson	Outer Loop	low rails	24	Bridge	Rails/fencing		400	0.08	528,000	$40,000	$200		●			L	**4**	1	3	0	0	0	0	0
Phifer	W11	Beason Creek	Fulton	Inner Loop	C&G	26	WOL	Restriping		1140	0.22	5,000	$1,080	$216		●			M	**7**	0	1	0	0	3	3	0
Phifer	P20	W. Mountain	Beason Creek	Inner Loop (CTT)	asphalt	26	PS	Widening		2770	0.52	300,000	$157,386	$1,049	●	●			M	**5**	0	2	0	0	1	2	0
Phifer	P21	Fulton	Kings Mountain	Schools	asphalt	26	PS	Restriping		4660	0.88	5,000	$4,413	$1,765		●			M	**9**	0	2	1	0	3	3	0
Potts Creek 1	T10	Sims	Merrimont	Scenic	wooded	0	Trail	Trail		6000	1.14	750,000	$852,273	$9,091		●			H	**12**	0	0	4	3	1	3	1
Potts Creek 2	T11	Merrimont	Countryside	Scenic	wooded	0	Trail	Trail		10,150	1.92	750,000	$1,441,761	$15,379		●			M	**9**	0	0	4	3	0	1	1
Potts Creek 3	T12	Countryside	Stoney Point	Regional (CTT)	box culvert, wooded	0	Trail	Trail		11,750	2.23	750,000	$1,669,034	$17,803	●	●			H	**13**	0	3	4	3	0	2	1
Potts Creek crossing	X4	US 74	US 74	Major Connection	culvert	0	Bridge	Suspended bridge		500	0.09	1,500,000	$142,045	$500		●			H	**13**	1	3	4	3	0	2	0
Putnam Lake	P22	Patterson	Scism	Outer Loop	asphalt	1	PS	Widening		6170	1.17	300,000	$350,568	$2,337		●			L	**2**	0	1	0	0	0	1	0
Ridge	W12	Battleground	Cleveland (161)	Inner Loop	C&G	32	WOL/Sharrows	Signage, striping	PP+Sh+L+L+Sh+PP	3360	0.64	5,000	$3,182	$1,273		●		●	H	**10**	0	1	1	2	1	5	0
Ridge	W13	Cleveland (161)	Senior Ctr.	Outer Loop	asphalt	32	WOL/Sharrows	Signage, striping	PP+Sh+L+L+Sh+PP	1900	0.36	5,000	$1,799	$720		●		●	M	**8**	0	2	2	2	0	2	0
Roxford	W14	Sherwood	Downing	Neighborhood	C&G	24	WOL	Signage only		2200	0.42	minimum	$500	$100		●			L	**2**	0	0	0	2	0	0	0
S. Railway Bridge	X5	N. Railroad	Battleground	Inner Loop	rails, narrow lane	14	Bridge	Make bike/ped only		100	0.02	500,000	$9,470	$200		●			M	**8.5**	1	1	3	2	0.5	1	0
Scism	P23	Oak Grove	N. Piedmont	Outer Loop	asphalt	24	PS	Widening		5540	1.05	300,000	$314,773	$2,098		●			L	**3**	0	1	1	0	0	1	0
Shelby Rd (74)	P24	Kings Mountain	Countryside	Outer Loop (CTT)	PS	26	PS	Signage only		7850	1.49	1,000	$1,487	$2,973	●	●			L	**3**	0	0	1	1	0	1	0
Sherwood	W15	Country Club	Roxford	Neighborhood	C&G	30	WOL	Signage only		2350	0.45	minimum	$500	$200		●			L	**4**	0	1	0	2	0	1	0
Stoney Point	P25	Countryside	Oak Grove	Regional	PS	28	PS	Signage only		13,700	2.59	1,000	$2,595	$5,189		●			H	**10**	0	2	0	2	1	4	1
Waco	S14	Watterson	N. Piedmont	Inner Loop	asphalt	23	Signs	Signage only		3050	0.58	1,000	$578	$578		●			M	**5.5**	0	1	0	1.5	0	3	0
Watterson	S15	W. Mountain	Waco	Inner Loop	C&G	22	Signs	Signage & Sharrows		3610	0.68	1,000	$684	$684		●		●	H	**10**	0	0	1	2	2	5	0
Westgate Plaza	S16	Roxford	Ware	Neighborhood	C&G & pkg lot	0	Signs	Signage & 150' Trail		3850	0.73	1K & 750K	$22,000	$1,000		●			L	**3**	0	0	0	2	0	1	0
Wintergreen	X6	Huntingtowne	Wintergreen	Inner Loop	creek	0	Bridge	Pre-fab. bridge (10' wide)		50	0.01		$50,000	$200		●			M	**9**	1	5	1	2	0	0	0
Winter-Hunting	S17	Oakland	Caldwell	Inner Loop	asphalt	24	Signs	Signage only		1400	0.27	minimum	$500	$200		●			L	**3**	1	0	0	2	0	0	0
Woodhaven Trail	T13	Washington	Dick Elam	Neighborhood	field	0	Trail	Trail		1100	0.21	750,000	$156,250	$1,667		●			M	**9**	0	0	5	3	0	0	1
Woodlake	P26	Canterbury	York (161)	Outer Loop	asphalt	22	PS	Widening		8100	1.53	300,000	$460,227	$3,068		●	●		L	**4**	0	1	0	0	0	2	1
York	W16	King	Martin-Marietta	Inner Loop	C&G	32	WOL	Signage only		3500	0.66	1,000	$663	$1,326		●			L	**4**	0	0	2	0	0	2	0
York	W17	Martin-Marietta	Woodlake	Major Connection	C&G	38	WOL	Signage only		2950	0.56	1,000	$559	$559		●			M	**8**	0	0	3	0	0	4	1
York	W18	Woodlake	Lake Montonia	Outer Loop	C&G	42	WOL	Signage only		1550	0.29	minimum	$500	$200		●			M	**8**	0	2	4	0	0	1	1
York	P27	Lake Montonia	Alex D. Owens	Outer Loop	PS	26	PS	Signage only		8120	1.54	1,000	$1,538	$3,076		●			H	**10**	0	3	3	0	0	3	1
York	P28	Alex D. Owens	Tibor	Regional	PS	26	PS	Signage only		9980	1.89	1,000	$1,890	$3,780					H	**10**	1	4	3	0	0	1	1

LIST KEY:

LOCATION

Project Identification

Project #	Project Type
S	Signage Only
P	Paved Shoulder
W	Wide Outside Lane
L	Striped Bicycle Lane
T	Offroad Trail/Greenway
X	Bridge Crossing Improvement

For details on Project types see **Section 5.**

IMPROVEMENTS

CTT = Carolina Thread Trail
C&G = curb and gutter
For explanation of Loop Routes see **Section 4.4**.
All facilities include appropriate signage.

Striping

BL	Bicycle Lane
L	Vehicular Travel Lane
CL	Center Lane
PP	Parallel Parking Lane
Sh	Sharrow

For information on striping, see **Section 5.11.**

COSTS

	TOTALS
Construction Costs	**$16,682,303**
Annual Upkeep	**$189,877**

For details on project costs, see **Section 8.1.**

FUNDING SOURCES

CTT	Carolina Thread Trail
SRTS	Safe Routes to School
CMAQ	Congestion Mitigation & Air Quality
Powell Bill	

For more information on potential funding sources, see **Section 8.2.**

RANKING

For an explanation of priority of projects (High(H), Medium (M) & Low (L)), Public and Steering Committee voting procedures, and assigned values (key linkages, safety, school links, destination links, scenic), see **Section 6.2**.

KINGS MOUNTAIN NORTH CAROLINA

6.3 Project Prioritization

The Kings Mountain Comprehensive Bicycle Plan includes a total of 91 facility projects, where improvements (often multiple improvements) are proposed. Each of these projects is depicted on the **Proposed Routes and Facilities** map in **Section 7**. The total length of all of the proposed project segments is 66.9 miles. Of that total, 54.6 miles consist of proposed improvements to current road facilities, while the remaining 12.3 miles are proposed off-road facilities. The total projected cost to complete all of these improvements is estimated to be roughly $16.7 million. Though different projects can be funded through different means, implementation costs requires that projects be taken on incrementally and as opportunities arise. With this in mind, projects are prioritized.

Prioritizing bicycle infrastructure projects is by nature a fluid process. Priorities depend upon a number of factors that are each subject to change; factors such as traffic demands, development trends, individual property parcel sales, and employment opportunities. The projects recommended by the Bicycle Plan were prioritized using the following method:

Prioritization of Bicycle Plan Goals

In order to establish criteria for determining which projects would be most needed and valued by the public, a list of goals was vetted with the steering committee, and then with the public at the first Open House and via the online survey. The various goals were rated using a goal scoring matrix. See **Section 6.1 Proposed Projects List** for results. Each of the goals was respected in the design of projects, but the highest rated goals were emphasized.

1. **Public Prioritization of Projects**
   Once preliminary projects were developed for the Plan, each attendee of the second Open House meeting was asked to select and comment on their 24 most favored projects.

2. **Steering Committee Project Prioritization**
   Committee members each selected 12 favored projects and indicated as well any projects they did not agree with.

3. **Project Selection Criteria**
   Each of the projects was finally evaluated by how well it meets the priority goals. The final high priority criteria are defined below, along with the methodology used for evaluating each project by those criteria:

Kings Mountain Bicycle Plan Steering Committee Meeting

- **Key Linkages** - provide vital connections across substantial barriers such as highways, railroads and streams, or that otherwise form a singular link between significant networks of bicycle facilities (yes =1, no =0)
- **Destinations** - within one block or one parcel proximity. Qualifying destinations were selected by the project Steering Committee & by the public at the Open House meetings. Each destination linked = 1 point.

- **School links** - within a one block or one parcel proximity. Schools are also counted under destinations, due to the fact that they serve multiple functions. Each school linked = 1 point.

- **Scenic** – having mountain or rural views, follow wooded trails, or include exceptionally attractive streetscapes (yes =1, no =0)

- **Safe conditions** – as per the Bicycling Suitability Analysis rating.
  - Least Suitable to Somewhat Suitable = 0
  - More Suitable = 1
  - Most Suitable = 2
  - All off-road routes = 3

The **Bicycle Suitability Analysis** map is located in **Section 7**. The bicycle suitability of each street is based upon a combination of factors, including traffic count, posted speed limit, functional classification, and the presence of bicycle facilities.

A total score for each project was derived using an even weight given to each of the five goals rated above, the Open House II project rating, and the Steering Committee project rating. Prioritization of projects was divided into High (H), Medium (M), and Low (L).

High	= 10 points or greater
Medium	= between 9 points and 4 points
Low	= 3 points or fewer

This prioritization breakdown resulted in 17 High, 45 Medium and 28 Low priority projects. Project ratings are indicated in the Ranking column on the proposed Projects List in this section. Since these priority levels are based upon a variety of factors, it is important to use the resulting list as a guide, but not as an absolute rule. As noted previously, conditions change, and opportunities can arise that will make certain projects more favorable as the next to undertake.

Section 7: SYSTEM MAPS

7.1 MAP INDEX:

1. **Regional Context**

2. **Existing Conditions**
    1. Project Area
    2. Downtown

3. **Analysis maps**
    1. Aerial Photo
    2. Geo-morphology
    3. Destinations
    4. Current Bicycle Facilities
    5. Off-road Trail Potential
    6. Road Lanes
    7. On-street Parking
    8. Road Classification
    9. Posted Speed
    10. Traffic Conditions: AADT & Bicycle Crashes
    11. Bicycle Suitability
    12. Zoning
    13. Population
    14. Income
    15. Minority Population

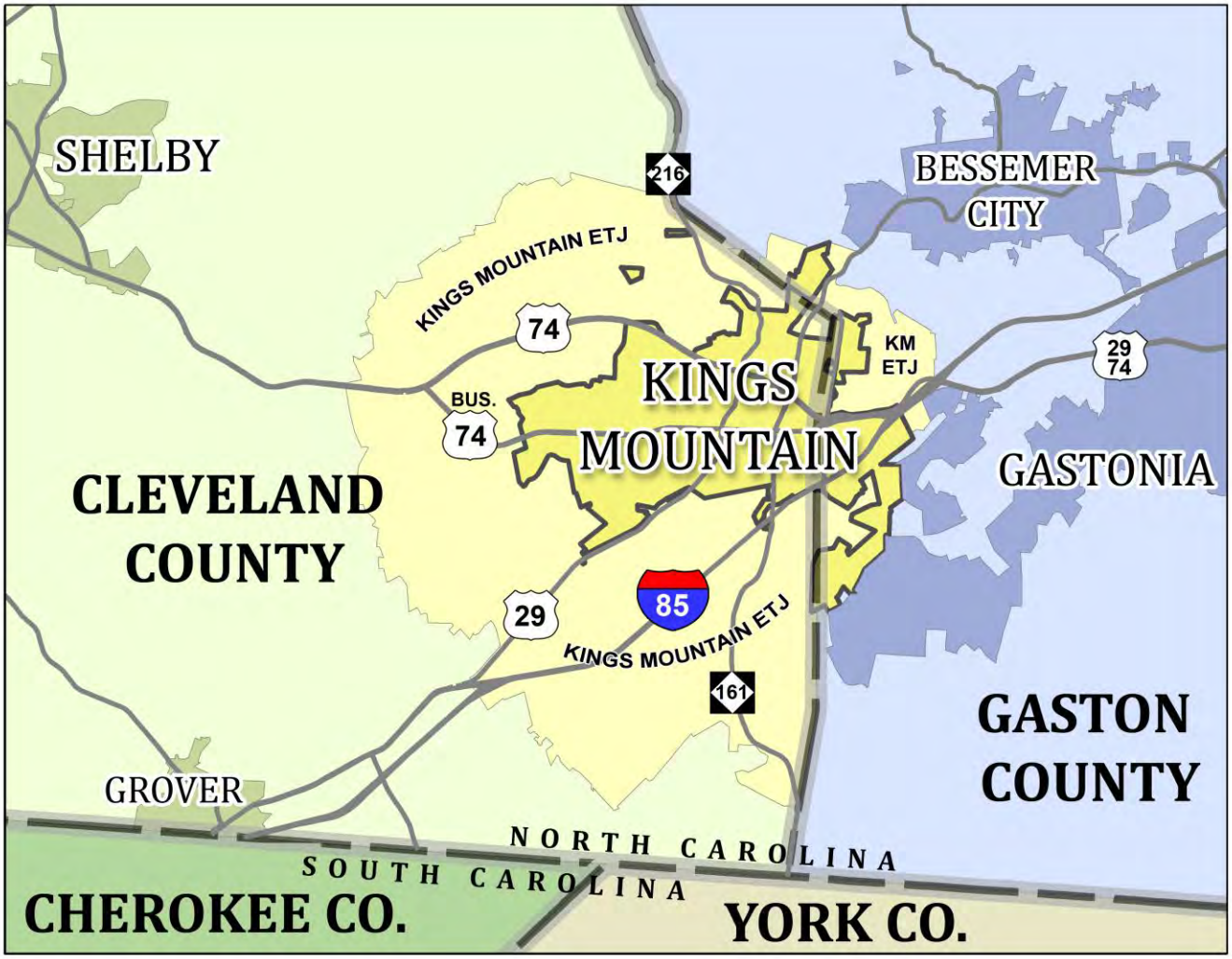
4. **Corridors**

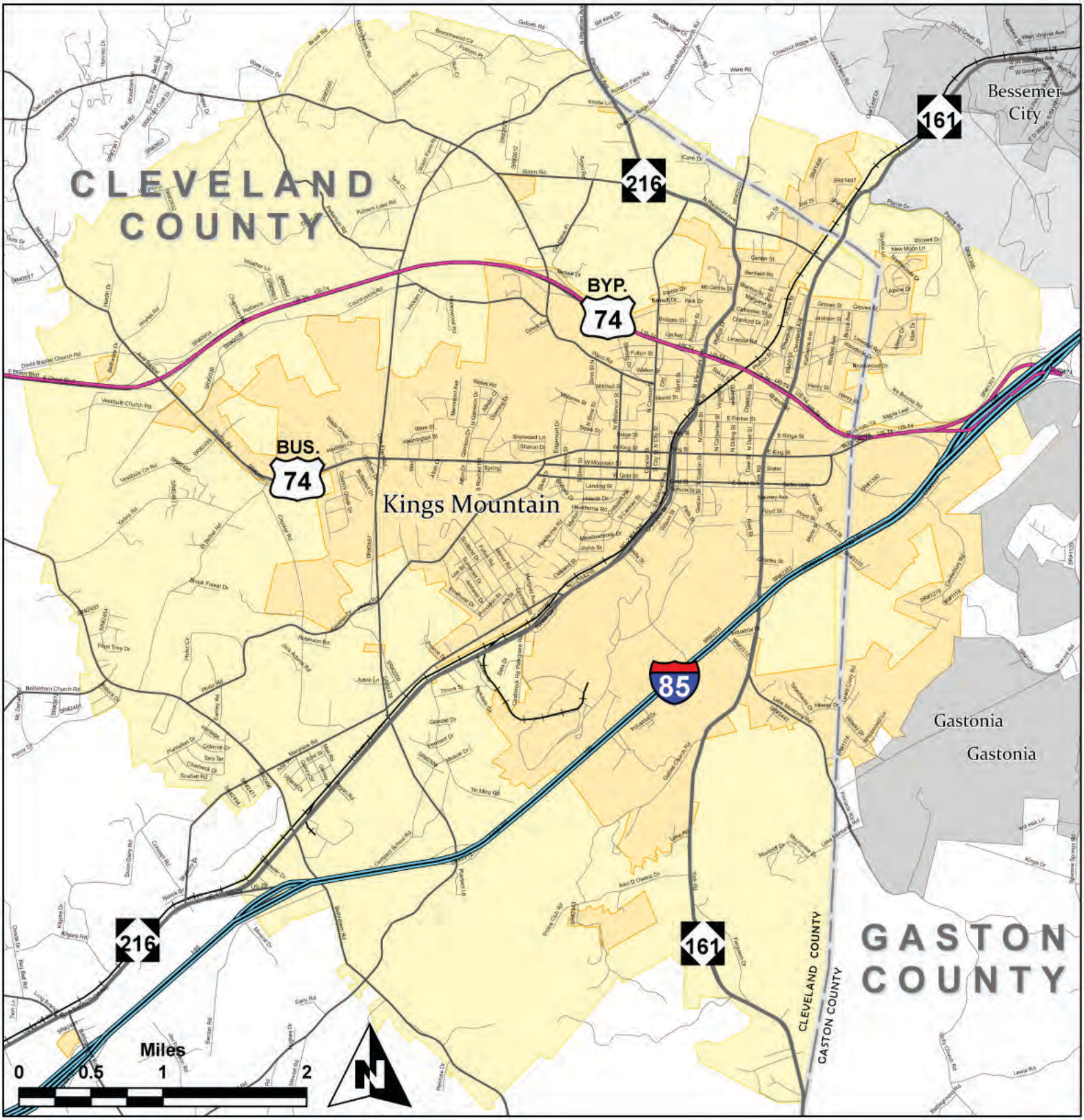
5. **Project Recommendations**
    1. Initial Steering Committee Suggestions
    2. Project Ranking
    3. Proposed Routes & Facilities

6. **Funding Opportunities**

7.2 MAPS:

Regional Context





KINGS MOUNTAIN NORTH CAROLINA

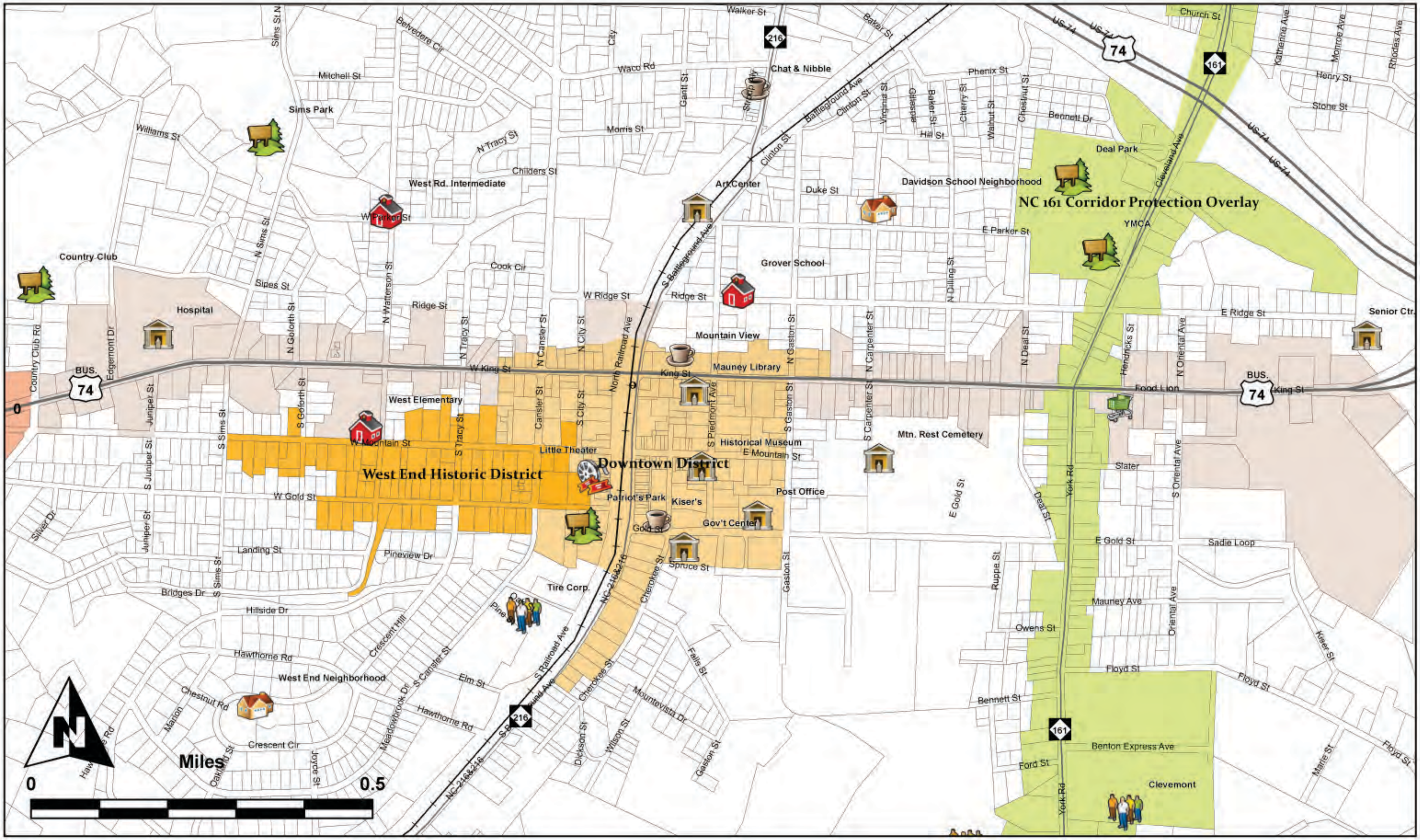
COMPREHENSIVE BICYCLE PLAN

Existing Conditions

CCOG Centralina Council of Governments

Project Area

- Kings Mountain City Limits
- Additional Planning Area (ETJ)
- Other municipalities



Downtown

KINGS MOUNTAIN NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

CCOG Centralina Council of Governments

Overlay Districts

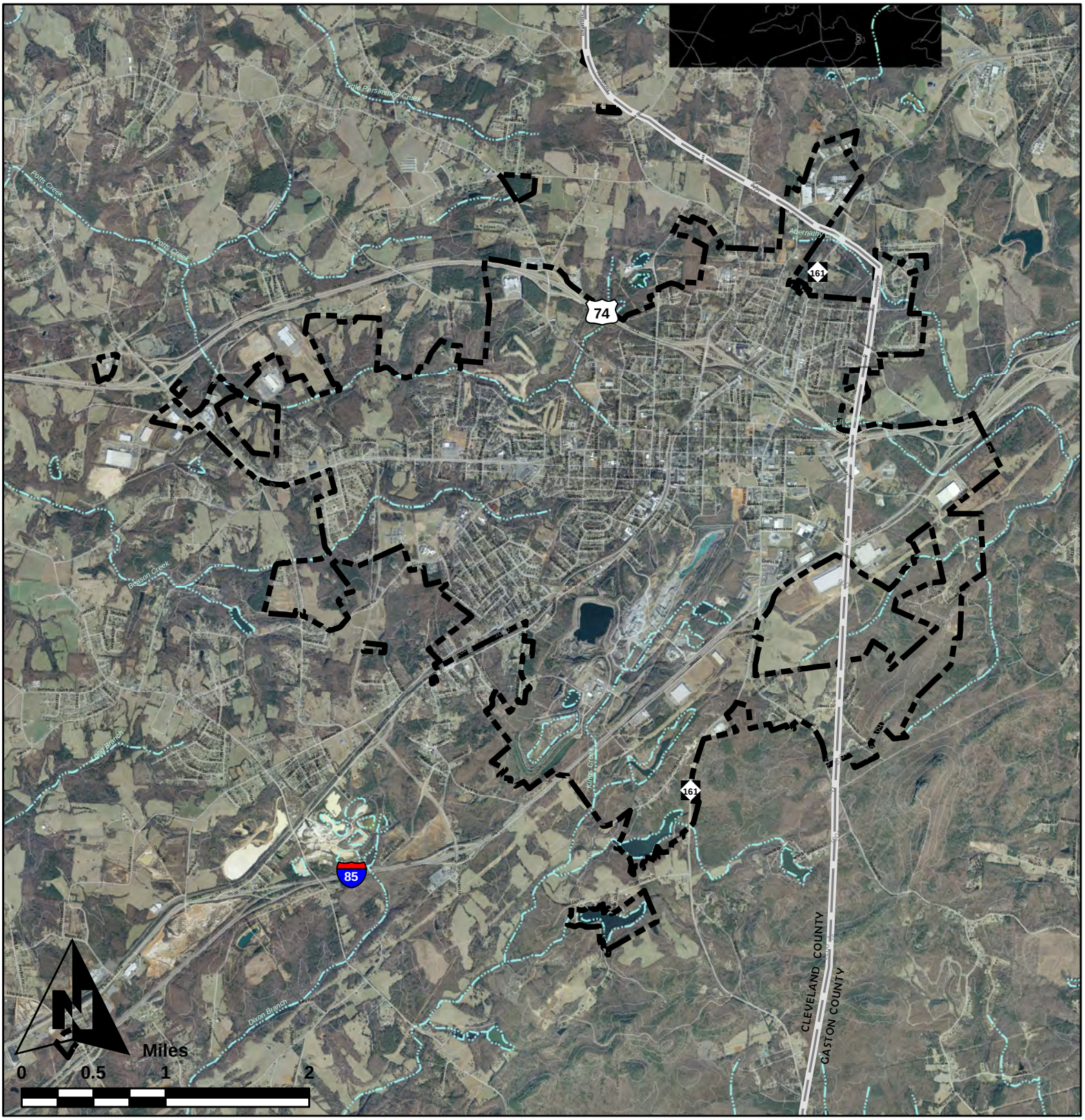
- West End Historic District
- Downtown Preservation District
- NC 161 Corridor Overlay
- East 74 BUS Overlay
- West 74 BUS Overlay

Overlay Districts

Overlay Districts are in place to "protect and enhance the economic and aesthetic appeal and orderly development of properties…while at the same time maintaining traffic efficiency and safety." These districts call for sidewalks, street trees, and increased street connectivity.

Destination Type

Civic, Commercial, Employment, Neighborhood, Recreation, Restaurant, School, Theater



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

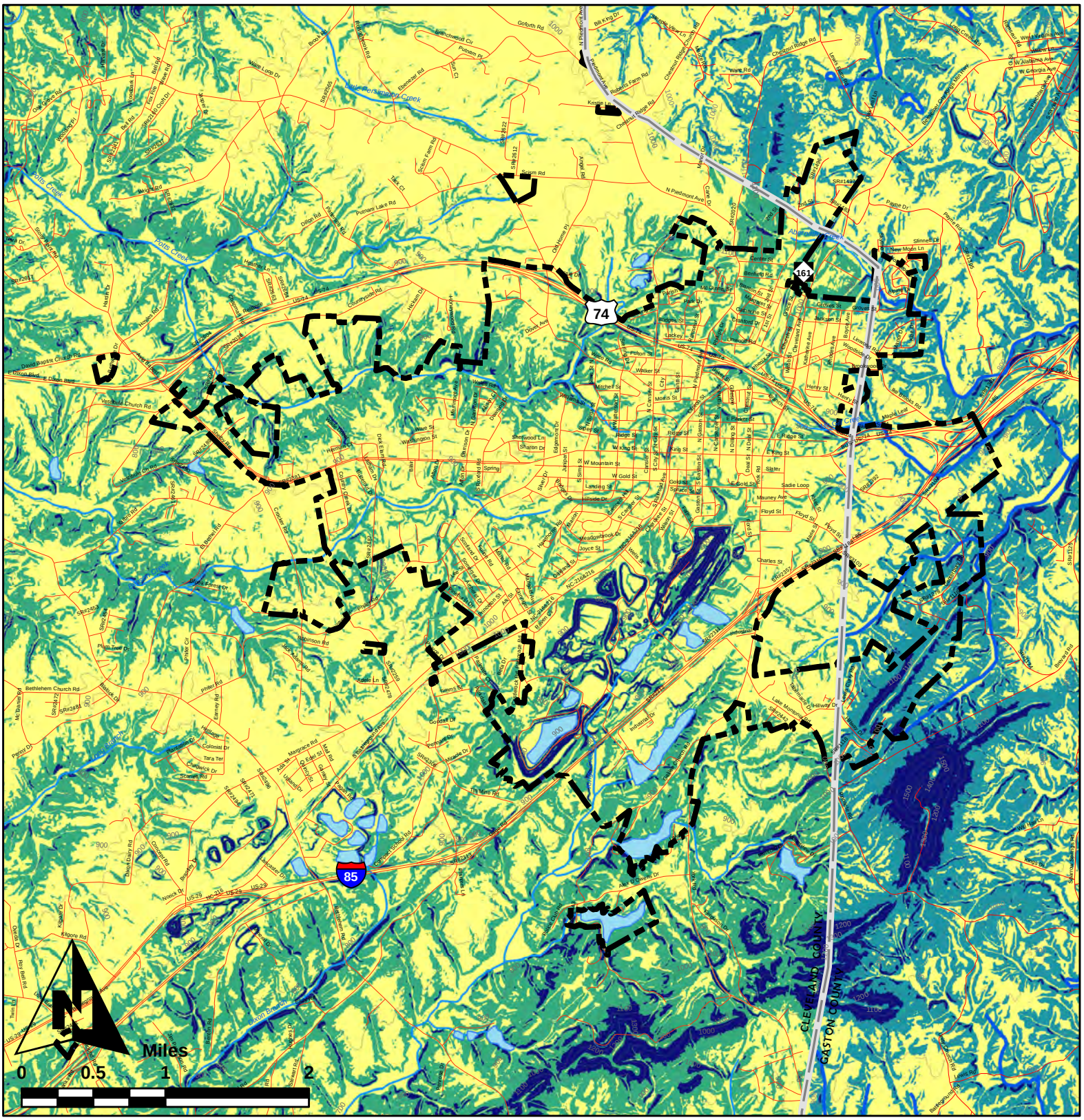
CCOG
Centralina Council of Governments

Aerial

stream

100' contour

Kings Mountain City Limits



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

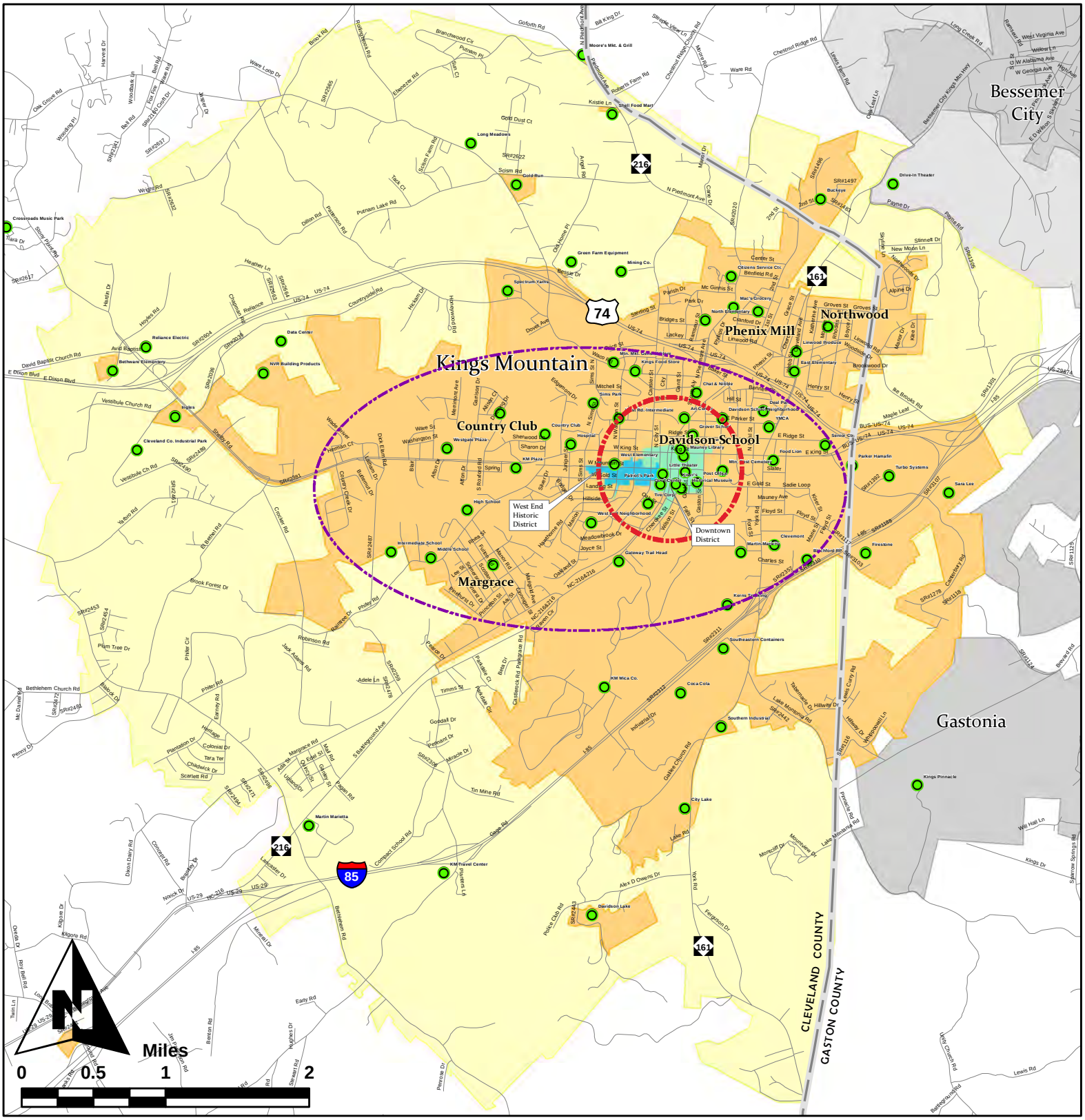
CCOG
Centralina Council of Governments

Topography

Slope

- Steep
- Gentle

- Roads
- 100' contour
- Surface Water
- Kings Mountain City Limits



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

Destinations

Legend

- Destination
- Downtown (1/2 mile radius)
- Immediate Urban Area
- West End Historic District
- Downtown District
- Kings Mountain City Limit
- Additional Planning Area (ETJ)

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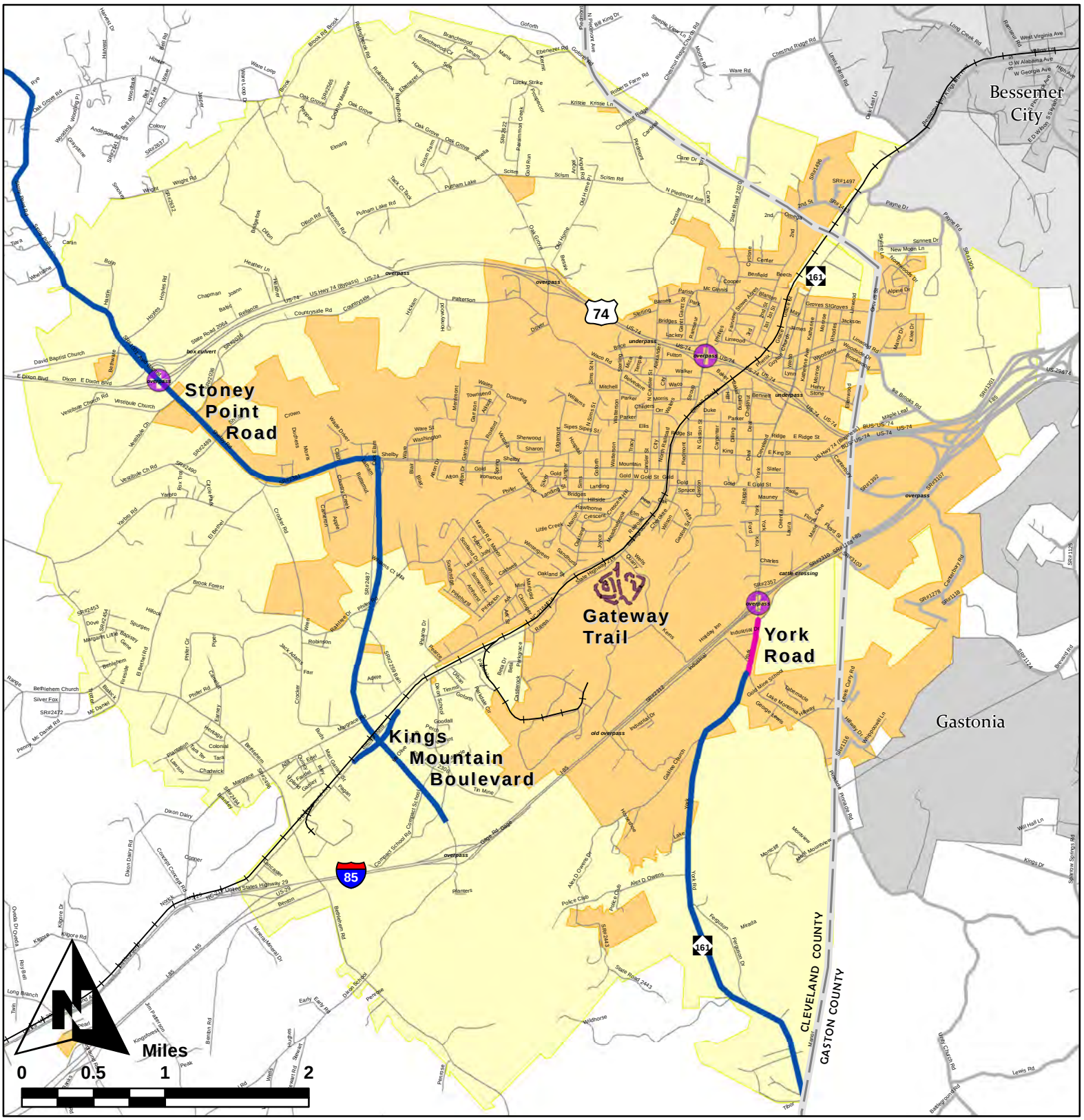

KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

Designated Bicycle Facilities

Facilities

- No Bicycle Improvements
- Paved Shoulders with Signage*
- Share the Road Signs
- Bicycle safe highway crossing**
- Multi-Purpose Trail
- Kings Mountain City Limits
- Additional Planning Area (ETJ)

* See Section 5.3 - Paved Shoulder
** See Section 5.7 - Grade Separated Crossing

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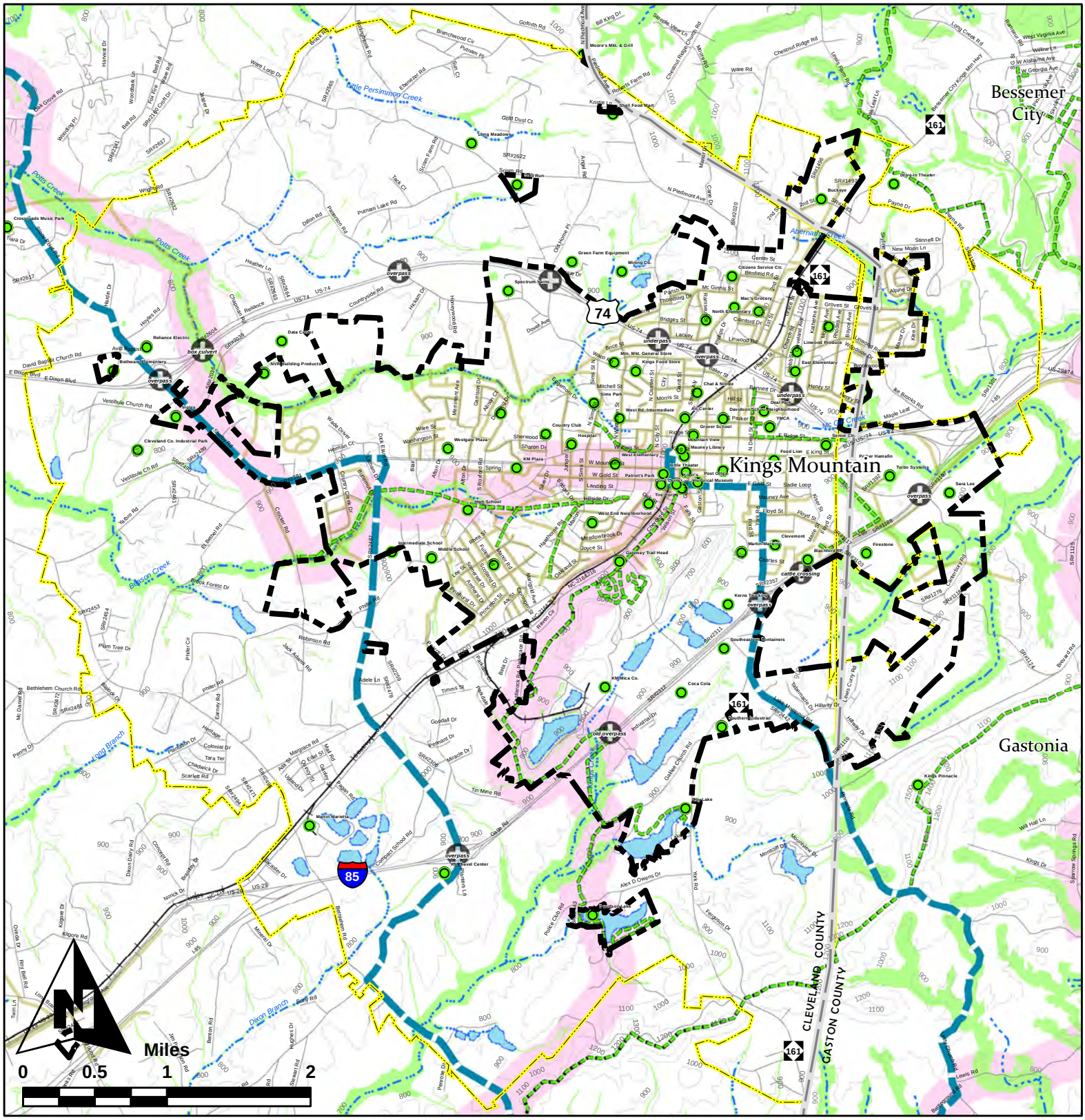
Centralina Council of Governments



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

CCOG
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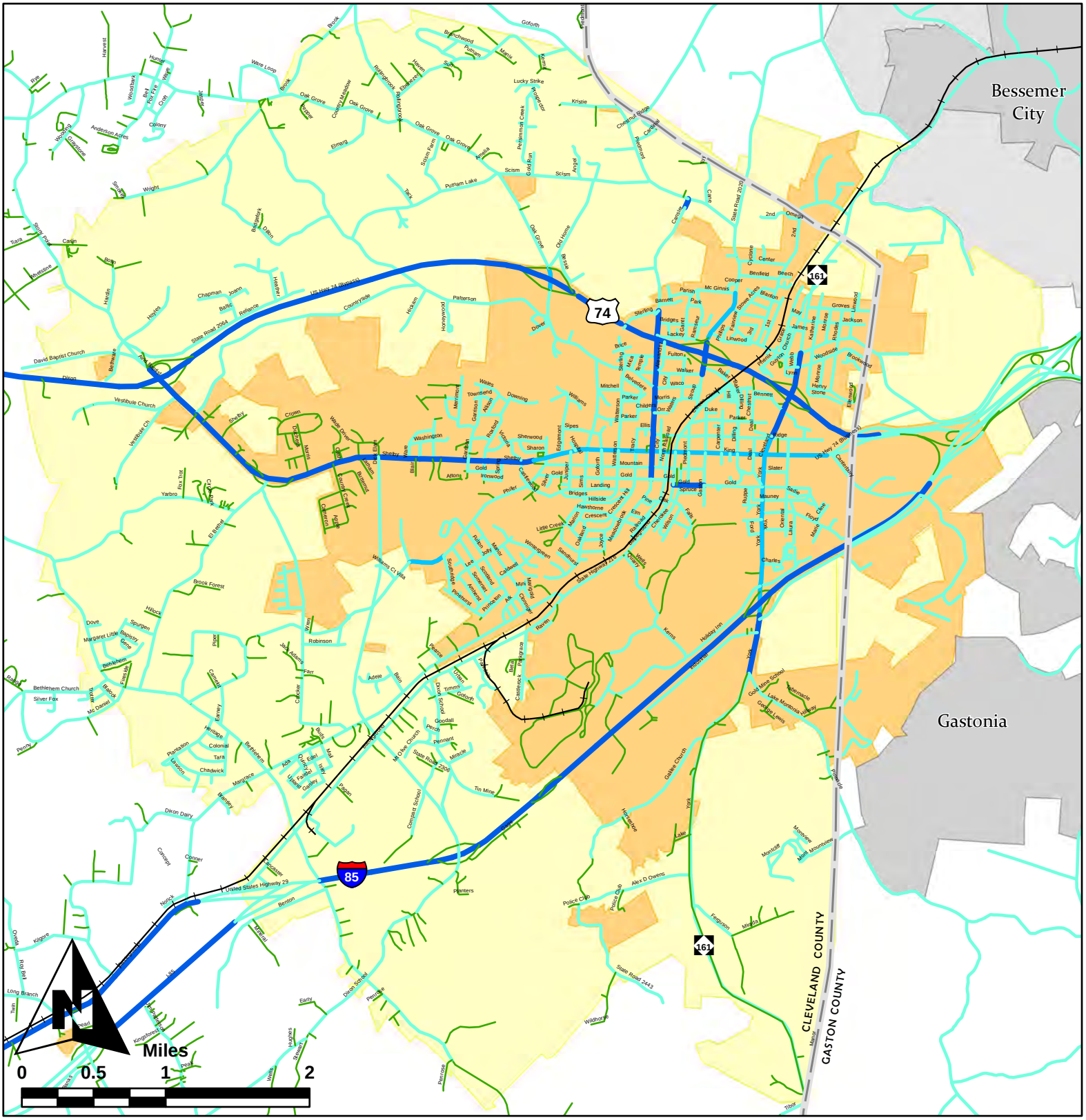
Trail Potential

- Destination
- Kings Mountain City Limits
- ETJ
- floodplains
- Carolina Thread Trail
- Potential Highway Crossing
- OTM Triathlon
- Proposed/Existing Trail
- Sewer Lines
- Streams
- 100' contour



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

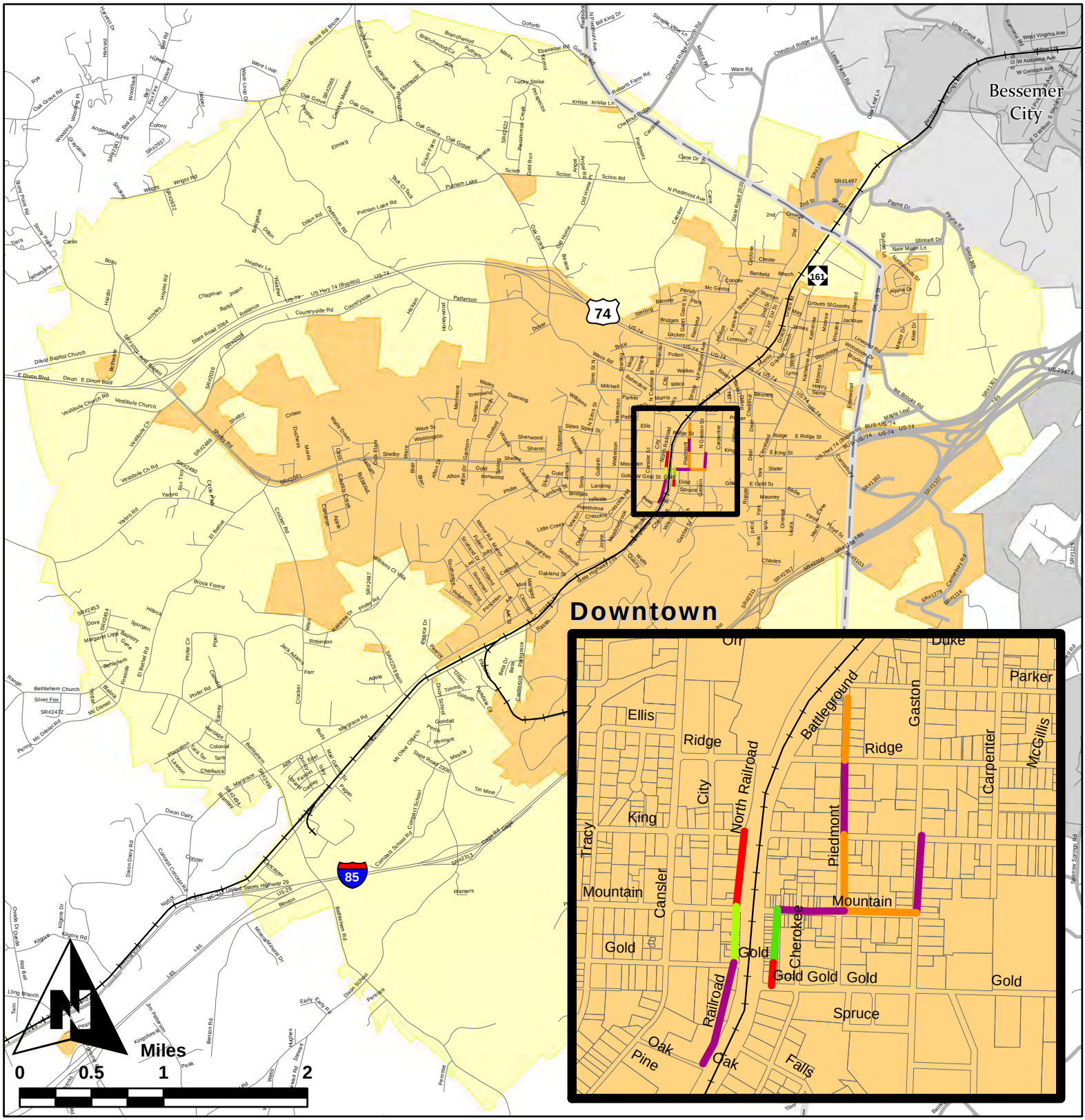
Centralina Council of Governments

Streets

Number of Lanes

- 0 - 1
- 2
- 3
- 4 or more

- Kings Mountain City Limits
- Additional Planning Area (ETJ)



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

Designated Parking

- Diagonal on left, Parallel on right
- Diagonal on right, Parallel on left
- Parallel, both sides
- Parallel on N/W side
- Parallel on S/E side

- Kings Mountain City Limits
- Additional Planning Area (ETJ)

Note:
Many streets throughout the City currently accomodate unstriped parallel parking.

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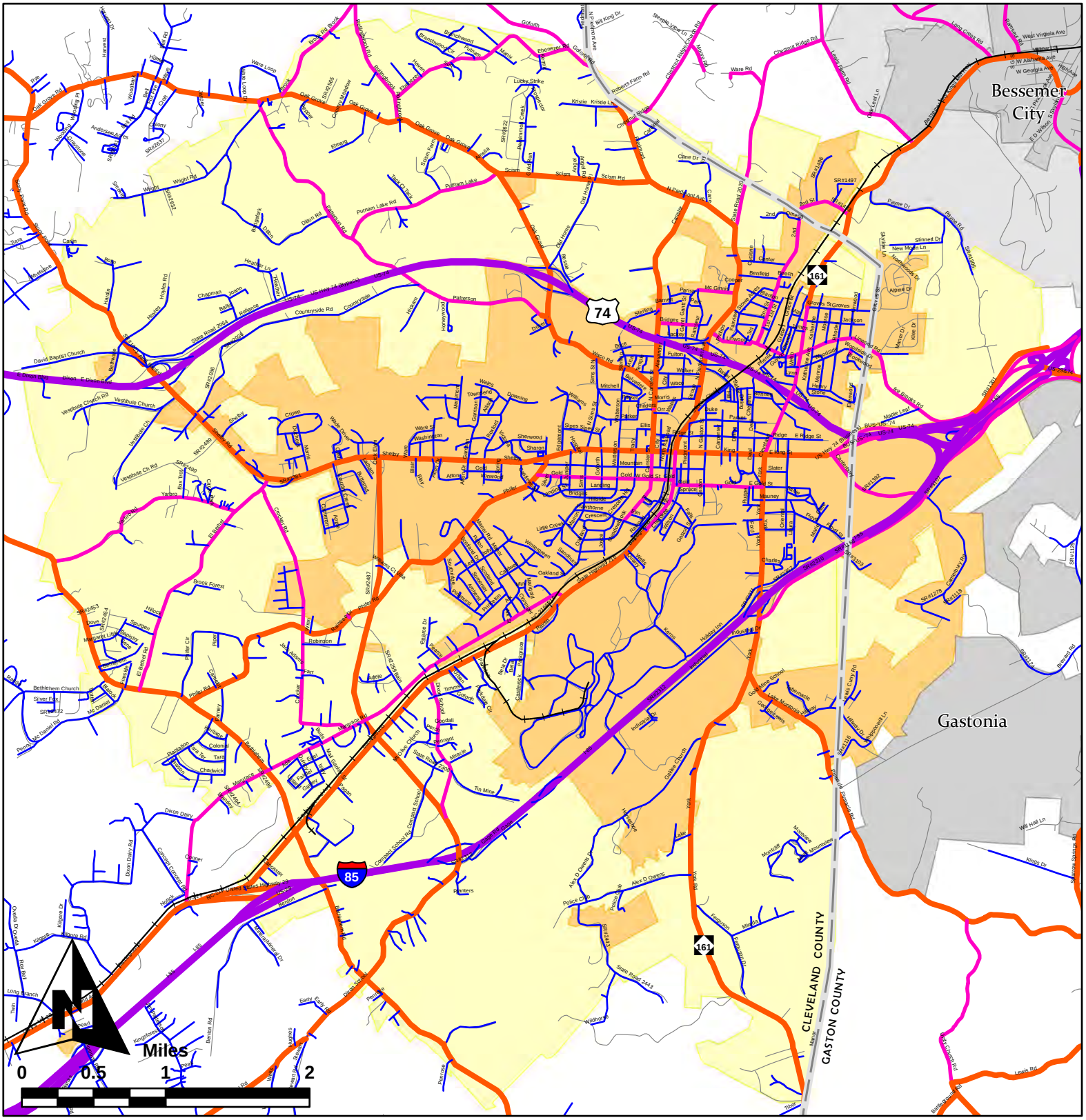
Centralina Council of Governments



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

Functional Classification

- Interstate or Principle Arterial
- Minor Arterial
- Collector
- Local
- Kings Mountain City Limits
- Additional Planning Area (ETJ)

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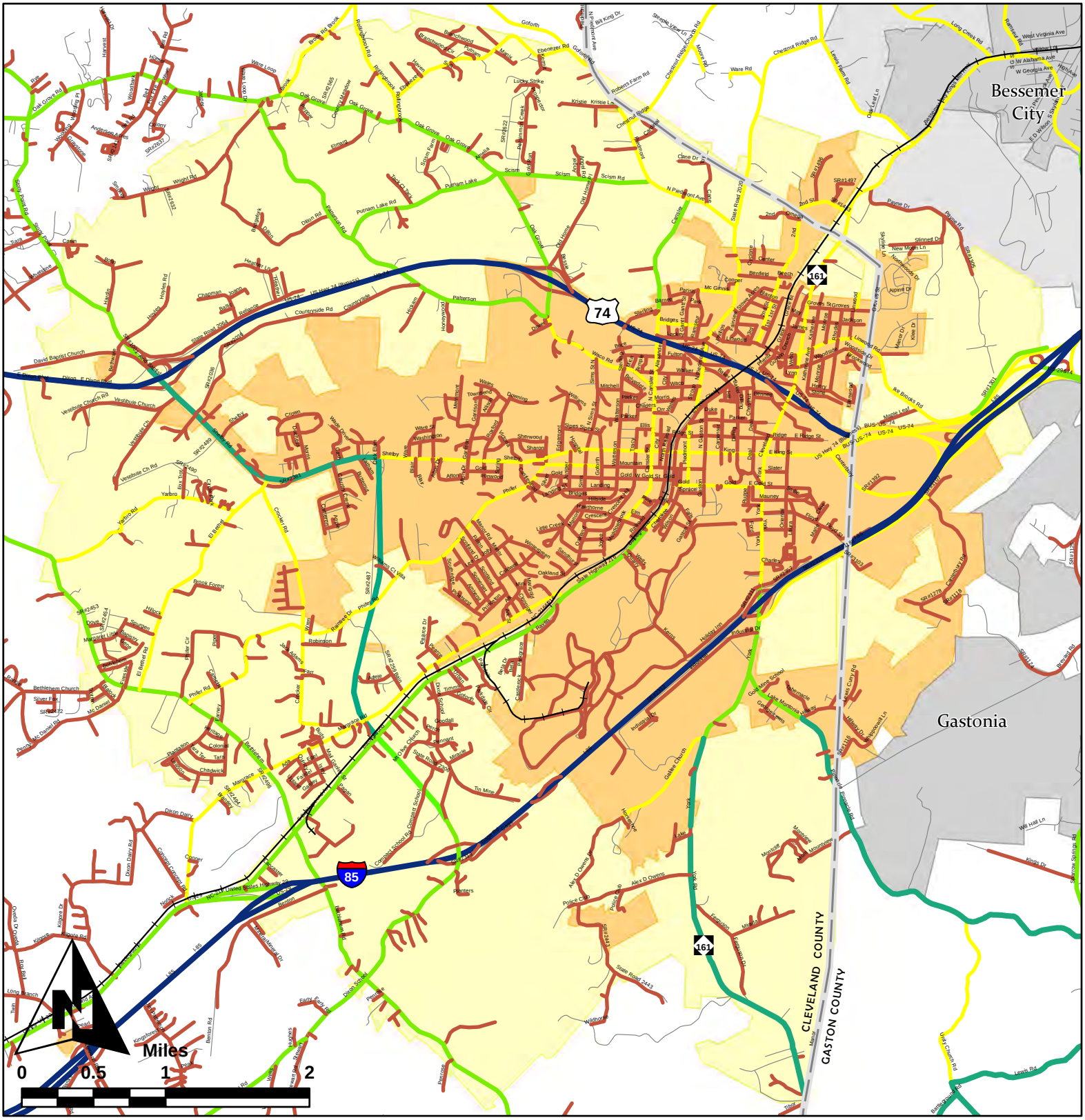

KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

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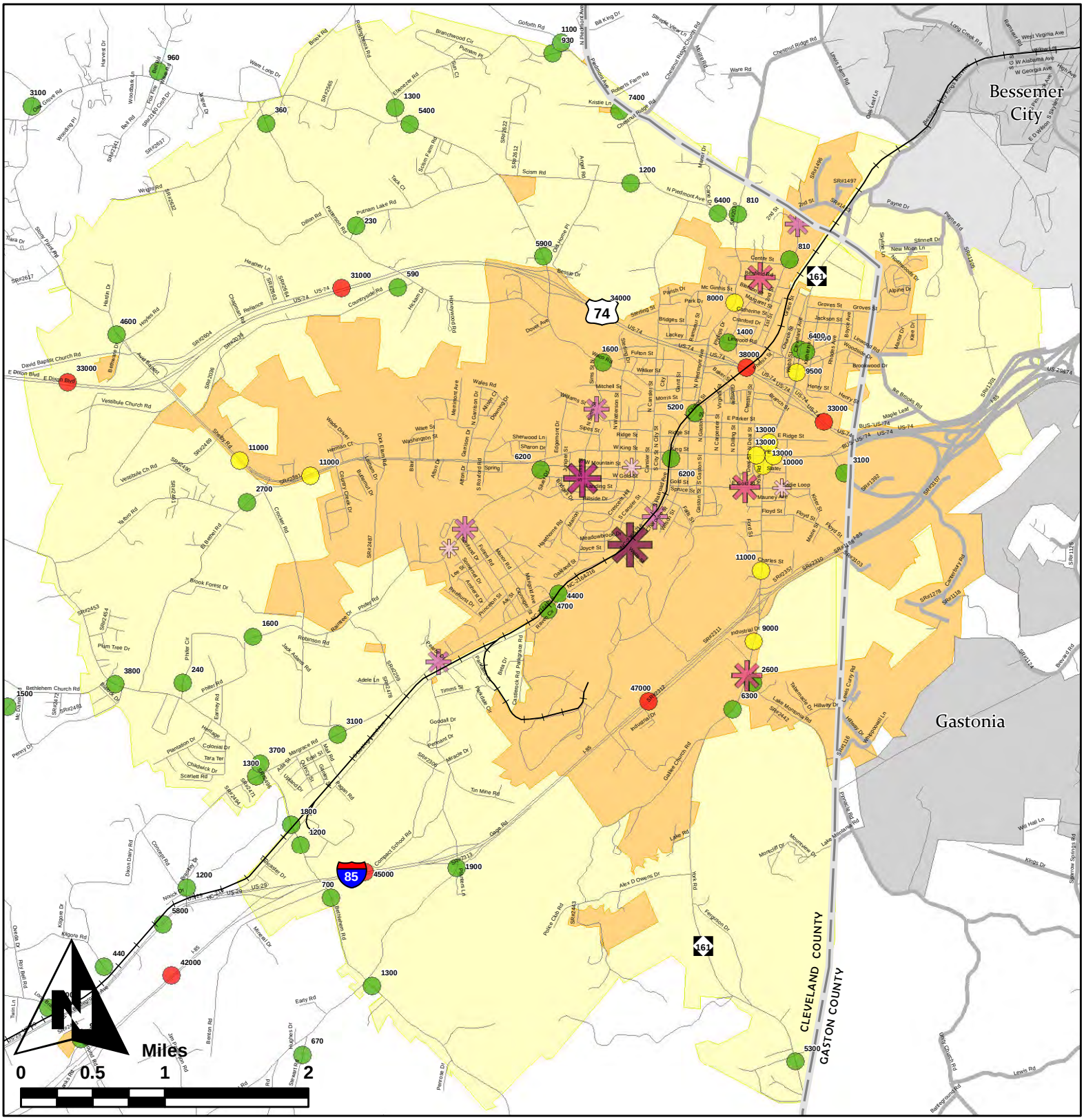
Posted Speed Limits

Posted Speed Limit (mph)

- 25 and under
- 30 - 35
- 40 - 45
- 50 - 55
- over 55



KINGS MOUNTAIN
NORTH CAROLINA
COMPREHENSIVE BICYCLE PLAN

Traffic Conditions

Existing Conditions

CCOG
Centralina Council of Governments

Avg. Annual Daily Traffic

- 80 - 7500
- 7501 - 15000
- 15001 - 47000

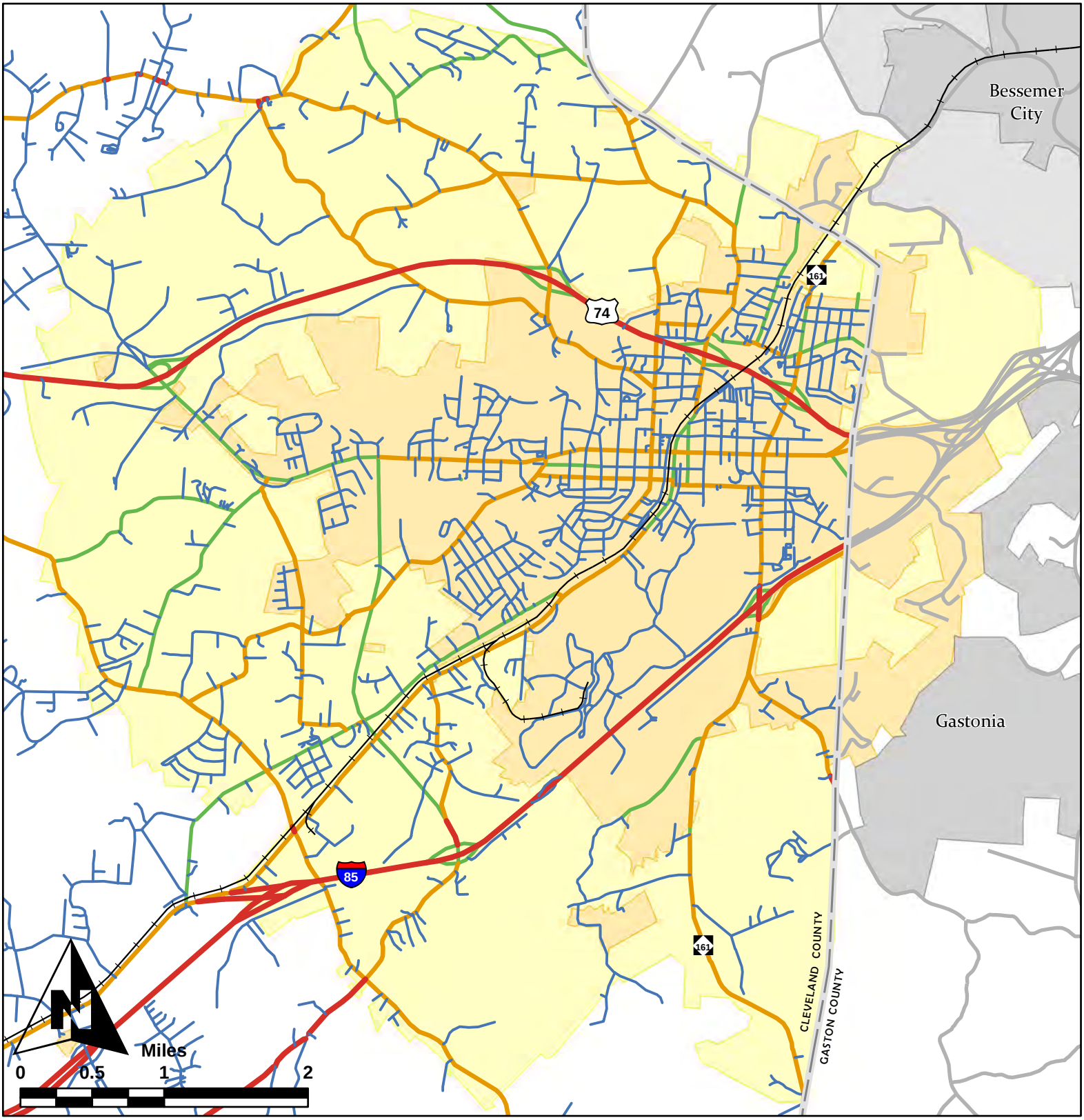
Bicycle Crashes

Severity

- Fatal
- Disabling
- Injury Evident
- Injury possible
- Property Damage Only

North Carolina CRASH DATA

Reported bicycle accidents from January 1990 to February 2010. NC Dept. of Transportation



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

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Bicycle Suitability Analysis

Bicycling Suitability

- Most Suitable (6 - 10)
- More Suitable (4 - 5)
- Somewhat Suitable (2 - 3)
- Least Suitable (0 - 1)

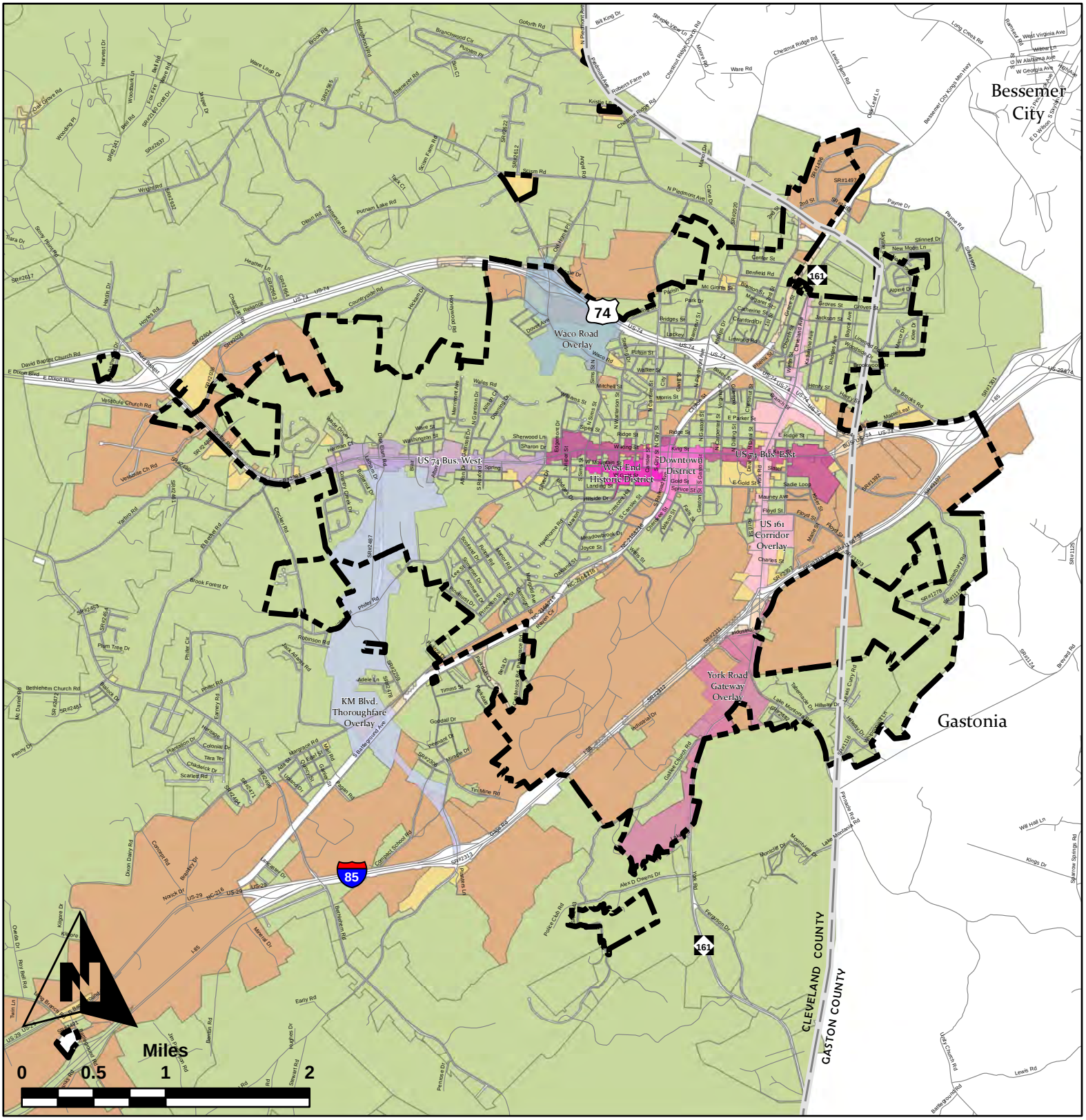
- Kings Mountain City Limits
- Additional Planning Area (ETJ)

Factors Used for Bicycling Suitability Map

The following table shows the assigned points breakdown

SUITABILITY FACTOR	VALUE RANGE	SCORE
Traffic Count	Less than 7500 AADT	2
	Between 7500 and 15000 AADT	1
	More than 15000 AADT	0
	AADT: Annual Average Daily Traffic	
Speed	25mph or less	2
	30mph or 35mph	1
	40mph and over	0
Functional Classification	Local	2
	Collector	1
	Minor or Principal Arterial	0
Bike Facility	Bike Lane or Shoulder	4
	Share the Road	2
	No Facility	0

Source: Mesilla Valley Bicycling Suitability Map (2009)



Zoning

KINGS MOUNTAIN NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

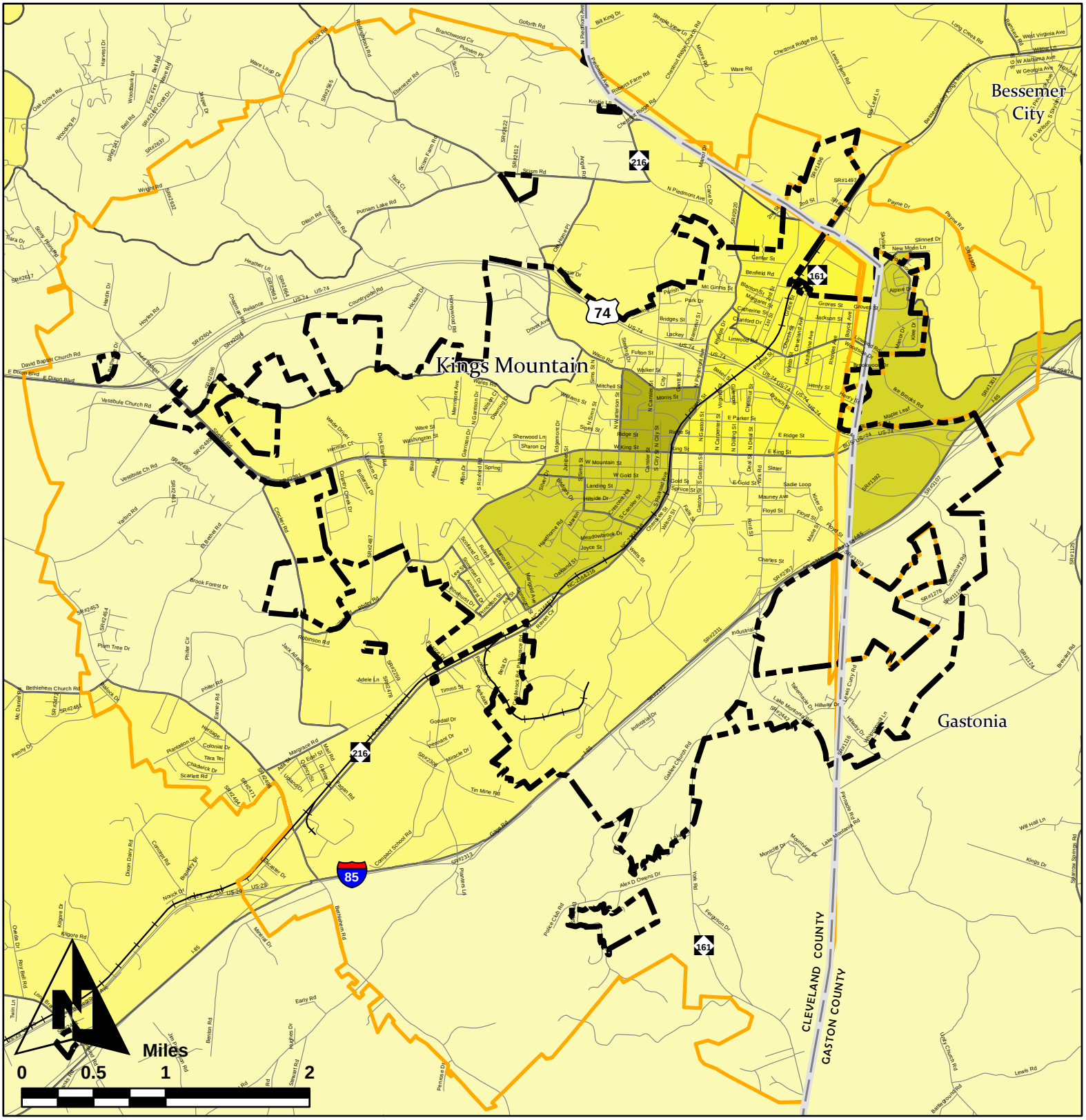
Centralina Council of Governments

General Zoning

- Agricultural
- Civil
- Commercial
- Industrial
- Residential

Overlay Districts

- West End Historic District
- Downtown Protection, Preservation, and Enhancement District
- NC 161 Corridor Protection Overlay
- York Rd Gateway Protection Overlay
- Overlay_74bus_e
- Overlay_74bus_w
- Waco Rd Overlay
- KM Boulevard Thoroughfare Protection Overlay



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Demographics

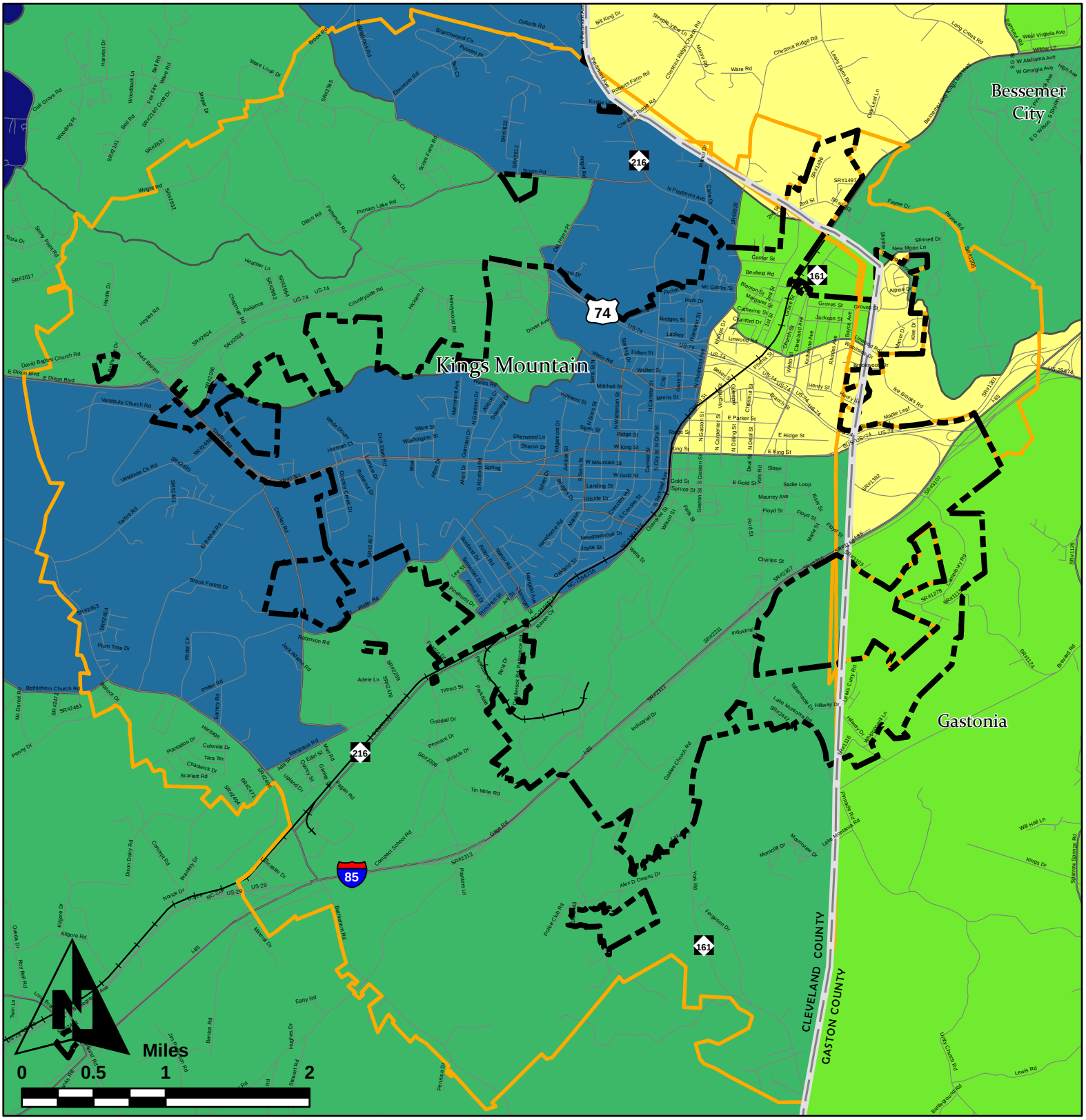
CCOG
Centralina Council of Governments

Population

Population per Acre

- > 8
- 4 - 8
- 2 - 4
- 0.5 - 2
- < 0.5

- Kings Mountain City Limits
- ETJ



KINGS MOUNTAIN NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Demographics

CCOG Centralina Council of Governments

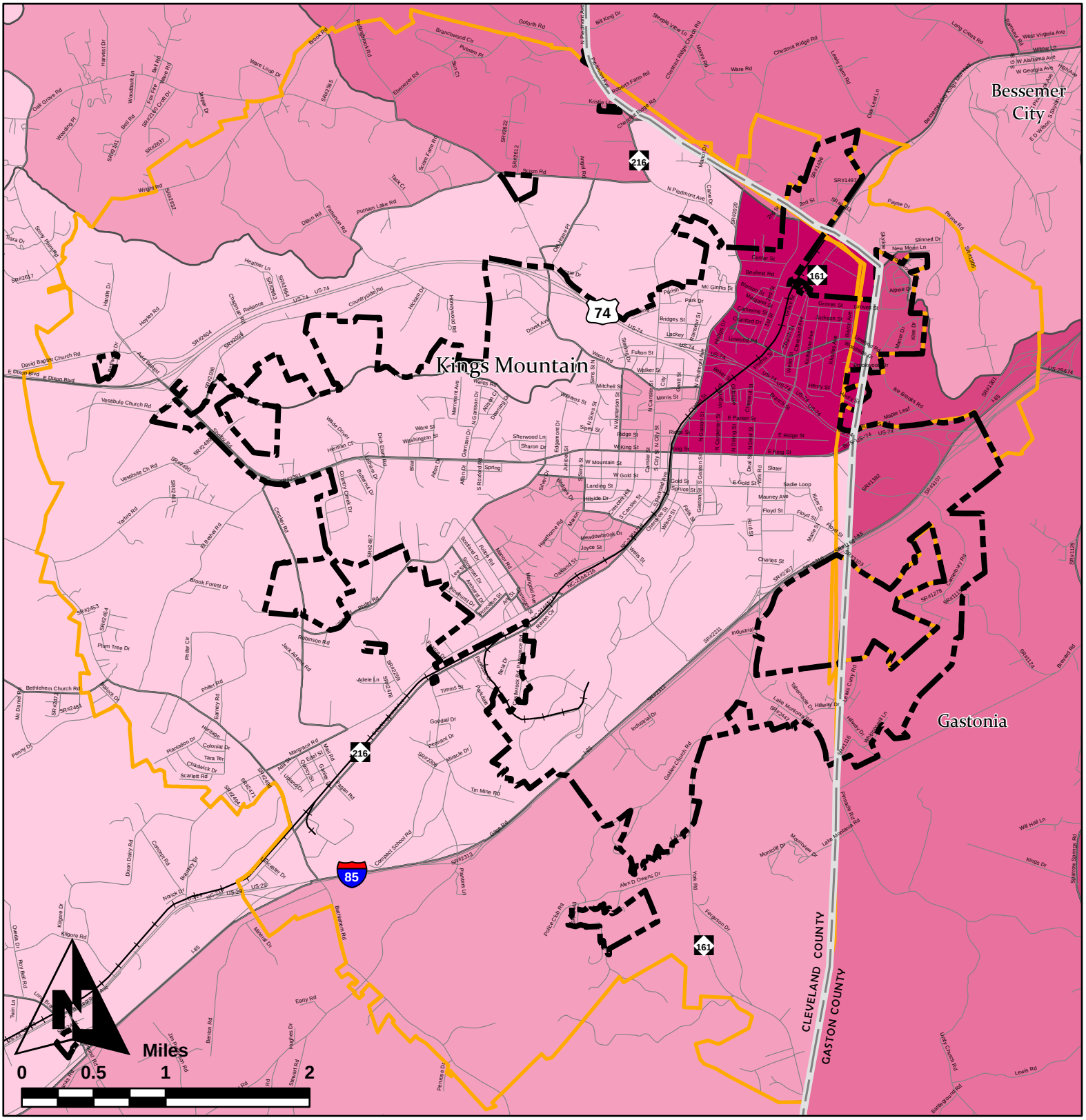
Income

Median Annual Income ($)

- 13,775 - 30,000
- 30,001 - 40,000
- 40,001 - 50,000
- 50,001 - 60,000
- 60,001 - 102,655

Kings Mountain City Limits

ETJ



KINGS MOUNTAIN NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Minority Population

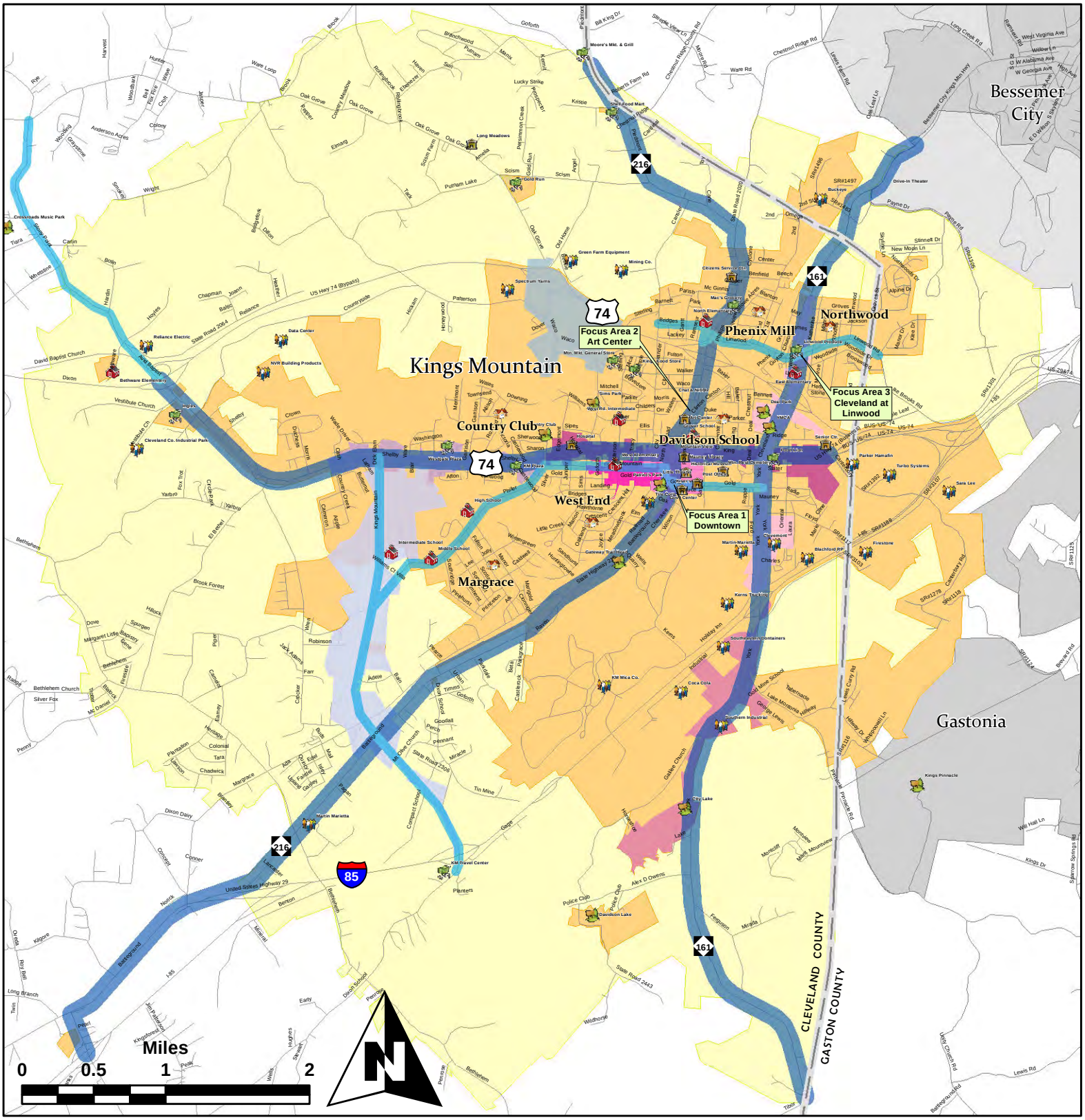
Demographics

Centralina Council of Governments

Percent Minority

- < 10%
- 10 - 30%
- 30 - 50%
- 50 - 70%
- > 70%

- Kings Mountain City Limits
- ETJ



KINGS MOUNTAIN NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Existing Conditions

CCOG Centralina Council of Governments

Corridors & Focus Areas

Focus Areas

Corridors

- Major
- Minor

Boundaries

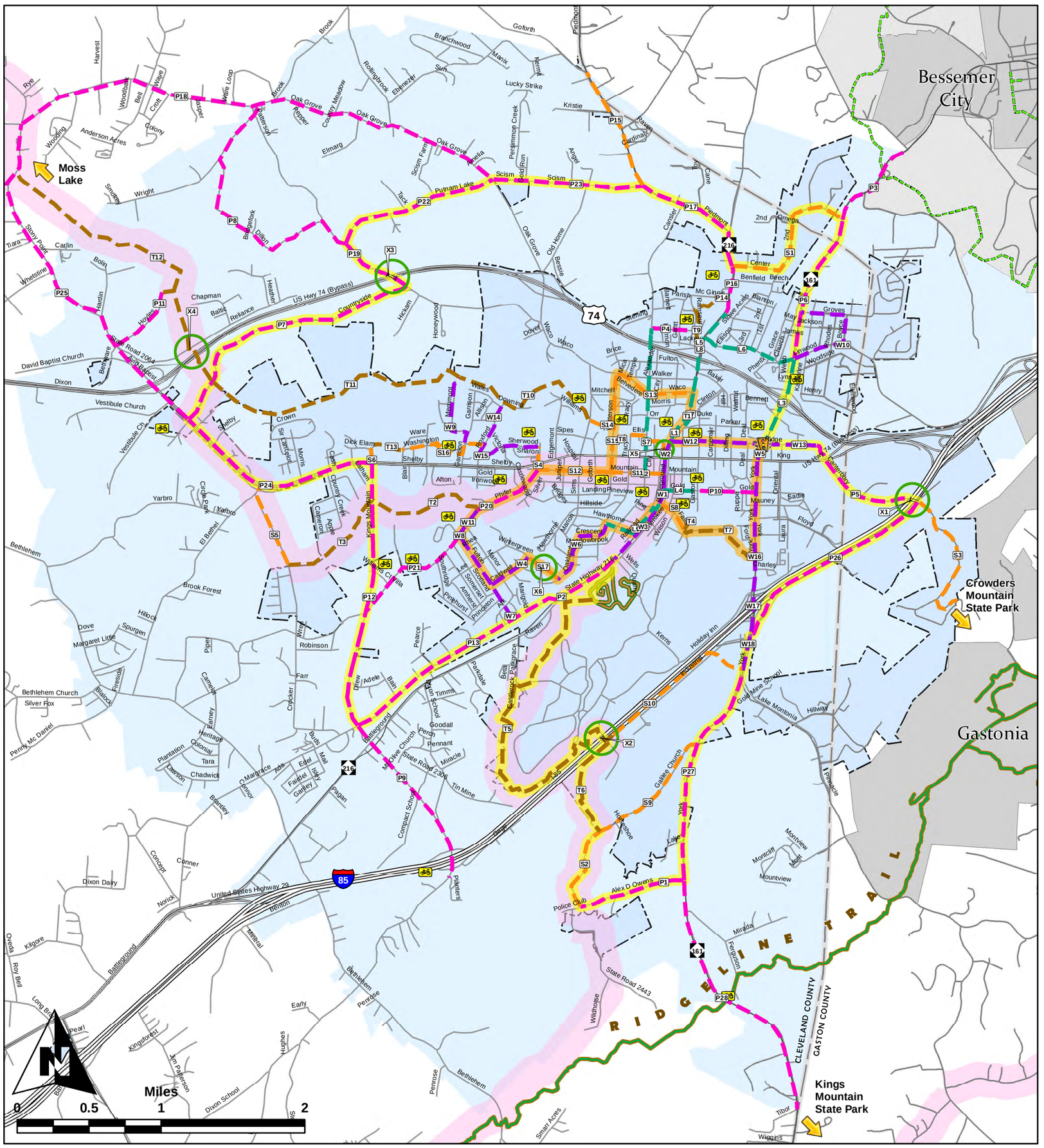
- City Limit
- ETJ

Overlay Districts

- West End Historic District
- Downtown Protection, Preservation, and Enhancement District
- NC 161 Corridor Protection Overlay
- York Rd Gateway Protection Overlay
- Overlay_74bus_e
- Overlay_74bus_w
- Waco Rd Overlay
- KM Boulevard Thoroughfare Protection Overlay

Destination Type

- Civic
- Commercial
- Employment
- Neighborhood
- School
- Recreation



KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Proposed Routes & Facilities

Proposed Facilities

- BL
- WOL/Sharrows
- PS
- Signage only
- Trail
- Bridge
- Bike Racks
- New Traffic Light
- Ridgeline Trail (Ped only)
- Gateway Trail (Multi-Purpose)
- Carolina Thread Trail
- Kings Mountain City Limits
- Additional Planning Area (ETJ)

Proposed Routes

- Inner Loop
- Outer Loop

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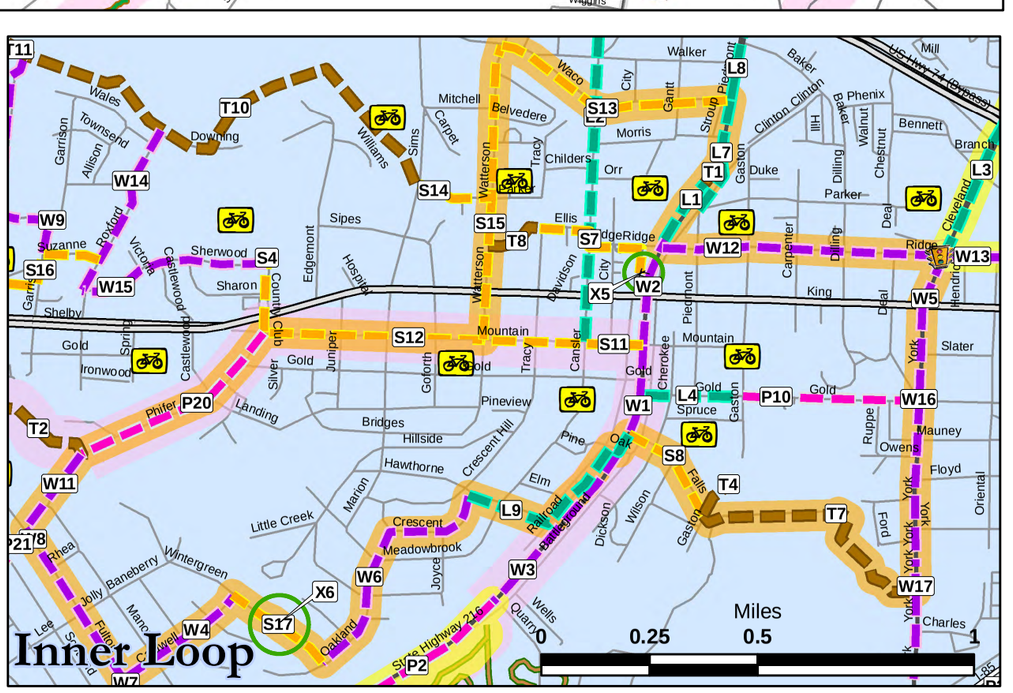
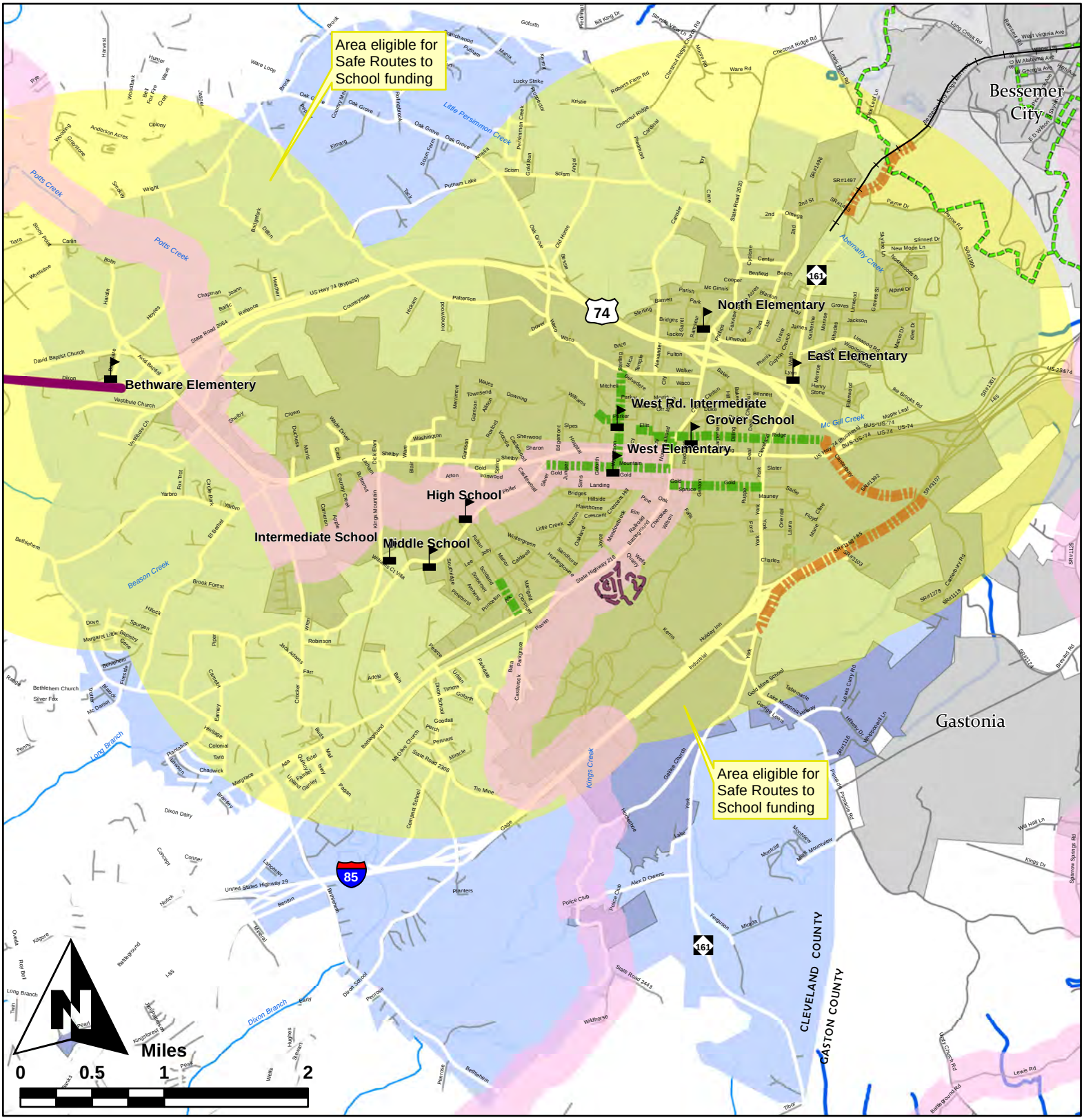
Centralina Council of Governments





KINGS MOUNTAIN
NORTH CAROLINA

COMPREHENSIVE BICYCLE PLAN

Proposed Facilities

Funding Opportunities

- CMAQ Eligible
- Powell Bill Eligible
- Carolina Thread Trail
- 2009-2015 TIP
- Proposed Projects
- Kings Mountain City Limits
- Additional Planning Area

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Section 8: IMPLEMENTATION & FUNDING

8.1 Sample Cost Estimates

In order to build bicycle facilities, a number of different costs associated with projects must be considered. These include: material costs, labor costs, mobilization costs, right-of-way purchase or easement costs, design costs, and project management expenses. Installation of paved shoulders and bicycle lanes may also include changes to existing grades and necessitate alterations to drainage structures. Together these items are considered "project costs." Multi-purpose paths are literally small roads, with all the costs associated with roads construction, so eliminating the right-of-way costs is often essential to the financial viability of a project. When multi-purpose paths are co-located on water or sewer easements, right-of-way costs are eliminated.

The cost estimates are provided below only as a guide and are approximate. Prices are current as of 2011. Materials, labor and other project costs will vary with fluctuating interest rates and inflation, as well as on the complexity of the project.

A summary of project type unit costs is provided in the following table:

PROJECT TYPE	CODE*	COST PER MILE♦
Signage only	S	$1,000
Restriping (lane adjustment only)	W, P	$5,000
Striping (bike lanes)	L	$15,000
Road widening (2' shoulders)	P	$300,000
Utility relocation		$400,000
Widening & grading	P	$500,000
Bridge rail renovation	X	$530,000
Trail	T	$750,000
Drainage and shoulder modification		$750,000
Suspended bridge	X	$1.5 million

* Code corresponds to project numbers in the Proposed Projects List and Proposed Routes & Facilities Map.

♦ Cost assumptions include design and construction. The results are costs that reflect those expenses for stand-alone projects, which must be designed, bid, and managed as independent projects. These costs may be lower for bicycle facilities that are constructed as a part of a larger road improvement project. All facility unit cost estimates include appropriate signage.

Signage

The cost for manufacturing a sign is relatively low, as low as $25 when simple signs are produced in bulk. Installing a sign raises the cost significantly, to approximately $300 per sign installation. Every major intersection and all intersections on designated bicycle route where bicycle routes make a turn will require bicycle route signage and a directional arrow for each approaching direction. "Share the Road" signage is recommended on a case by case basis as NCDOT desires to limit the installation of further signs due to visibility, maintenance, and driver perception issues.

Paved Shoulders and Bicycle Lanes

Adding asphalt to an existing paved road can oftentimes appear as a straightforward endeavor. Paved shoulders and bicycle lanes can be installed as a part of a resurfacing or widening project, or can be completed as a stand-alone project. The information below describes the variables, and costs, that must be considered as a part of any project.

The above costs were calculated from an NCDOT project calculation spreadsheet that included contingency, design, utility relocation, and contingency costs. The results are costs that reflect those expenses for stand-alone projects, which must be designed, bid, and managed as independent projects. These costs may be lower for bicycle facilities that are constructed as a part of a larger road improvement project.

The cost for slope modification is difficult to predict. The cost is minimal on projects where dirt simply has to be moved to create an appropriate slope. The cost increases dramatically when creating an appropriate slope requires right-of-way or easement acquisition, drainage modification, or retaining structures.

The cost to add bicycle lanes to the design and construction of a traditional road widening or construction project is reflected in all of the costs associated with a project, and so their costs can best be estimated as a percent of the project cost. According to NCDOT, the rule of thumb for adding bicycle or pedestrian facilities to a project is five to ten percent. The percentage will be higher on a straightforward two-lane road project, and less on a complex multi-lane project.

Multi-Purpose Paths

Multi-purpose paths are typically 10-foot wide paved facilities, on 30-foot wide corridors designated for bicycle and pedestrian use only. Such paths can be built on specific easements, dedicated rights-of way, or along utility corridors, such as electricity, water or sewer lines. There must be sufficient room available to accommodate the 30-foot corridor, which includes 10 feet of travel surface, and five-foot shoulders on either side. The cost to build a multi-purpose path includes many of the variables considered when constructing a new road: materials, bridging, drainage, signage, earth moving, and overall design and management.

8.2 Funding Sources & Strategies

Many sources are available for funding the planning and construction of bicycle improvements. Using the right source and getting the best return requires strategy. The most successful strategy for the City to develop and improve its bicycle system will involve an appropriate combination of all possible funding sources, both public and private. Local, state, federal, and private funding is available to support the planning, construction, right-of-way acquisition and maintenance of bicycle facilities. Available funding sources are related to a variety of purposes including transportation, water quality, hazard mitigation, recreation, air quality, wildlife protection, community health, and economic development. This section identifies a list of some of the bicycle facility funding opportunities available through federal, state, nonprofit, corporate and private sources. An important key to obtaining any of this funding is for the City to have an adopted plan for bicycle and multi-purpose trail systems in place prior to making an application or otherwise securing funding.

State Funding

NCDOT

Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks and bicycle-safe bridge design are frequently included as incidental features of highway projects. The NCDOT Complete Streets Program is expanding this policy.

1. State Transportation Improvement Program (STIP): The primary NCDOT source for developing pedestrian and bike facilities involves securing identification of a project in the State Transportation Improvement Program. Every two years projects are submitted by regional planning organizations (metropolitan planning organizations (MPO) and rural planning organizations (RPO) throughout the state. Submitted bike and pedestrian projects are prioritized by the Division of Bike and Pedestrian Transportation staff. High priority projects will be used to populate the 5-Year Work Program and the delivery STIP. For further information, see: http://www.ncdot.gov/performance/reform/

2. **Incidental Projects:** The NCDOT Board of Transportation approved in 2009 a "Complete Streets" policy to consider and incorporate multimodal alternatives in the design and improvement of all appropriate transportation projects within a growth area of a municipality unless exceptional circumstances exist. Routine maintenance projects may be excluded from this requirement. As NCDOT designs or develops individual highway or bridge projects along the proposed route, recommended bicycle improvements should be included in the design. These accommodations may increase the cost of the project. Local governments typically are asked to participate in funding such improvements, with implementation by the NCDOT.

   NCDOT may require local financial participation in the construction of such facilities, but the cost to include as a part of a larger project is always less than as a stand-alone one. The affected RPO and its member governments should reference the Plan's recommendations when reviewing projects throughout the development process.

3. **Congestion Mitigation and Air Quality (CMAQ):** CMAQ is a program that currently allocates approximately $20 million annually to North Carolina to fund programs in "non-attainment areas" (i.e., areas that do not meet federal air quality standards) and projects designed to improve air quality and reduce congestion, without adding single-occupant vehicle capacity to the transportation system. The funds originate from the Federal Highway Administration but are passed through to local entities by NCDOT. Most of the incorporated area of Kings Mountain lies outside of the current non-attainment boundary and therefore is not eligible for CMAQ funding. However, bicycle projects within the portion of the City that lies within Gaston County are eligible. CMAQ funds are distributed through the Lake Norman Rural Planning Organization (LNRPO). Its allocation over a seven year period is approximately $6.1 million.

4. **Road Resurfacing:** The City can request that NCDOT evaluate future road repaving projects in its jurisdiction to determine if a two-foot paved shoulder, or a four-foot bicycle-lane can be installed without significant drainage, Right-of-Way, or grading work required. Where such work is feasible, NCDOT can then inform the City of the upcoming work and offer the opportunity to financially contribute for the marginal cost associated with these improvements.

5. **Signage:** Bicycle route signage is installed by either the local NCDOT District Office or, when on municipal roads or multi-purpose paths, the affected municipality. When the District 12 does not have resources to purchase signage, NCDOTs Bicycle and Pedestrian Transportation Division (DBPT) may be able to assist with purchasing signage.

   All signage on NCDOT-owned facilities must meet the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). The DBPT will work with NCDOT divisions to determine signage locations and designations.

6. **Safe Routes To School (SRTS):** The SRTS program is funded under SAFETEA-LU and administered by NCDOT. The program provides approximately $15 million in North Carolina over five years for improvements within two miles of elementary and middle schools. Some of these funds are provided to the local highway division who distributes the funds at their own discretion. Individual grant awards are limited to approximately $200,000. No local match is required. These grants can pay for pedestrian and bicycle facilities and intersection improvements. The funds can also be used for education and enforcement efforts. The target population for these activities must be K-8 students.

   For more information about the SRTS program, contact:
   Ed Johnson, ASLA, RLA
   SRTS Coordinator
   NCDOT, Division of Transportation Mobility and Safety
   Traffic Management Unit
   1561 Mail Service Center, Raleigh, NC 27699-1561
   Email: erjohnson2@ncdot.gov
   Direct 919.329.8497 Branch 919.773.2800

North Carolina Division of Parks and Recreation
The Recreational Trails Program (RTP) provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The grants are intended for the development, construction, maintenance, and rehabilitation of multi-purpose trails and trail facilities. Funds are subject to the overall Federal-aid highway obligation limitation. Since 2009, reauthorization has been extended at 2009 funding levels. Funding status for the grant for 2012 and beyond is unknown. However, the North Carolina Division of Parks and Recreation is still encouraging applications for grant money. RTP funds may be used to match other Federal program funds for projects that otherwise would be eligible for RTP funding.

Eligible activities for RTP funds include:

- Maintenance and restoration of trails
- Development and rehabilitation of trailside and trailhead facilities
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails (with some limits on Federal lands)
- Acquisition of easements and fee simple title to property
- Assessment of trail conditions for accessibility and maintenance
- Development and distribution of related publications
- Operation of trail safety and trail environmental protection programs
- Assessment of trail conditions for accessibility and maintenance
- Other related uses

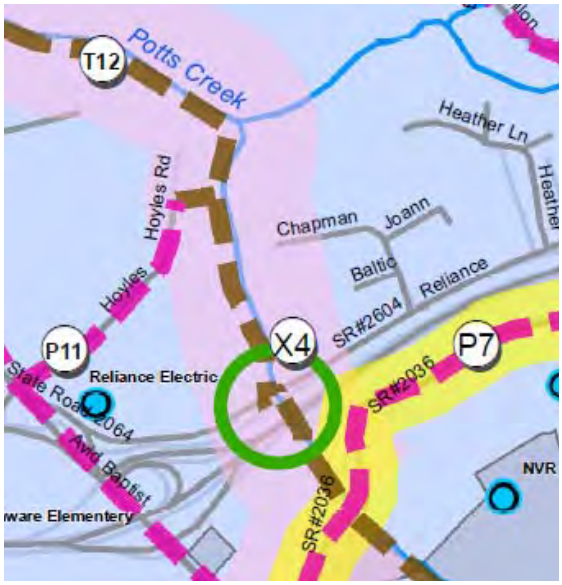
North Carolina Department of Environment and Natural Resources (NCDENR)
NCDENR administers two grant programs designed to fund planning and implementation of recreation projects, such as multi-purpose trails. These programs are the Parks and Recreation Trust Fund (PARTF) and the Land and Water Conservation Fund (LWCF). LWCF applicants may receive a maximum of $250,000 per project from NCDENR, and PARTF applicants may receive a maximum of $500,000, per project, from NCDENR. Both LWCF and PARTF grants require a dollar-for-dollar match, or 50 percent.

Private Foundations & Organizations

Carolina Thread Trail
The Carolina Thread Trail (CTT) is a regional network of greenways and trails currently being designed and developed over a region that includes both Cleveland and Gaston Counties. It is intended to ultimately reach 15 counties and over two million people, linking cities, towns and attractions. Its multi-purpose paths are intended to be primarily off-road facilities that will also serve to help preserve natural areas and provide opportunities for exploration of nature, culture, science and history.

CAROLINA THREAD TRAIL
Weaving Communities Together

The Catawba Lands Conservancy is the lead organization for the CTT. The Conservancy is a regional land trust that has worked closely with regional stakeholders to protect natural areas, water quality, working farms and other special places in the region.



Proposed **Carolina Thread Trail**
(shown as broad, light pink swath)

Both Cleveland and Gaston County has participated in the CTT by developing county-wide greenway plans. The Carolina Thread Trail segments are defined as ¼-mile wide "opportunity corridors" in which the actual trail will be located. The City of Kings Mountain will determine the exact location of the CTT segments within its jurisdictions. This more detailed alignment will depend upon existing conditions, including the availability of land, rights-of-way, landowner interest and future opportunities, and trail design and development.

As one of these more fine-grained planning efforts, the Kings Mountain Bicycle Plan process involved on-the-ground reconnaissance and evaluation of these CTT corridors within the Kings Mountain jurisdiction, and recommends a number of bicycle facility project segments to be located within proposed CTT alignments included in the Cleveland County master plan. These projects are indicated in the **Section 6: Proposed Projects List** and shown on the **Proposed Routes & Facilities Map** in **Section 7**.

Funding opportunities are identified annually by the Catawba Lands Conservancy for CTT designated trail projects. These funds are designated for both design and construction of trail facilities.

Land for Tomorrow Campaign
Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. Their goal is to ensure that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. For more information, visit http://www.landfortomorrow.org/

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

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

These are some of the conservation services of TPL:

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

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

Z. Smith Reynolds Foundation

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in other areas of greenways development. More information is available at www.zsr.org

Robert Wood Johnson Foundation

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

Local Strategies

Implementation through Local Land Development

The most cost efficient method for implementing bicycle facilities on a consistent basis is to do so as part of the land development process. Depending on the individual situation and what the City's land use regulations call for, right-of-way can be preserved, or construction of a greenway, multi-purpose path or bicycle lane can be undertaken. In general, required improvements or land reservation should be proportional to the impact the development will have on the transportation system.

Requiring the installation of bicycle lanes or paved shoulders as a part of the development approval process obviously costs the developer, but results in a facility constructed for less cost, and far less difficulty, than as an independent project. The traditional zoning language used for this strategy requires construction along the frontage of the development. For multi-purpose paths the community may work with the developer to set aside the land for construction of the facility, with either an easement or dedication of the property to the community. These developer costs can be recovered in part since the bike facility is an amenity that can enhance the value of a property.

Another strategy the City may use in securing infrastructural improvements is to make such improvements a "fair and reasonable" condition in association with the approval of a conditional zoning district or conditional use permit. Any such conditions must be tied to a development project itself, and must be mutually agreed upon by both the approving entity and the applicant, and should be directly associated with an approved planning document. In other words, if an approved plan called for an off-road bicycle path or greenway on a piece of property, a "fair and reasonable" condition associated with conditional approval would be for either the property associated with the path or greenway be dedicated to the local government, or the path segment be built on that piece of property (or funds in lieu be paid to the local government).

The City should use this tool ONLY when referencing adopted plans that clearly show proposed improvements (i.e., plan or greenway development) on a specific piece of property. The term "fair and reasonable" should also be used appropriately. Asking a property owner to make a $500,000 improvement or donation for a development that is valued at only $25,000 would not be deemed by most persons to be "fair and reasonable."

In order for these two tools to be used, they must be specifically allowed in the local land use regulations. In addition, approval of a conditional use permit necessitates a quasi-judicial public hearing to be held by the local government.

Powell Bill Funds

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.4. The City of Kings Mountain received $306,939.59 in 2010-2011. Powell Bill funds shall be expended only for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Communities are able to use Powell Bill funds to build and maintain bicycle lanes on roads that they maintain.

General Funds
Municipalities and counties are always eligible to utilize their own revenues for trail improvement and installation projects. Historically, there has been little interest in County-level participation in transportation, as public roads in North Carolina have been owned and maintained by either NCDOT or by municipalities (although in recent years the North Carolina General Statutes have been changed to allow counties to fund road maintenance). Municipalities have therefore been more involved in funding and executing transportation projects. The City is encouraged to consider funding strategic projects in this Plan that will not be funded by NCDOT in the foreseeable future, are ineligible for other grants, and cannot be improved or funded as a part of the development process. All improvements on NCDOT facilities must be coordinated with the NCDOT to ensure their requirements are met.

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

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

Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Major employers and developers should be identified. Very specific routes that make critical connections to places of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers that are located along or accessible to bicycle facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trailheads or interpretive signage along greenway systems. Legal agreements should be carefully reviewed to verify ownership of the subsurface, surface or air rights.

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

8.3 Maintenance Programs

Maintenance of bicycle facilities is an ongoing and necessary activity that ensures the continued safe use of a bike lane or trail. Maintenance should not be an afterthought, but should be considered at the outset of new project development and before reconstruction, as well as through on-going plans and routine maintenance.

ON-ROAD FACILITIES

For on-road facilities, maintenance activities should reflect the specific needs of bicyclists. Bicyclists ride on two very narrow, high-pressure tires. What may appear to be an adequate roadway surface for automobiles can be treacherous for cyclists. Fairly small rocks can deflect a bicycle wheel, a minor ridge in the pavement can cause a spill, a pot-hole can cause a wheel rim to bend. Wet leaves are slippery and can cause a bicyclist to fall. The gravel that gets blown off the travel lane by traffic accumulates against the curb, in the area where bicyclists are riding.

Perform these primary maintenance tasks for on-road bicycle facilities:

- Sweep streets after major winter storms.
- Sweep streets in autumn for leaves and in spring for tree waste.
- Keep drains in operating condition.
- Cut back vegetation to provide adequate clearances and sight distances.
- Cutback intrusive tree roots.
- Replace and repairing signs.
- Inspect and replace roadway striping and graphics to keep them prominent.
- Fill potholes and pavement cracks.
- Inspect pavement patches after underground utility work and other excavation activities that disrupt road and sidewalk surfaces.
- Modify or replace non-standard drainage grates with bicycle-safe grates.
- Clean and replace street lighting as needed to ensure their reliable operation and desired luminescence.

For more information, see the NBPC Technical Brief (National Bicycle & Pedestrian Clearing House) http://www.michigantrails.org/blog/wp-content/uploads/maintenance-of-bicycle-and-pedestrian-facilities.pdf

Pavement Marking

A variety of pavement marking methods can be employed to define bike lanes. These markings are renewed annually either through painting or applying new pavement tape. Buttons are another form of pavement marking, but they are replaced as needed rather than on a regular replacement schedule.

OFF-ROAD FACILITIES

Trails with multi-purpose paths used by bicycles must be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards, or areas where water accumulates. Other bicycle facilities, such as signage, lighting, striping and landscaping, require other care and occasional replacement.

In general, maintenance costs include:

- Personnel Costs – wages and benefits for the people who perform the work.
- Materials – or supplies, including paving materials, and landscape materials such as soil, rocks, and plants.
- Water – for irrigation.
- Utilities – including electricity and phone for running automatic or centralized irrigation systems and traffic signals.
- Equipment – for on-going maintenance and future purchases of maintenance tools.

Maintenance Considerations for Landscaped Areas

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

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

Maintenance & Operations of Off-road Trails

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

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

1. **Long-term maintenance programs** - includes renovation of facilities and trail resurfacing. Comprehensive inspections should occur twice a year to record user impacts, general wear and tear, and other factors that may affect safety, environmental features, or structural integrity of the facility. If long-term maintenance programs are deferred, the safety of the trail is compromised and costly capital

improvement funds to renovate damaged areas may be required. Typical long-term maintenance activities include:

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

2. **Routine maintenance** – includes safety and repair issues that occur throughout the life of the facility. Frequency of routine maintenance should take place on a monthly basis, dependent upon the amount of usage and availability of funds. Typical routine maintenance activities include:
    - Removal of litter and general cleaning
    - Sweeping and leaf removal
    - Mowing and weed control
    - Pruning and removal of encroaching/fallen branches
    - Trail edging
    - Route signage maintenance
    - Graffiti control
    - Regular presence of volunteers to report faults

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

Volunteer programs

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

8.4 Plan Adoption

After final approval of the Comprehensive Bicycle Plan by the Steering Committee and NCDOT's Division of Bicycle and Pedestrian Transportation, the planning consultant (Centralina Council of Governments) submitted the Plan to the City Planning Board for review, and to the Lake Norman Rural Planning Organization (LNRPO) for endorsement.

Upon recommendation of the Plan by the Planning Board, the Plan was presented to the City Council for review. The City Council and attorney reviewed the Plan and held a public hearing of the Plan for public comment. When the City Council was satisfied with the Plan, it was publicly adopted by that body.

8.5 Implementation Actions

Once the Bicycle Plan is adopted and becomes part of Kings Mountain policy, there are a number of Key Action Steps the community can take to ensure that it is addressing the recommendations in the plan. Some of these actions are explained in detail in other parts of the Plan. The items are presented here for quick review with references to those corresponding sections of the Plan.

1. Form Action Committee (KMBC)	**Section 4.5.1**
2. Modify Ordinances	**Section 4.5.2**
3. Initiate Programs	**Section 4.6**
4. Identify Funding Sources	**Section 8.2**
5. Begin Construction of Priority Projects	**Section 6.3**
6. Develop a Maintenance Program	**Section 8.3**
7. Develop a Bike Route Map	**Section 5.9, 5.15**

8.6 Performance Measures

By its nature and scope, a comprehensive plan is not intended to be completed all at once. Completing every recommendation of this plan would likely require decades. Meanwhile the shape and needs of the community change. With this in mind, the Plan includes a list of projects that has been carefully prioritized. Projects should be taken on with respect to their designated priority as opportunities permit. But priorities, as well as projects themselves, must be revised periodically to meet changing conditions. Though the City remains true to the vision described in this Plan, the means of achieving that vision may change with fluctuating economic conditions, property sales and redevelopment, fluid population trends, changing development practices, and evolving technology. As the Plan is implemented and bicycle facilities are constructed, it is recommended that the City perform a periodic evaluation of the goals and the processes described in the Plan, particularly in coordination with road projects, and as more growth in the area occurs.

Performance measures help keep a plan on track over the years it takes to implement it. These measures should serve as standards by which to evaluate the efficacy of various projects or programs, and as an impetus to keep the community on the task of completing projects, starting programs, or changing policy. As such, performance measures should be reported publicly at regular intervals.

Performance measures are best determined locally to fit local means and expectations. But to serve effectively and practically for any community, they should include the following:

- A clear description of the data to be collected
- An cost-effective and reliable means of collecting the data
- Straight-forward results related to common factors such as:
  - **linear miles** – on-road or off-road facilities, road-miles signed, connectivity, etc.
  - **years** – over which measureable quantities of improvements are made, etc.
  - **number of riders** – participant count at bicycle events, bicycle ownership per capita, number of reported accidents, participants in education programs, etc.
  - **dollars spent** – amount budgeted, amount received through grants, percentage of overall budget spent on various categories of bicycle-related expenditures, etc.

Example measures/goals:

- 1 mile of on-road or off-road bike facility to be implemented each fiscal year.
- 1,000 bicycling participants in a certain event costing ____ dollars to sponsor

Ultimately, the Kings Mountain Comprehensive Bicycle Plan could be considered successful as it meets its stated goals. Therefore, each project should be considered and evaluated in terms of how it contributes to meeting those goals. In abbreviated form, the goals of this plan are:

- safe bicycling conditions through targeted on-road and off-road bicycle facilities
- bicycle connections to popular destinations, creating a connected community
- safe passage across gaps and around barriers, such as railroads and highways
- on-road and off-road bicycle facilities to serve all segments of the population, for commuting, recreation, exercise, scenic enjoyment, and relief from automobile traffic
- economic development and significant community events
- Strategic use of existing conditions and making the best use of funding opportunities

The recommendations below are provided as examples of regular means of evaluating both the effectiveness of projects, and the ongoing relevance of the Plan itself.

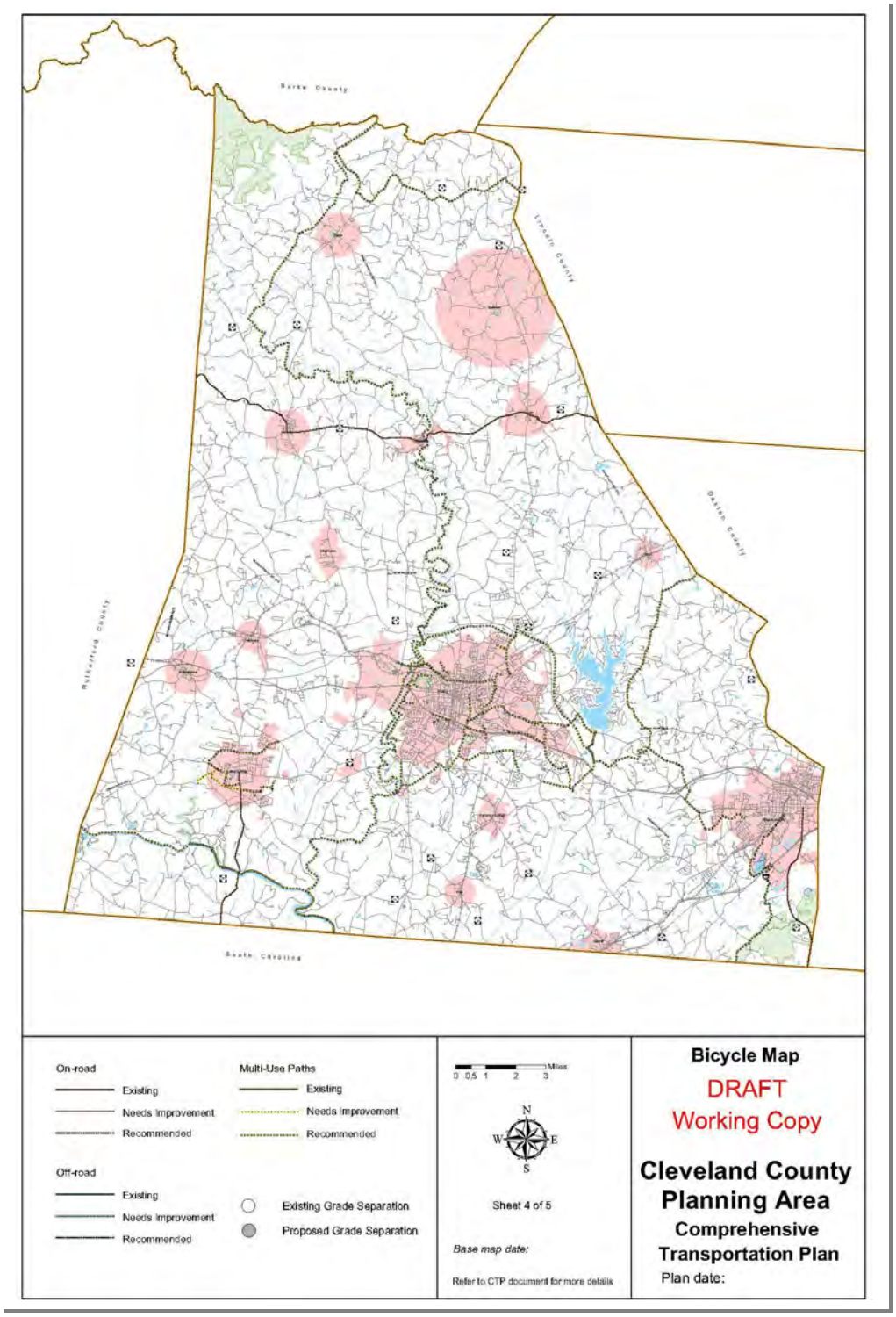
- The Kings Mountain Bicycle Committee (KMBC) should meet periodically to confirm and re-evaluate the priorities of this Plan and its recommended projects, particularly as tracts of land are developed.
- The Public Works Director should regularly report facility conditions and needs.
- Public surveys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

APPENDICES

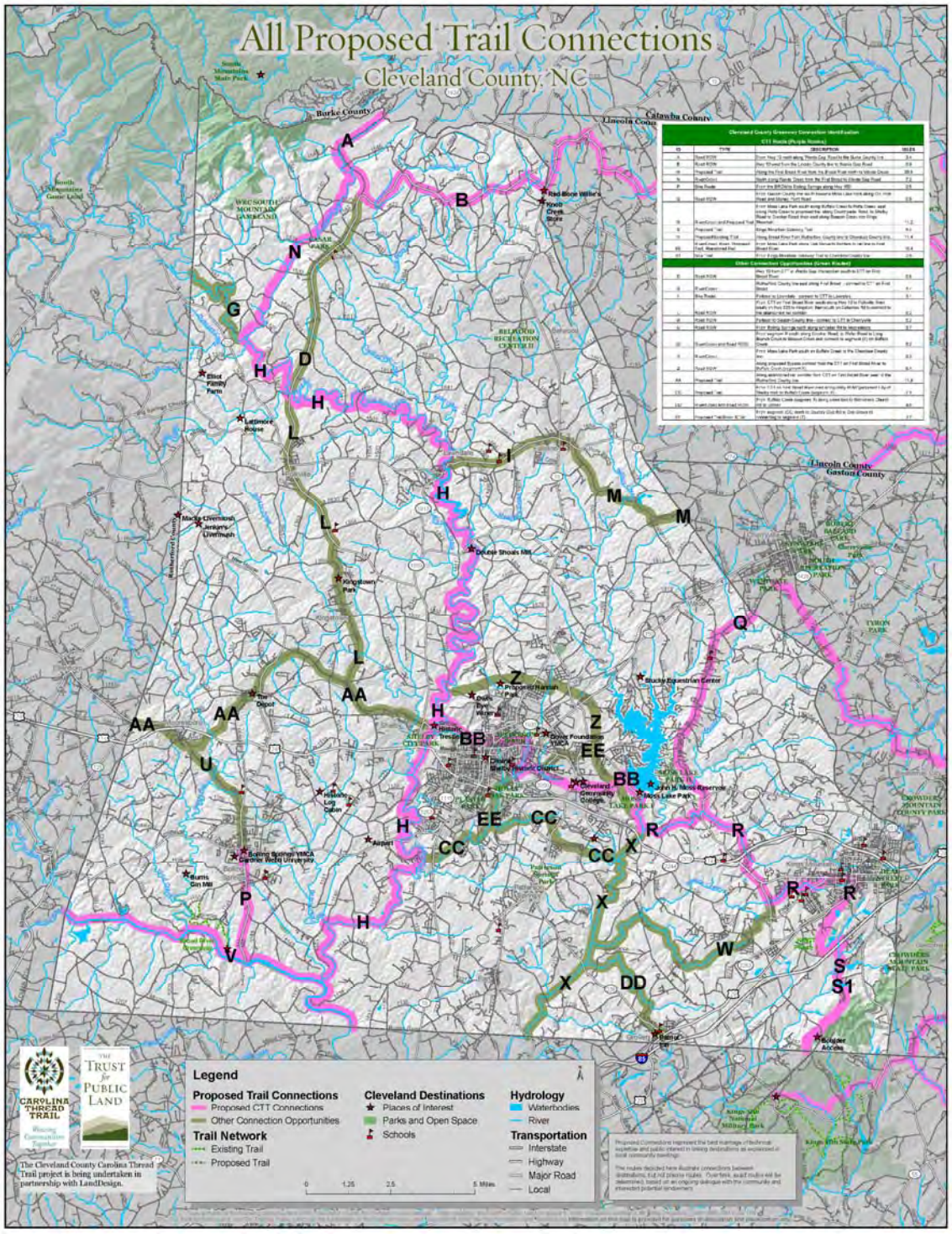
INDEX

A.1 Cleveland Avenue Proposed Lane Treatment (section)

A.2 Cleveland County Comprehensive Transportation Plan (CTP) Bicycle Sheet

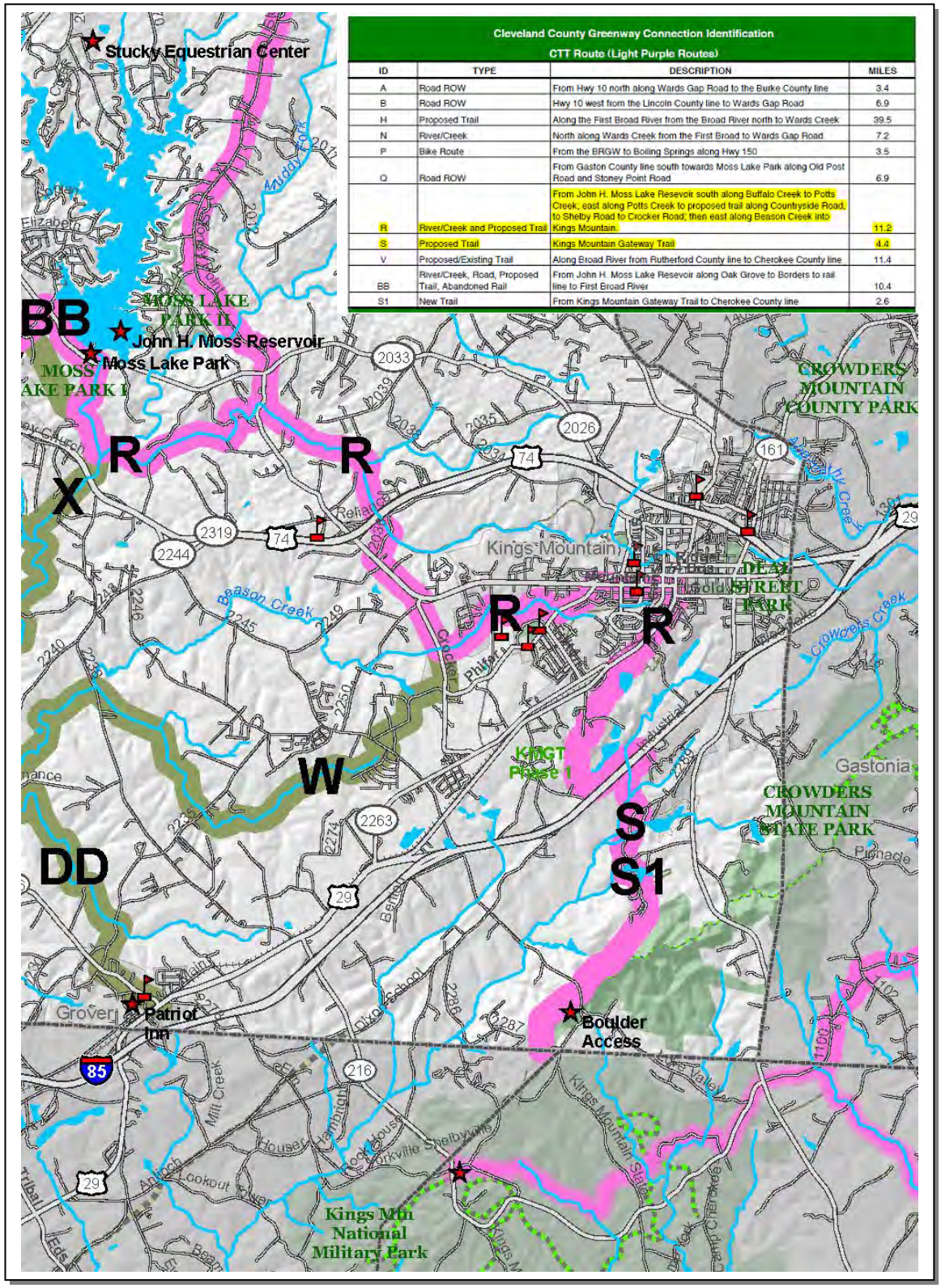


A.3a Cleveland County Greenway Master Plan



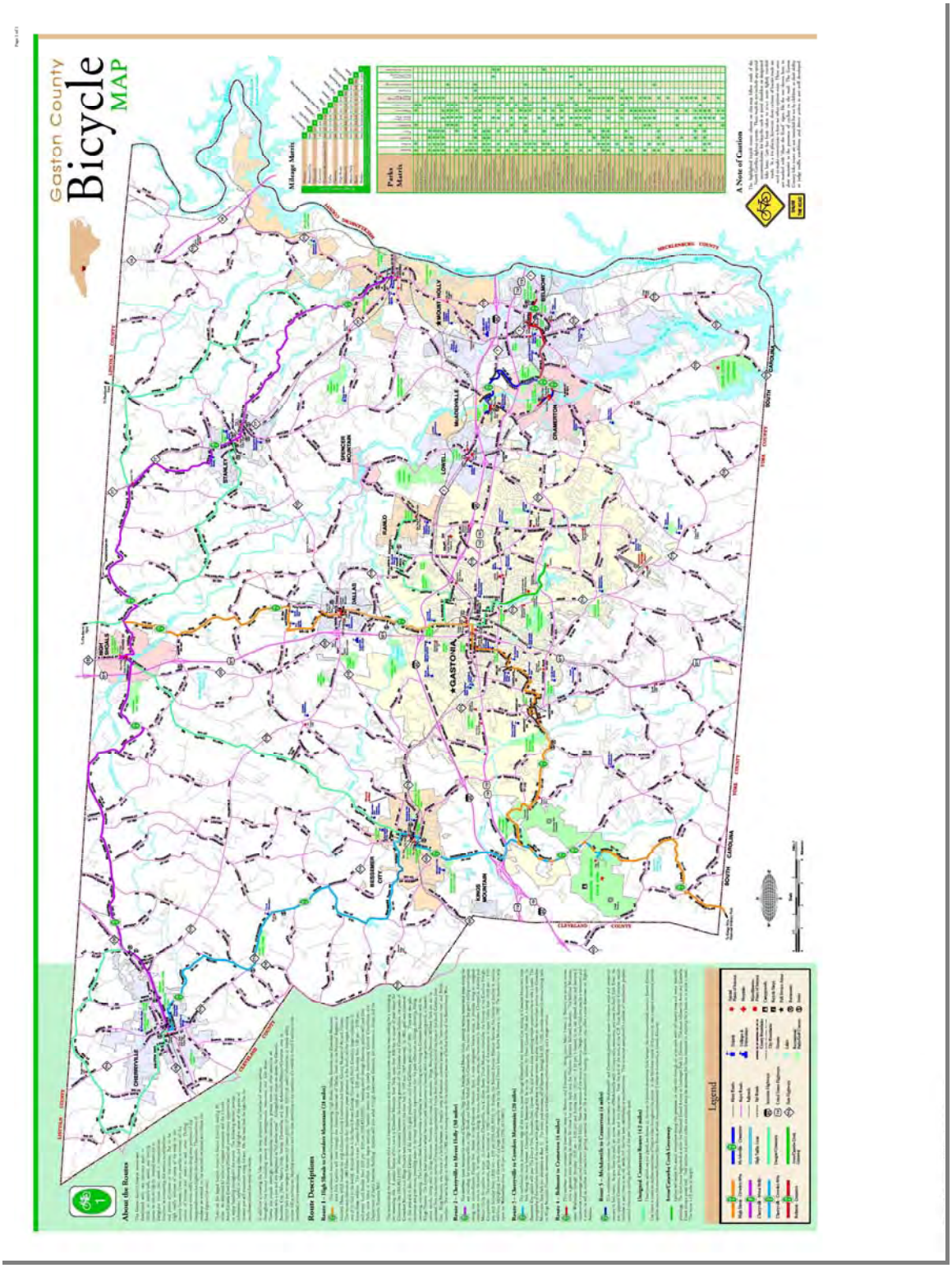
See detail of Kings Mountain area and project list next page.

A.3b Cleveland County Greenway Master Plan (Detail)

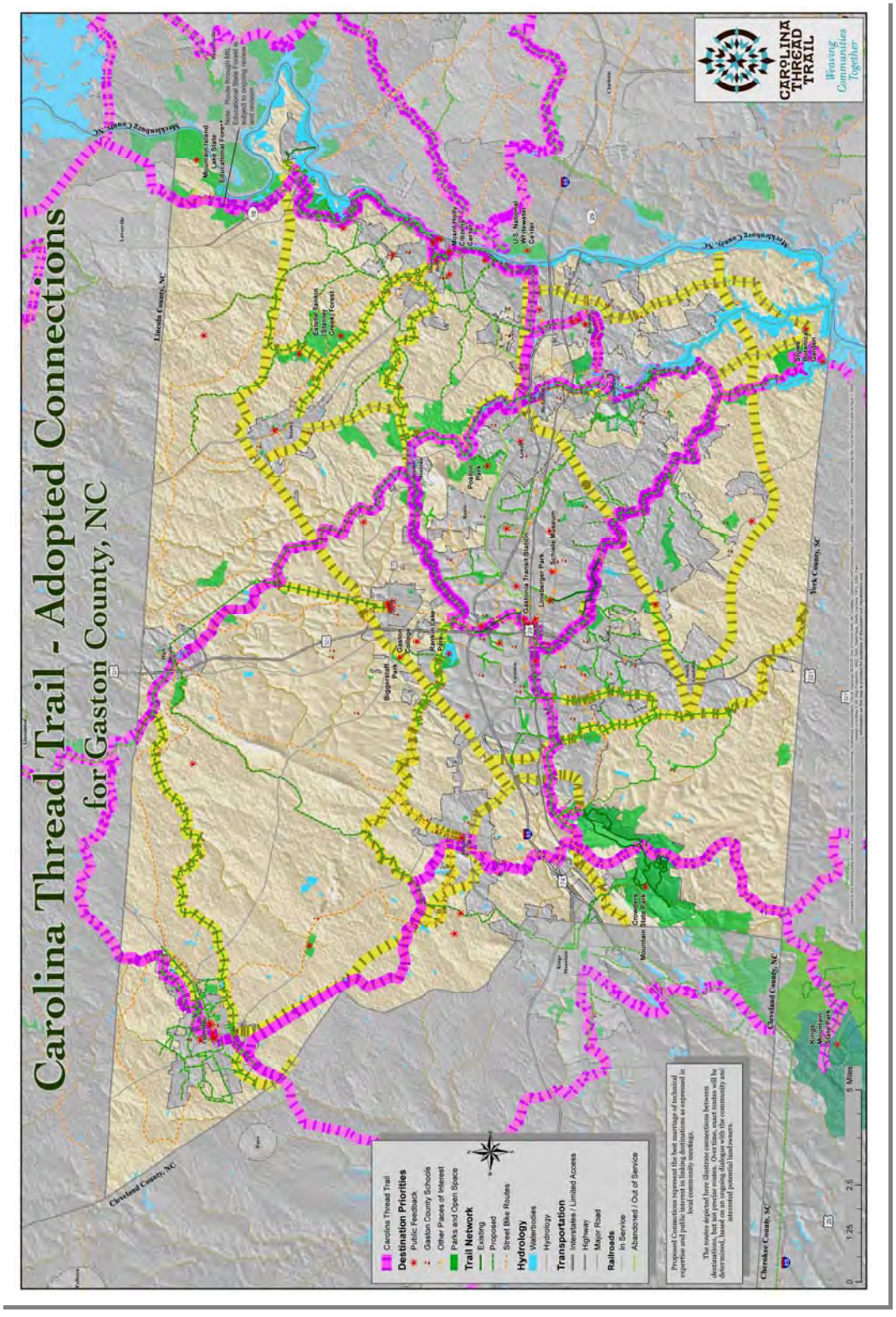


Cleveland County Greenway Connection Identification CTT Route (Light Purple Routes)			
ID	TYPE	DESCRIPTION	MILES
A	Road ROW	From Hwy 10 north along Wards Gap Road to the Burke County line	3.4
B	Road ROW	Hwy 10 west from the Lincoln County line to Wards Gap Road	6.9
H	Proposed Trail	Along the First Broad River from the Broad River north to Wards Creek	39.5
N	River/Creek	North along Wards Creek from the First Broad to Wards Gap Road	7.2
P	Bike Route	From the BRGW to Boiling Springs along Hwy 150	3.5
Q	Road ROW	From Gaston County line south towards Moss Lake Park along Old Post Road and Stoney Point Road	6.9
R	River/Creek and Proposed Trail	From John H. Moss Lake Resevoir south along Buffalo Creek to Potts Creek, east along Potts Creek to proposed trail along Countryside Road, to Shelby Road to Crocker Road; then east along Beason Creek into Kings Mountain.	11.2
S	Proposed Trail	Kings Mountain Gateway Trail	4.4
V	Proposed/Existing Trail	Along Broad River from Rutherford County line to Cherokee County line	11.4
BB	River/Creek, Road, Proposed Trail, Abandoned Rail	From John H. Moss Lake Resevoir along Oak Grove to Borders to rail line to First Broad River	10.4
S1	New Trail	From Kings Mountain Gateway Trail to Cherokee County line	2.6

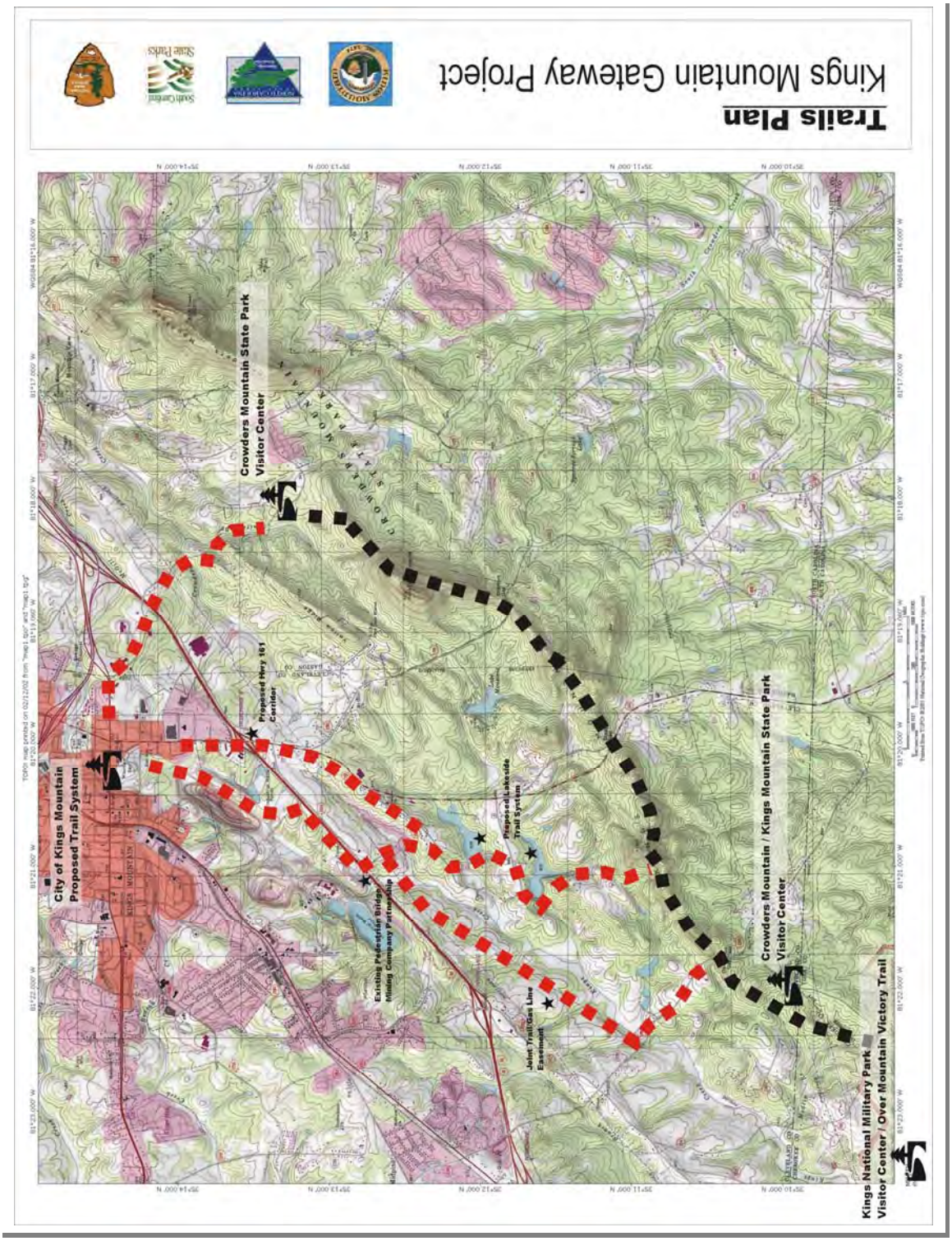
A.4 Gaston County Bicycle Map



A.5 Gaston County Greenway Master Plan

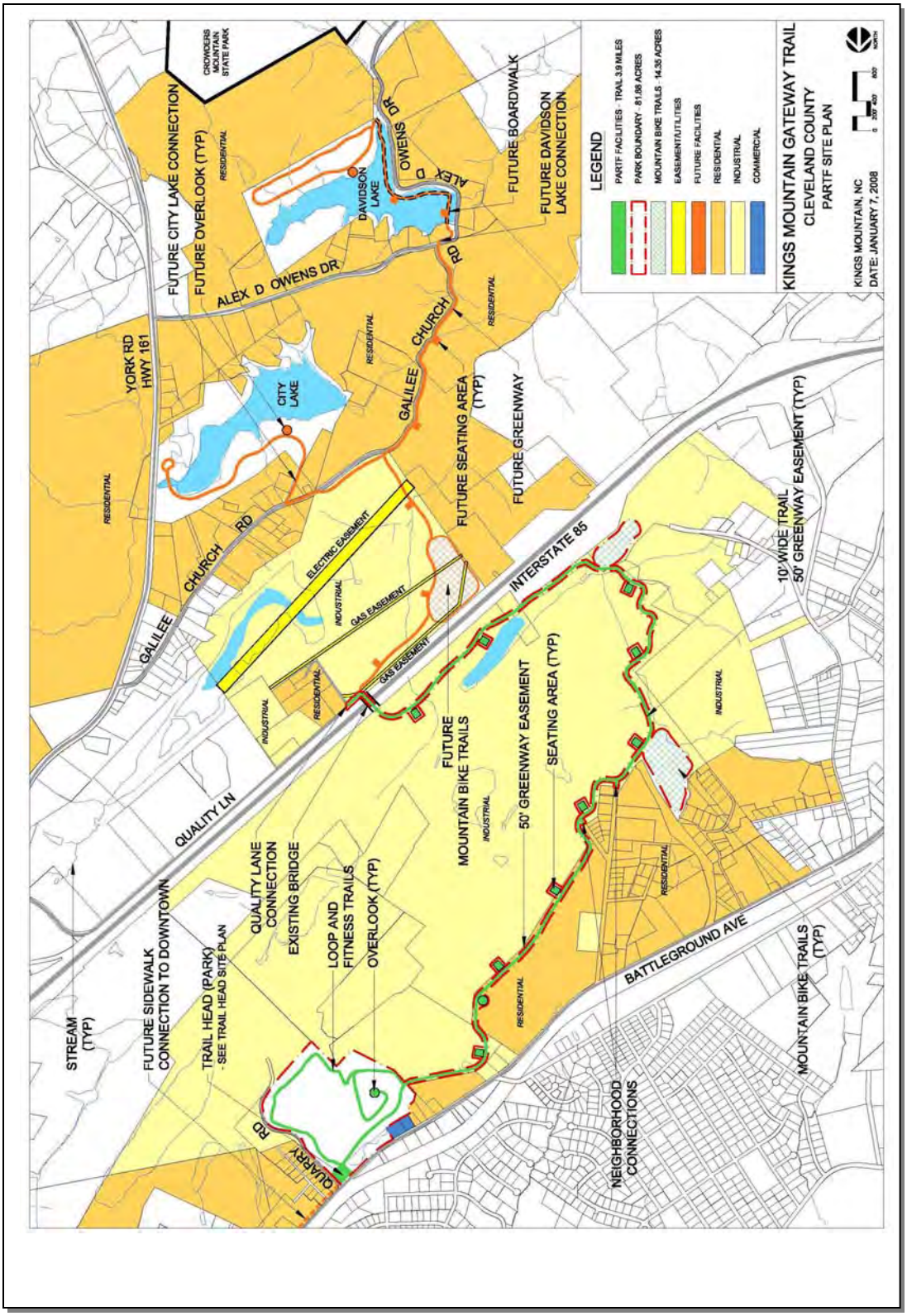


A.6 Gateway Project Conceptual Plan

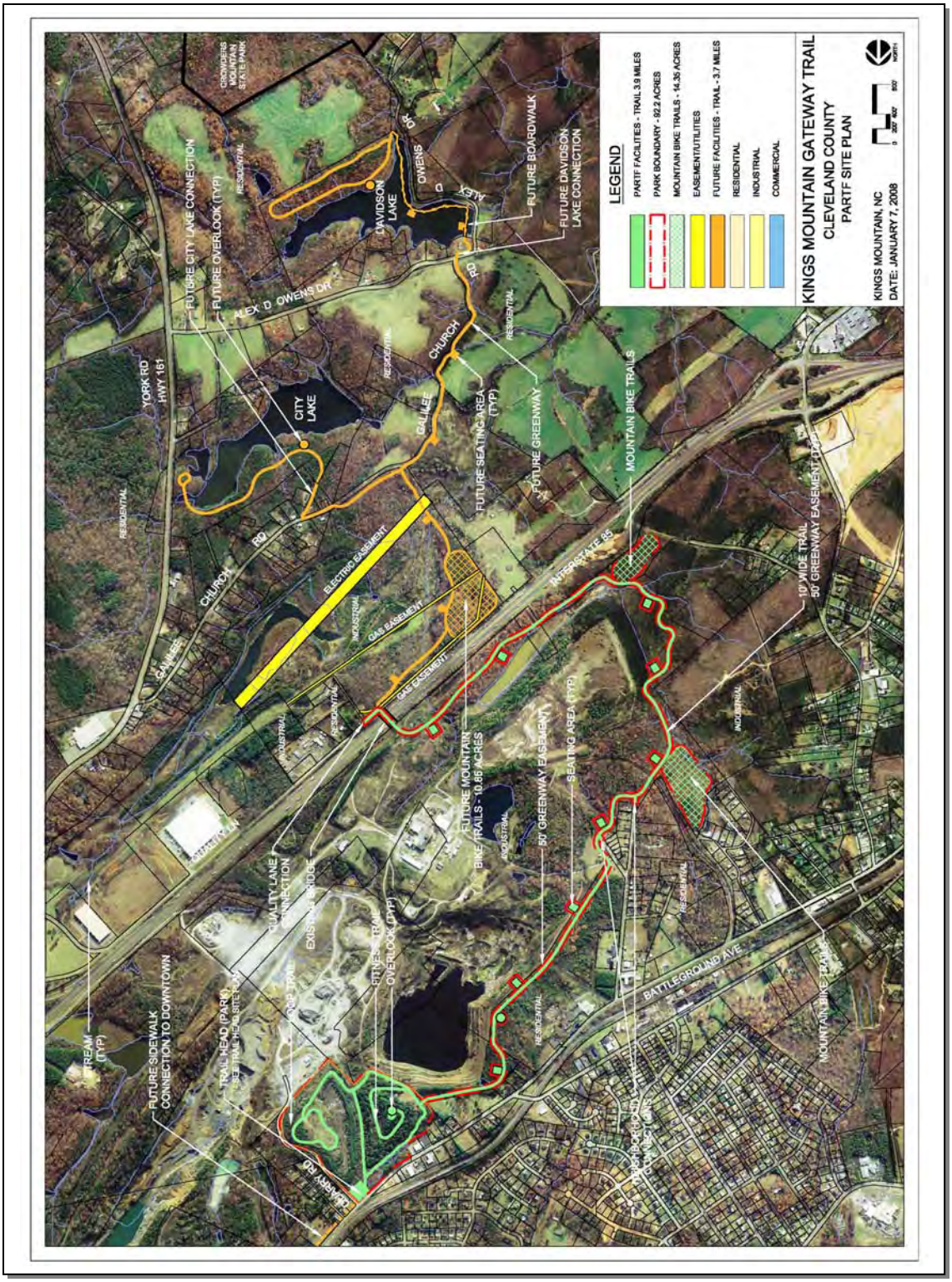


A.7 Gateway Trail Loop Aerial Map

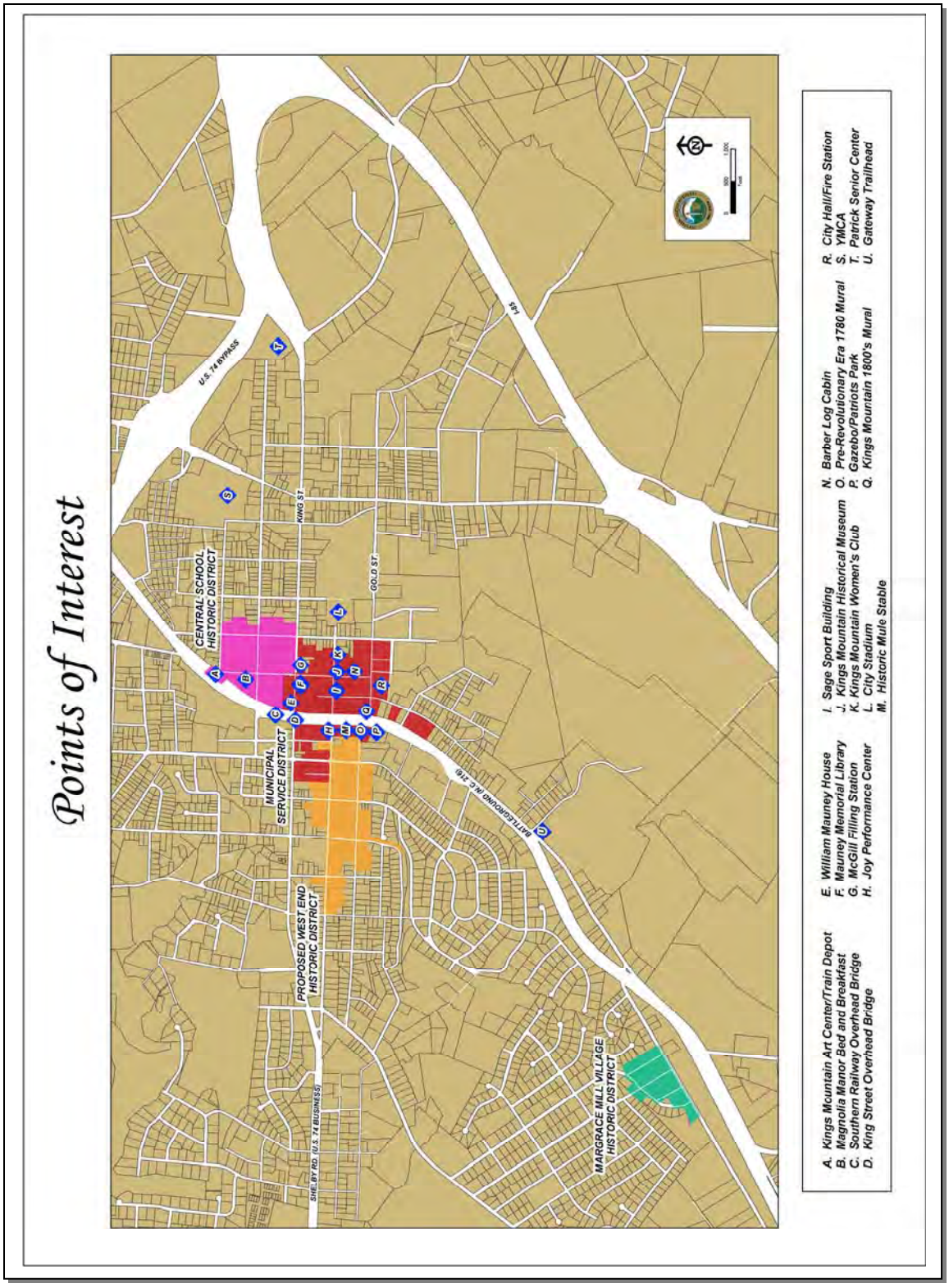
A.8 Gateway Trail PARTF Site Plan



A.9 Gateway Trail PARTF Site Plan Aerial



A.10 Kings Mountain Points of Interest Map



A.11 Kings Mountain Street & Sidewalk Data (sheets 1 – 6)

Sheet 1

Street Name	Curb & Gutter	Sidewalks	From	To	Center Line Length	Width	D.O.T. #
Afton Drive	N/A	N/A	King Street	Dead End	885	23	2253
Alexander Street	N/A	601	Walker Street	Dead End	1026	14ft	
Alley Street	N/A	N/A	Waco Road	Morris Street	425	17ft	
Allison Court	1604	N/A	Wales Road	Downing Drive	829	28ft	
Alpine Drive	3164	N/A	Northwoods Drive	Northwoods Drive	1571	30ft	
Alston Circle	1306	N/A	Crocker Road	Cul-De-Sac	650	24	
Amherst Drive	2630	N/A	Southwoods Drive	Lee Street	1315	27ft	
Ann Street	1412	N/A	Marcella Drive	Cul-De-Sac	702	24	
Apple Court	N/A	N/A	Country Creek Drive	Cul-De-Sac	324	24ft	
Ark Street	261	261	Margrace Road	Mini Street	1426	21ft	
Baker Street	2031	778	N. Piedmont Ave.	Phenix Street	1496	32ft	
Baker Street	N/A	N/A	Phenix Street	Hill Street	434	15ft	
Baneberry Drive	1839	N/A	Maner Road	Cul-De-Sac	916	27ft	
Barnett Drive	624	263	N. Cansler Street	Dead End	793	22ft	
Battle Flag Court	335	N/A	Mill Creek Drive	Cul-De-Sac	183	28ft	
Beason Court	N/A	N/A	Country Creek Drive	Cul-De-Sac	433	24ft	
Belvedere Circle	3378	N/A	N. Watterson Street	N. Watterson Street	1659	30ft	
Benfield Road	2000	393	North Piedmont Ave	Second Street	1486		2023
Bennett Drive	1342	N/A	Chesnut Street	Branch Street	670	23ft	
Bennett Drive	1326	N/A	Chesnut Street	Branch Street	633	23ft	
Bennett Street	N/A	N/A	York Road	Dead End	647	16ft	
Benton Express	2254	N/A	Laura Street	York Street	1121	40ft	
Blanton Street	2550	N/A	First Street	Dead End	1260	24ft	
Boyce Street	1828	N/A	Linwood Road	Groves Street	1048	24ft	
Branch Street	1470	N/A	Bennett Drive	Cleveland Ave.	789	28ft	
Brandonwood Drive	N/A	N/A	Merrimont Ave.	Dead End	195	27ft	
Brice Street	N/A	N/A	Sterling Drive	Dead End	525	24ft	
Brice Street	N/A	N/A	Sterling Drive	Dead End	442	19ft	
Bridges Drive	1011	N/A	Gold Street	Landing Street	2640	23ft	
Bridges Street	N/A	N/A	Ramsuer Street	N. Cansler Street	1476	20ft	
Broad Street	N/A	N/A	Phenix Street	Dead End	427	17ft	
Brooklee Drive	4204	N/A	Manor Drive	Manor Drive	2157	28ft	
Brookwood Drive	3298	N/A	Linwood Road	Dead End	1652	31ft	
Butternut Drive	N/A	N/A	Country Creek Drive	Cul-De-Sac	1424	24ft	
Caldwell Street	876	N/A	Maner Road	Fulton Drive	441	27ft	
Cameron Lane	N/A	N/A	Country Creek Drive	Cul-De-Sac	2114	24ft	
Campbell Circle	1079	1079	W. Parker Street	Cul-De-Sac	545	29ft	
Carolina State Lane	532	N/A	Spruce Street	Gold Street	281	17ft	
Caroline Court	992	N/A	Brooklee Drive	Cul-De-Sac	486	24ft	
Carpenter Street	1152	50	Dead End	Dead End	1960	22ft	
Carpet Lane	N/A	N/A	N. Sims Street	Dead End	330	11ft	
Cash Road	N/A	N/A	King Street (Hy 74)	Wade Drive	628	20ft	2197
Castlewood Road	902	N/A	Sherwood Lane	King Street	874	31ft	
Catherine Street	1902	N/A	Stowe Acres	Second Street	963	24ft	
Center Street	N/A	N/A	North Piedmont Ave	Second Street	1703		2022
Charles Street	N/A	N/A	York Street	Dead End	635	26ft	
Cherokee Street	5148	2227	Dead End	Dead End	2645	21ft	
Cherry Street	N/A	N/A	Phenix Street	Dead End	458	22ft	
Chesnut Drive	458	N/A	Marion Street	Cresent Circle	228	30ft	

A.11 Sheet 2

Chesnut Street	1156	N/A	Phenix Street	Parker Street	1251	23ft	
Childers Street	1142	710	N. Cansler Street	N. Tracy Street	572	29ft	
Church Street	2888	3524	Cleveland Ave.	Lynn Street	3138	30ft	
Churchhill Drive	N/A	N/A	King Street (Hy 74)	Cul-De-Sac	1757	20ft	2028
Cleveland Ave.	6880	4121	King Street	Church Street			NC 161
Cline Street	N/A	N/A	Gold Street	Floyd Street	328	18ft	
Clinton Street	N/A	N/A	N.Battleground Ave.	Baker Street	942	23ft	
Cloninger Street	N/A	N/A	Ark Street	Margrace Road	621	23ft	
Coman Court	2543	N/A	Merrimont Ave.	Cul-De-Sac	1272	20ft	
Cooke Street	949	949	Ellis Street	Cul-De-Sac	468	30ft	
Copper Street	N/A	N/A	Water Tank Road	N. Piedmont Ave	268	24ft	
Country Club Acres	1022	N/A	Merrimont Ave.	Deerfield Drive	509	27ft	
Country Club Circle	2066	N/A	Merrimont Ave.	Deerfield Drive	1036	29ft	
Country Club Drive	N/A	N/A	King Street	Dead End	755	37ft	
Country Creek Drive	N/A	N/A	Cameron Lane	King Street (HY 74)	2964	24ft	
Cranford Street	N/A	N/A	Fairview Street	Third Street	673	18ft	
Crescent Hill Road	3198	3198	Gold Street	Hawthorne Road	1619	23ft	
Cresent Circle	5387	1650	Hawthorne Road	Hawthorne Road	2567	34ft	
Deal Street	3566	574	Ridge Street	Gold Street	1207	23ft	
Deerfield Drive	1824	N/A	Country Club Acres	Jason Drive	910	29ft	
Dick Elam Road	N/A	N/A	King Street (Hy 74)	Dead End	1026	20ft	2031
Dickson Street	N/A	N/A	S.Battleground Ave.	Cherokee Street	255	14ft	
Dilling Street	2262	551	King Street	Phenix Street	2283	19ft	
Downing Drive	3120	N/A	Garrison Drive	Cul-De-Sac	2600	23ft	
Duke Street	N/A	N/A	N. Gaston Street	Dead End	271	10ft	
Edgemont Drive	1441	986	King Street	Sipes Street	565	42ft	
Edgemont Drive	N/A	N/A	Sipes Street	Dead End	2106	23ft	
Ellenwood Road	1260	N/A	Henry Street	Cul-De-Sac	654	26ft	
Ellis Street	1150	1150	N. Cansler Street	N. Tracy Street	591	29ft	
Ellison Drive	N/A	N/A	Grace Street	James Street	951	14ft	
Ellison Street	N/A	N/A	Fairview Street	Dead End	266	18ft	
Elm Street	N/A	N/A	S. Cansler Street	Railroad Ave.	552	24ft	
Fairview Street	3262	N/A	N. Piedmont Ave.	Linwood Road	1671	24ft	
Fallingwood Drive	918	N/A	Woodside Ave.	Brookwood Drive	450	32ft	
Falls Street	550	816	S.Battleground Ave.	Mounte Visa Dr.	1563	17ft	
Falls Street	N/A	N/A	Mounte Visa Dr.	Dead End	300	17ft	
First Street	3754	N/A	Linwood Road	Dead End	1884	27ft	
Floyd Street	2200	N/A	York Street	Dead End	4432	31ft	
Ford Street	N/A	N/A	Bennett Street	Woodland Drive	518	18ft	
Fourth Street	N/A	N/A	Linwood Road	Dead End	497	14ft	
Fulton Drive	N/A	N/A	Margrace Road	Ark Street	536	25ft	
Fulton Drive	5966	N/A	Ark Street	Phifer Road	3129	43ft	
Fulton Street	2388	984	N. Cansler Street	Dead End	1242	30ft	
Fulton Street	1597	N/A	N. Cansler Street	Dead End	850	24ft	
Fulton Street	N/A	N/A	Sterling Drive	Dead End	270	30ft	
Fulton Street	N/A	N/A	Sterling Drive	Dead End	252	30ft	
Gantt Street	N/A	N/A	McGinnis Street	Lackey Street	1626	21ft	
Gantt Street	N/A	N/A	Fulton Street	Morris Street	1390	22ft	
Garrison Drive	3792	N/A	Wales Road	Suzanne Street	1962	29ft	
Garrison Drive	N/A	N/A	King Street	Suzanne Street	775	20	2615
Gaston Street	6070	4964	N.Battleground Ave.	Dead End	3671	27ft	
Gillespie Street	N/A	N/A	Clinton Street	Hill Street	512	19ft	

A.11 Sheet 3

Gold Street	3797	1403	S.Battleground Ave.	Cline Street	6059	24ft	
Gold Street	9026	8461	Railroad Ave.	Phifer Road	4775	25ft	
Gold Street Ex.	N/A	N/A	Spring Street	King Street (HY 74)	1540	20ft	2254
Grace Street	N/A	N/A	Linwood Road	Dead End	2586	17ft	
Groves Street	4379	N/A	Cleveland Ave.	Alpine Drive	3642	27ft	
Guyton Loop	N/A	N/A	Church Street	Church Street	513	13ft	
Hall Crossing Drive	694	N/A	Maner Road	Landry Drive	367	26ft	
Harmon Court	397	N/A	W. Parker Street	Dead End	294	27ft	
Harmon Road	N/A	N/A	Lackey Street	Bridges Street	526	17ft	
Hawthorne Road	4834	N/A	Hillside Drive	Railroad Ave.	2641	28ft	
Hendricks Street	N/A	N/A	King Street	Ridge Street	580	16ft	
Henry Street	4024	N/A	Katherine Ave.	Dead End	2062	23ft	
Hermitage Court	782	N/A	Oakland Street	Cul-De-Sac	407	27ft	
Hill Street	N/A	N/A	Clinton Street	Dilling Street	892	20ft	
Hillside Drive	5819	N/A	Marion Street	Joyce Street	3452	34ft	
Hillside Drive	N/A	N/A	Cresent Hill	Dead End	349	34ft	
Huntington Drive	1348	N/A	Oakland Street	Cul-De-Sac	667	27ft	
Industrial Drive	2969	N/A	York Road	Dead End			
Jackson Street	3258	N/A	Church Street	Boyce Street	1905	26ft	
Jackson Street	N/A	N/A	Boyce Street	Dead End	478	17ft	
James Street	N/A	N/A	Cleveland Ave.	Grace Street	553	17ft	
Jason Drive	1290	N/A	Dead End	Cul-De-Sac	681	27ft	
Jeremy Drive	N/A	N/A	Country Creek Drive	Cul-De-Sac	753	24ft	
Joanne Court	505	N/A	Manor Drive	Cul-De-Sac	259	27ft	
Jolly Street	N/A	N/A	Maner Road	Fulton Drive	405	23ft	
Joyce Street	644	N/A	Hillside Drive	Cresent Circle	696	31ft	
Juniper Street	N/A	412	Landing Street	King Street	1321	21ft	
Kaitlyn Lane	1780	864	Cul-De-Sac	Cul-De-Sac	884	20	
Katherine Ave.	5946	N/A	Stone Street	Dead End	3351	27ft	
Kimberly Lane	N/A	N/A	Country Creek Drive	Cameron Drive	722	24ft	
King Street	19972	16216	Canterbury Road	Kings Mountain Bvd.			US 74
Kings Row Drive	626	250	Kings Mtn. Bvd.	Dead End	318	26	
Kingswood Court	531	N/A	Pinehurst Drive	Cul-De-Sac	256	27ft	
Kiser Street	N/A	N/A	Oriental Ave.	Dead End	297	14ft	
Lackey Street	1660	N/A	N. Piedmont Ave.	Ramsuer Street	503	32ft	
Lackey Street	N/A	N/A	Ramsuer Street	Dead End	1158	23ft	
Landing Street	6640	N/A	Phifer Road	Bridges Drive	3330	26ft	
Landrum Lane	1103	N/A	Marcella Drive	Cul-De-Sac	556	24	
Landry Drive	1814	N/A	Baneberry Drive	Hall Crossing Drive	904	20ft	
Landry Drive	1712	N/A	Hall Crossing	Cul-De-Sac	877	20ft	
Laura Street	1250	N/A	Floyd Street	Benton Express	648	32ft	
Lee Street	2598	N/A	Fulton Drive	Dead End	1392	27ft	
Linwood Road	1273	N/A	Second Street	Cleveland Ave.	1700	22ft	
Linwood Road	1663	1872	North Piedmont Ave	Second Street			
Linwood Road	3872	N/A	Cleveland Ave.	Brookwood Drive			2024
Lobiolly Lane	1006	N/A	Northwoods Drive	Redwood Circle	492	28ft	
Lynn Street	N/A	N/A	Church Street	Cleveland Ave.	401	16ft	
Mahogny Lane	88	N/A	Pennington Place	Dead End	183	19ft	
Maner Road	5739	N/A	Phifer Road	Mini Street	3020	27ft	
Manor Drive	4141	N/A	Linwood Road	Dead End	2080	27ft	
Marcella Drive	2919	N/A	Nora Drive	Cul-De-Sac	1555	24	
Margaret Street	1438	N/A	Stowe Acres	Second Street	721	24ft	

A.11 Sheet 4

Marie Street	N/A	N/A	Floyd Street	Dead End	633	21ft	
Marigold Ave.	N/A	N/A	Dead End	Cul-De-Sac	673	25ft	
Marion Street	2102	N/A	Bridges Drive	Medowbrook Road	1240	24ft	
Mauney Ave.	1636	N/A	York Street	Oriental Ave.	792	23ft	
May Street	N/A	N/A	Grace Street	Church Street	325	18ft	
McClendon Court	818	N/A	Marcella Drive	Cul-De-Sac	398	24	
McGill Street	966	966	Ridge Street	Dilling Street	482	17ft	
McGinnis Street	N/A	N/A	N. Piedmont Ave.	Gantt Street	1657	20ft	
Medowbrook Road	2642	N/A	Hawthorne Road	Hillside Drive	2698	32ft	
Merrimont Ave.	4717	N/A	Garrison Drive	Cul-De-Sac	2395	29ft	
Mica Street	1112	N/A	Fulton Street	Waco Road	570	36ft	
Mill Creek Drive	1651	N/A	Margrace Road	Cul-De-Sac	840	28ft	
Mill Street	N/A	N/A	Phenix Street	Dead End	145	30ft	
Mini Street	N/A	N/A	Ark Street	Marigold Ave.	185	26ft	
Mitchell Street	1582	N/A	N. Sims Street	N. Watterson Street	794	23ft	
Moble Home Drive	366	N/A	Pennington Place	City Limits	190	20ft	
Monroe Ave	1008	N/A	Groves Street	Jackson Street	492	26ft	
Monroe Ave	N/A	N/A	Jackson Street	Linwood Road	792	16ft	
Monroe Ave	2286	N/A	Woodside Ave.	Henry Street	1143	26ft	
Morris Street	N/A	N/A	N. Piedmont Ave.	N. Cansler Street	1596	16ft	
Mountain Street	10688	9795	Phifer Road	Gaston Street	5698	32ft	
Mounte Vista Dr.	1322	N/A	Wilson Street	Falls Street	656	25ft	
Myers Street	956	N/A	Baker Street	Dead End	450	22ft	
N Battleground Ave.	1571	1571	North Piedmont Ave	King Street			NC 216
N. Cansler Street	5215	1596	King Street	Walker Street	2841	40ft	
N. City Street	N/A	N/A	Walker Street	Waco Road	501	24ft	
N. City Street	2202	1620	King Street	Dead End	1112	27ft	
N. Goforth Street	1668	N/A	King Street	Dead End	832	30ft	
N. Roxford Road	3658	N/A	King Street	Downing Drive	1843	24ft	
N. Sims Street	3177	N/A	King Street	Waco Road	3387	23ft	
N. Tracy Street	1494	1494	Ellis Street	King Street	767	30ft	
N. Tracy Street	1017	1017	W. Parker Street	Dead End	818	28ft	
N.Battleground Ave.	N/A	1430	Barker Street	N. Piedmont Ave	1472	32ft	
Nora Drive	1235	N/A	Crocker Road	Dead End	635	24	
North Cansler Street	4844	238	Walker Street	Barnett Drive			2025
North Piedmont Ave.	7529	7179	N. Battleground Ave.	Mc Ginnis Street			NC 216
Northwoods Drive	6391	N/A	Groves Street	Alpine Drive	3319	30ft	
Oak Street	1138	N/A	S. Cansler Street	Railroad Ave.	638	24ft	
Oakland Street	4325	N/A	Cresent Circle	Cul-De-Sac	2613	31ft	
Old Bridge	101	N/A	N. Railroad Ave.	N.Battleground Ave.	104	18ft	
Oriental Ave.	N/A	N/A	Floyd Street	Ridge Street	2662	23ft	
Orr Terr.	488	488	N. Cansler Street	Dead End	300	19ft	
Owens Street	1324	N/A	Ruppe Street	York Street	543	26ft	
Park Drive	N/A	N/A	Ramsuer Street	Gantt Street	449	16ft	
Parker Street	4334	4783	N. Piedmont Ave.	Chesnut Street	2248	25ft	
Parrish Drive	886	886	Barnett Drive	Mc Ginnis Street	804	28ft	
Pennington Place	595	410	Northwoods Drive	Moble Home Drive	456	19ft	
Phenix Street	982	N/A	Linwood Road	Mill Street	1353	25ft	
Phenix Street	2323	1391	Barker Street	Dead End	935	24ft	
Phifer Road	2038	4926	Mountain Street	Southridge Drive	5511	26ft	2256
Phillips Drive	N/A	N/A	Linwood Road	Dead End	490	10ft	
Piedmont Ave.	4484	4484	Gold Street	N.Battleground Ave.	2257	34ft	

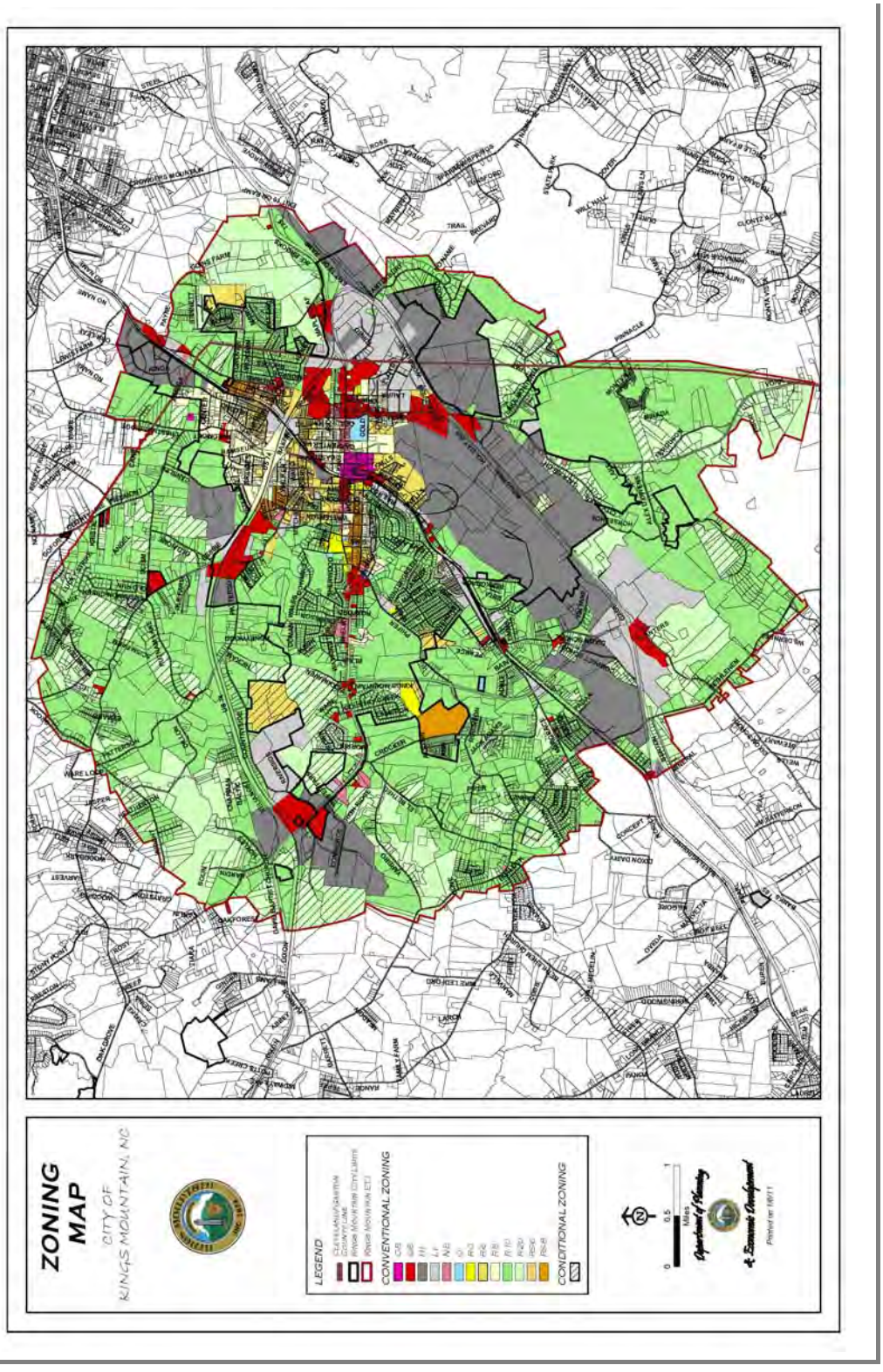
A.11 Sheet 5

Pinehurst Drive	2696	N/A	Princeton Drive	Dead End	1706	27ft	
Pineview Drive	1008	N/A	Crescent Hill Road	Dead End	509	26ft	
Princeton Drive	2796	N/A	Fulton Drive	Dead End	1389	27ft	
Quality Lane	276	N/A	Industrial Drive	Dead End			
Railroad Ave.	2580	1502	Ridge Street	Elm Street	3232	29ft	
Railroad Ave.	N/A	N/A	Elm Street	Hawthorne Road	336	25ft	
Ramsuer Street	N/A	686	McGinnis Street	Lackey Street	1890	19ft	
Redwood Circle	2536	N/A	Northwoods Drive	Northwoods Drive	1289	29ft	
Regal Drive	562	N/A	Spruce Street	Gold Street	275	26ft	
Rhea Street	790	N/A	Maner Road	Fulton Drive	398	26ft	
Rhodes Ave.	5862	N/A	Groves Street	Henry Street	2944	23ft	
Ridge Street	4774	6478	N.Battleground Ave.	Dead End	5320	32ft	
Ruppe Street	1346	N/A	Gold Street	Owens Street	684	24ft	
S Battleground Ave	4731	3818	King Street	Wells Road			NC 216
S. Cansler Street	5545	299	Hamthorne Road	King Street	2821	23ft	
S. City Street	1106	N/A	King Street	Mountain Street	557	27ft	
S. Goforth Street	2698	N/A	King Street	Landing Street	1351	22ft	
S. Sims Street	2820	N/A	King Street	Bridges Drive	1690	23ft	
S. Tracy Street	N/A	N/A	King Street	Gold Street	971	31ft	
Sandhurst Drive	1716	N/A	Oakland Street	Cul-De-Sac	851	28ft	
Savannah's Way	619	85	Mountain Street	Dead End	309	24	
Scotland Drive	2630	N/A	Southwoods Drive	Phifer Road	2334	27ft	
Second Street	4360	N/A	Linwood Road	Cleveland Ave.			
Shackley Street	N/A	N/A	First Street	Second Street	222	14ft	
Sharon Drive	2432	N/A	Country Club Drive	Sherwood Lane	1197	27ft	
Sherwood Lane	4536	N/A	Country Club Drive	N. Roxford Road	2310	36ft	
Silver Street	974	N/A	Gold Street	Cul-De-Sac	489	23ft	
Sipes Street	2685	N/A	Edgemont Drive	N. Goforth Street	1390	25ft	
Slater Street	N/A	N/A	York Street	Oriental Ave.	789	20ft	
South Roxford Rd.	N/A	N/A	King Street (Hy 74)	Cul-De-Sac	897	20ft	2255
Southridge Drive	2626	N/A	Phifer Road	Pinehurst Drive	1324	27ft	
Southwoods Drive	2668	N/A	Fulton Drive	Pinehurst Drive	1344	27ft	
Spring Street	N/A	N/A	King Street (Hy 74)	Gold Street Ex.	285	20ft	2254
Spruce Street	1816	N/A	Cherokee Street	Gaston Street	945	26ft	
Sterling Drive	136	N/A	N. Cansler Street	Cul-De-Sac	1197	23ft	
Sterling Drive	N/A	N/A	Waco Road	Dead End	1138	27ft	
Stone Street	580	N/A	Katherine Ave.	Dead End	933	16ft	
Stowe Acres	3398	N/A	Fairview Street	Second Street	1741	24ft	
Sumerset Drive	5121	N/A	Princeton Drive	Phifer Road	2599	26ft	
Suzanne Street	N/A	N/A	Garrison Drive	N. Roxford Road	675	20ft	
Third Street	1110	N/A	Fairview Street	Cranford Street	567	18ft	
Thornburg Drive	742	742	Barnett Drive	Dead End	384	27ft	
Timple Street	1282	N/A	Fulton Street	Walker Street	638	34ft	
Townsend Terr.	998	N/A	Allison Court	Garrison Drive	488	26ft	
Unnamed Street	N/A	N/A	Second Street	Dead End	379	16ft	
Victoria Circle	526	N/A	Sherwood Lane	Cul-De-Sac	247	41ft	
Virginia Ave.	N/A	N/A	Hill Street	Dead End	128	12ft	
W. Parker Street	2786	2611	N. Tracy Street	N. Sims Street	1577	30ft	
W. Ridge Street	1150	805	N. Cansler Street	Railroad Ave.	617	32ft	
Waco Road	5696	4450	Walker Street	N. Piedmont Ave	2522	23ft	
Wade Drive	N/A	N/A	Cash Road	Cul-De-Sac	1197	20ft	2198
Wales Road	2599	N/A	Downing Drive	Cul-De-Sac	1326	25ft	

A.11 Sheet 6

Walker Street	4497	3717	North Piedmont Ave	Waco Road			2026
Walnut Street	N/A	N/A	Phenix Street	Chesnut Street	758	19ft	
Ware Street	N/A	N/A	King Street (Hy 74)	Churchhill Drive	1641	20ft	2077
Washington Street	N/A	N/A	Ware Street	Churchhill Drive	910	20ft	2029
Water Tank Road	N/A	N/A	McGinnis Street	Copper Street	309	17ft	
Wateroak Street	N/A	N/A	Margrace Road	Ark Street	432	21ft	
Waters Street	N/A	N/A	Morris Street	Dead End	313	24ft	
Watterson Street	5526	5108	Waco Road	Gold Street	3937	23ft	
Webb Street	N/A	N/A	Linwood Road	Woodside Ave.	410	19ft	
Wells Street	N/A	N/A	S.Battleground Ave.	Dead End	910	20ft	
Westover Drive	N/A	N/A	King Street (Hy 74)	Washington Street	529	20ft	2030
Williams Street	573	N/A	Edgemont Drive	Cul-De-Sac	1363	19ft	
Williamsburg Court	N/A	N/A	Sumerset Drive	Cul-De-Sac	343	29f	
Wilson Street	N/A	520	Falls Street	Dead End	1175	19ft	
Wilson Terr.	230	230	Lackey Street	Dead End	230	19ft	
Wintergreen Drive	1747	N/A	Baneberry Drive	Cul-De-Sac	887	27ft	
Woodland Drive	N/A	N/A	York Street	Ford Street	496	18ft	
Woodside Ave.	892	892	Church Street	Cleveland Ave.	430	32ft	
Woodside Ave.	4781	N/A	Cleveland Ave.	Dead End	2694	24ft	
York Road	14101	560	King Street	Galilee Church Rd.			NC 161
Total	**403571**	**116449**			**283258**		

A.12 Kings Mountain Zoning Map



North Carolina Department of Transportation
Application for Bicycle and Pedestrian Planning Grant Funds
2009 Call for Proposals

Submittal Deadline is December 5, 2008

Applicant Information			FOR NCDOT USE ONLY Proposal eligible ☐ Yes ☐ No
Name of Municipality: City of Kings Mountain	Population 10,662	County Cleveland	NCDOT Division 12
Total Cost for Plan Development: $37,500	NCDOT Planning Funds Requested: $26,250	Local Match: $11,250	
Municipality agrees to enter into a reimbursement agreement with NCDOT: ☒ Yes ☐ No		Municipality is member of: ☐ MPO ☒ RPO ☐ neither	
Department applying for grant: Planning and Economic Development			
Contact Person: Steve Killian	Title: Director of Planning	Work Phone Number: 704-434-4595	
Work Fax Number: 704-734-4480	E-mail Address: stevek@cityofkm.com		
Mailing Address: Post Office Box 429	City: Kings Mountain	State: NC	Zip Code: 28086

I certify that the City/Town of _____, in applying for Bicycle or Pedestrian Planning Grant funds, attests a commitment to the plan's development, management, financing and completion within 15 months from receipt of a Notice to Proceed from NCDOT, and that the completed plan will be submitted to the City/Town Council or other approving authority for adoption.

_____ Signature*

_____ Title

_____ Name (printed)

_____ Date

Eligibility Criteria

Plan Category – Check only one category ☒ Bicycle Plan ☐ Pedestrian Plan

Due to limited planning grant funds, municipalities may apply for funding to undertake **either** a bicycle plan or a pedestrian plan in any given fiscal year. Please indicate the type of plan for which you are submitting this application.

Has the City/Town Council passed a resolution supporting this application?	☒ Yes, attached ☐ Pending** _____ Date anticipated
For municipalities within a Metropolitan Planning Organization (MPO), has the MPO passed a resolution supporting this application?	☐ Yes, attached ☐ Pending** _____ Date anticipated
For municipalities within a Rural Planning Organizations (RPO), has the RPO passed a resolution supporting this application?	☒ Yes, attached ☐ Pending** _____ Date anticipated

***THE SIGNATURE OF AN AUTHORIZED STAFF PERSON (I.E. CITY/TOWN MANAGER, ADMINISTRATOR, ETC.) IS REQUIRED FOR PROPOSALTO BE ELIGIBLE.**

****A RESOLUTION BY THE APPROPRIATE MUNICIPALGOVERNING BODY AND BY THE MPO, IF APPLICABLE, MUST ACCOMPANY THE APPLICATION, OR MUST BE SUBMITTED PRIOR TO DECEMBER 31, 2008 TO BE ELIGIBLE FOR FUNDING. RPO RESOLUTION, IF APPLICABLE, IS HIGHLY ENCOURAGED. PLEASE INDICATE THE DATE YOU ANTICIPATE RECEIVING A PENDING RESOLUTION.**

*****APPLICANTS WILL NOT BE REWARDED BY THE REVIEW COMMITTEE'S SCORING FOR REQUESTING A FUNDING AMOUNT THAT IS LESS THAN THE MAXIMUM AMOUNT ALLOWED FOR THE PARTICULAR POPULATION CATEGORY OF THE APPLYING MUNICIPALITY.**

Narrative Description
Please limit descriptions to space provided

1) Please describe the vision and goals for your municipality related to improving bicycle **OR** pedestrian transportation. Be sure your goals are realistic and measurable. Refer to any plans adopted within the last five (5) years that support this vision (may include comprehensive plan, land use plan, transportation plan, etc). Note that the vision and goals for your community need to be focused upon transportation and not solely upon recreation.

The appeal of bicycle transportation is guiding many municipalities toward a more environmentally-sound future. The City of Kings Mountain is no different. The mission-driven goal is to develop a comprehensive bikeway plan that connects origination and destination points both within the City and beyond. The bikeway plan can help promote healthy living habits and provide a safe means of transportation for local citizens and visitors alike to the area. The bicycle facility can link schools, businesses, neighborhoods, and various medical and employment centers to each other and the downtown area, a hub for activities and transportation links. Fulfilling the vision requires an ease of access to an alternative transportation mode and will necessitate supportive public decision-making. Additionally, the demand for a healthy lifestyle will become an important factor in site analysis; thus, diligent implementation of such programs as the Kings Mountain Comprehensive Greenway, Bikeway, and Pedestrian Improvement Plan (KMCGBPIP, 2002) is imperative. Facilities such as bike lanes, trail signs, and greenways for walking, running, and biking are all components of this lifestyle. Several recent programs complement both the proposed bike plan and KMCGBPIP. Encircling the downtown area, the Historic Walking Trail (2003) is one such component, providing a sidewalk system promoting the Historic District. Another program is the three TEA-21 funded sidewalk enhancement projects. AHH (Active, Healthy, Historic), adopted in 2006, promotes a healthy way of life for the public through daily routine activities. The bikeway facility plan can also assist the City in developing a policy for its Subdivision and Zoning Ordinances that would reward developers who provide right-of-way and construct sidewalk and bike lanes. Moreover, developing transportation alternatives with regard to the Land Development Plan and Comprehensive Transportation Plan policies would achieve sustainable and smart growth goals and raise awareness of multi-modal transportation needs and opportunities.

2) Describe your municipality, including demographic information and the physical setting. Explain how the demographics and physical setting of your municipality support the need for a pedestrian or bicycle plan. Highlight any special features (e.g. resort community, college town, etc.), high-use bicycle **OR** pedestrian areas and areas with a high incidence of bicycle crashes **OR** pedestrian crashes. Identify and describe any special user populations or areas deserving special focus.

Kings Mountain is located along Interstate 85 and Highway 74, with close proximity to metropolitan areas such as Gastonia (eleven miles) and Charlotte (thirty-five miles) to the east, and Greenville/Spartanburg South Carolina to the south (forty-eight miles). The City has a diverse and growing population, estimated at 10,662 by the State in 2007. Our urban geography reflects a city whose residential communities were developed around employment and commercial centers in a traditional textile and manufacturing based economy. According to the 2000 U.S. Census, the largest population groups (nearly two-thirds) include children and adults of working age. Therefore, long-term objectives and specific resolutions need to be addressed for these two population segments. One of the main objectives is to increase mobility and provide an alternative form of local transportation. Fortunately, the City has an ideal location for promoting alternative transportation modes and achieving growth goals. There exist several favorable features in the industrial, residential, and educational network. Nearly all employment centers are accessible by either an arterial road or a system of residential collectors and secondary roads. Additionally, all six local area schools are nested within residential areas. A total of eleven bicycle accidents were documented since 1997, with the majority occurring on local city streets. Therefore, it is prudent to design routes with safety as the focal point. Inter- and intra-connectivity are further reinforced and encouraged by an extensive array of entertainment and recreational activities. Numerous scenic views and roads in the area of Kings and Crowder's Mountains offer bicyclists local attractions, enveloping and connecting the City with mountains, roads, and trails only minutes away. Each year, nearly one million people visit the Kings Mountain State Park and the Kings Mountain Military Park in South Carolina (within eight miles), and Crowder's Mountain State Park in North Carolina (within six miles). The City recognizes its unique location with respect to these parks, its distinctive mountain setting, and its responsibility to use eco-friendly solutions like bicycling to protect great community resources.

3) Provide an overview of the current bicycling **OR** pedestrian transportation system, including an assessment of strengths and weaknesses of the system. Describe facilities currently in place or planned for completion in the next two years (e.g. designated bicycle route system, miles of off-road paths, extent of sidewalk network, etc.) as well as potential barriers that inhibit developing the system. Please enclose any relevant documents or maps, or provide links to on-line materials.

With nearly twelve incorporated square miles and over fifty-eight miles of public roads, the City is a prime candidate for a comprehensive multi-modal network. Fortunately, an appropriate foundation is already in place. The KMCGBPIP, which addresses the need for bike facilities, also created provisions for streetscape improvement plans, protection of the City's entrance arterial roads, and collaborative recreational efforts. However, as of yet, there is no inclusive bicycling facility system available to link schools, businesses, downtown, and residential neighborhoods together. As such, there is a compounding need for both on and off street facilities and equipment. This deficit in facilities impedes bike travel in two ways: ease/accessibility and safety. According to the City's Thoroughfare Plan of 1996, several roads were deemed "approaching capacity" or "over capacity". These included King St., Cansler St., and York/Cleveland Avenue. The City does contain several existing resources that can complement the proposed system. Foremost, the KMCGBPIP acts as a policy document, guiding City-wide objectives and peripheral impacts. TEA-21 Enhancement Funds were obtained in 2003 for three sidewalk extension projects: King/Phifer Streets (in progress), West Gold Street, and Cansler Street (both completed). Signs demarcating the Historic Walking Trail (2003) display distance and sites of historic properties in the downtown area. The NCDOT approved "Share the Road" signage is in place over eight miles of various roads including York Road (NC161), Wood Lake Parkway, and Canterbury Road. A widened shoulder, sufficient for shared uses, has recently been added along a four mile stretch of Stoney Point Road. Another solid component is the Gateway Trails Project. Envisioned in 2000, it is currently a centripetal force among a myriad of local municipal and grassroots organizations for pedestrian facilities with links to bicycle facilities.

4) Describe any bicycle and/or pedestrian education, enforcement or encouragement programs and initiatives underway or planned. List any key issues that have been identified, such as safety, health and well-being, connectivity, etc. Describe what value programs or initiatives of this kind would bring to your community.

Non-infrastructure efforts should be channeled into the appropriate demographic and physical areas. In the past, several initiatives were organized with these in mind. The City and Cleveland County Alliance for Health sponsored the three "Pedestrian Roadshows". Citizens had the opportunity to initially look at potential barriers to safe travel throughout the city. The completed work has been documented and can be highly conducive to bikeway planning. The "Bike Rodeo" not only encouraged safety, but also initiated excitement and motivation about the benefits and fun of biking. This program, assisted by the Kings Mountain Police Department and Cleveland County Hospital, provided free helmets and an "obstacle" bike course for the City's Intermediate School students. It is with much anticipation that this program can be renewed again. Another success is the annual "Over the Mountain Triathlon", a recreational "magnet" that includes a 45K bike race, 10K run, and 1.5K swim. The Triathlon route encompasses four counties, two states, and three area parks, promoting Kings Mountain as a viable destination for outdoor fitness. Additionally, the City is an active participant in the Gateway Trails Program. Gateway Trails will be a catalyst for a sweeping array of linkages to neighborhood communities using new bikeways, the downtown area, existing trail systems, and new trails to both state and national parks. In 2006, Active, Healthy, and Historic Kings Mountain (AHH) was established through a grant to the Cleveland County Health Department. AHH was designed to encourage safe physical fitness for residents through daily routine activities in a monthly log book. Finally, the City is planning to apply for a Safe Routes to School Grant. The coordination of these initiatives can further the educational, safety, and encouragement components, and also a shift in transportation habits to alternative transportation modes.

5) Provide a brief description of any municipal bicycle planning and/or pedestrian planning activities that are currently underway or have been undertaken in the past (list years). List may include bicycle, pedestrian, or greenway elements in any municipal, county or regional planning documents. Describe what value bicycle planning or pedestrian planning bring to a municipality. Please enclose any relevant documents or maps, or provide links to on-line materials. Describe the results of these planning efforts in terms of improvements in bicycle and/or pedestrian facilities, accessibility, and/or safety.

The KMCGBPIP's maps generally show future greenway and bikeway trails. Some of these pedestrian trails will be incorporated with the Gateway Trails Project (2000). Included in this project is the trailhead, located a mere half mile from downtown Kings Mountain. According to the 2007 Strategy Plan for the Revitalization of Downtown Kings Mountain, a recommendation was made for a "well-signed connection" for bicyclists from downtown to this trailhead. The adoption of the 161 York-Cleveland Business Overlay District and the York Road Gateway Protection Overlay District in (2007) were other goals of this planning document. These overlay districts require multi-modal provisions; more specifically, they require sidewalks at the ROW. Additionally, the Carolina Thread Trail program is currently developing a Trail Master Plan for Gaston and Cleveland County. Particular emphasis is being placed upon the trail connections to adjacent locales, as this network will reach fifteen counties and over two million citizens. Therefore, the City of Kings Mountain plays a crucial role in the proposed connection to neighboring jurisdictions. The City has also participated in many beneficial programs including "Roadshow", a joint project with Cleveland County and Cabarrus Health Alliance. Mayor Rick Murphrey appointed a committee that identified areas in the city that were best suited for walking, biking, and travel improvement, as well as locations that may be deemed "unsafe". The committee included City employees, local business owners, and citizens. Two sidewalk extension grants (TEA-21) are now completed and another is underway (King/Phifer Street). Most notably, the concept of alternative transportation modes, especially bicycles, is addressed in the forthcoming transportation section of the City's 2009 Land Development Plan.

6) Describe how the development of a comprehensive bicycle transportation **OR** pedestrian transportation plan will benefit your municipality and meet the needs of diverse populations (residents and, where appropriate, students and/or visitors).

One question remains cardinal to the bicycle plan: how can it be integrated into the Kings Mountain transportation system and correlate positively to the overall goals of the City's public policy and future development? The bicycle facility can ensure distributive equality and overcome the difficult challenge of acquiring sufficient road width to accommodate bicyclists. Additionally, determining the feasibility of amortization over time is a constraint. The bicycle plan can benefit the City by addressing these concerns on a comprehensive level. Biking has the potential to cross demographic, economic, and jurisdictional barriers for an increased quality of life. Proper assimilation of the bike facility can be advantageous for the City, while meeting the needs of the community. Factors such as a reduction in congestion, parking alternatives, improved air quality, and a "neighborhood livability" element are all broad-spectrum benefits. In an unambiguous way, improvements can also reach four target groups: children, adults, the elderly, and tourists. A serviceable plan can mitigate the natural and man-made barriers to travel, while increasing connectivity. Accessibility to schools, institutions, commercial areas, residences, entertainment, and recreational venues can be coupled with a shift in habits toward alternate modes of transportation. Therefore, it is prudent to increase our respect, recognition, and safety of the bicyclist and their right to use public roadways. For example, a bike facility can provide the nearly 4,404 area students with an alternative to cars to get to school. Coupled with three nearby parks and an extensive public playground near the YMCA, this network can provide an excellent form of transportation and provide both the recreational and health benefits of biking. It is stated that more than 82% of trips five miles or less are made with cars (bikeleague.org). The City's size and location lend to a favorable bicycling environment, transforming a recreational pursuit into an often used alternative mode of travel.

7) List the name and title/position of the municipal staff person responsible for project oversight. Please note that this person **must** be a full-time permanent employee of the municipality. Also list any others who will have involvement in plan development and their experience. Please describe any prior experience these individuals have in the preparation and/or implementation of a bicycle plan and/or a pedestrian plan or other transportation/community planning efforts and include copies or links to relevant documents. Provide resumes/qualifications for each individual listed, including the overseeing staff person.

Steve Killian, Director of Planning and Economic Development for the City of Kings Mountain, will take the lead supervisory role for this project. A member of the AICP, Steve Killian has nearly thirty years of extensive and progressive planning experience. His expertise has been valuable in the development and implementation of several key programs, including the KMGBPIP, Highway Overlay Districts, Share the Road, NCDOT Enhancement Projects, Gateway Trails, and Historic Walking Trail. Currently, he is the principal planner on the City's Land Development Plan and future amendments to the Zoning Code. Steve Killian has been the City's appointed representative on the Lake Norman Transportation Coordinating Committee since its establishment in 2002. He has advocated renewable growth and smart growth policies. Jackie Barnette, Director of Public Works, will also play a fundamental role in this project. Jackie Barnette has over thirty-two years of municipal service experience and oversees City street, storm water, ground, and building maintenance, sanitation, driveway permits, and the City's garage. His many accomplishments include DOT Enhancement Projects (sidewalks), completion of Patriots Park, and obtaining a North Carolina Road Scholar status. Both Steve Killian and Jackie Barnette work diligently on projects crossing multi-jurisdictional and inter-departmental lines, and serve on several technical committees. A cohesive and collaborative effort of this nature will be imperative in guiding the formation and implementation of the bike facility.

8) Describe how your plan will be developed, specifying whether the work will be done through the services of a paid consultant (indicating whether you have decided yet to hire a private consultant or a COG), a combination of municipal staff and consultant, or through some other process. Briefly describe how duties and tasks will be divided. Indicate how MPO or RPO staff and resources may be utilized.

The City will hire the appropriate consultant, who will have a multitude of available resources. These include City staff, Lake Norman RPO, and other transportation and planning committees/agencies as needed. The consultant will work independently, with supervisory guidance of Steve Killian, Director of Planning and Economic Development. The consultant's work will be coordinated with a specific timeline of objectives, project developments, and project recommendations. This timeline will directly coincide with the template "Planning Guide for Developing Bicycle Plans and Pedestrian Plans" (itre.ncsu.edu website). Additionally, Steve Killian will provide monthly evaluation reviews and formative assessments with the consultant. He will also provide a summative assessment at the conclusion of the project.

9) Indicate the level of support from elected officials and municipal decision-makers for bicycle and/or pedestrian programs and projects. Describe what elected officials, municipal decision-makers, representatives of other agencies, interest groups, commissions and boards, individuals and other stakeholders have done to support bicycle and/or pedestrian programs and projects in the past. Describe how they or others will be involved in development of this plan. List any existing bicycle, pedestrian, greenway, open space or other relevant committees and task forces in your area that are charged with addressing bicycle issues and/or pedestrian issues. Provide letters of support, if available. Describe what kind of citizen participation will be sought. Describe the benefits of networking with and involving stakeholders and/or appointing a steering committee.

The City of Kings Mountain elected officials and staff act pro-actively to meet future needs. In the past, the local elected officials formed numerous citizen advisory groups to work with staff and address growth issues in the community. Responsible growth and transportation options, as well as aesthetic and accessibility concerns were explored. Resolutions and prior attempts at both transportation enhancement and bike facility grants show a concerted effort and commitment from the City. Previous accomplishments include: KMCGBPIP, Highway Overlay Districts, Active Healthy Historic Kings Mountain Program, Regional Greenway Network Collaboration Resolution, Truck Stop Electrification Project, Roadshow workshops, Gateway Community initiatives, and Share the Road signage. In addition, there have been numerous, well-received meetings for public participation which will again prove vital in developing this bike facility. Mayor Rick Murphrey's introduction of green projects, partnerships with the parks, and trail initiatives reflect a desire to protect the environment while seeking innovative ideas for infrastructure improvement. Currently, the City has several active land use committees: Moss Lake Advisory, Downtown Incentive Grants, Land Development, Planning Board, Technical Review, and Historic Landmark Commission. Working with other local citizen groups will offer a more comprehensive approach on the facility. For example, trail connectivity to bikeways and neighborhoods, institutions, and the downtown is imperative and supports many grass-roots and large-scale projects (such as the Gateway Trail and Main Street Program). As such, the City is contributing $130,000 in kind to the Gateway Trail to establish a trailhead facility for its users. Lastly, the Lake Norman RPO provides a solid foundation of knowledge and committed support as does NCDOT through its working relationship with the City.

10) Describe how your community will implement the programs, policies, projects and initiatives identified and prioritized in the plan. Indicate what municipal, regional, state or federal resources may be sought. List any departments, agencies, organizations or other partners that may be involved. Attach letters of support, if available.

The City will approach implementation with the philosophy that bikeways are a viable alternative to automobiles and that broad based support among the citizens, businesses and public institutions exists and can be tapped. Resources includes the grass root organizations (such as Kings Mountain Gateway Trails Inc., Carolina Thread Trail, Cleveland County Chamber of Commerce, Safe Kids of Cleveland County, and the Gateway Trails project), institutions (such as hospital and schools) and finally significant financial, staff (such as Planning, Police and Public Works) and in-kind contributions from the City, some of which will be incorporated into the CIP. The City will pursue financial resources such as TEA-21 funds, Powell Bill funds, Safe Routes to Schools, CMAQ (if eligible), local legislative delegation initiatives, and local contributions. Technical assistance will be sought from Centralina COG, NCDOT and the Lake Norman RPO.

The goal is to create bike facilities that make the City have a truly multi-modal transportation system responsive to the citizens' needs. All applicable City policies, both regulatory and financial, will be amended to obtain this goal. Methodologies learned from state and federal transportation agencies will be employed, as well as program and promotion ideas from bicycle organizations.

A representative sample of letters of support is attached.

List activities involved in developing the plan and provide a Plan Development Schedule, beginning with NCDOT notification of grant award, scheduled for June 2009. Note whether the task will be undertaken by staff, consultant, or both. Please state when municipality anticipates executing the Municipal Reimbursement Agreement, entering a contract with a consultant, and receiving the Notice to Proceed and keep in mind that there are 15 months from the date that the Municipal Reimbursement Agreement is executed. List activities by quarter. Please be sure that your schedule is a planning schedule, and not a construction schedule

June to September 2009

* June 15 is the date upon which you will receive two hard copies of the Municipal Reimbursement Agreement. Note that the Municipal Reimbursement Agreements must be executed within 90 days of the date you receive the document. Those who do not meet the deadline must submit a request for an extension.

Upon Notice to Proceed, the City will draft and issue a Request for Qualifications to design consultants, with a sixty-day submittal deadline. During this time, the City Council will form a Task Force, comprised of community stakeholders of various bicycle-related and City planning interests. Together with the Task Force, the City will review all applicants and select three as most qualified. Mr. Killian, Director of Planning, will then submit the recommendations to the City Council for approval. The Lake Norman RPO will be available for assistance with any of these steps.

October to December 2009

The City Council will make the final selection of the planning consultant, and Steve Killian will arrange for the contract of services. The consultant will then meet with Steve Killian, appropriate staff, and the NCDOT Division of Bicycle and Pedestrian Transportation (NCDOTDBPT) Project Manager immediately to finalize the work plan objectives, gather data, and perform reconnaissance. The consultant will later meet with the Task Force and perform stakeholder interviews.

January to March 2009

The consultant will conduct a public workshop which the City will arrange and advertise for. Results of the public input will be presented to and reviewed by the Task Force. The consultant will then produce the first draft of the plan, incorporating the comments of the public and the Task Force.

(Plan development activities, continued from previous page)

April to June 2009

The consultant will conduct a second public workshop to gather comments upon the draft plan. The consultant will then revise the draft per public input, and submit the draft for review by the Task Force, Steve Killian, NCDOTBPT, NCDOT Division 12, and Lake Norman RPO. The consultant will then revise the draft per the reviews.

July to September 2009

The consultant will produce an executive summary of the plan, and then resubmit the final draft to NCDOTBPT for final review. Upon approval by NCDOTDBPT, the consultant will take the plan through the City adoption process. This will include review by the Task Force, City Planning Board, and City Council before a public hearing. The consultant will incorporate necessary revisions throughout this process. Upon adoption of the plan, the consultant will submit the plan to the Lake Norman RPO for endorsement.

October to December 2009

The consultant will produce and deliver the required number of final printed and electronic copies of the plan, along with all GIS and other electronic files in editable format to the City and the NCDOTBPT.

Municipality Name: City of Kings Mountain

Project Cost Information

Total Project Cost*:	Total NCDOT Planning Funds Requested:	Total Local Match Committed:	Source(s) and Amount(s) of Local Matching Funds (list all applicable):
$37,500	$26,250	$11,250	General Fund

***Municipalities awarded a grant will be required to submit a detailed budget including a breakdown of allowable costs. Staff time is not an allowable cost, nor can it be considered as an in-kind contribution for matching funds.

Attachments

Required:	Optional (if information is available on-line, please list link):
☒ Municipal Resolution	☒ Letters of Support X attached or were sent
☐ MPO Resolution (if applicable)	☒ Copies of previous plans (summaries and/or web links preferred)
☒ RPO Resolution (if applicable)	☒ Other Maps
☒ Resume(s) of overseeing staff and other individuals 2 attached	☒ Other (please identify): documents in Appendix
☒ Map of Municipality	☐ Other (please identify):
	☐ Other (please identify):

Preparer Information

Please provide information on the primary person who prepared this application and indicate the municipal department, local agency, consulting firm, or other organization with which they are affiliated.

Agency/Consulting Firm/Organization: City of Kings Mountain			
Name of Preparer: Steve Killian	Title: Director of Planning	Work Phone Number: 704-734-4596	
Work Fax Number: 704-734-4480	E-mail Address: stevek@cityofkm.com		
Mailing Address: Post Office Box 429	City: Kings Mountain	State: NC	Zip Code: 28086

Submittal Information

For more detailed information on completing the application please see the Step-by-Step Instructions online at www.itre.ncsu.edu/PTG/BikePed/NCDOT/application.html.

Please mail **one original and nine copies** of the completed application, including attachments, to the NCDOT Division of Bicycle and Pedestrian Transportation at the address to the right.

Double-sided copies are acceptable.

Applications will be accepted no later than 5:00 pm on December 5, 2008.

Mailing Address:
Helen Chaney
NCDOT Division of Bicycle and Pedestrian Transportation
1552 Mail Service Center
Raleigh, NC 27699-1552

Delivery Address:
Helen Chaney
NCDOT Division of Bicycle and Pedestrian Transportation
Suite 250
401 Oberlin Road
Raleigh, NC 27605

LAKE NORMAN RPO

1300 Baxter Street,
Suite 450
P. O. Box 35008
Charlotte, NC 28235

(704) 372-2416
FAX (704) 347-4710
www.lakenormanrpo.org
www.centralina.org

RESOLUTION ENDORSING THE CITY OF KINGS MOUNTAIN'S BICYCLE AND PEDESTRIAN PLANNING GRANT

WHEREAS, the Transportation Advisory Committee (TAC) is the duly recognized transportation decision making body for the Lake Norman Rural Transportation Planning Organization (RPO), as authorized under NC GS 136-211; and

WHEREAS, the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation has issued a call for proposals for the Bicycle and Pedestrian Planning Grant Initiative; and

WHEREAS, the Bicycle and Pedestrian Planning Grant Initiative is a matching grant program that encourages municipalities to develop comprehensive bicycle and pedestrian plans; and

WHEREAS, the City of Kings Mountain has decided to apply for an Bicycle and Pedestrian Planning Grant through the NCDOT; and

WHEREAS, the Lake Norman RPO has consistently supported bicycle and pedestrian planning initiatives.

NOW THEREFORE BE IT RESOLVED that the Lake Norman RPO hereby endorses the Bicycle and Pedestrian Planning Grant Initiative application of the City of Kings Mountain on this the 27th day of November 2007;

Thomas R. Anderson, P.E., Chairman
Lake Norman Rural Planning Organization

Bill Duston, Secretary
Lake Norman Rural Planning Organization

CITY OF KINGS MOUNTAIN
RESOLUTION OF SUPPORT 07-51
NCDOT BICYCLE AND PEDESTRIAN PLANNING GRANT

WHEAREAS, the City of Kings Mountian supports comprehensive planning; and

WHEAREAS, the City of Kings Mountian recognizes the needs for and benefit from multi-modal transportation facilities: and

WHEAREAS, the City of Kings Mountian has adopted a City of Kings Mountain Land Use Plan; and

WHEAREAS, the City of Kings Mountian has adopted a thoroughfare Plan which was also adopted by the Board of Transportation; and

WHEAREAS, the City of Kings Mountian has become a Gateway Community for the state and national park areas; and

WHEAREAS, the City of Kings Mountian has adopted a comprehensive Greenway, Bikeway and Pedestrian Improvement Plan;

NOW THEREFORE, BE IT ESTABLISHED by the City of Kings Mountian, North Carolina, assembled in Regular Session this 27th day of November 2007 as follows:

Section 1. City Council authorizes the submittal of a Bicycle Planning Grant.

BY: _____
Edgar O. Murphrey, Jr., Mayor

(Municipal Seal)

Attest:

Ann L. Sessom
Ann Sessom, City Clerk

KINGS MOUNTAIN
COMPREHENSIVE GREENWAY, BIKEWAY AND PEDESTRAIN IMPROVEMENT PLANS

INTRODUCTION

The idea to develop a formal comprehensive greenway, bikeway and pedestrian improvement plan came out of the extension of the City of Kings Mountain Gateway Community Project, in which the City becomes the entry way to South Carolina's, Kings Mountain State Park, Kings Mountain National Military Park and Crowders Mountain State Park and thereby establishes various beneficial economic and quality of life ties to the parks including trails, corridor development management, and gateway city attributes.

It appears that economic changes and rapid development in the City of Kings Mountain will continue because of the I -85 corridor and our relative location to the Charlotte, Spartanburg and Greenville metropolitan areas. While there is time a land use plan may be developed with policies that preserve open space, provide best management practices through design, promote safe bikeways and walkways for its citizens, enhance quality of life and create a positive place for retail businesses and industry to locate. The planning process allows us to resolve mandates and show how we will achieve proactive community goals including becoming the Gateway Community

The next step in the planning process is creation of a comprehensive plan for greenway, bikeway and pedestrian facilities that would provide quality recreation, multi-modal means of transportation and links to focal points throughout the city that ultimately connect to the parks to the south and eventually to regional sites and trails surrounding or beyond the city. Having an official plan makes establishing trails and multi-modal facilities a policy goal achievable through various means.

For example greenways will provide recreational and transportation opportunities in a natural setting, while allowing the City to comply with mandated NPDES Phase II regulations through the control of runoff with buffer areas and open space preservation. Bikeways and pedestrian improvements created, as part of development will provide for safe integration of alternative to cars as the cost of building more road facilities rise making those financial resources harder to obtain. All these facilities must be created through the cooperative and collaborative effort of federal, state and local agencies. The later must provide the leadership in plan creation and subsequently in local plan implementation through regulation, gifting and private public investment.

Patience, flexibility, opportunism and adaptability will be crucial to success.

In 1966 **"greenway"** was defined by Webster's Dictionary as a corridor of undeveloped land in or near a city that is designed for recreational use. Today greenway must be defined in a way that best describes the needs of the community we live in. In Kings Mountain greenways will provide alternative corridors connecting such areas as city parks, schools, neighborhoods, major retail development, the downtown area and the state and federal parks. These passageways typically include pedestrian trails and bikeways. Traditional sidewalks, bike lanes, unopened right-of-ways, construction and maintenance easements, alleyways and bikeways will all be used. Taken together they are a link to nature, to urban amenities, to recreation, all for the enjoyment of the community.

KINGS MOUNTAIN
COMPREHENSIVE GREENWAY, BIKEWAY AND PEDESTRAIN IMPROVEMENT PLANS

Benefits of Greenways, Bikeways and Pedestrian Improvements

What would it, the aggregated benefits mean to us? The following dozen statements express the beliefs that it:

- Creates economic development opportunities by making the City's quality of life commitment a favorable factor in getting industrial investment to the City.
- Creates better new communities that are connected to the fabric.
- Provide safe connections between parks, neighborhoods, shopping areas and schools for pedestrians and bicyclists.
- Provides educational opportunities.
- Preserves open space and natural resources.
- Provides recreational opportunities for biking, walking, hiking and enjoyment of natural settings.
- Enhances existing sidewalks and provides an overall city beautification / livability benefit.
- Links points of interest throughout the city.
- Creates opportunities for compliance with upcoming NPDES Phase II storm water management regulations and mandates.
- Expands on the Gateway Community project to create quality of life benefits along with economic development benefits not only in the NC 161 Corridor but also citywide.
- Creates an economic incentive with tax reduction through gifting of trail areas.
- Increases land values.

Plans in which Greenways, Bikeways and Pedestrian Improvements Have Appeared

When various plans either call for the development of infrastructure or create development standards it is prudent to adopt a plan that brings all applicable policies together. This somewhat eases the burden of interpreting growth and development management direction. It is also better imparts to all concerned how we got to a certain point in the process of building a community. For Kings Mountain the call for standards for greenways, bike facilities and pedestrian improvements can be found in the following:

KINGS MOUNTAIN
COMPREHENSIVE GREENWAY, BIKEWAY AND PEDESTRAIN IMPROVEMENT PLANS

- Gateway Community Planning Process – 2001
- Kings Mountain Land Development Plan – 1995
- Cleveland County Parks & Recreation Master Plan – 1991
- Transportation Improvement Program – 1998
- Kings Mountain Thoroughfare Plan – 1996
- Kings Mountain Capital Improvement Program – 2000-2006
- Kings Mountain Boulevard Corridor Overlay Land Development Plan Amendment –
- 2002
- NCDOT Manual on Traditional Neighborhood Design – 2000
- NCDOT Bikeways Program 1996

Mission Statement

Provide alternative means to automobile transportation and incorporate in growth management policies a multi-modal transportation plan using sidewalks, bikeways, bike lanes and greenways, while promoting safety, education, open space, environmental resources, recreation, city beautification, quality of life enhancement, storm water management, the gateway community project, economic development, increased land values and linking points of interest throughout the city.

Goals

- Create public support.
- Identify funding sources for each type of facility.
- Coordinate with citizens, state and local agencies, municipalities, and non-profit organizations for promotion of the overall project.
- Make travel safer for pedestrians and bicyclists.
- Extend existing sidewalks and greenway / trail system.
- Create an inventory of sidewalks and existing trails.
- Create design standards and construction specifications.
- Protect scenic and functional transportation characteristics of the NC 161 (Gateway) corridor.
- Determine appropriate land uses and view shed for the park area.
- Link downtown to the parks and their trails.
- Improve appearance of 161 (the gateway corridor).
- Link the neighborhoods to downtown.

Objectives

- Create an education program on trails, bikeways / bike lanes and their benefits.
- Promote regional and local area trails, bike facilities and greenways as regional and local economic / quality of life enhancements.

- Promote greenway, bike facility and pedestrian improvements as part of gateway community effort.
- Secure funding resources from NCDOT and NC recreational state government agencies.
- Create two trail links to Crowder Connector trail system.
- Create the I-85 bicycle lane over bridge.
- Extend three sidewalk systems by 2004.
- Mark two bicycle routes by 2003 as Share the Road Facilities.
- Create a process of creating greenways by 2003 through subdivision review and zoning site-specific plan review.
- Create a Highway 161 Corridor Protection Overlay Zoning district by 2003.
- Create a streetscape improvement plan for NC 161.
- Make the streetscape improvement plan integrate bicycle and pedestrian improvements.
- Create sufficient sidewalks, greenways and bikeway / bike lanes to link all neighborhoods and to downtown.

Organizing For A Plan

A successful planning effort will have broad support from leadership, administration and most importantly solid support at the "grass-roots" level. So far the concept of trails, greenways, bike facilities and more sidewalks to link neighborhoods, the downtown and parks for transportation and recreational purposes seems to be favorably received by all. This planning effort at various times will include:

- Review with Mayor and City Manager
- Review with the Planning & Zoning Board
- Technical Ad Hoc Committee Work
- Review with City Council
- Advisory Ad Hoc Committee Work
- Citizen Review
- Review with Developers
- Review with NCDOT

Organizing for a plan involving greenways, bikeways and pedestrian facilities means adopting a process that will be primarily long-term oriented but relying on creativity and adaptability to take advantage of any opportunity that comes along.

GREENWAY, BIKEWAY AND PEDESTRIAN IMPROVEMENT DESIGN GUIDELINES

Multi-Use-Trails (Greenways)
Width of easement 24'
Width of dedicated right-of-way 24'

Sub base 12' wide and 6" thickness (concrete, asphalt or gravel)
Width of travel surface 10'
Width of adjoining shoulder or green strip 2'
Signs at entrance and end of trail with name and distance

Bike Way
(One Way)
Width of easement 14'
Width of dedicated right-of-way 14'
Width of travel surface 5' (trail, sidewalk, or greenway)
Width of adjoining shoulder for green strip 2'
(Two Way)
Width of easement 16'
Width of dedicated easement 16'
Width of travel surface 8'
Width of adjoining shoulder or green strip 2'

Sidewalks
Width of easement 10'
Width of dedicated right-of-way 10'
Width of travel surface 5'
Width of adjoining shoulder or green strip 2'

Share the Road (Bike Lanes)
Width of easement existing may suffice
Width of dedicated right-of –way existing may suffice
Width of travel surface 4'
Width of adjoining shoulder or green strip 2'
Note: Share the road signs will be located at each end of road, thoroughfare, boulevard, and at key intersections.
On street parking will not be encouraged

Alternative designs including easement and right-of-way locations, tree and shrub plantings may be approved on a case by case basis because of topography, safety issues or other special circumstances, however all alternatives must meet all NCDOT and local standards. NCDOT Traditional Neighborhood Development Manuel has standards that developers are encouraged to incorporate whenever possible.

Implementing the Plan

A number of activities are necessary for proper implementation of the plan. Some of the activities are short-term but many are long-term. All need to be incorporated in a multitude of "disciplines". For example a new sewer line easement may be the best fit for a greenway. Cooperation between the Sewer Department, Water Department, Planning Department, Code Enforcement and the engineer designing or supervising

construction is needed. Each department needs to be aware of the standards and opportunities for implementing the plan through their own work.

The following should be done to implement the plan:

- Amend City of Kings Mountain Land Development Plan to include the Comprehensive Greenway, Bikeway and Pedestrian Plan (Comprehensive Plan) as element.
- Refer to the Comprehensive Plan as a standard for Site Specific Plan reviews under the zoning ordinance
- Inventory all Sewer, Water, Gas and electrical line easements or right-of-ways for possible use as a trail or path segment.
- Coordinate greenway development with the creation of a storm water management utility that complies with NPDES Phase II.
- Work with Technical and Advisory ad hoc Committees to amend the location and type of facility from time to time.

- Develop policy for transfer of greenway, trail or path area to public entity or homeowners association for maintenance.

The implementation of the plan depends largely on the pace of development for creation of new trails, funding resources for development of trails and the amount of favorable consideration given by developers and private property owners to the requests for dedication of trails. Capital programming is an option but it has to compete with scarce funds. The best effort for plan implementation includes conversion of utility easements already being maintained strong citizen advocacy, creation of tax incentives for donations and being creative.

Acquisition and Construction

The most difficult part of implementation requires some acknowledgement. Acquiring greenway and trail segments as well as establishing spurs for bike facilities and sidewalk construction will take considerable effort on the part of citizens as well as leadership and staff. It is expected that those city departments involved directly in growth and development management will have to take the lead in acquiring facilities and securing resources for construction. The acquisition and construction methodologies will include:

<u>Acquisition</u>

- Conversion of existing utility easements
- Gifting to the City
- Reservation of greenways and trails through subdivision review and site-specific plan approval
- Gateway Community trail development

Construction

- NC Parks and Trails monies
- NCDOT Bike Facilities Program
- Transportation Improvement Program Funds
- Private Foundation Funds
- Private development construction and dedication
- Capital Improvement Programming
- Enhancement (TEA-21) monies

It took the City 125 years to protect and designate by ordinance the first segment of greenway. It is hoped that this effort creates facilities at quicker pace.

Regulatory Changes

The City may create incentives and processes to reward developers who include greenways, bike facilities and sidewalk facilities. The rewards include density bonuses, expedited project approval, lot size contributory credit, gifting credit / write-offs and NPDES Phase II compliance. This may be done through changes to the zoning ordinance, subdivision ordinance and also the development of a storm water management ordinance. Changes to the zoning ordinance will include corridor overlay regulations, where facilities are needed or in an area likely to undergo rapid development or redevelopment. The goal will be to create inter connectivity, safe facilities and alternatives to automobile traffic. Changes to the subdivision ordinance will include stronger requirements for pedestrian facilities whether they are sidewalks or trails. This, as well as compliance with storm water management requirements will be facilitated by emphasizing the site specific plan approval process recently added to the zoning ordinance.

Summary and Conclusion (Under Construction)

When we think about taking a trip to the local store for groceries, medicine or when we take our children to sporting events, school and when we go to work, how do we get there? Automobiles are almost our only means for transportation. Greenways, bikeways, and pedestrian trails will give us another means to reach these destinations safely, and at the same time providing for healthier lifestyles, promoting economic development and preserving open space. All in all improving the overall quality of life for all of our community.

It is obvious that this project will take years to complete. The process of creating and promoting greenways, trails and bike facilities will bring the community closer together. The new connections between stores, schools, our parks, churches, neighborhoods, the gateway area and even other regions trail systems will be rewarding and pleasurable for our citizens and visitors.

A.14 NCDOT Bicycle & Pedestrian Prioritization Presentation (portion)

NCDOT – P2.0 Education Sessions

May 2011

Bicycle and Pedestrian - Prioritization 2.0

Projects prioritized for years 2018-2022 (years 6-10)

Bicycle projects (on-road & multi-use paths) and Pedestrian projects prioritized separately using similar criteria

Bicycle and pedestrian projects submitted in P1.0:

- Refined to reflect true needs
- Some reclassified as Highway Modernization (based on scope/cost)
- Emailed to MPOs/RPOs on May 9th for Information Only – *Disregard June 15th deadline for data*

All (existing + new) Bicycle and Pedestrian projects need to be submitted in July (5-29)

- Up to 10 total Bicycle projects (rank 5)
- Up to 10 total Pedestrian projects (rank 5)

Bicycle and Pedestrian - Scoring

Same scoring for Bicycle or Pedestrian Projects

Right-of-Way Acquired – 18 points max. Self explanatory.

Connectivity – 15 points max. Direct access to transit/school/CBD/high density residential or linkage to a larger system of interconnected bicycle/multi-use facilities

Inclusion in an Adopted Plan – 15 points max. Recognition of a project in an adopted bike/pedestrian plan . Public involvement with plan development and local adoption also indicates community support.

Demand/Density – 12 points max. Persons per square mile within 0.5 miles of a pedestrian facility and/or 1.5 miles of a bicycle facility. Greater densities = higher points.

Bicycle or Pedestrian Crashes – 5 point max. Crash data will be provided by the NCDOT Safety Planning Group. Three or more bicycle/vehicle crashes or pedestrian/vehicle crashes within last 5 yrs.

MPO/RPO Ranking – 35 points max. Rank Top 5 Projects. #1 = 35, #2 = 28, #3 = 21, #4 = 14, #5 = 7

What Do You Need To Do?

Review highway projects in your areas in years 8, 9, and 10 of Draft Work Program AND any unfunded projects

Consider up to 15 new candidate projects

Prepare for June 1st opening for new candidate project submittals

Start considering project priorities/rankings

A.15 Open House I results: Public Recommendations for Facilities

Striped Bicycle Lanes

Recommended Streets:

1. NC 161 from downtown to Park access
2. Dixon School Rd.
3. Battleground Rd./Ave.
4. Mountain St.
5. King St.
6. Lake Montonia Rd.
7. Hawthorne
8. Gold
9. Railroad
10. NC 161
11. Stoney Point Rd.
12. Battleground (NC 161) from town to Gateway trailhead
13. Phifer Rd. to access KMHS & KMMS
14. King Mountain Blvd.
15. Ridge St. to Senior Center
16. US 74 across I-85 towards Kings Mountain
17. US 74 between Kings Mountain and Shelby
18. Cansler St.

Paved Shoulders

Recommended Streets:

1. NC 161 south to SC state line or state park
2. Margrace Rd.
3. Countryside Rd.
4. Scisms Rd.
5. Oakgrove Rd.
6. Putnam Lake rd.
7. Pinnacle/Lake Montonia Rd.
8. NC 216 North & South
9. Patterson

Wide Outside Lanes

Recommended Streets:

1. Camber St.
2. Manor Dr.

Grade Separated Crossings

Recommended locations:

1. Downtown between Railroad and Battleground Ave.

Bicycle Routes

Recommended Streets:

1. Over the Mountain Triathlon

2. Downtown > by the P.O. > NC 161 up to State Park > thru Park > Right on Dixon School Rd. OR Right on Battleground > then back downtown (25 miles +/-)

3. Loop through the residential neighborhoods surrounding the downtown area (NCDOT also advised consideration of a loop)

4. School to school to YMCA to school to downtown

A.16 Open House I results: Goal Scoring Matrix

Evaluating Bicycle Routes

CHOOSING PRIORITY PROJECTS

Bicycle facilities cost money. Projects will be built segment by segment over time. The Kings Mountain Comprehensive Bicycle Plan must therefore assign priorities to the kind of projects to build first. The following **goal scoring matrix** will help guide project decisions, including immediate improvements to make to existing facilities throughout designated routes, and new facilities in both medium and long term projects.

Instructions:

Please look over the bike route project goals described below and assign a number value to each one, the higher the number the more you value that goal. If you have an additional goal or two for the bike route, write each on a separate row and assign it a value in the same way. **Make sure your total points add up to 100!**

Goal Scoring Matrix

Points	Percentage	Bike Route Goal	Explanation
214	19.4%	Safety	Improve an unsafe section of road or build off-road.
177	16.1%	Link Destinations	Provide bicycle connections to popular places like schools, businesses, downtown, and neighborhoods.
140	12.7%	Usage/Demand	Concentrate on segments where bicyclists are already riding or where they will want to ride the most.
135	12.3%	Commuting	Build segments that will most help people get to work or run errands on bicycle.
123	11.2%	Recreation/Tourism	Focus on route segments that offer the best in terms of recreation and relaxation for visitors as well as locals.
103	9.4%	Scenic Views	Select route segments that offer views of scenic areas.
97	8.8%	Students	Increase opportunities for students to ride bicycles to schools in the area.
91	8.3%	Cost Effectiveness	Focus on segments of the route that are easiest-to-build.
20	1.8%	Optional Additional Goal:	
1600	**100%**	Total	1600 = 100 x 16 participants

A.17 Open House I: Idea Cards (Compendium)

IDEA CARDS

WRITE DOWN ANY UNIQUE SUGGESTION YOU MAY HAVE FOR IMPROVING "BIKE-ABILITY" IN THE AREA. THEN DROP YOUR IDEA CARD IN THE BOX.

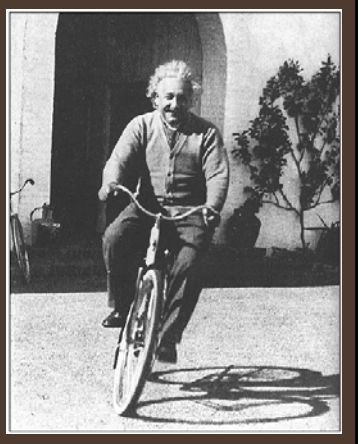
1. Laminate bicycle and pedestrian laws for kids to use as placemats.
2. Need bike racks everywhere!
3. Provide a safe place for kids, because they have nothing to do besides video games and drugs.
4. There is a trailer park on King Street behind KFC that's about to be bulldozed. It would be a great place to have a safe, low-cost off-road BMX park, with dirt jumps and stuff like that. It has potential to connect to connect into a trail.
5. Bike-Trade Day (or "Bike-a-Rama") where people can bring in bikes they no longer use to trade for bikes they want.
6. Get word about this planning process to elected officials.
7. Talk to a school official like John Yarbrough (ex-principal and currently a facilities manager) and YMCA representative like Tyler McDaniel.
8. Talk to the Chamber (Shirley Brutko 704-739-4755).

COMPREHENSIVE BICYCLE PLAN

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

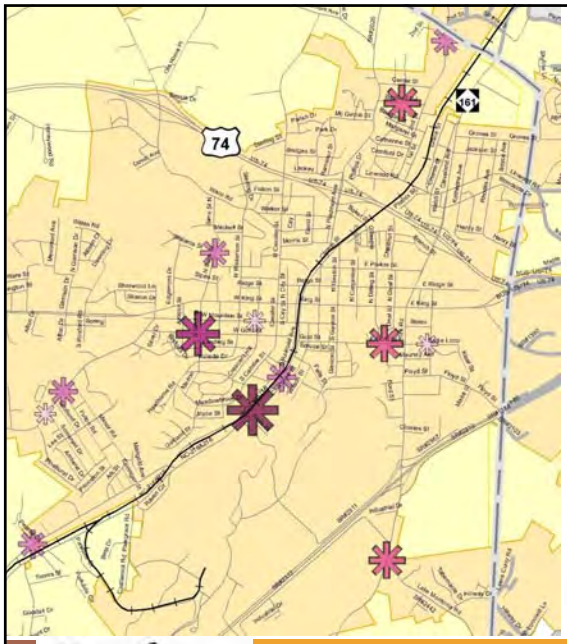
"I thought of that while riding my bicycle."
~ Albert Einstein on the theory of relativity



COMPREHENSIVE BICYCLE PLAN

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE



North Carolina CRASH DATA

Reported bicycle accidents from January 1990 to February 2010. NC Dept. of Transportation

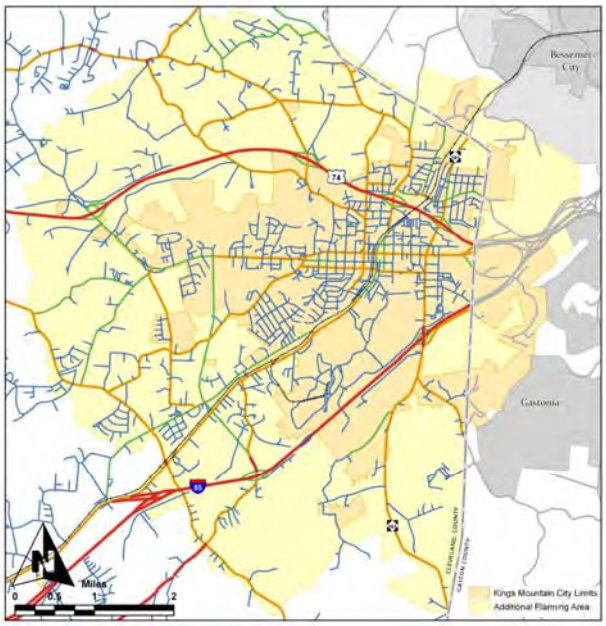
Bicycle Crashes

Severity

- Fatal
- Disabling
- Injury Evident
- Injury possible
- Property Damage Only

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE



Bicycling Suitability

- Most Suitable (6 - 10)
- More Suitable (4 - 5)
- Somewhat Suitable (2 - 3)
- Least Suitable (0 - 1)

Factors Used for Bicycling Suitability Map

The following table shows the assigned points breakdown

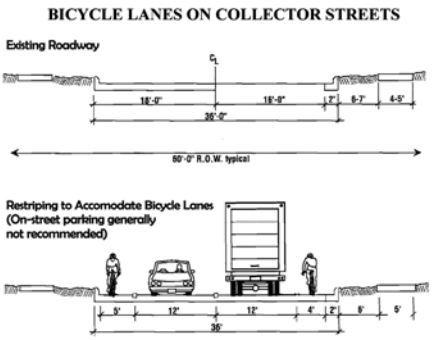
SUITABILITY FACTOR	VALUE RANGE	SCORE
Traffic Count	Less than 7500 AADT	2
	Between 7500 and 15000 AADT	1
	More than 15000 AADT	0
	AADT: Annual Average Daily Traffic	
Speed	25mph or less	2
	30mph or 35mph	1
	40mph and over	0
Functional Classification	Local	2
	Collector	1
	Minor or Principal Arterial	0
Bike Facility	Bike Lane or Shoulder	4
	Share the Road	2
	No Facility	0

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

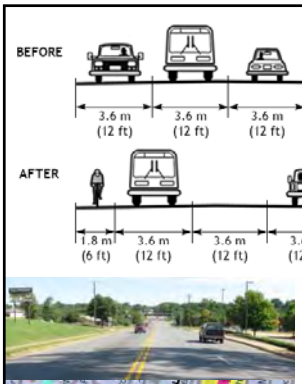
STRIPED BICYCLE LANE

A portion of a roadway reserved for preferential or exclusive use by bicycles through striping, signing, and pavement markings at least four feet wide, not Including gutter pan.



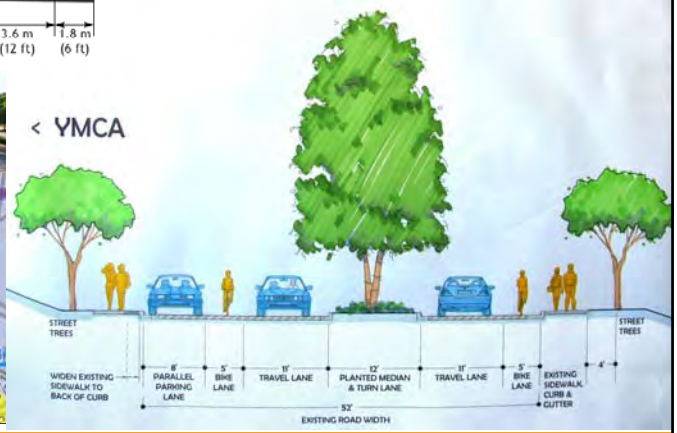
KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE



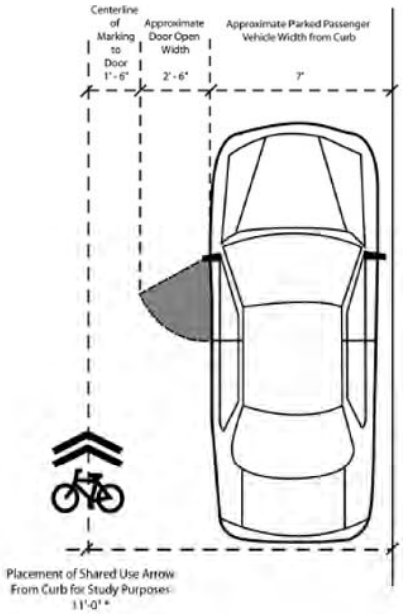
Cleveland Avenue

Proposed Improvements from E. Ridge Street to Linwood Road



KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE



The "Sharrow"

Many people wonder what those little bike symbols mean and why they are there. Shared lane pavement markings, or "sharrows", are bicycle symbols carefully placed to guide bicyclists to the best place to ride on the road, avoid car doors and remind drivers to share the road with cyclists. Unlike bicycle lanes, sharrows do not designate a particular part of the roadway for the exclusive use of bicyclists. They are simply a marking to help motorists expect to see and share the lane with bicyclists.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

WIDE OUTSIDE LANE

Wide outside lanes allow motorists to more safely pass slower moving bicyclists without changing lanes.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PAVED SHOULDERS

Paved shoulders may be added to sections of existing roadways to allow bicyclists room to safely share the road with motor vehicles.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

MULTI-USE PATHS / GREENWAYS

Pathways that are made for both bicycle and pedestrian traffic, and physically separated from motor vehicles, can provide safe and attractive routes, both for getting to places and for recreation. They often follow streams or utility corridors.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

On-line **SURVEY** results - sample question

5. What one most important thing do you think would encourage more bicycling in and around the city?

	Response Percent	Response Count
Having bicycle lanes or extra width on the streets	**50.0%**	**21**
Trails or greenways to ride on	26.2%	11
More traffic signals or bicycle-related warning signs	7.1%	3
Better police enforcement of traffic laws	0.0%	0
Getting the community more involved through safety programs or events	9.5%	4
Anything else?	7.1%	3

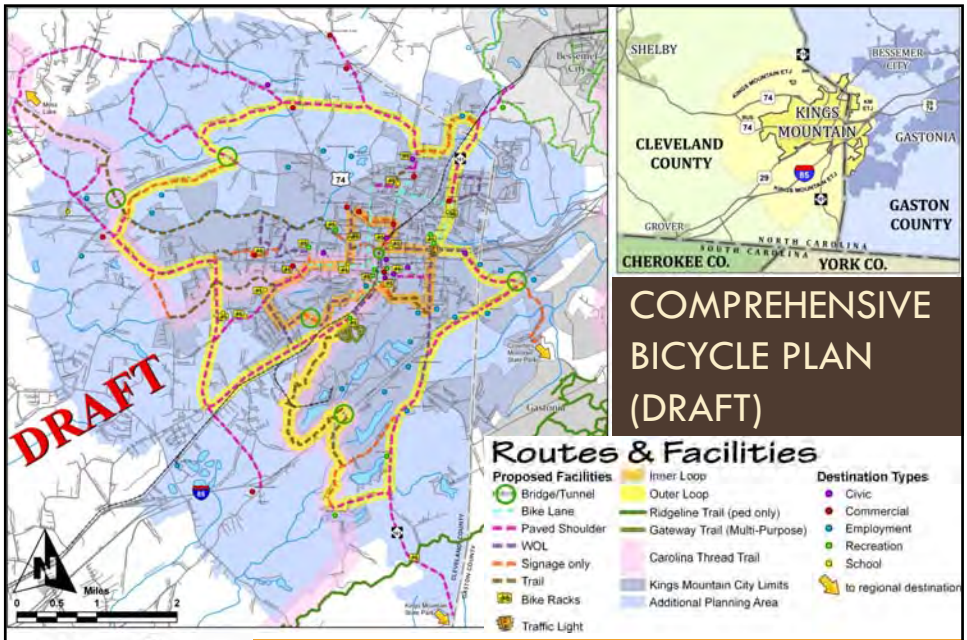
KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

PUBLIC OPINION	GOAL	EXPLANATION
24.0%	Safety	Improve an unsafe section of road or build off-road.
12.3%	Students	Increase opportunities for students to ride bicycles to schools in the area.
11.6%	Link Destinations	Provide bicycle connections to popular places like schools, businesses, downtown, and neighborhoods.
11.1%	Recreation/Tourism	Focus on route segments that offer the best in terms of recreation and relaxation for visitors as well as locals.
10.5%	Usage/Demand	Concentrate on segments where bicyclists are already riding or where they will want to ride the most.
10.0%	Commuting	Build segments that will most help people get to work or run errands on bicycle.
8.1%	Scenic Views	Select route segments that offer views of scenic areas.
7.0%	Cost Effectiveness	Focus on segments of the route that are easiest-to-build.
5.4%	Additional Goals	
100%	Total	

KINGS MOUNTAIN

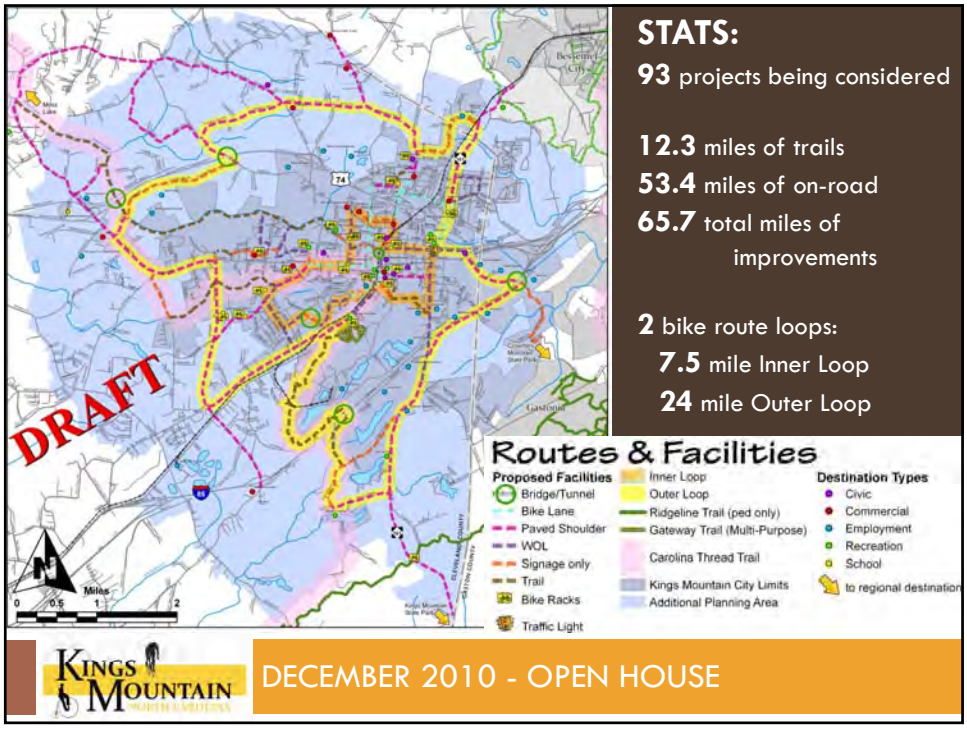
DECEMBER 2010 - OPEN HOUSE



COMPREHENSIVE BICYCLE PLAN (DRAFT)

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE



STATS:

93 projects being considered

12.3 miles of trails
53.4 miles of on-road
65.7 total miles of improvements

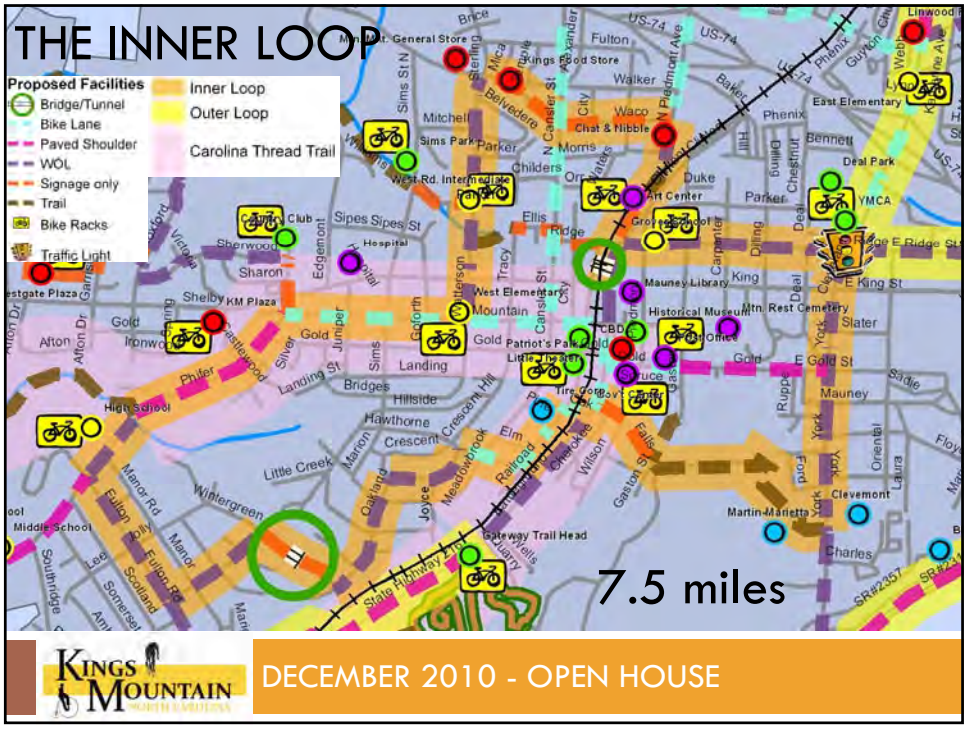
2 bike route loops:
7.5 mile Inner Loop
24 mile Outer Loop

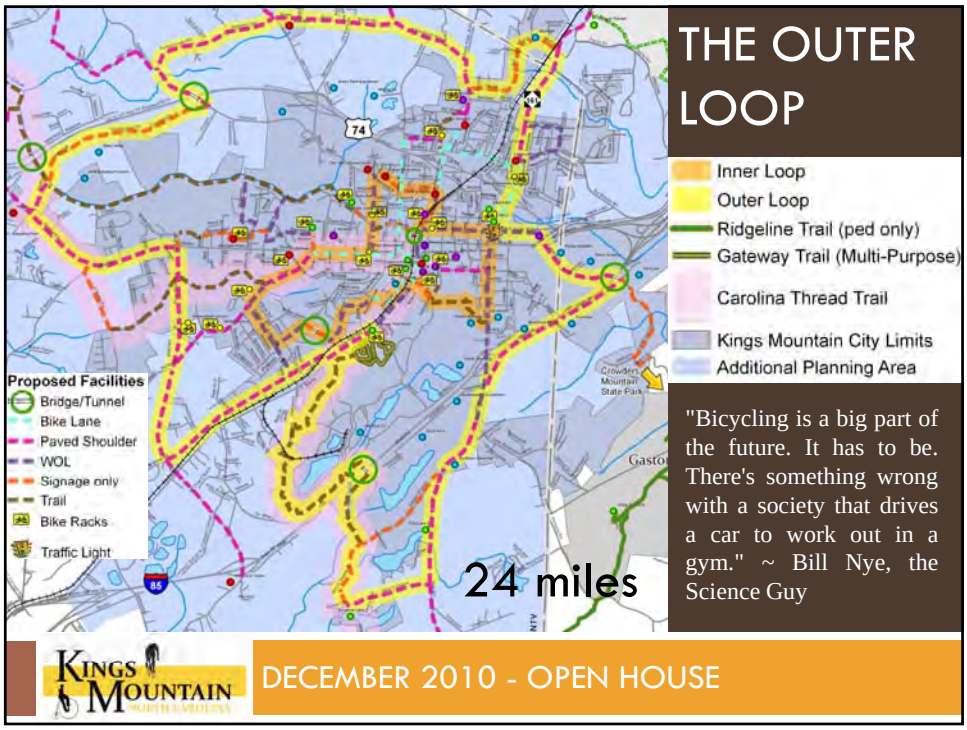
KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

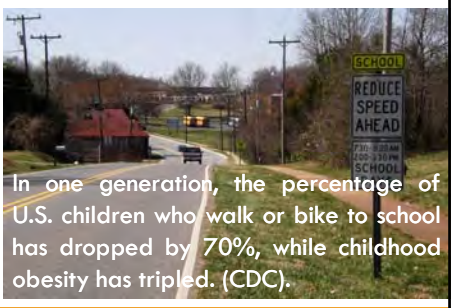

THE INNER LOOP
Proposed Facilities
Bridge/Tunnel
Bike Lane
Paved Shoulder
WOL
Signage only
Trail
Bike Racks
Traffic Light
Inner Loop
Outer Loop
Carolina Thread Trail
7.5 miles
KINGS MOUNTAIN
DECEMBER 2010 - OPEN HOUSE


THE OUTER LOOP
Inner Loop
Outer Loop
Ridgeline Trail (ped only)
Gateway Trail (Multi-Purpose)
Carolina Thread Trail
Kings Mountain City Limits
Additional Planning Area
Proposed Facilities
Bridge/Tunnel
Bike Lane
Paved Shoulder
WOL
Signage only
Trail
Bike Racks
Traffic Light
24 miles
"Bicycling is a big part of the future. It has to be. There's something wrong with a society that drives a car to work out in a gym." ~ Bill Nye, the Science Guy
KINGS MOUNTAIN
DECEMBER 2010 - OPEN HOUSE

SCHOOL ZONES

Proposed Facilities

- Bridge/Tunnel
- Bike Lane
- Paved Shoulder
- WOL
- Signage only
- Trail
- Bike Racks
- Traffic Light



In one generation, the percentage of U.S. children who walk or bike to school has dropped by 70%, while childhood obesity has tripled. (CDC).

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

For those does not own an automobile, mobility is severely limited in communities that are designed solely around the car. Bike-friendly communities maximize independence and mobility in ways that auto-dependent communities cannot.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PROJECT VOTING INSTRUCTIONS:

1. **Look at the map** showing all of the **Routes & Facilities**
2. **Find the projects** on your voting sheet.
3. **Vote your 24 favorite projects** using your sticky dots (Use only one dot per project. Color doesn't matter).
4. **Share your thoughts** in the spaces provided.
5. **Return your voting sheet.** Place in box.

Thank you!

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PROJECT SCHEDULE:

1. Map current bicycle conditions (mid-2010)
2. Planning session with Steering Committee
3. Public survey
4. First Public Open House Meeting
5. Steering Committee review of public input
6. Preparation of Draft Bicycle Plan
7. Second Public Open House Meeting – review of Draft Plan
8. Steering Committee review of public comments
9. Revision of Draft Bicycle Plan
10. Review of Draft Bicycle Plan by City Staff and NC transportation officials
11. Final Plan revisions and submittal for adoption
12. Delivery of Final Plan (mid-2011)

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

KINGS MOUNTAIN BICYCLE PLAN - PUBLIC INPUT MEETING DECEMBER 2010

PROPOSED BIKE FACILITIES				YOUR INPUT:	
Street / Location	**From**	**To**	**Proposed Improvement**	**VOTE** Place only **one** dot per project.	**COMMENT** Write in information or opinion you may have about any of the proposed segments below (positive or negative). Please print clearly.
2nd & Herndon	Center	BC-KM Hwy (161)	Signage only		
Alex D. Owens	York	SR 2443	Paved shoulder		
Alex D. Owens	Alex D. Owens	Galilee Church	Signage only		
Art Center	Ridge	Art Center Trail	Signage only		
Art Center Trail	N. Piedmont	Art Center	Trail	1	
Battleground	Mountain	Falls	Bike Lane	1	Ellen Burris - Important for KMG1 access
Battleground	Quarry	Margrace	Paved shoulder	1	Ellen Burris - Important for KMG1 access
Battleground	Mountain	Ridge	Wide outside lane	1	Ellen Burris - Important for KMG1 access
Battleground	Falls	Quarry	Wide outside lane	2	Ellen Burris - Important for KMG1 access
Beason Creek	Phifer	Kings Mountain	Trail	2	Use spare dirt. Use spare dirt for BMX trails.
Beason Creek	Kings Mountain	Crocker	Trail	4	Use spare dirt. Use spare dirt for BMX trails.
Bridges	Cansler	Ramseur	Paved shoulder	1	
Caldwell	Fulton	Wintergreen	Wide outside lane		
Cansler	Mountain	Bridges	Bike Lane	1	
Canterbury	Canterbury	Canterbury	Bridge rails	1	
Canterbury	Senior Ctr.	Woodlake	Paved shoulder	1	
Canterbury	Woodlake	City Limits	Signage only	1	
Center	N. Piedmont	2nd	Signage only	2	
Cleveland/161	Linwood	Ridge	Bike Lane	2	Ellen Burris - Excellent idea - important tarffic light
Cleveland/161	Herndon Access	Linwood	Paved shoulder	2	Ellen Burris - Excellent idea - important tarffic light
Cleveland/161	King	Ridge	Wide outside lane		Ellen burris - Excellent idea - important tarffic light
Country Club	Mountain	Sherwood	Signage only		
Countryside	Shelby Rd (74)	Patterson	Paved shoulder	1	
Crescent & Oakland	Hawthorne	Huntingtowne	Wide outside lane	1	
Crocker El Bethel	Beason Creek	Shelby Rd (74)	Signage only		
Dick Elam	US-74	creek	Signage only		
Dillon-P'son-Wright	Putnam Lake	Oak Grove	Paved shoulder	1	
Dixon School	Margrace	truck stop	Paved shoulder	1	
EllisCanslerRidgeRR	Tracy	N. Railroad	Signage only		
Falls	Falls	Battleground	Signage only		
Fulton	Margrace	Caldwell	Wide outside lane	2	
Fulton	Caldwell	Phifer	Wide outside lane	1	
Galilee Church	York	Alex D. Owens	Signage only	1	
Garrison Merrimont	Suzanne	Potts Creek	Wide outside lane		
Gateway	Gateway Trail	Galilee Church	Trail	1	
Gold	Gaston	Battleground	Bike Lane	2	
Gold	Cleveland (161)	S. Gaston	Paved shoulder	2	
Hoyles	Stoney Pt.	Trail	Paved shoulder		
Hoyles connector	Hoyles	Potts Ck. Trail	Trail		
Kings Creek Bridge	I-85	I-85	Refurbish	2	
Kings Mountain	Shelby	Margrace	Paved shoulder	2	
Lackey	N. Piedmont	NES trail	Bike Lane		
Linwood	Center	Cleveland (161)	Bike Lane	1	
Linwood	Cleveland	Boyce	Wide outside lane	1	
Margrace	S. Battleground	Kings Mountain	Paved shoulder	2	
Martin-Marietta Tr.	Martin-Marietta	S. Gaston	Trail	2	
Martin-Marietta Tr.	Falls	S. Gaston	Trail	1	
McGinnis	NES North Trail	N. Piedmont	Paved shoulder		
Mountain	Battleground	Watterson	Bike Lane	1	
Mountain	Watterson	Phifer	Bike Lane	2	
Mt. Zion Trail	N. Watterson	Tracy	Trail	2	
N. Piedmont	Waco	Fairview	Bike Lane	1	Ellen Burris - All important
N. Piedmont	Scism	Goforth	Paved shoulder	2	Ellen Burris - All important
N. Piedmont	Center	Fairview	Paved shoulder	1	Ellen Burris - All important
N. Piedmont	Scism	Central	Paved shoulder	1	Ellen Burris - All important

KINGS MOUNTAIN BICYCLE PLAN - PUBLIC INPUT MEETING DECEMBER 2010

PROPOSED BIKE FACILITIES				YOUR INPUT:	
Street / Location	**From**	**To**	**Proposed Improvement**	**VOTE** Place only **one** dot per project.	**COMMENT** Write in information or opinion you may have about any of the proposed segments below (positive or negative). Please print clearly.
N. Piedmont	Art Center	Waco	Wide outside lane	2	
N. Watterson	W. Mountain	Waco	Wide outside lane	1	
BC-KM Hwy/161	Herndon Access	Lewis Farm	Paved shoulder	2	
N. Elementary Trail	Lackey	McGinnis	Trail	4	
Oak Grove	Wright	Scism	Paved shoulder	2	
Oak Grove	Patterson	Stoney Point	Paved shoulder	2	
Parker	Sims	Watterson	Signage only	1	
Patterson	Patterson	Patterson	Bridge rails		
Patterson	Putnam Lake	Dillon	Paved shoulder	1	
Patterson	I-85	Dillon	Paved shoulder	2	
Phifer	W. Mountain	Beason Creek	Paved shoulder		
Phifer	Beason Creek	Kings Mountain	Paved shoulder	1	
Phifer	Beason Creek	Fulton	Wide outside lane		
Potts Creek 1	Sims	Merrimont	Trail	4	
Potts Creek 2	Merrimont	Countryside	Trail	4	
Potts Creek 3	Countryside	Stoney Point	Trail	4	
Putnam Lake	Patterson	Scism	Paved shoulder		
Railroad	Oak	Hawthorne	Bike Lane	1	
Ridge	Battleground	Cleveland (161)	Wide outside lane	1	
Ridge	Cleveland (161)	Senior Ctr.	Wide outside lane	2	
Roxford	Sherwood	Downing	Wide outside lane		
Scism	Oak Grove	N. Piedmont	Paved shoulder	1	
Shelby Rd (74)	Kings Mountain	Countryside	Paved shoulder	1	
Sherwood	Country Club	Roxford	Wide outside lane		
S. Railway Bridge	N. Railroad	Battleground	Bike/ped only	3	
Stoney Pt.	Countryside	Oak Grove	Paved shoulder		
Waco	Watterson	N. Piedmont	Signage only		
Westgate Plaza	Roxford	Ware	Signage only		
Wintergreen	Huntingtowne	Wintergreen	Bike/ped bridge	1	
Winter-Hunting	Oakland	Caldwell	Signage only		
Woodhaven Trail	Washington	Dick Elam	Trail	5	Dirt jmps (no cost)
Woodlake	Canterbury	York (161)	Paved shoulder		
Wright	Dillon	Oak Grove	Paved shoulder		
York	Alex D. Owens	Tibor	Paved shoulder	3	
York	Lake Montonia	Alex D. Owens	Paved shoulder	3	
York	Woodlake	Lake Montonia	Wide outside lane	4	
York	Martin-Marietta	Woodlake	Wide outside lane	3	
York	King	Martin-Marietta	Wide outside lane	2	

Additional comments?

1. There is a ppl that BMX with us if we can find the place. There will be no cost needed. Dirt jumps would be great for us and we will build them.

All we are asking for is a little support from any one. The more support the better our chances are at succeeding. That's one goal in mind.

And if we can get grant money, maybe we can get a bike park built and that would benefit everyone even if we have to build it ourselves we will.

2. This is a good idea, but it does not include anything for the youth. Dirt jumps cost less than a skate park, and are easy to maintain.

The BMX community would help build and maintain if needed. Grant money should be used to benefit the people. The more people you can reach

out to with this program, the more money the city and tax payer save. Please help the BMX community and future youth.

3. Dave Zugelder - Thank you for having this meeting. We are avid cyclists my wife and I. We are willing to help in any way to build, maintain,

help in design with the mountain bike trails. Single trails off of the greenway trail will bring cyclists from other counties, even States if built properly.

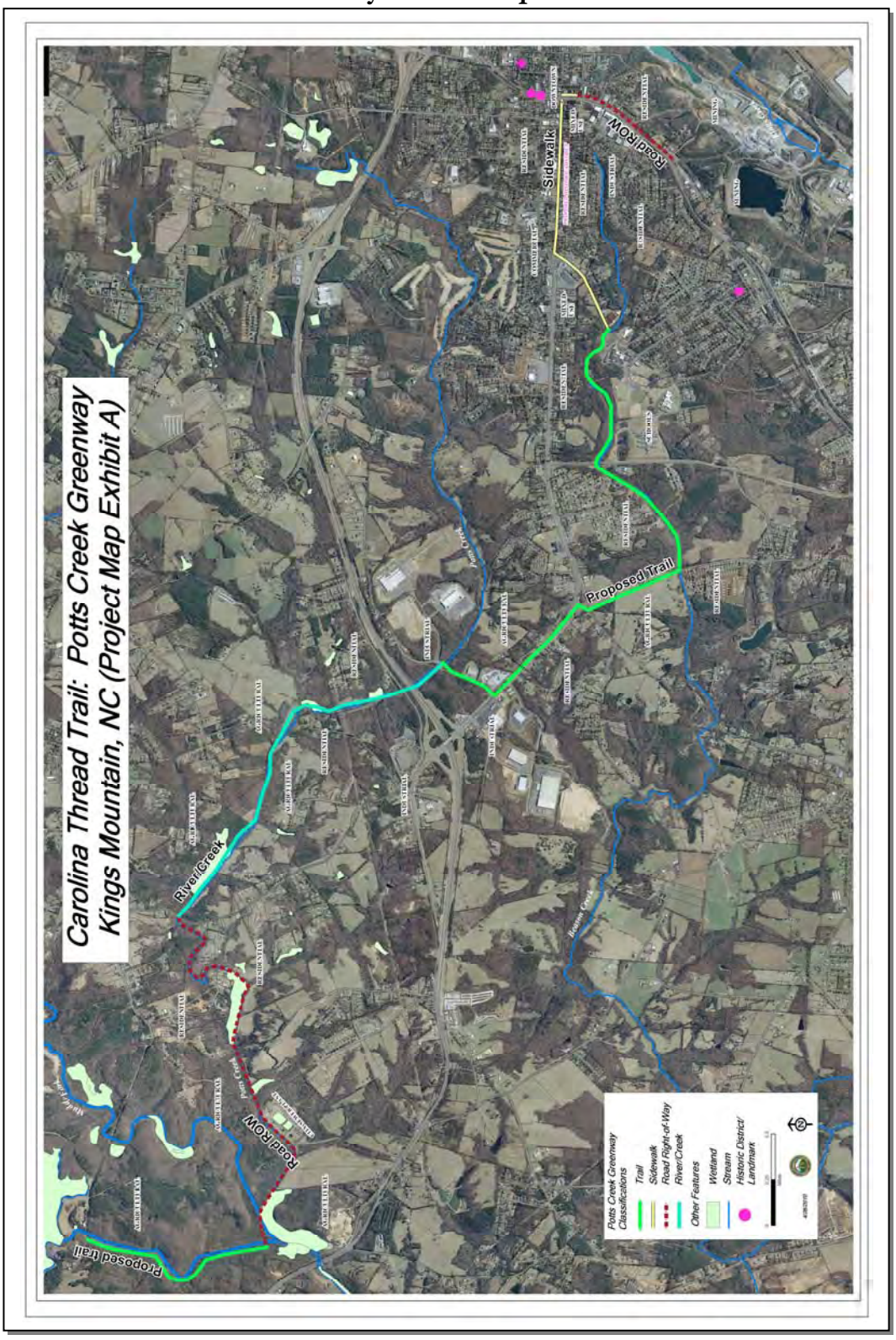
We feel this will add to the local economy. Thank you.

4. Please email the powerpoint to danclapp@hotmail.com. Please send me the plan also. Any chance of signing and striping the newly widened

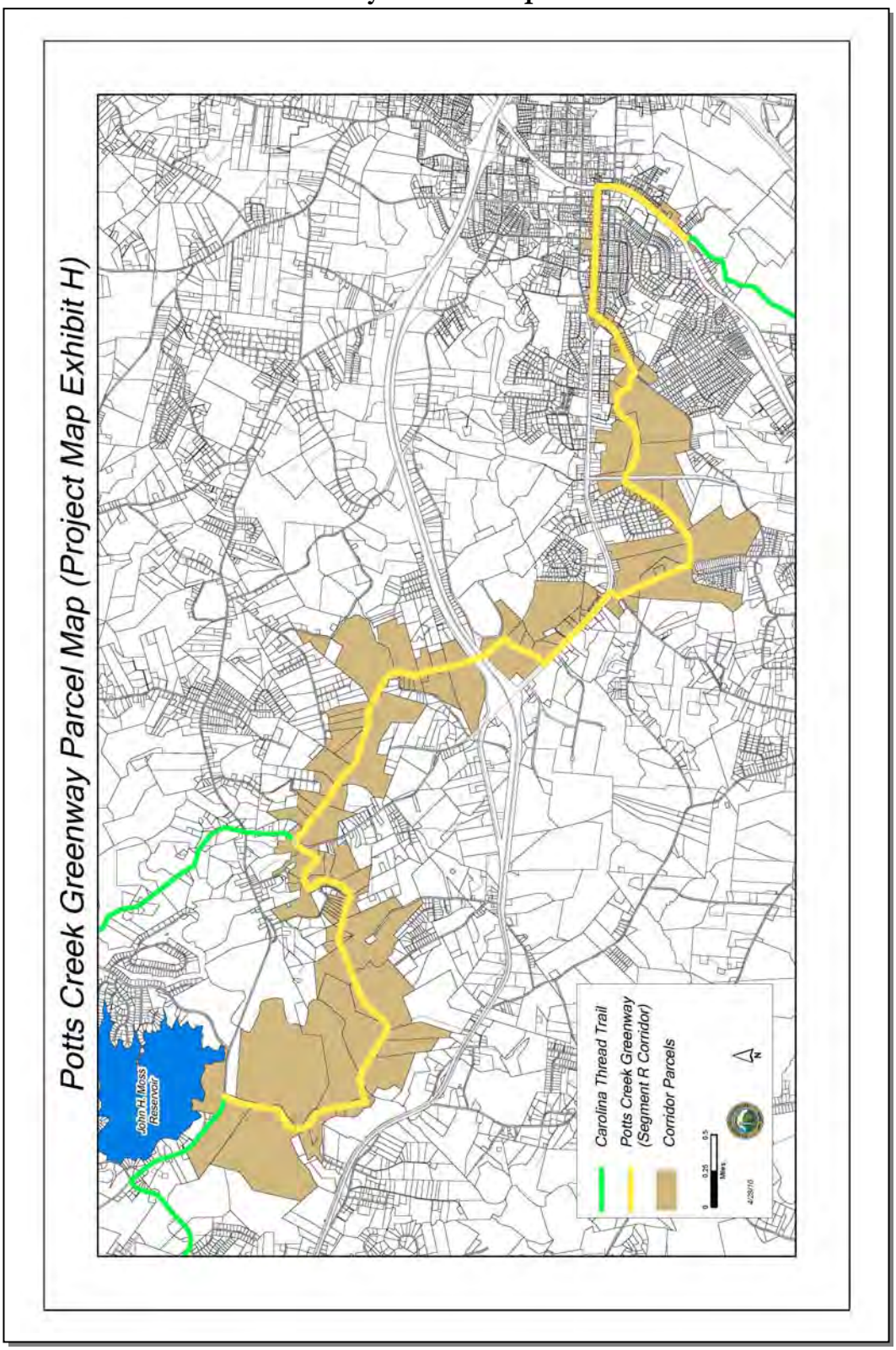
Pinnacle road from Lake Montonia to Sparrow Springs Road.

5. Mary Zugelder - See Husband's Comment

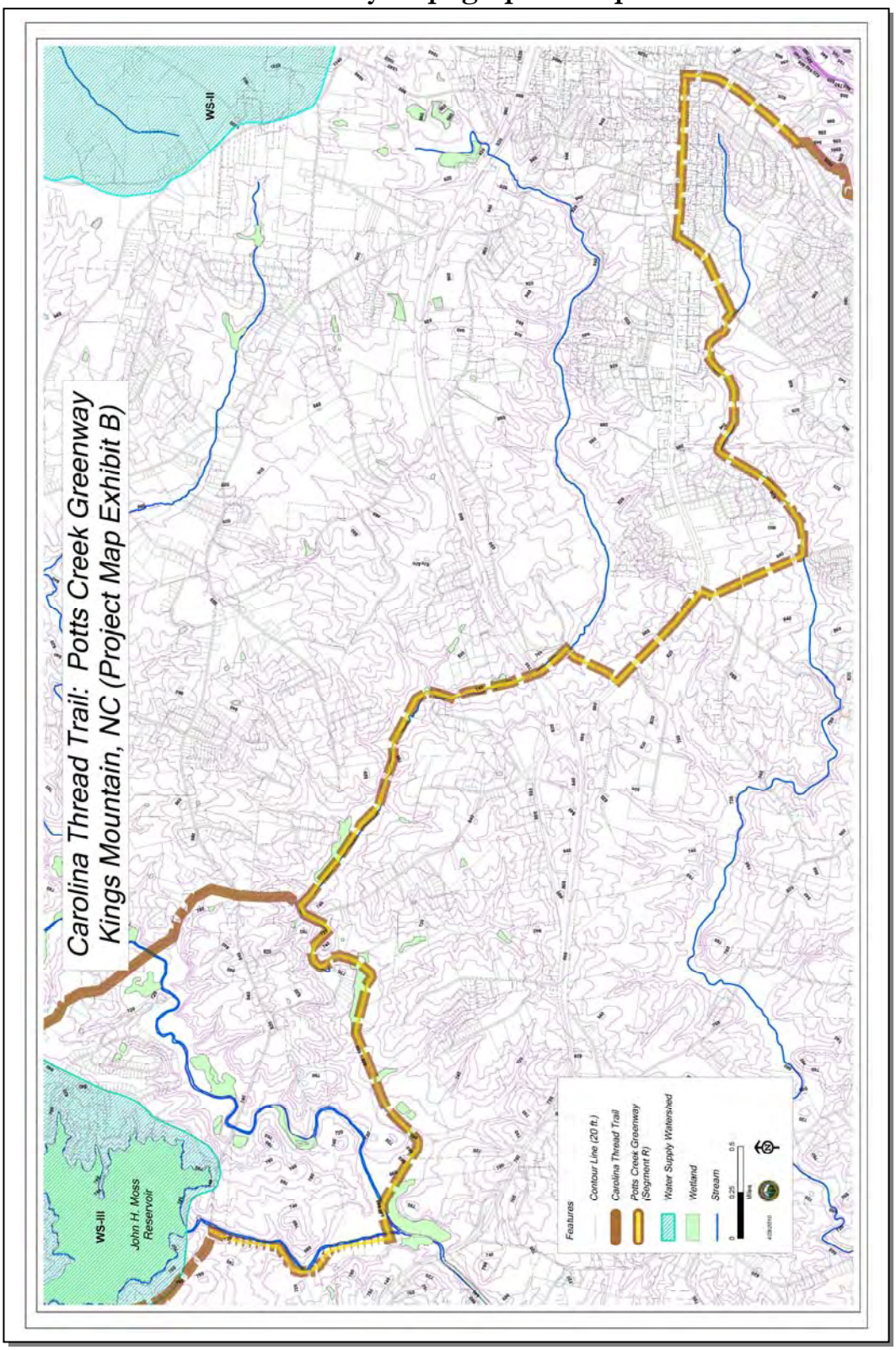
A.20 Potts Creek Greenway Aerial Map



A.21 Potts Creek Greenway Parcel Map



A.22 Potts Creek Greenway Topographic Map



1. How often do you currently ride a bicycle?

	Response Percent	Response Count
Never have	1.0%	1
It's been years!	21.4%	21
Maybe a few times a year	12.2%	12
Fairly often	**38.8%**	**38**
Daily, or almost so	26.5%	26
	answered question	**98**
	skipped question	**0**

2. For what reasons do you most often ride a bicycle?

	Response Percent	Response Count
I don't ride.	8.2%	8
For pleasure, recreation, or exercise.	**87.6%**	**85**
To get to school.	0.0%	0
To get to work.	6.2%	6
To shop, visit friends, for errands, etc.	10.3%	10
It's the only way I have of getting places.	1.0%	1
Other (please specify)	2.1%	2
	answered question	**97**
	skipped question	**1**

3. What keeps you from riding a bicyle more than you do now?

	Response Percent	Response Count
I need a working bicycle!	10.4%	10
I can't, due to poor health or physical inability.	2.1%	2
It feels unsafe to ride in the City.	**42.7%**	**41**
I'm too busy or just not interested.	22.9%	22
The weather.	15.6%	15
Some other reason?	21.9%	21
	answered question	**96**
	skipped question	**2**

4. Where do you like to ride a bicycle?

	Response Percent	Response Count
Outside of the City	**52.3%**	**45**
Lots of areas in and around the City	50.0%	43
Particularly on certain streets or within a certain neighborhood	26.7%	23
Please list the main streets you most often ride (or would like to if it was safer).		26
	answered question	**86**
	skipped question	**12**

5. What one most important thing do you think would encourage more bicycling in and around the city?

	Response Percent	Response Count
Having bicycle lanes or extra width on the streets	**45.4%**	**44**
Trails or greenways to ride on	38.1%	37
More traffic signals or bicycle-related warning signs	4.1%	4
Better police enforcement of traffic laws	1.0%	1
Getting the community more involved through safety programs or events	5.2%	5
Anything else?	6.2%	6
	answered question	**97**
	skipped question	**1**

6. Would you support public funding for bicycle facilities such as bike lanes or greenway paths?

	Response Percent	Response Count
Yes	**71.1%**	**69**
Maybe	21.6%	21
No	6.2%	6
I don't know	1.0%	1
	answered question	**97**
	skipped question	**1**

7. In order to plan the best bicycle improvements, we need to know what goals are most important to you.

	Does not matter	Seldom matters	I can go either way	Definitely matters	Needed most!	Rating Average	Response Count
Make conditions in and around the city safer for bicyclists.	0.0% (0)	1.0% (1)	7.3% (7)	**49.0% (47)**	42.7% (41)	4.33	96
Make only the least expensive kinds of improvements.	18.8% (18)	26.0% (25)	**39.6% (38)**	9.4% (9)	6.3% (6)	2.58	96
Concentrate on areas where bicyclists already ride the most.	2.1% (2)	3.1% (3)	22.9% (22)	**56.3% (54)**	15.6% (15)	3.80	96
Provide for those commuting to work on bicycle.	2.1% (2)	10.4% (10)	31.3% (30)	**44.8% (43)**	11.5% (11)	3.53	96
Help students bike to school.	7.3% (7)	6.3% (6)	27.1% (26)	**42.7% (41)**	16.7% (16)	3.55	96
Concentrate on scenic areas for recreational bicycling or to attract more tourism.	2.1% (2)	2.1% (2)	15.6% (15)	**50.0% (48)**	30.2% (29)	4.04	96
					answered question		**96**
					skipped question		**2**

8. Please tell us your age bracket.

	Response Percent	Response Count
Younger than 16	2.1%	2
16 - 24	2.1%	2
25 - 39	31.3%	30
40 - 65	**58.3%**	**56**
Older than 65	6.3%	6
	answered question	**96**
	skipped question	**2**

A.24 Relevant Federal and State Policies

- NCDOT Bicycle Policy Guidelines http://www.ncdot.gov/bikeped/download/bikeped_laws_Bicycle_Policy.pdf
- NCDOT Greenway Policy http://www.ncdot.gov/bikeped/download/bikeped_laws_Greenway_Admin_Action.pdf
- NCDOT Complete Streets Policy http://www.bytrain.org/fra/general/ncdot_streets_policy.pdf
- NCDOT Board of Transportation Resolution for Bicycling and Walking - http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html
- NCDOT's Traditional Neighborhood Development Street Design Guidelines (http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf). These guidelines are available for proposed TND developments and permits localities and developers to design certain roadways according to TND guidelines rather than the conventional subdivision street standards. The guidelines recognize that in TND developments, mixed uses are encouraged and pedestrians and bicyclists are accommodated on multi-mode/shared streets.
- United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (March 2010) - http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm
- FHWA Policy for Mainstreaming Nonmotorized Transportation (FHWA Guidance – Bicycling and Pedestrian Provision of Federal Transportation Legislation) - http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm

Kings Mountain Comprehensive Bicycle Plan

Steering Committee Kick-Off Meeting

Firehouse Meeting Room
April 13, 2010, noon-2 p.m.

Minutes

1. Attendees:

Joyce King	Cleveland County Health Department
Adam Hines	Mountaineer Partnership
Sam Nichols	NCDOT Division 12
Jackie Barnette	Kings Mountain Public Works
Chief Melvin Proctor	Kings Mountain Police Department
Curtis Pressley	Kings Mountain Planning Board
Ellen Burris	Resident cyclist
Summer Kelly	Kings Mountain Public Library
Ellis Noell	
Steve Killian	Kings Mountain Planning
Marcie Campbell	Kings Mountain Planning
Blair Israel	Centralina Council of Governments
Diane Dil	Centralina Council of Governments

2. Review of Project Scope & Timeline
   Attachment

3. Having a Vision and Setting Goals
   a. Questionnaire – see attachment for results
   b. Facilities handout – Attachment
   c. The following observations, goals and concerns were suggested to guide the development of the Bike Plan.

      1) Kings Mountain (KM) residents should be better enabled to enjoy the especially scenic landscape of their area while riding a bike through a safe and pleasantly designed community.

      2) KM bike routes should serve <u>all</u> segments of population, providing them opportunities for commuting, recreation, healthy exercise, and relief from the pressures of automobile traffic

      3) The bike routes should contribute to the small town quality of KM, and help reinforce the social connectedness and integrity of the community.

      4) KM bike routes should help cyclists safely get from one place to another.

5) The KM Comprehensive Bicycle Plan should take existing physical design constraints into account. Facilities should be selected to fit best within available Right-of-Way and existing paved street width, and respect on-street parking needs.

6) KM bike routes should be designed in a manner that minimizes the burden on city services and resources.

7) KM bike routes should provide safe ways around large obstacles (e.g. railroad and highways)

8) KM bike routes should utilize both on-road and off-road segments.

9) The KM Comprehensive Bicycle Plan should offer strategies that suggest the best use of funding available for projects.

10) The KM Comprehensive Bicycle Plan should help create opportunities for economic development and large community events.

4. Rules, Routes & Reality checks

a. Rules: Develop policy, programs, events and specific fixes (LIST).

1) Recommend bike way master plan?
2) Incorporate overlay zones or districts
3) Connect to existing trails
4) Provide an interactive map online
5) Create a bike map for handing out
6) Develop a signage plan/share the road
7) KM "Bike Community" designation
8) Bike to Work and Bike to School programs
9) Hold bike events, such as a triathlon
10) Complete streets program/plan
11) Avoid mixing bike routes and on-street parking
12) Develop creative strategies for incorporating bike lanes into on-street parking arrangements when the combination is unavoidable.
13) Obtain local control over state maintained road during special events
14) (See above) and transportation corridors?
15) Employ un-conventional or non-traditional methods to calm or control traffic, such traffic circles/roundabouts.
16) Provide local incentives to encourage developers to include bike lanes
17) Triathlon, CycleCross (Steeplechase), and other events
18) Incorporate the NC Scenic Byway on Pinnacle Road

b. Routes: (AERIAL MAP)
   - Locate the best on-road and off-road routes for bicyclists and other opportunities for improvement. Consider connecting existing greenways and trails, creeks, sewer line easements, dirt roads, etc.
   - Identify barriers and problem areas.

   Results are on the **Initially Suggested Routes Map -** attached

c. Reality Check: (COLORED MAP)
   - Refine existing conditions.
   - Additional destinations?

   Also shown on **Initially Suggested Routes Map -** attached

5. Additional stakeholder input

Please send us any missing phone numbers and associations of the people listed below if you have them.

- Cyclists
  - Dennis Patterson
  - Tim Plonk
  - William Thompson – 980-329-1166

- Additional Contacts
  - Mitch Johnson – 704-473-3636
  - Jeff Mauney – Library Board
  - Sharon Stack – Library – 704-739-2371
  - Kevin – Director YMCA
  - Gina Asycue (Adam?)
  - Ashley Harris (Adam?)
  - Ronnie Franks – 704-460-1571
  - Gilbert Patrick (Steve?)
  - Kevin Frane – 704-476-3561 – Chamber
  - Corky Fulton – 704-678-0515

6. Adjourn

The meeting was ended at 1:40 p.m.
You will be notified when the Open House has been scheduled. In the meantime, please consider who you can encourage to attend that public input meeting. Thank you for participating!

Kings Mountain Comprehensive Bicycle Plan

Steering Committee 2nd Meeting

Firehouse Meeting Room
June 22, 2010, noon-1:45 p.m.

Minutes

1. Attendees:

Larry Hamrick, Jr.	
Joyce King	Cleveland County Health Department
Stacy Stallings	YMCA Wellness Coordinator
Adam Hines	Mountaineer Partnership
Ellis Noell	Kings Mountain Public Relations/Special Events Director
Steve Killian	Kings Mountain Planning
Marcie Campbell	Kings Mountain Planning
Blair Israel	Centralina Council of Governments

2. Results of 1st Public Open House

The first of two public Open House meetings for the Bicycle Plan was held on June 8, from 5:30 – 7:30. Approximately 25 people attended and interacted with a variety of displays to register their opinions on bicycle issues. Viewing various maps of the City, illustrated descriptions of bicycle facilities, and various questionnaires, they registered their opinions regarding community goals, popular destinations, and types of facilities they wanted to see in specific locations. Many also made use of the computer stations to take the online bicycle survey. Highlights of the results were reported to the Steering Committee. Key points from the discussion are included below.

a. On-line survey

- So far there have been 42 surveys completed online.
- Most bicyclists report that they currently ride for recreation.
- Most indicated it currently feels unsafe to ride in the City.
- More people say they ride outside of City limits.
- When given the choice of one type of improvement to encourage bicycling in kings Mountain, most chose facilities like bicycle lanes and wider streets. Greenways were second in popularity. A few indicated traffic signals/signs or safety programs.
- The goal rated as most important was **Safety**. Least important was **Expense**.
- Most indicated they were in favor of public funding of bicycle facilities.
- The vast percentage of surveys was completed by people over 40 years of age, with only three people below 25.
- The committee is encouraged to send the survey link to others they know, particularly those who can get younger aged citizens to take the survey.

b. Goals

- **Safety** scored highest with both public and Steering Committee, but **Linking Destinations** scored very highly with both as well. It was noted that it scores even higher when the "students" and "commuting" categories are lumped together with it.

c. "Great Place" & Ideas

- A master planning effort is currently underway for Patriots Park. Ellis Noell will look for references to bicycling-related features/improvements.
- A mid-project report will be delivered to City elected officials in order to solicit their input to the Plan.

d. Destinations

Additional destinations identified by the public include:

- Oak Grove Community
- Crescent Community
- Senior Center
- Parker-Hannafin
- Lake Montonia (this destination was previously not included by the Steering Committee due to the private status of the Lake).
- An unnamed employment center was also indicated by the public to the northeast of the NC 74/Waco Road interchange, but the Committee was unaware of its name.

e. Recommended facilities

- Striped bicycle lanes are favored the most by the public and the Committee
- Among many other roads, Phifer Road was recommended by the public. The Committee favors a bicycle connection along Phifer as well, but reports that widening would require major grading. A parallel trial might be a better solution.
- King Street was also favored for bicycle lanes. The Committee suggested other improvements to King Street that would accommodate bicycle use, including "road dieting" (replacing the center turn lane with a narrow median and adding the bicycle lanes) and decreasing the number of access points (driveway cuts). These changes, along with street trees, would improve this primary east-west corridor across the City for all modes of transportation, and would help meet the intent of the East NC 74 Business Overlay. The Committee suggested that such changes along this downtown portion of NC 74 Bus. would not adversely affect the majority of businesses now occupying this corridor and would encourage new growth.
- A downtown loop bicycle route was suggested that would include Ridge Street and Mountain Street.

3. Results of previous Steering Committee meeting

a. Minutes review

- No changes or further observations were made concerning the previous meeting minutes. However, additional contact information was provided.

4. Planning the Next Open House

In preparation for the Bicycle Plan's final public Open House meeting, the Committee discussed some key questions that should be addressed.

1. What methods of funding bicycle improvements would you be open to? Choices might include:
    - A **petition** to City Council to include a bicycle project in the City's capital improvements program budget
    - General Obligation **Bonds**
    - **Subdivision exaction** - a fee that developers would pay as they develop land
    - Designating a portion of the City's **Powell Bill** funds received from the State for an eligible bicycle improvement in the place of an automobile-related project
    - Substituting a bicycle project in the place of an automobile-related project on the State **Transportation Improvement Program** (TIP) schedule

2. What specific safety issues concern you for bicycling **within** the City? Vehicular speeds, narrow lanes, too many cars, large trucks, insufficient signage, insufficient traffic signals, driver attitudes, loose enforcement of traffic laws, too many driveway curb cuts for businesses, too much on-street parking, too many bicyclists, other?

3. Same question as above for **outside** the City

4. What specific unsafe locations you can identify? (Show on a map)

5. Do you bike primarily for the health benefits?

6. Would you support bike events? Which kind would you like to participate in? (examples provided – Ellis, we need your help here)

7. Which are you more in favor of: pedestrian-only greenway trails (no bikes allowed), or multi-purpose trails that allow bicycles and pedestrians?

5. Adjourn

- The meeting was adjourned at 1:45 p.m.

Kings Mountain Comprehensive Bicycle Plan

Steering Committee 3rd Meeting

Firehouse Meeting Room
November 3, 2010, noon-1:45 p.m.

Minutes

Attending:

Melvin Proctor	Adam Hines
Ellen Burris	Joyce King
Brian Hunnell	Steve Killian
Ellis Noell	Marcie Campbell
John Vine-Hodge (NCDOT)	Blair Israel (CCOG)

1. Review of draft facilities (bike tour)
   Mr. Israel reviewed the draft plan map of bicycle facilities. Of the 58.2 total miles of recommended facilities shown, there are 12 miles of multi-use trail (off-road facilities). The plan features an Inner Loop of 8.4 miles, and an Outer Loop of 26.1 miles. These two loops intersect at the intersection of Cleveland Avenue and East Ridge Street. Proposed facilities include bike lanes, wide outside lanes, paved shoulders, multi-use trails, bridge improvements, and bike racks.

   The committee reacted positively to the proposed facility alignments, and made the following suggestions:
   a. Add Cansler Street from West Mountain Street to Waco Street.
   b. Consider using Putnam Lake Road for the Outer Loop instead of Dillon Road, Wright Road, and Oak Grove Road. Or use Brook Road and Goforth Road. oak Grove could serve as an offshoot route.
   c. If Oak Grove Road is used, recommend widening for paved shoulders. Check with Linda Dosse (NCDOT–Transportation Planning Branch) on proposed improvements.
   d. Consider making a connection to Moss Lake, utilizing the triathlon route.
   e. Plan aggressively: indicate where right-of-way is needed for road widening improvements.

   Bike lane treatments for Cleveland Avenue require a “road diet”, which reduces the current 4-lane alignment to 2-lanes to allow room within the current curb line for the bike lanes and limited parallel parking. A sample cross-section was displayed. The arrangement was positively received by the committee.

Mr. Israel also recommended the use of the "sharrow" in wide outside lane facilities. The sharrow is a striping pattern that indicates the presence of potential bicycle traffic to motorists, and guides bicyclists in their use of the street. A sample photograph was displayed. The committee did not object to the use of this device.

2. Project Prioritization
   Each Committee member was given opportunity to select 12 favorite and 6 least favorite projects. Results are shown on the attached map and corresponding spreadsheet.

3. Spot Improvements
   The Committee reviewed the proposed placement of recommended bicycle racks and selected additional locations that include:
   - Patriots Park
   - Moss Lake at the main landing

   Additional traffic light improvements suggested by the Committee members include the following locations:
   - Cleveland at East Ridge
   - King at Battleground
   - King at Railroad
   - King at Cansler
   - Alex D. Owens at Davidson Lake
   - Moss Lake at the main landing

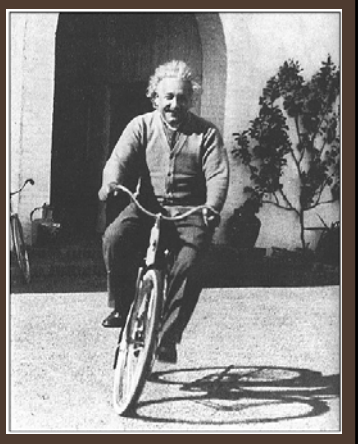
4. Public Input
   The Open House meeting for public review of the plan was scheduled for December 9th, from 5-7 pm, at the City Council Chambers. The public will be provided general information about bicycle planning along with specifics about the issues in Kings Mountain. They will be invited to review the draft map of proposed facilities for Kings Mountain, make comments, and select priority projects.

COMPREHENSIVE BICYCLE PLAN

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

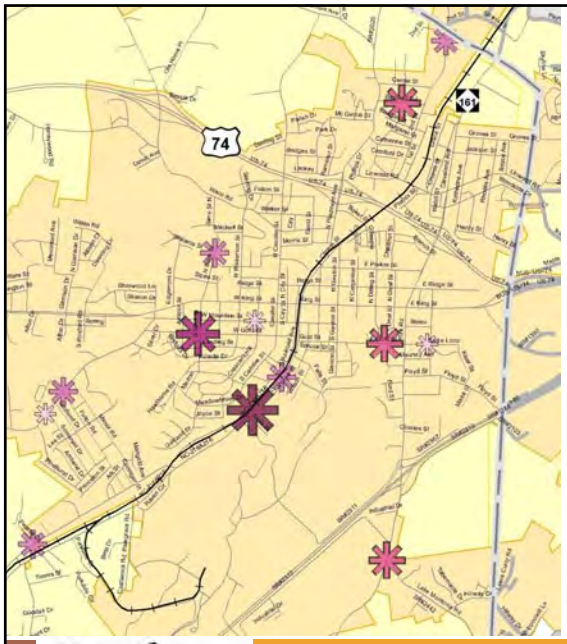
"I thought of that while riding my bicycle."
~ Albert Einstein on the theory of relativity



COMPREHENSIVE BICYCLE PLAN

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE



North Carolina CRASH DATA

Reported bicycle accidents from January 1990 to February 2010. NC Dept. of Transportation

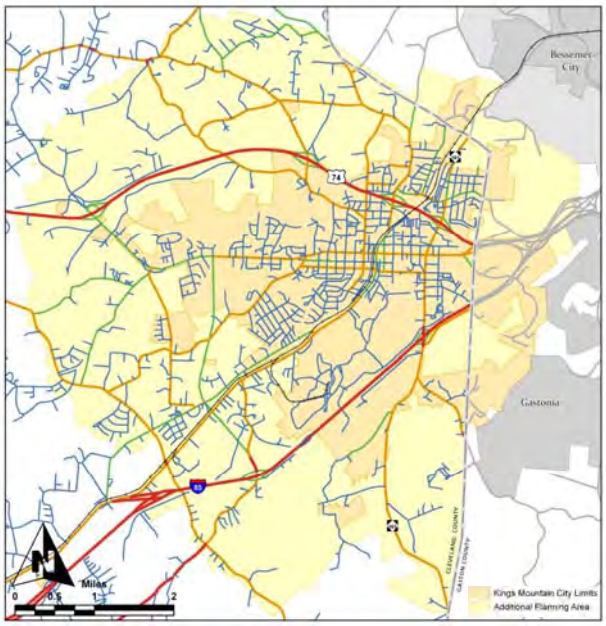
Bicycle Crashes

Severity

- Fatal
- Disabling
- Injury Evident
- Injury possible
- Property Damage Only

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE



Bicycling Suitability

- Most Suitable (6 - 10)
- More Suitable (4 - 5)
- Somewhat Suitable (2 - 3)
- Least Suitable (0 - 1)

Factors Used for Bicycling Suitability Map

The following table shows the assigned points breakdown

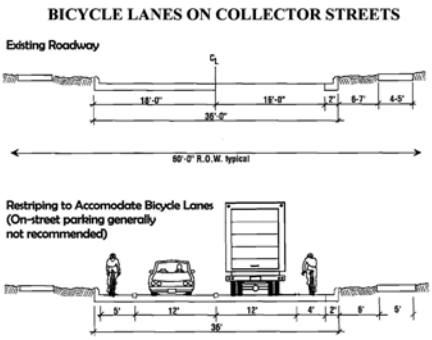
SUITABILITY FACTOR	VALUE RANGE	SCORE
Traffic Count	Less than 7500 AADT	2
	Between 7500 and 15000 AADT	1
	More than 15000 AADT	0
	AADT: Annual Average Daily Traffic	
Speed	25mph or less	2
	30mph or 35mph	1
	40mph and over	0
Functional Classification	Local	2
	Collector	1
	Minor or Principal Arterial	0
Bike Facility	Bike Lane or Shoulder	4
	Share the Road	2
	No Facility	0

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

STRIPED BICYCLE LANE

A portion of a roadway reserved for preferential or exclusive use by bicycles through striping, signing, and pavement markings at least four feet wide, not Including gutter pan.



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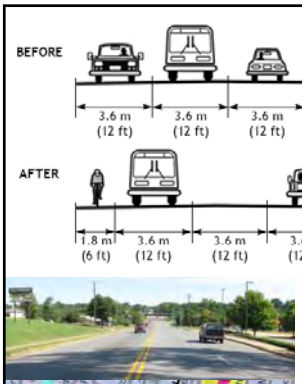
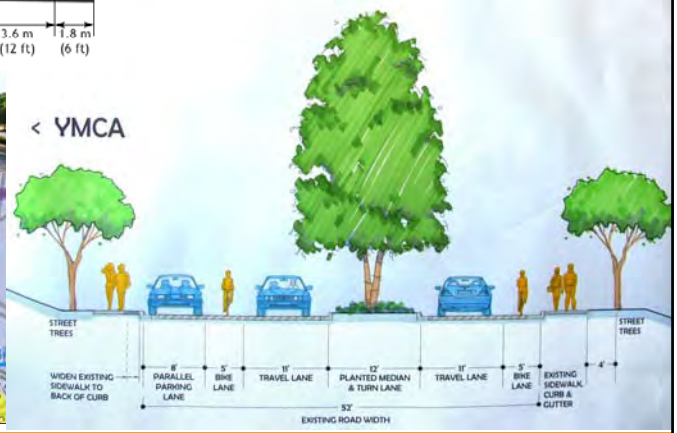
DECEMBER 2010 - OPEN HOUSE



Cleveland Avenue

Proposed Improvements from E. Ridge Street to Linwood Road



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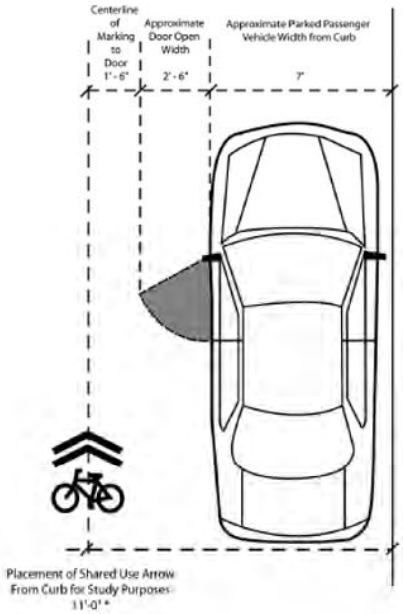
DECEMBER 2010 - OPEN HOUSE



The "Sharrow"

Many people wonder what those little bike symbols mean and why they are there. Shared lane pavement markings, or "sharrows", are bicycle symbols carefully placed to guide bicyclists to the best place to ride on the road, avoid car doors and remind drivers to share the road with cyclists. Unlike bicycle lanes, sharrows do not designate a particular part of the roadway for the exclusive use of bicyclists. They are simply a marking to help motorists expect to see and share the lane with bicyclists.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

WIDE OUTSIDE LANE

Wide outside lanes allow motorists to more safely pass slower moving bicyclists without changing lanes.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PAVED SHOULDERS

Paved shoulders may be added to sections of existing roadways to allow bicyclists room to safely share the road with motor vehicles.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

MULTI-USE PATHS / GREENWAYS

Pathways that are made for both bicycle and pedestrian traffic, and physically separated from motor vehicles, can provide safe and attractive routes, both for getting to places and for recreation. They often follow streams or utility corridors.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

On-line **SURVEY** results - sample question

5. What one most important thing do you think would encourage more bicycling in and around the city?

	Response Percent	Response Count
Having bicycle lanes or extra width on the streets	**50.0%**	**21**
Trails or greenways to ride on	26.2%	11
More traffic signals or bicycle-related warning signs	7.1%	3
Better police enforcement of traffic laws	0.0%	0
Getting the community more involved through safety programs or events	9.5%	4
Anything else?	7.1%	3

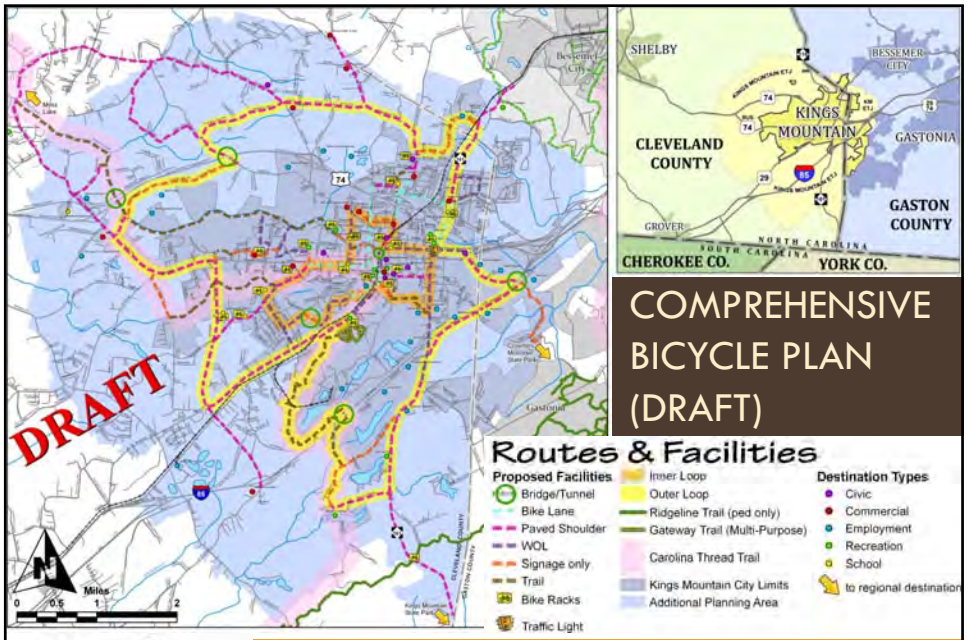
KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

PUBLIC OPINION	GOAL	EXPLANATION
24.0%	Safety	Improve an unsafe section of road or build off-road.
12.3%	Students	Increase opportunities for students to ride bicycles to schools in the area.
11.6%	Link Destinations	Provide bicycle connections to popular places like schools, businesses, downtown, and neighborhoods.
11.1%	Recreation/Tourism	Focus on route segments that offer the best in terms of recreation and relaxation for visitors as well as locals.
10.5%	Usage/Demand	Concentrate on segments where bicyclists are already riding or where they will want to ride the most.
10.0%	Commuting	Build segments that will most help people get to work or run errands on bicycle.
8.1%	Scenic Views	Select route segments that offer views of scenic areas.
7.0%	Cost Effectiveness	Focus on segments of the route that are easiest-to-build.
5.4%	Additional Goals	
100%	Total	

KINGS MOUNTAIN

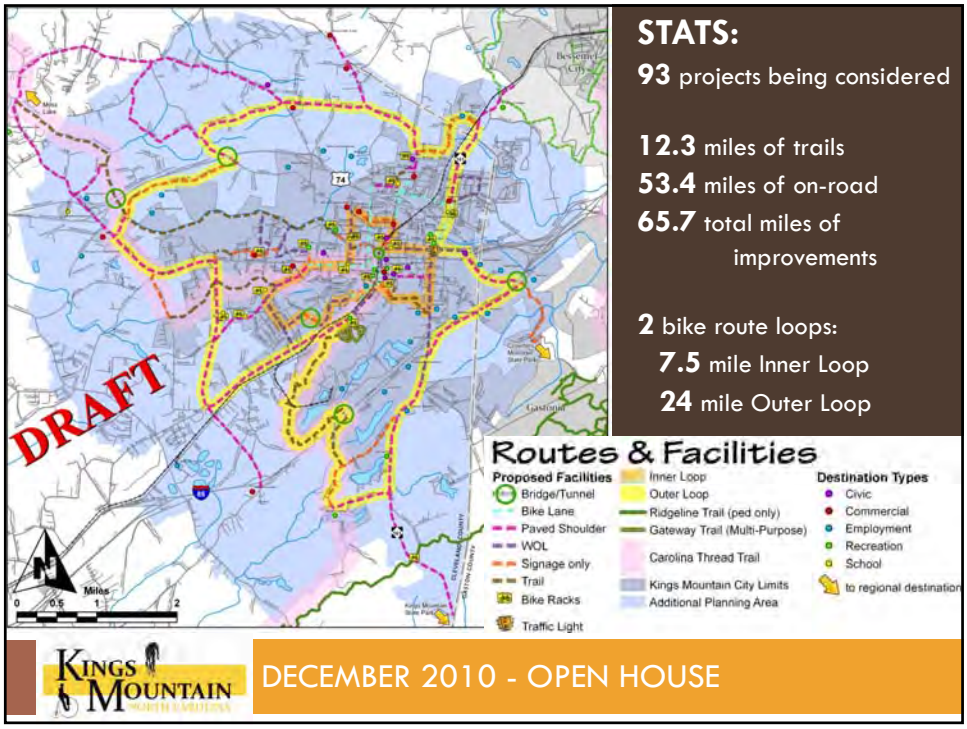
DECEMBER 2010 - OPEN HOUSE



COMPREHENSIVE BICYCLE PLAN (DRAFT)

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE



STATS:

93 projects being considered

12.3 miles of trails
53.4 miles of on-road
65.7 total miles of improvements

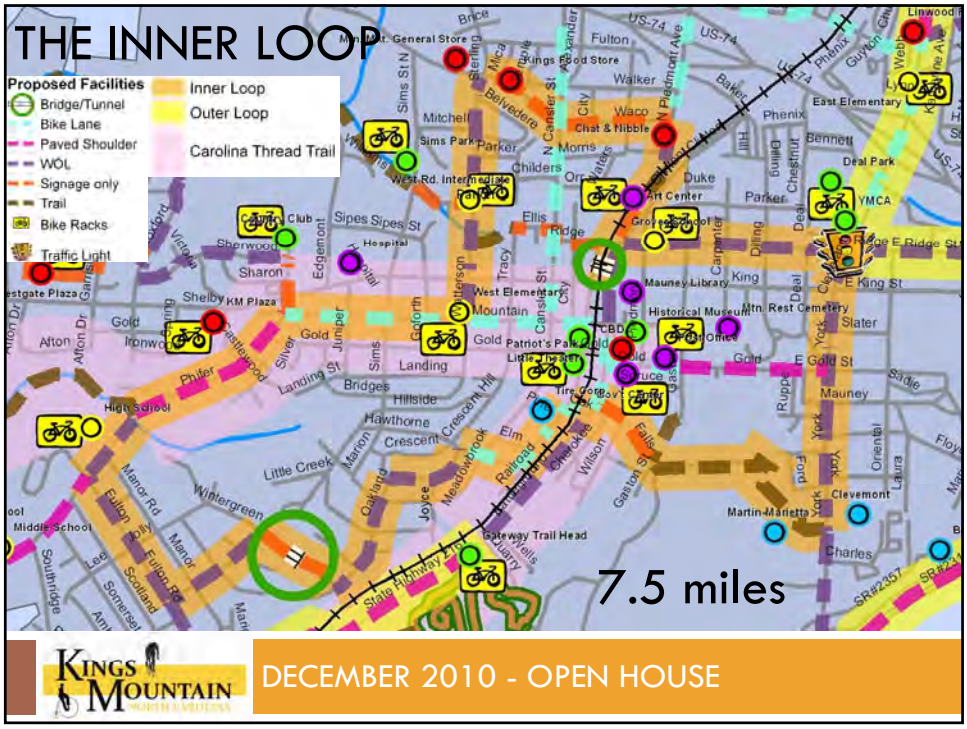
2 bike route loops:
7.5 mile Inner Loop
24 mile Outer Loop

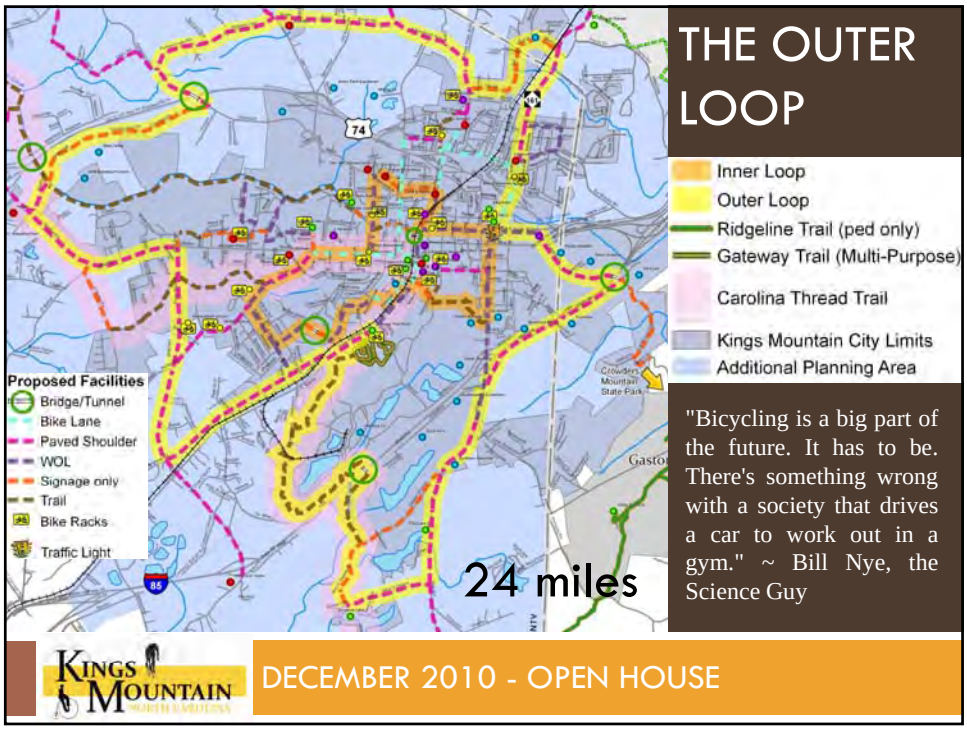
KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

KINGS MOUNTAIN

DECEMBER 2010 - OPEN HOUSE

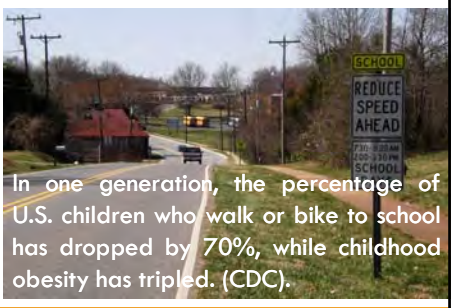

THE INNER LOOP
Proposed Facilities
Bridge/Tunnel
Bike Lane
Paved Shoulder
WOL
Signage only
Trail
Bike Racks
Traffic Light
Inner Loop
Outer Loop
Carolina Thread Trail
7.5 miles
KINGS MOUNTAIN
DECEMBER 2010 - OPEN HOUSE


THE OUTER LOOP
Inner Loop
Outer Loop
Ridgeline Trail (ped only)
Gateway Trail (Multi-Purpose)
Carolina Thread Trail
Kings Mountain City Limits
Additional Planning Area
Proposed Facilities
Bridge/Tunnel
Bike Lane
Paved Shoulder
WOL
Signage only
Trail
Bike Racks
Traffic Light
24 miles
"Bicycling is a big part of the future. It has to be. There's something wrong with a society that drives a car to work out in a gym." ~ Bill Nye, the Science Guy
KINGS MOUNTAIN
DECEMBER 2010 - OPEN HOUSE

SCHOOL ZONES

Proposed Facilities

- Bridge/Tunnel
- Bike Lane
- Paved Shoulder
- WOL
- Signage only
- Trail
- Bike Racks
- Traffic Light



In one generation, the percentage of U.S. children who walk or bike to school has dropped by 70%, while childhood obesity has tripled. (CDC).

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

For those does not own an automobile, mobility is severely limited in communities that are designed solely around the car. Bike-friendly communities maximize independence and mobility in ways that auto-dependent communities cannot.

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PROJECT VOTING INSTRUCTIONS:

1. **Look at the map** showing all of the **Routes & Facilities**
2. **Find the projects** on your voting sheet.
3. **Vote your 24 favorite projects** using your sticky dots (Use only one dot per project. Color doesn't matter).
4. **Share your thoughts** in the spaces provided.
5. **Return your voting sheet.** Place in box.

Thank you!

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE

PROJECT SCHEDULE:

1. Map current bicycle conditions (mid-2010)
2. Planning session with Steering Committee
3. Public survey
4. First Public Open House Meeting
5. Steering Committee review of public input
6. Preparation of Draft Bicycle Plan
7. Second Public Open House Meeting – review of Draft Plan
8. Steering Committee review of public comments
9. Revision of Draft Bicycle Plan
10. Review of Draft Bicycle Plan by City Staff and NC transportation officials
11. Final Plan revisions and submittal for adoption
12. Delivery of Final Plan (mid-2011)

KINGS MOUNTAIN NORTH CAROLINA

DECEMBER 2010 - OPEN HOUSE