

Town of Fuquay-Varina, NC 2013 Community Pedestrian Master Plan



Acknowledgements

Citizen Involvement

A special thanks to the 300+ local residents who participated in this planning process through comment forms, public workshops, and meetings.

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Pedestrian furnishings in Downtown Fuquay-Varina

1 Introduction

Purpose & Background

This plan will guide the Town of Fuquay-Varina, North Carolina Department of Transportation (NCDOT), and other local and regional partners in improving infrastructure for pedestrians in Fuquay-Varina and fostering a ‘walking culture’ through related programs and policies.

NCDOT’s Bicycle and Pedestrian Planning Grant Initiative

In 2012, the Town of Fuquay-Varina was awarded a matching grant from the NCDOT Bicycle and Pedestrian Planning Grant Initiative. The purpose of the grant is to encourage municipalities to develop comprehensive bicycle plans and pedestrian plans. This program has assisted more than 135 North Carolina communities and is administered through NCDOT’s Division of Bicycle and Pedestrian Transportation (DBPT).

Past and Current Plans and Initiatives

The Town of Fuquay-Varina has taken a proactive approach in meeting the needs of pedestrians through many of its past and current plans and initiatives. This master plan will draw upon and combine the findings of previous planning and other related efforts, including the following, each of which are summarized in Chapter 4:

- Greenway System Master Plan (1999)
- Wake County Consolidated Open Space Plan (2006)

- Community Transportation Plan (2006)
- Facility Master Plan (2009)
- Town Center Plan Guidelines (2009)
- CAMPO 2035 Long Range Transportation Plan (LRTP) (2011)
- NCDOT Complete Streets Design Guidelines (2012)
- Wake County Transit Plan (Draft) (2012)
- Southwest Wake County Area Study (Draft) (2012)

Vision

The Town of Fuquay-Varina adopted its *Community Transportation Plan* in 2006. The vision statement from that plan is as follows and provides direction for this pedestrian master plan:

“The community of Fuquay-Varina shall embrace a plan that is based on community support and involvement where the village character is a social and economic mainstay; traditional values for all citizens reflects a safe, mental and physical harmony between the environment and a growing community; the past is a bridge to the future that forges timeless settings promoting character and livability; and the community supports a plan that embraces change over time as an opportunity to reinforce the sense of community, quality of life, and pride.”

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Purpose and Background (1-1)

The Planning Process and Public Involvement (1-2)

Benefits of a Walk-Friendly Community (1-2)

Plan Components

This master plan is designed to guide the Town of Fuquay-Varina in fulfilling its vision by providing a clear purpose (Chapter 1), an assessment of where things stand today (Chapter 2), detailed recommendations for pedestrian facilities (Chapter 3), pedestrian-related programs (Chapter 4), pedestrian policies (Chapter 5), and implementation strategies for pedestrian development (Chapter 6). The appendices to this plan are designed to be implementation resources. They cover topics such as design guidelines, state and federal funding resources, and a summary of public input and involvement strategies.

The Planning Process and Public Involvement

The Project Steering Committee

The project steering committee for this pedestrian plan consisted of representatives from the Fuquay-Varina Police Department, Fuquay-Varina citizens, Town Commissioners, Fuquay-Varina Planning Department, Fuquay-Varina Parks and Recreation Department, Fuquay-Varina Public Works Department, NC State Alliance of YMCAs, and NCDOT's Division of Bicycle and Pedestrian Transportation.

Data Collection and Analysis

After collecting baseline information about the study area in April 2013, the consultants began assessing existing conditions, which are the focus of Chapter 2 of this plan. Consultants used aerial photography and geographic information systems (GIS) data to identify opportunities and constraints for pedestrian facility development. These preliminary findings were then tested for applicability and appropriateness through on-the-ground field research, which also included an intersection inventory and a photographic inventory. The existing conditions and the preliminary findings were then presented to the steering committee in July 2013.

Public Involvement & Plan Development

In May 2013, a public comment form was created for this plan, which yielded responses from more than 130 people. The public comment form was circulated via Town staff, steering committee members, and interested citizens, as well as through an informational brochure. Plan information materials were provided to the Town for display and distribution during the Celebrate Fuquay-Varina! event held on June 1, 2013. The project consultant team also set up a booth at the Fuquay-Varina Fourth of July Fireworks event. People were invited to learn about the plan and provide comments about where they would like to see improvements for walking. A public input map, brochures, and posters were displayed and a project consultant answered questions and took comments. Dozens of people stopped by to learn about the plan and directly provide input. The general feedback was highly positive, with many people impressed that the Town of Fuquay-Varina was proactively addressing walkability.

The project consultant worked with the public information officer for the Town of Fuquay-Varina to post messages to the Town's website and Facebook page. Press releases and announcements about the pedestrian plan were printed in the Fuquay-Varina Independent and the Southwest Wake News newspapers.

In August and September 2013, the draft plan was developed using input gathered during the steps described above. The draft plan was available for review and comment during October 2013, and was posted online for public review shortly thereafter. Comments from the steering committee, the public, NCDOT, and other stakeholders were

collected, and the plan was then revised into the final version that was presented to NCDOT and the Town Council in fall 2013.

Benefits of a Walk-Friendly Community

When considering the level of dedication in time and valuable resources that it takes to create a walk-friendly community, it is also important to assess the immense value of active transportation. Better walking and bicycling facilities improve safety and encourage more people to walk and bike, which in turn improves health, provides a boost to the local economy, creates a cleaner environment, reduces congestion and fuel costs, and contributes to a better quality of life and sense of community.

Communities across the country are experiencing the benefits of providing a supportive environment for walking and bicycling. With a better active transportation network, Fuquay-Varina can create a stronger, more vibrant community and take advantage of the benefits described below.

Increased Health and Physical Activity

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects our level of physical activity. Regular physical activity is recognized as an important contributor to good health; the Centers for Disease Control and Prevention (CDC) recommend 30 minutes of moderate physical activity each day for adults and 60 minutes each day for children.¹ Unfortunately, many people do not meet these recommendations

because they lack environments where they can be physically active. The CDC reports that “physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic.”² These conditions also increase families’ medical expenses; each year North Carolinians spend over \$24 billion on health care costs associated with a lack of physical activity, excess weight, type 2 diabetes, and poor nutrition.³

Having accessible pedestrian facilities available, such as sidewalks and greenways, can help people more easily incorporate physical activity into their daily lives. Sixty percent of North Carolinians say they would increase their level of physical activity if they had better access to walking facilities, such

as sidewalks and trails.⁴ Regular physical activity, such as walking, is shown to have numerous health benefits:⁵

- Reduces the risk and severity of heart disease and diabetes
- Reduces the risk of some types of cancer
- Improves mood
- Controls weight
- Reduces the risk of premature death

The American Public Health Association also recognizes the health benefits of walk-friendly communities. According to its 2010 report, “Investments in transit, walking and bicycling facilities support transit use, walking and bicycling

directly; they also support the formation of compact, walkable, transit-oriented neighborhoods that in turn support more walking, bicycling and transit and less driving. These built environments have repeatedly been associated with more walking, bicycling and transit use, more overall physical activity, and lower body weights; lower rates of traffic injuries and fatalities, particularly for pedestrians; lower rates of air pollution and greenhouse gas emissions; and better mobility for non-driving populations.”⁶

The CDC determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week.⁷ This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits. The establishment of a safe and reliable network of sidewalks and multi-use trails can have a positive impact on the health of nearby residents. The Rails-to-Trails Conservancy puts it simply: “Individuals must choose to exercise, but communities can make that choice easier.”⁸

Economic Benefits

Transportation Savings

When it comes to transportation costs, walking is the most affordable form of transportation available. According to the American Automobile Association, the cost of owning and operating a medium-sized sedan for one year, assuming one drives 10,000 miles per year, is approximately \$7,804.⁹ In contrast, owning and operating a bicycle costs just \$120 per year, according to the League of American Bicyclists,¹⁰ and walking is virtually free. The Pedestrian and Bicycle Information Center explains how these lower costs help individuals and communities as a whole: “When safe facilities

The Cost of Transportation-Related Health Outcomes

The National Health Costs of...	\$\$ (Billions)	Estimate Includes	Source
Obesity and overweight	\$142	<ul style="list-style-type: none"> • Healthcare costs • Lost wages due to illness & disability • Future earnings lost by premature death 	<p>National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Statistics Related to Overweight and Obesity: The Economic Costs.</p> <p>Available at: http://win.niddk.nih.gov/statistics/index.htm</p>
Air pollution from traffic	\$50-80	<ul style="list-style-type: none"> • Health care costs • Premature death 	<p>Federal Highway Administration. 2000. Addendum to the 1997 Federal Highway Cost Allocation Study Final Report, May 2000.</p> <p>Available at: www.fhwa.dot.gov/policy/hcas/addendum.htm</p>
Traffic crashes	\$180	<ul style="list-style-type: none"> • Healthcare costs • Lost wages • Property damage • Travel delay • Legal/administrative costs • Pain & suffering • Lost quality of life 	<p>AAA. Crashes vs. Congestion? What's the Cost to Society? Cambridge, MD: Cambridge Systematics, Inc.; 2008.</p> <p>Available at: www.aaanewsroom.net/assets/files/20083591910_crashesVscongestionfullreport2.28.08.pdf</p>

(Source: The American Public Health Association, 2010, *The Hidden Health Costs of Transportation*)

are provided for pedestrians and bicyclists, more people are able to be productive, active members of society. Car ownership is expensive, and consumes a major portion of many Americans' income."

Walking becomes even more attractive from an economic standpoint when the unstable price of gasoline is factored into the equation. Oil prices more than quadrupled between 2000 and 2008, when gasoline prices topped \$4 per gallon.¹¹ The unreliable cost of fuel reinforces the idea that local communities should be built to accommodate people-powered transportation, such as walking and biking. Many older North Carolina communities already have traditional mixed-

Annual Cost Per Mile

costs		yearly totals
operating costs		
gas per mile		_____
total miles driven	×	=====
total gas	=	_____
maintenance	+	_____
tires	+	=====
total operating costs	+ =	_____
ownership costs		
depreciation		_____
insurance	+	_____
taxes	+	_____
license and registration	+	_____
finance charges	+	=====
total ownership costs	+ =	_____
other costs		
(washing, accessories, etc.)	+	=====
total driving costs	=	_____
total miles driven	÷	=====
cost per mile	=	_____

Driving Costs Worksheet. American Automobile Association, Your Driving Costs Report: 2013.

use and generally compact land development patterns; when combined with new strategies for improving alternative transportation, many such communities could foster local reductions in auto- and oil-dependency.

Property Values

Bicycle and pedestrian facilities such as bike lanes, paths, sidewalks, and greenway trails are popular community amenities that add value to properties nearby. According to a 2002 survey by the National Association of Realtors and the National Association of Homebuilders, homebuyers rank trails as the second-most important community amenity out of 18 choices, above golf courses, ball fields, parks, security, and others.¹² This preference for trails is reflected in property values around the country. In the Shepard's Vineyard residential development in Apex, North Carolina, homes along the regional greenway were priced \$5,000 higher than other residences in the development—and these homes were still the first to sell.¹³ A study of home values along the Little Miami Scenic Trail in Ohio found that single-family home values increased by \$7.05 for every foot closer a home is to the trail.¹³ These higher prices reflect how trails and greenways add to the desirability of a community, attracting homebuyers and visitors alike.

Environmental Improvements

Air Quality

Providing the option of walking as an alternative to driving can reduce the volume of gasoline consumed and resulting car-related emissions, which in turn improves air quality. Cleaner air reduces the risk and complications of asthma, particularly for children, the elderly, and people with heart conditions or respiratory illnesses.¹⁴ Lower automobile traffic volumes also help to reduce neighborhood noise levels and improve local water quality by reducing automobile-related discharges that are washed into local rivers, streams, and lakes. Furthermore, every car trip replaced with a walking trip reduces U.S. dependency on fossil fuels, which is a national goal. According to a survey by the National Association of Realtors and Transportation for America, 89 percent of Americans agree that transportation investments should support the goal of reducing energy use.¹⁵

Environmental Services of Greenways

Greenways and trails are a key component of any pedestrian network and carry environmental benefits as well. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. By conserving plant cover, greenways also preserve the natural air filtration processes provided by plants, which remove harmful pollutants, such as ozone, sulfur dioxide, carbon monoxide, and airborne heavy metal particles. Finally, greenways improve water quality by creating a natural buffer zone that protects streams, rivers, and lakes; preventing soil erosion; and filtering pollution caused by agricultural and road runoff. Greenways also act as a line of defense against natural hazards, such as flooding.



Greenways have multiple benefits, including those for pedestrians, in any community.

Transportation Benefits

Many North Carolinians do not have access to a vehicle or are unable to drive. According to the 2001 National Household Travel Survey, 12 percent of persons age 15 or older do not drive, and 8 percent of U.S. households do not own an automobile. Providing a well-connected pedestrian network provides those who are unable or unwilling to drive with a safe transportation option. Pedestrian improvements can increase access to important destinations for the young, the elderly, low-income families, and others who may be unable to drive or do not have a motor vehicle.

Investing in pedestrian facilities can also help to reduce congestion and the pollution, gas costs, wasted time, and stress that comes with it. Each person who makes a trip by foot is one less car on the road or in the parking lot. A network of sidewalks, trails, and paths gives people the option of making a trip by foot, which helps to alleviate congestion for everyone. Pedestrian facilities can also help to substantially reduce transportation

costs by providing a way of getting around without a car for some trips. More than one-quarter of all daily trips are one mile or less, equivalent to a 15 to 20 minute walk.¹⁶ With a safe, convenient alternative transportation network, some of these shorter trips could be comfortably made by foot, saving money on gas, parking costs, and vehicle wear and tear over time.

Quality of Life

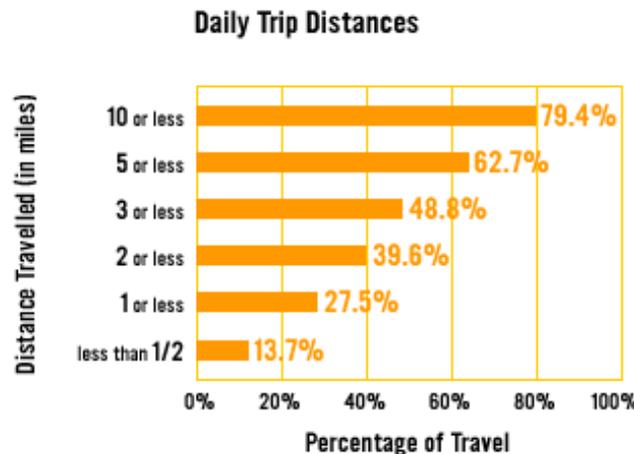
Many factors go into determining the quality of life for the citizens of a community: the local education system, the prevalence of quality employment opportunities, and the affordability of housing are all commonly cited. Increasingly though, citizens

are demanding a cleaner, safer, more enjoyable community that provides amenities for adults and children alike. Communities with quality greenways, trails, and sidewalks attract new residents as well as new businesses and industries. Getting outdoors and being physically active also helps to relieve stress, improve mood, and foster social connections between residents.

Transportation and recreation options will be especially important for older Americans in the coming years. According to the Brookings Institution, the number of older Americans is expected to double between 2000 and 2025.¹⁷ Seniors who find themselves unable to drive or who become uncomfortable with driving will find that their mobility is severely limited if another transportation option isn't available. Trails and paths will provide seniors with a place to take a low-intensity stroll around the neighborhood or a way to walk to nearby shops and services. Paths and trails are also valuable transportation connections for the elderly because they accommodate motorized wheelchairs, which can provide many seniors with the independent mobility that they would not have otherwise.

Children under 16 are another important subset of our society who deserve access to safe mobility and a higher quality of life. In recent years, increased traffic and a lack of pedestrian and bicycle facilities have made it less safe for children to travel to school or to a friend's house. In 1969, 48 percent of students walked or biked to school, but by 2001, less than 16 percent of students walked or biked to or from school.

In a 2004 CDC survey, 1,588 adults answered questions about barriers to walking to school for their youngest child aged 5 to 18 years.¹⁸ The main reasons cited by parents included distance to school,



Over 25 percent of all trips are 1 mile or less, equivalent to a 15 to 20 minute walk. Source: Pedestrian and Bicycle Information Center, www.pedbikeinfo.org

at 62%, and traffic-related danger, at 30%. Strategic additions to the bicycle and pedestrian network could shorten the distance from homes to schools, and overall pedestrian and bicycle improvements can improve the safety of the roadways so that children within Fuquay-Varina could once again safely walk in their communities. According to the National Center for Safe Routes to School, “Walking or biking to school gives children time for physical activity and a sense of responsibility and independence; allows them to enjoy being outside; and provides them with time to socialize with their parents and friends and to get to know their neighborhoods.”¹⁹ Ensuring that children have safe connections to their schools and throughout their neighborhoods can encourage them to spend time outdoors, get the physical activity they need for good health, and enjoy a higher quality of life.



Being able to get outdoors and be physically active contributes to quality of life in Fuquay-Varina.

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Sidewalks in Fuquay-Varina provide residents with a safe pedestrian option for both recreation and transportation

2 Existing Conditions

Overview

Walking is the most basic form of transportation. In North Carolina, it is also the most popular means of recreation and exercise. Yet choosing to make a trip by foot requires careful planning and consideration in North Carolina due to land use patterns and a lack of infrastructure connectivity. Generally, people will not choose to walk to work, school, or a park if they don't have sidewalks separated from the roadway and are not within a reasonable walking distance (1/2 mile or 10 minutes) of their destination.

Fuquay-Varina's geographic characteristics, existing roadway and land use configurations, and existing sidewalk facilities significantly affect the viability of pedestrian transportation and recreation, and the everyday decisions of pedestrians and motorists. A complete and effective pedestrian network consists of facilities such as sidewalks, crosswalks, curb ramps, pedestrian countdown signals, multi-use trails, and railroad crossings that are connected, highly visible, attractive, and safe. Today, the Town features 78 miles of sidewalk, which is exceptional, and due to Town priorities and effective policies. But there remain many gaps in the pedestrian network, including a lack of adequate crossing facilities.

History & Land Use Development

Originally incorporated in 1909, the then-named Town of Fuquay Springs was established at the convergence of the Cape Fear and Northern Railway and the Norfolk Southern Railway.

The Town of Fuquay Springs and the Town of Varina merged in 1963 to become Fuquay-Varina. While historic economic and residential growth can be attributed to the tobacco trade, more recent growth and development is due to the Town's close proximity to Research Triangle Park and Raleigh. Numerous residential subdivisions have been developed along Judd Parkway, the bypass that circumvents downtown Fuquay-Varina. Judd Parkway will soon be extended into the northwestern portion of the Town, forming a continuous loop around Town.

The downtown cores of historic Fuquay and historic Varina are hubs of commercial and retail activity. North Ennis Street connects Broad Street and Main Street, linking the two historic cores. These two roadways maintain their integrity as the primary business district corridor. Additional commercial development exists along Broad Street, east of the downtown Varina core.

Geographic Information Systems (GIS) Analysis

Geographic Information Systems (GIS) data was obtained from the Town of Fuquay-Varina, Wake County, and the State of North Carolina. Map 2.1, titled "Existing Conditions," on page 2-2, presents existing conditions in Fuquay-Varina and serves as the foundation for analyzing the current pedestrian environment. The analysis included evaluating the existing pedestrian network, locations of

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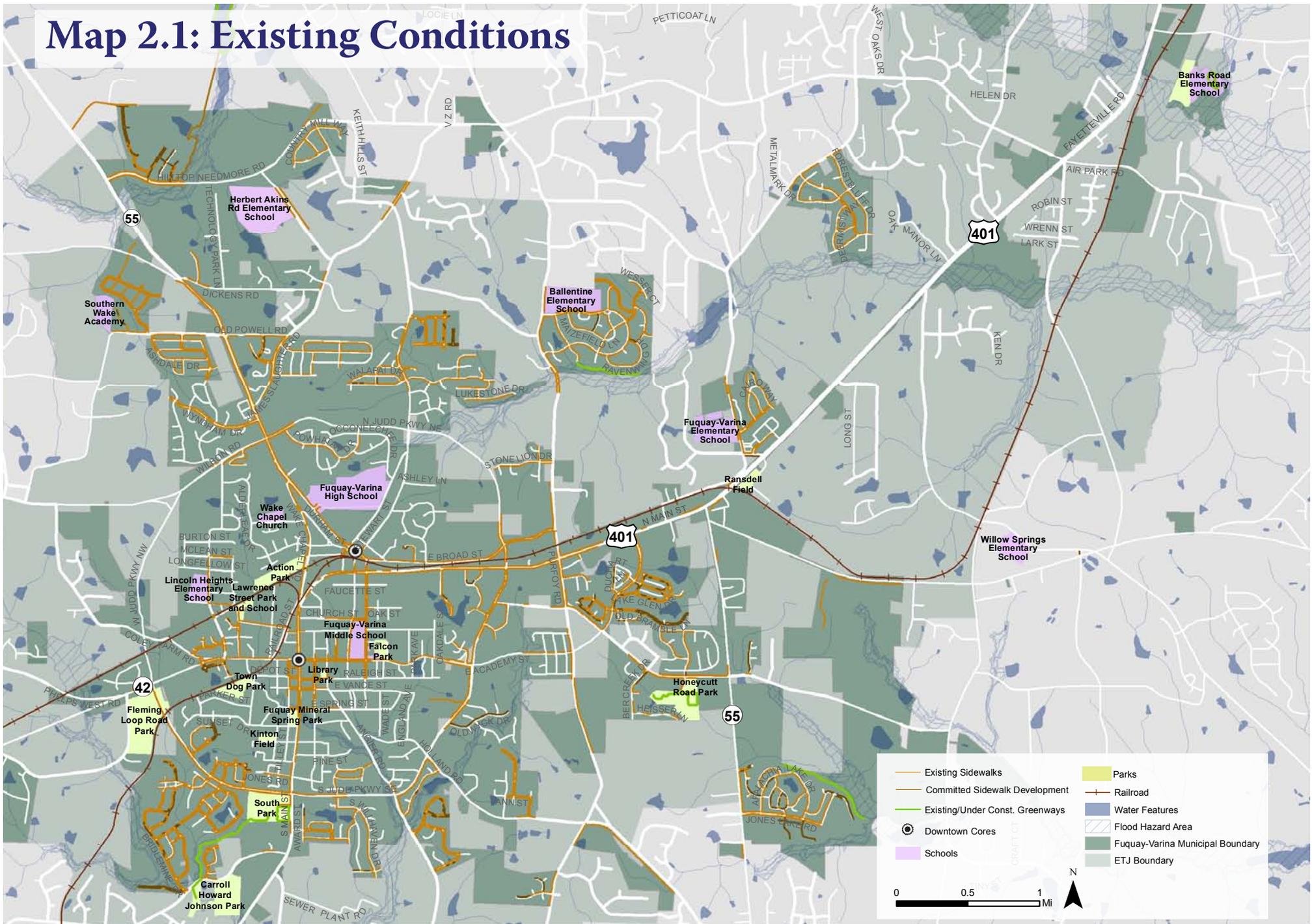
NCDOT Reported Pedestrian Crashes (2-14)

Opportunities and Challenges (2-16)

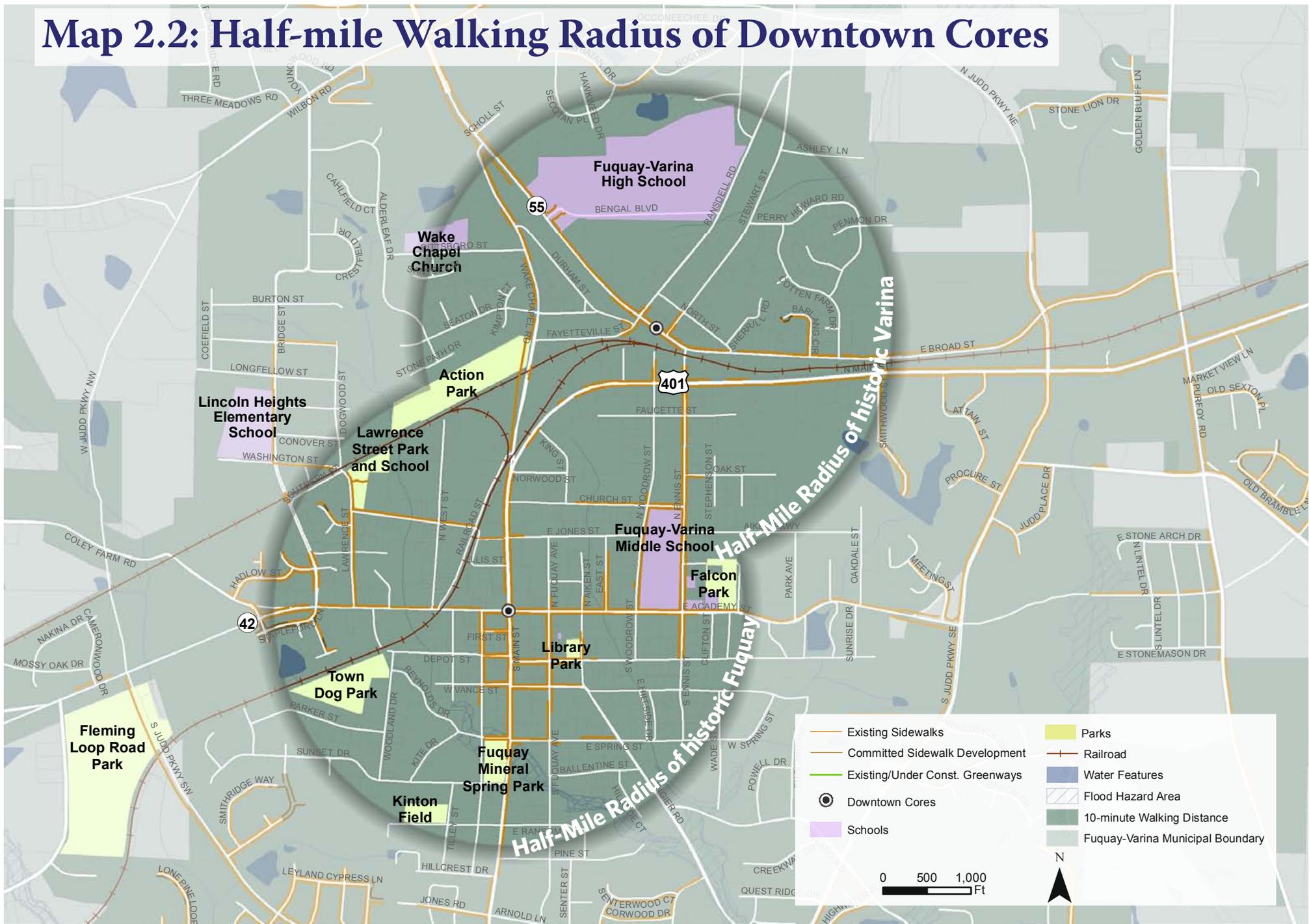
Existing Policies and Plans (2-20)

pedestrian-related crashes, and the identification of popular destinations and walking routes; natural and historic areas; sidewalk gaps; and demographic patterns that may be useful in assessing need for future pedestrian facilities. The compact, historic downtown core areas of Varina and Fuquay offer visitors and residents walkable, tree-lined streets. Many important destinations are located within a half-mile radius and within a one-mile radius of the two downtown core areas. Maps 2.2 and 2.3 on pages 2-3 and 2-4, respectively, present the 1/2-mile and one-mile radius buffers for each of the two downtown core areas. These maps highlight the existing pedestrian network and the locations of destinations within walking distance of the downtown areas.

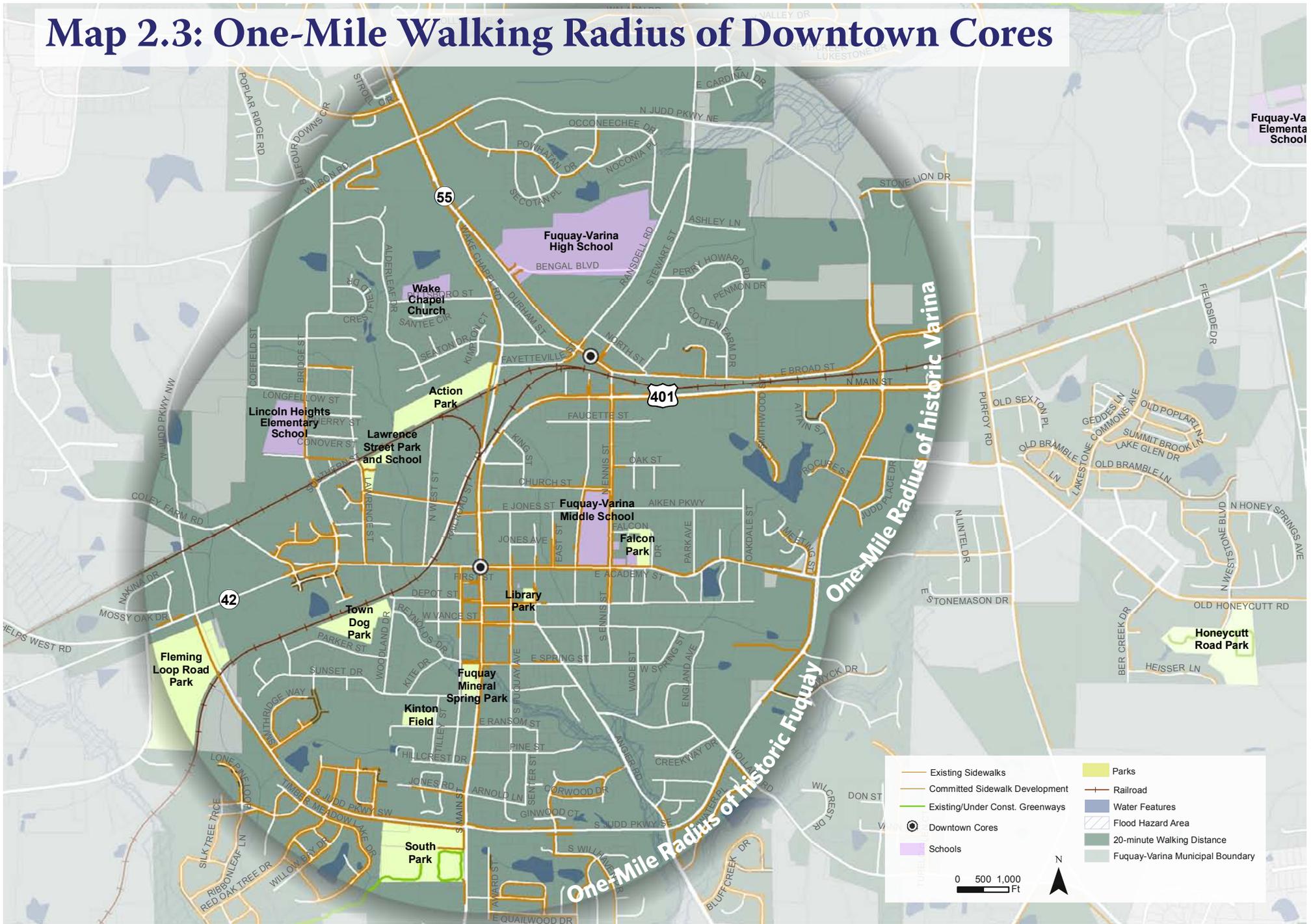
Map 2.1: Existing Conditions



Map 2.2: Half-mile Walking Radius of Downtown Cores



Map 2.3: One-Mile Walking Radius of Downtown Cores



Walkability: Destinations

The core of Fuquay-Varina is within a one-mile walking radius of the downtown cores of historic Varina (Broad Street and Ransdell Road), and historic Fuquay (South Main Street and Academy Street), as shown on Maps 2.2 and 2.3. Compact cores make trips by foot a very reasonable proposition. Outside of the downtown cores, people currently walk and bicycle to an array of destinations for various purposes. These potential destinations and points of origin for pedestrian travel are referred to in this document as ‘trip attractors’. Residents’ transportation choices and safety are impacted not only by existing pedestrian conditions in Fuquay-Varina, but also by behaviors of pedestrians and motorists. Today, pedestrians are very commonly seen throughout Town making utilitarian and recreation trips. Trip attractors in Fuquay-Varina include the following:

- Higher density/multi-family residential areas
- The Grower’s Market
- The Community Center, Council Gym, athletic fields, Southern Regional Center
- Public destinations (schools, Fuquay-Varina Community Library, post office, etc.)
- Parks
- Jeff Wells Trail, other trails
- Restaurants
- Historic districts, Fuquay Mineral Springs, Fuquay-Varina museums, other local landmarks
- Shopping locations (Shoppes on Main, Sunset Plaza, Fuquay Crossing, grocery stores, drug stores, banks, etc.)
- Places of employment (downtown cores, commercial and retail areas, office centers)



Library Park, East Street



Fuquay-Varina High School, NC 55/Broad Street



Centennial Square, East Academy Street and South Main Street



Fuquay-Varina Junior High School, East Academy Street



Action Park, Wake Chapel Road

Demographic Analysis

The pedestrian travel needs and demands of different populations in Fuquay-Varina can be better understood through an analysis of demographic information. 2010 US Census Bureau data and 2007-2011 US Census Bureau, American Community Survey (ACS) data were obtained and analyzed during the evaluation of current conditions. Data sets such as population density, minority populations, citizens without access to a vehicle, people who walk to work, and median household income were mapped by census block or block group.

Population Characteristics & Density

As of the 2012 US Census *estimate*, Fuquay-Varina had a total population of 17,937. In Fuquay-Varina, females represent 53 percent of the population and males 47 percent. The majority of the population (58.8 percent) falls between the ages of 18 and 65 years old.

Map 2.4, titled “Population Density,” shows population density by US census block in Fuquay-Varina. The two most densely populated areas are located along Wilbon Road north of the downtown centers and along NC 55, with 45 persons per acre and 34 persons per acre, respectively. There are additional areas with population densities ranging between 15 persons per acre and 30 persons per acre along NC 55 north of the downtown centers and along South Judd Parkway. Providing safe access between highly populated areas and destinations—such as commercial centers, employment areas, and the downtown business districts—should be considered a high priority for Fuquay-Varina.

Racial Minority Populations

According to the 2010 US Census, 27.7 percent of the total population of Fuquay-Varina is considered to be minority. Map 2.5, titled “Racial Minority Populations,” is a map of the minority populations within Fuquay-Varina. Higher density clusters of minority populations exist west of the downtown centers and north of North Judd Parkway along NC 55.

Hispanic or Latino Ethnicity or Origin Populations

According to the 2010 US Census, approximately 9.7 percent of Fuquay-Varina’s total population are considered to be of Hispanic or Latino ethnicity or origin. Map 2.6, titled “Hispanic or Latino Ethnicity Populations,” illustrates the concentrations of the Latino population in Fuquay-Varina. Higher density clusters of Latino populations exist in the northeastern portions of Fuquay-Varina and north of the downtown centers along US 401.



West Academy Street is a high population density area

Table 2.1: Fuquay-Varina Demographic Comparison

Fuquay-Varina Demographics (US Census Bureau)	Source	Estimate	% of Total
Total Population (Fuquay-Varina)	2010 Decennial Census	17,937	100
Hispanic/Latino Population (Fuquay-Varina)		1,738	9.7
Minority Population (Fuquay-Varina)		4,970	27.7
Population Living Below the Poverty Line (Fuquay-Varina)	ACS 5-Year (2007-2011)	1,668	9.3
Wake County		N/A	10.1
North Carolina		N/A	16.1
Median Household Income per Year (Fuquay-Varina)		\$62,859	N/A
Wake County		\$65,289	N/A
North Carolina	\$46,291	N/A	

Median Household Income Levels

Median household income is mapped by US census block group, as data are not available at the census block level. According to 2007-2011 US Census ACS data, the annual median household income for Fuquay-Varina is \$62,859. Median household income levels for Fuquay-Varina census block groups are illustrated in Map 2.7, and range from \$36,161 to \$86,121. To ensure convenient walking opportunities, a strong pedestrian network should be in place to safely connect residents of all income levels to important destinations throughout Fuquay-Varina.

Commute by Walking Populations

The overall commute by walking average for the Town of Fuquay-Varina as reported by the 2010 US Census is 0.5 percent, which is lower than the North Carolina average of 1.8 percent. Map 2.8, titled “Pedestrian Commuters,” illustrates ACS census block group data for the populations in Fuquay-Varina that commute by foot. The ACS census Block Group with the highest percentage (2.1 percent) of pedestrian commuters exists east of NC 55 and north of North Judd Parkway. The need for improved walkability exists in areas where populations commute to work by walking, as well as where populations currently do not commute to work by walking but live within a walkable distance of work, school, and other important destinations. Improved facilities and access would enable residents to consider walking to their place of employment or other high priority destinations.

Populations with No Access to a Vehicle (Zero-Car Households)

Map 2.9, titled “Zero-Car Households,” illustrates the concentrations of zero car households in and around the Town of Fuquay-Varina. Based on 2007-2011 US Census ACS estimates, more than 12.8 percent of the population in two census block groups (as high as 15.4 percent in one census block group) do not have access to a vehicle, and can be referred to as “zero car households.” These census block groups are illustrated by the darkest blue color on Map 2.9. Three other census block groups covering the downtown centers, neighborhoods north of the downtown centers, and neighborhoods southwest of the downtowns along NC 42 have populations of zero-car households ranging between 4.6 percent and 8.0 percent. Residents without access to a vehicle likely rely on walking or another form of non-motorized transportation for at least some trips; therefore, safe routes and facilities for non-motorized transportation should be provided for these residents.

Summary

In all planning and implementation initiatives, it is crucial to consider the needs of all populations living in Fuquay-Varina. The need for improved pedestrian access and mobility is greatest where higher populations of lower-income families, pedestrian commuters, minorities, and zero car households overlap, as these are places where the maximum number of residents would benefit from the development of pedestrian facilities.

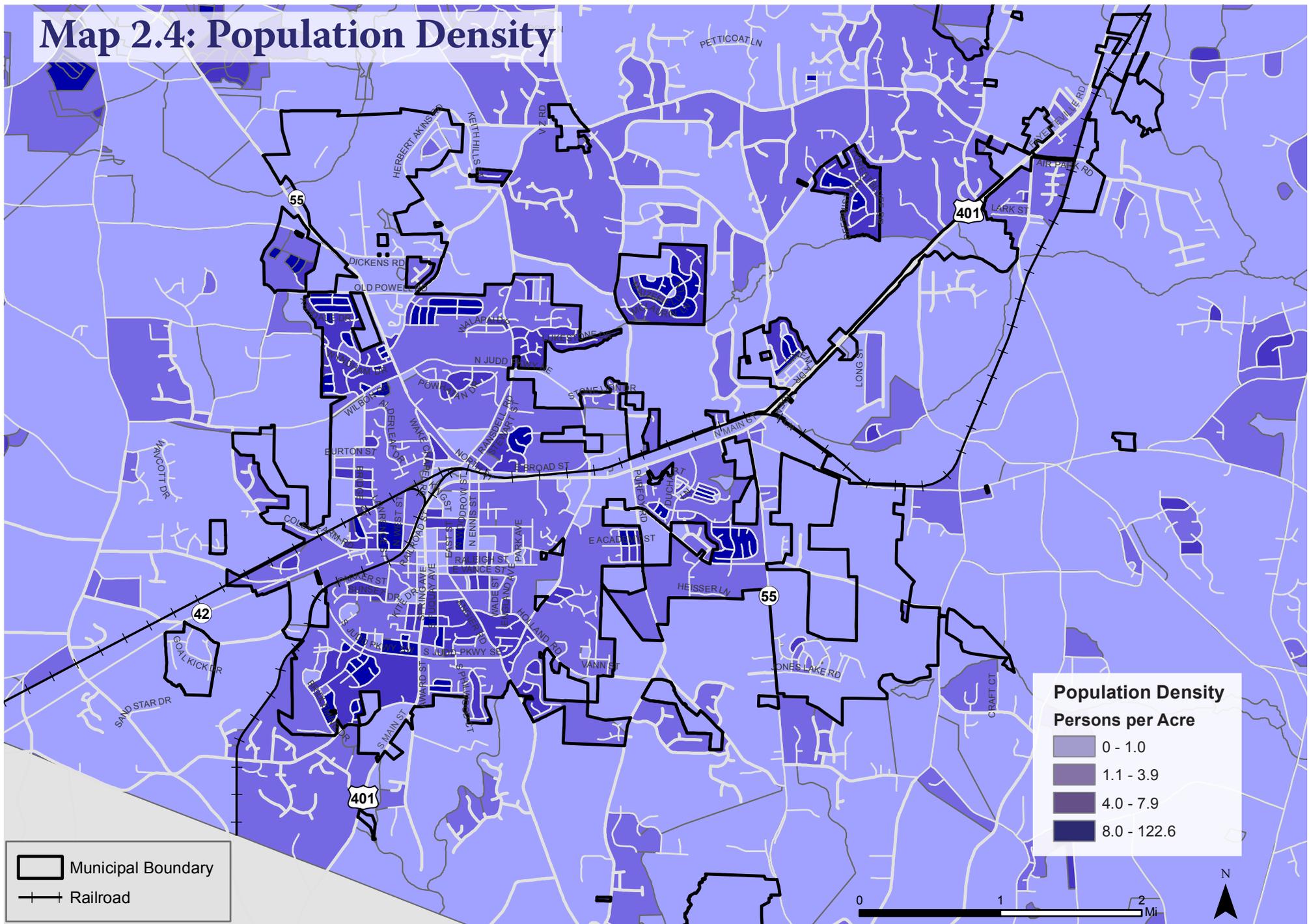


Johnson Pond, on Johnson Pond Road, is located in a higher income area

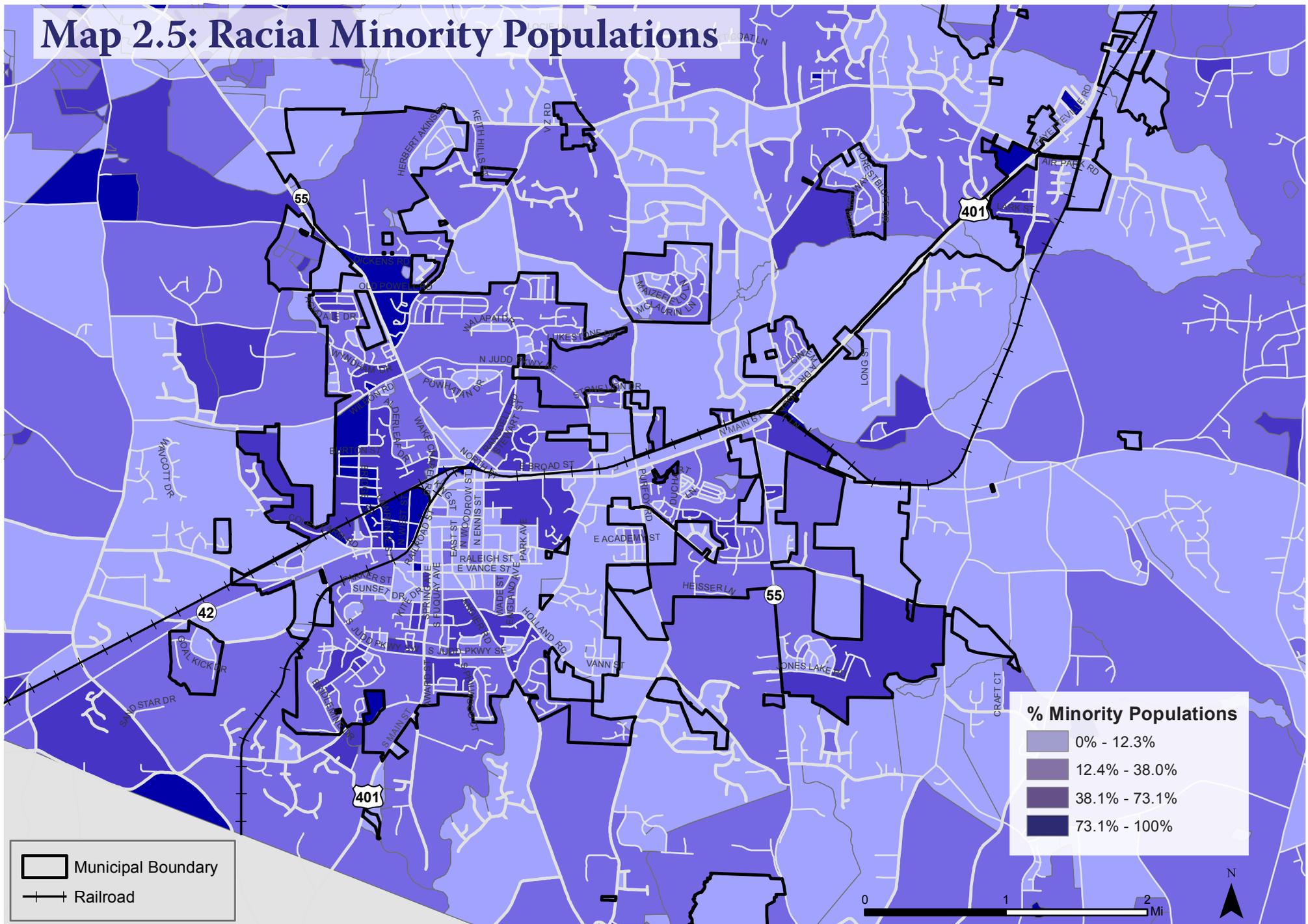


Bridge Street has a higher percentage of zero-car households

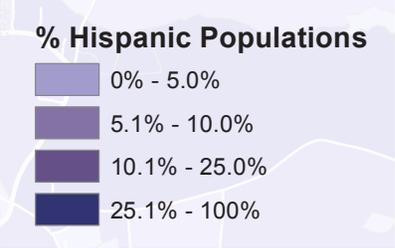
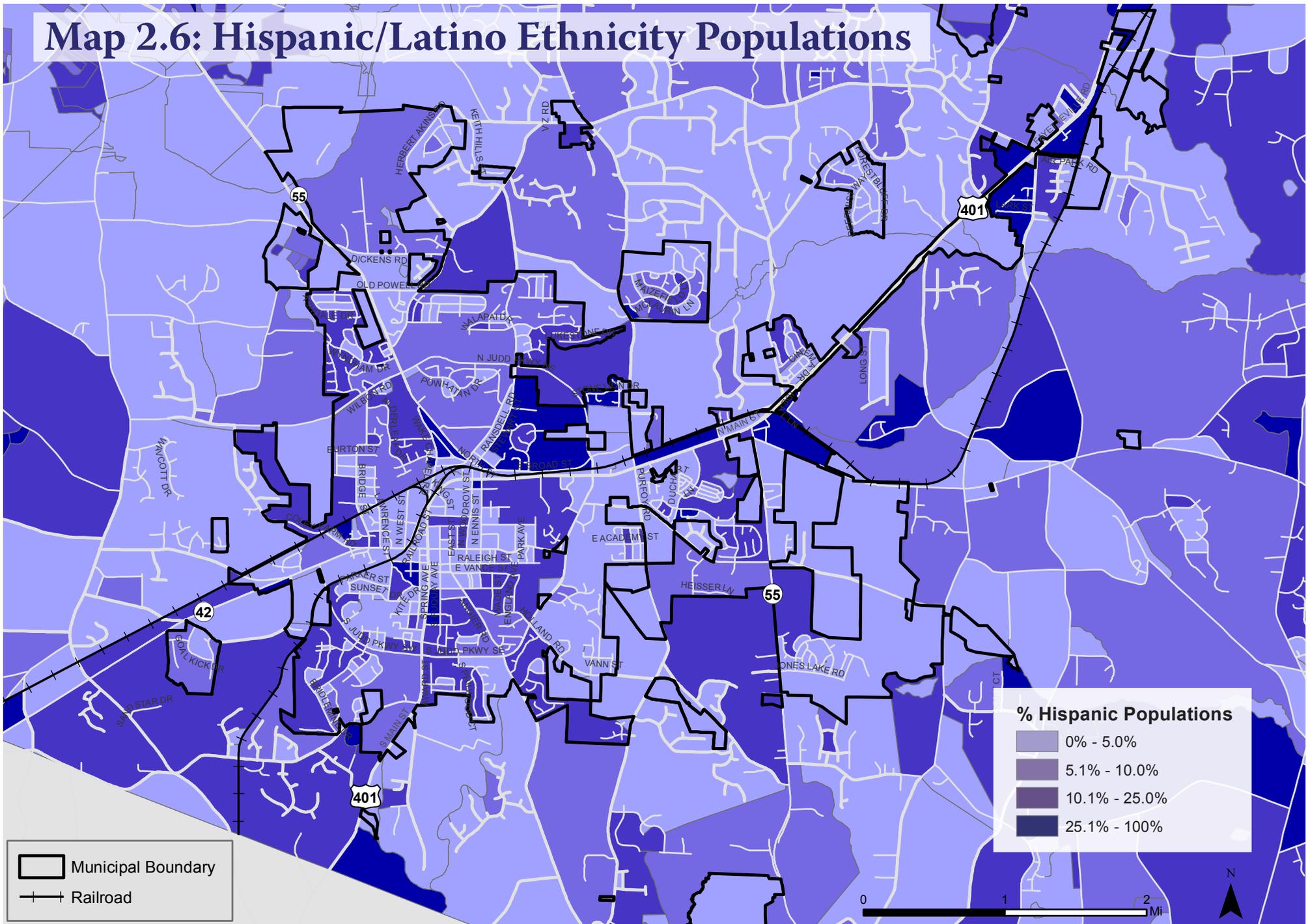
Map 2.4: Population Density



Map 2.5: Racial Minority Populations

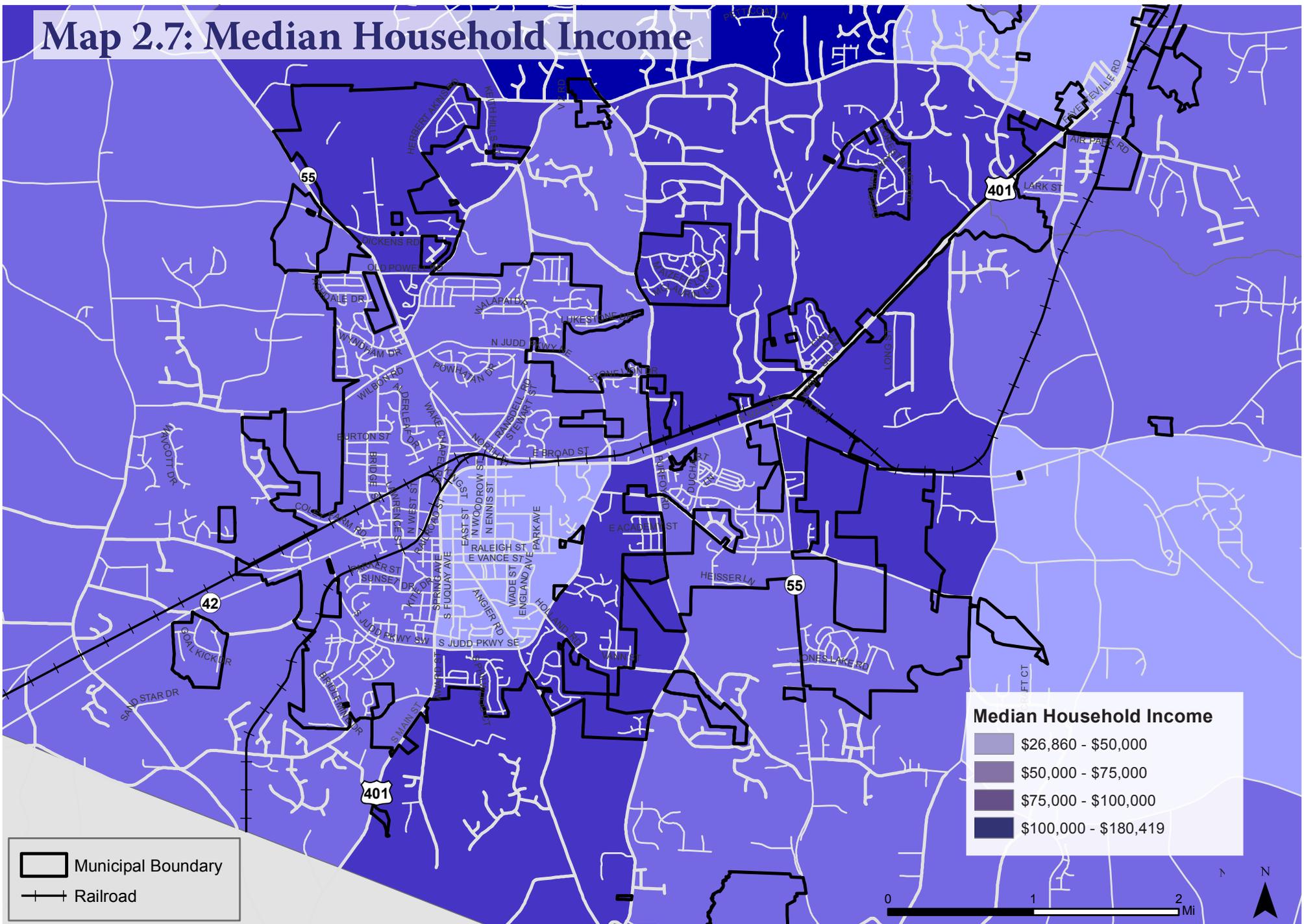


Map 2.6: Hispanic/Latino Ethnicity Populations

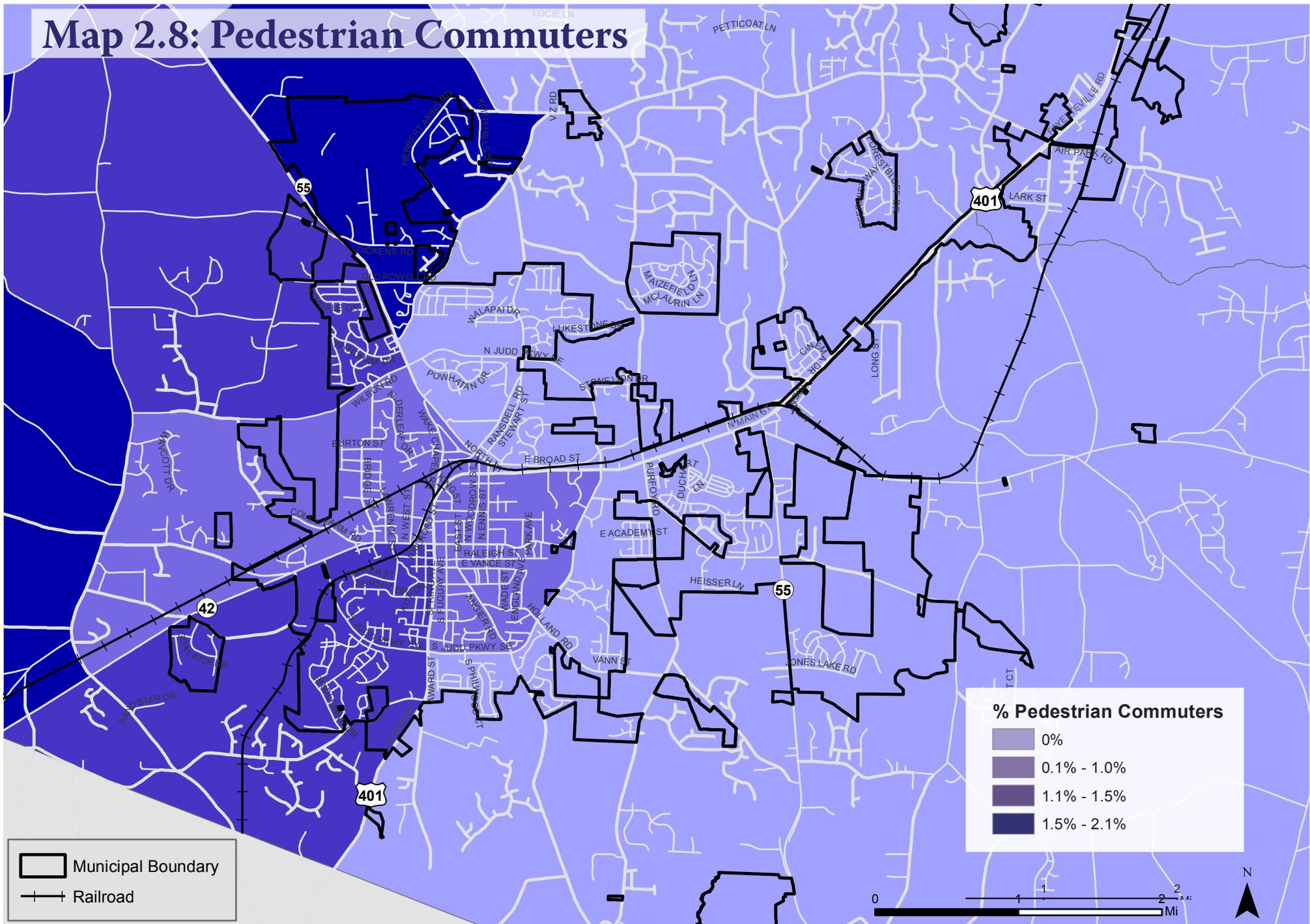


 Municipal Boundary
 Railroad

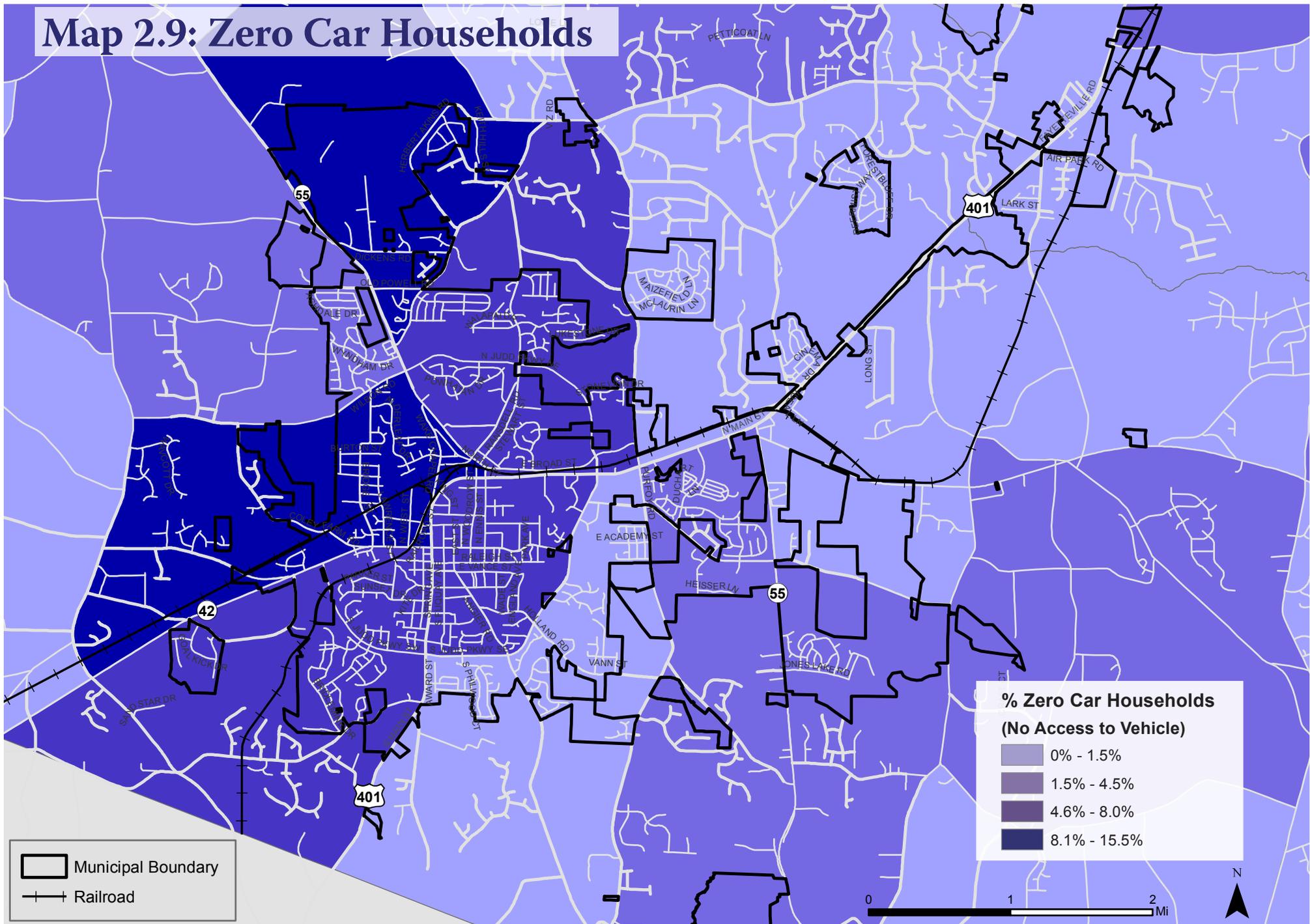
Map 2.7: Median Household Income



Map 2.8: Pedestrian Commuters



Map 2.9: Zero Car Households



2007-2013 NCDOT Reported Pedestrian Crashes

Data for pedestrian crashes involving motor vehicles from 2007-2013 was provided by NCDOT early in the planning process. It is important to note that not all pedestrian-related crashes are reported to the police, and only reported crashes are included in this evaluation. The 38 crashes are mapped on page 2-15. One crash resulted in a disabling injury, eleven resulted in evident injuries, eighteen resulted in possible injuries, seven resulted in no injury, and one crash was reported as unknown injury.

The locations of all 38 crashes were assessed during field work investigations. Existing intersection crossing conditions and the pedestrian environment were noted, as well as any barriers to pedestrian or motorist safety. Examples of existing barriers to pedestrian travel in Fuquay-Varina are presented on pages 2-18 and 2-19. The recommendations presented in Chapter 3 take into account the locations of the 38 crashes and the results of the field work assessment of each crash location.

Table 2.2 contains a listing of pedestrian-auto crash locations and crash frequencies. Crashes occurred most frequently along North Main Street and East Broad Street, with additional crashes north of Fuquay-Varina High School on North Broad Street/NC 55, on South Main Street, and at other locations near commercial centers.

Table 2.2: 2007-2013 Pedestrian Crash Locations

Pedestrian Crash Location	Number of Crashes
North Main Street	9
East Broad Street	6
Fayetteville Road	3
North Broad Street	2
South Main Street	2
South NC 55	2
All other locations	14

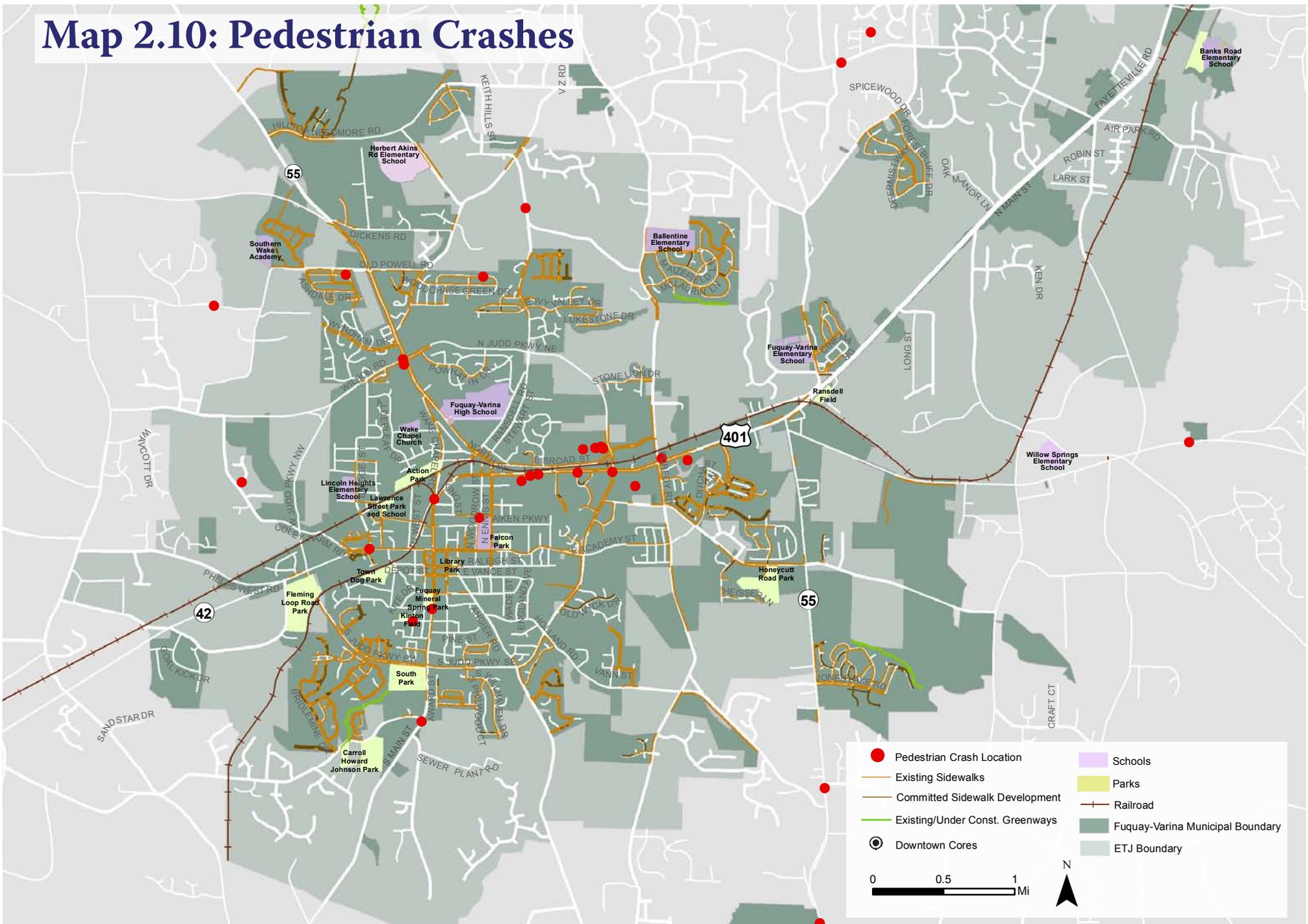


The North Main Street and North Judd Parkway intersection is the site of a pedestrian crash



Nine pedestrian crashes were reported along North Main Street from 2007-2013, including one near the North Main Street and Purfoy Road intersection

Map 2.10: Pedestrian Crashes



Opportunities & Challenges

An analysis of Fuquay-Varina's pedestrian conditions identified a number of elements that are considered opportunities and challenges for creating a walkable community. An opportunity represents a situation or condition that is favorable to pedestrian access, either today or in the future. A challenge represents a situation or condition that is a potential limitation or restriction on pedestrian access. This section identifies the opportunities and challenges associated with the existing pedestrian environment in Fuquay-Varina, as noted by the consultant team's field review and input from the public, Town staff, the steering committee, and key stakeholders.

Key Opportunities

1. Pedestrian Activity /Existing Sidewalk Mileage

The Town of Fuquay-Varina currently features more than 78 miles of sidewalk along its roads, including numerous new segments of sidewalk. East Broad Street and South Main Street have wide, attractive sidewalks with brick pavers that provide comfortable pedestrian access to businesses downtown.

Numerous pedestrians were observed around Fuquay-Varina, particularly near many of the locally-owned shops in both the downtown cores, along US Highway 401/Broad Street, and along South Main Street. Many pedestrians were seen navigating across the various at-grade railroad crossings in downtown, even though safe crossing facilities currently do not exist at these locations. Photo #1 on page 2-17 depicts pedestrian activity on East Broad Street.

2. Proximity of Destinations

Six schools exist in Fuquay-Varina and can be seen on Map 2.1. Public schools include Ballentine Elementary School, Fuquay-Varina Elementary School, Lincoln Heights Elementary School, Herbert Akins Road Elementary, Fuquay-Varina Middle School, and Fuquay-Varina High School. One private school, Hilltop Christian School, is also located in Fuquay-Varina. The Wake Technical Community College is located on Fayetteville Road, in the northeastern area of town.

At least seven parks are within a half-mile to one-mile walking distance of downtown. The majority of the parks can be safely accessed with the existing sidewalk network, but many areas lack crossing treatments at intersections, and gaps in the sidewalk network limit pedestrian travel between the residential neighborhoods and key destination areas.

The Town of Fuquay-Varina is relatively compact inside the Judd Parkway loop and, as shown in Maps 2.2 and 2.3, many destinations are within a half-mile to one-mile walking distance of each other. Neighborhoods, schools, and parks are situated close to the downtown cores and to each other, making walking a feasible option for many trips if a connected network of sidewalks and safe crossings is available. Photo #2 on page 2-17 is of Lincoln Heights Elementary School, located in close proximity to residential neighborhoods and other destinations.

3. Downtown Cores

The downtown commercial centers provide well-lit, well-maintained sidewalks, and safe pedestrian crossings at many intersections. Main Street and Broad Street provide several good crossing examples with informational signage, high-visibility crosswalks, and curb bulb-outs that help pedestrians to safely travel through the downtown centers. Photo #3 on page 2-17 illustrates well-maintained, decorative sidewalks along South Main Street.

4. Existing Multi-Use Trails

A few multi-use trails exist in Fuquay-Varina, such as the South Lakes Greenway Trail in the South Lakes development, and the walking trail in South Park. A trail extension will connect the South Lakes Trail to the planned town greenway at NC Highway 55. Currently, however, the existing 3.25 miles of trails are not well connected and serve only small portions of Fuquay-Varina. Photo #4 on page 2-17 highlights the existing South Lakes Greenway.



1. Pedestrian Activity: Pedestrians crossing East Broad Street at Stewart Street



2. Proximity of Destinations: Lincoln Heights Elementary School on Bridge Street



3. Downtown Cores: South Main Street and Academy Street, downtown Fuquay



4. Existing Multi-Use Trails: South Lakes Greenway, Glenville Lake Drive

Key Challenges

1. Major Roadways

One of the key challenges to pedestrian travel in Fuquay-Varina is the presence of major roads through Town. Several highways, including US Highway 401, NC 55, and NC 42, travel through downtown core areas in Fuquay-Varina, presenting a challenging environment for pedestrians. The volumes of automobile traffic and the speed of traffic along some segments of the roadways create uncomfortable routes for pedestrians to safely navigate. Photo #1 on page 2-19 presents existing conditions along NC 55, one of the major roadways discussed in this section.

US Highway 401

US Highway 401 enters the northeastern area of Fuquay-Varina near Wake Technical Community College and travels through the downtown, merging with Main Street, NC 55, and NC 42, before crossing the southwestern Town boundary and traveling down to Chalybeate Springs.

NC Route 55

NC 55 connects the northwestern tip of Fuquay-Varina to Holly Springs. NC 55 travels into Fuquay-Varina and merges with US 401, Main Street, and NC 42, before crossing the southern Town boundary and traveling down to Angier.

NC Route 42

NC 42 is the east-west connector roadway that ties Fuquay-Varina to its eastern neighbor, Clayton, and its western neighbor, Sanford. NC 42 travels through the downtown, merging with US 401, Main Street, NC 55, and NC 42, before passing Fleming Loop Recreational Park as it journeys out of Town.

Judd Parkway

The Judd Parkway roadway corridor was designed and constructed to reduce truck traffic and alleviate overall traffic congestion through the Town's business districts. The bypass circumvents downtown Fuquay-Varina and will soon be extended in the northwestern portion of the Town, forming a continuous loop around Town.

2. Sidewalk Connectivity

A well-maintained sidewalk network exists in the downtown cores, and many of the residential subdivisions provide sidewalks along one side of each of the internal roadways. However, many roadways that connect the downtown cores with residential subdivisions and other key destinations—such as schools, grocery stores, and commercial and retail centers, places of employment, and recreation-areas are without sidewalks or only offer sidewalks on one side of the road. Example roadways with inadequate or disconnected sidewalks include, but are not limited to, the following:

- North Judd Parkway & South Judd Parkway
- Angier Road
- Stewart Street
- Purfoy Road
- Sunset Lake Road
- Vance Street
- Raleigh Street

Safe connections between the two downtown cores and neighborhood areas located adjacent to the downtown areas do not exist. The sidewalk network does not extend outward from the downtown areas to these neighborhoods, and people often walk along the road to connect to

commercial areas along Broad Street, Main Street, and other major roads without sidewalk facilities. The existing sidewalk network, roadway network, parcels, schools, and other key destinations are shown in Maps 2.1 to 2.2 on pages 2-3 to 2-4. Photo #2 on page 2-19 illustrates an opportunity for future sidewalk connection from Broad Street to Ballentine Elementary School, along Sunset Lake Road.

3. Lack of Multi-Use Trails

The term “multi-use trails” refers to both greenway trails and side paths built in open spaces or stream corridors, or along a roadway, that accommodate pedestrians, cyclists, and a variety of other non-motorized trail users (such as roller bladers). Currently, 3.25 miles of multi-use trails exist in Fuquay-Varina. However, existing trails tend to be short and localized to a single destination rather than connecting multiple destinations across a longer distance. This impacts the ability for children to walk and bicycle to school, opportunities for physical activity within the community, and the option of walking or biking between neighborhoods and important destinations rather than traveling by car. Photo #3 on page 2-19 depicts the existing foot trail connecting the rear of the Lawson Cypress neighborhood with Jones Road.

4. Intersections and Railroad Crossings

Intersections

During fieldwork investigations, the consultant team evaluated pedestrian safety and accessibility at several intersections in Fuquay-Varina. Intersections were initially selected by mapping NCDOT pedestrian crash data in GIS and were further assessed based on feedback received from

the steering committee and from public input received throughout the planning process. While many intersections within Town are signalized, the majority of signalized intersections lack crossing treatments such as pedestrian countdown signals, pedestrian refuge medians, or high-visibility crosswalks.

Within the downtown cores, several intersections include treatments, such as high-visibility crosswalks, curb bulb-outs, and signage. Outside of the downtown commercial districts, however, crosswalks and other pedestrian amenities are lacking, making pedestrian connections between destinations difficult and less safe, even though they may be within walking distance.

Railroad Crossings

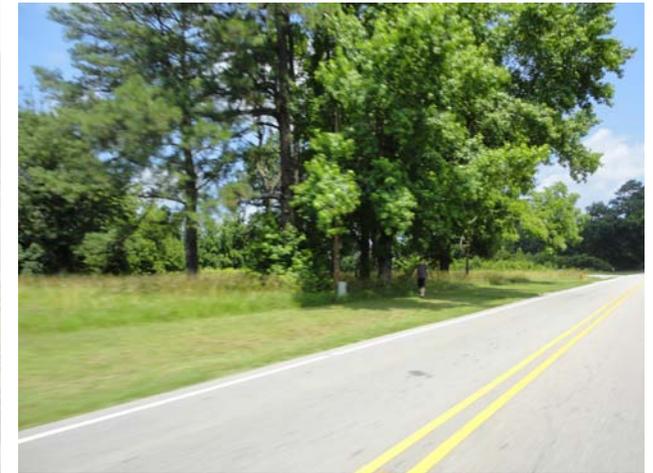
Railroad crossings are another considerable challenge for pedestrians in Fuquay-Varina. During fieldwork, the consultant team noted that many pedestrians navigate across the at-grade railroad crossings in town, even though these crossings do not contain curb ramps, signage, or other pedestrian amenities. The lack of safe crossing facilities for the at-grade railroad corridors is a significant barrier to pedestrian travel. The following railroad crossings were evaluated during field work investigations:

- Railroad & North Judd Parkway
- Railroad & North Ennis Street
- Railroad & West Academy Street
- Railroad & Sunset Lake/Purfoy Road
- Railroad & Wake Chapel/North Main Street

Photos #4 & 5 to the right emphasize the lack of safe intersection and railroad crossings along key roadway corridors such as Broad Street, North Ennis Street, North Main Street, and Judd Parkway.



1. Major Roadways: High traffic speeds and volumes along NC 55 make travel by foot to Fuquay-Varina High School challenging



2. Sidewalk Connecvitiy Sunset Lake Road provides an example of roadways lacking sidewalks in Fuquay-Varina



3. Lack of Multi-Use Trails: Disconnected sidewalks and trails lead to informal cut-through paths like this one near Jones Road



4. Intersections and Railroad Crossings: The railroad crossing and intersection at Broad Street and North Ennis Street lacks safe crossing facilities for pedestrians, and the intersection of North Main Street and Judd Parkway [photo inset] features faded crosswalks and a long crossing distance.

Existing Policies and Plans Related to Pedestrian Travel

Overview of Local Policies

Existing land development, zoning and subdivision ordinances, and technical standards have a significant effect on pedestrian travel and multi-use trail development in Fuquay-Varina. The Town of Fuquay-Varina “Code of Ordinances” includes the subdivision regulations and was reviewed as part of this pedestrian transportation planning process. A detailed review the policy document along with recommended language revisions is presented in Chapter 5 of this plan.

Previous Planning Efforts

Numerous plans, guidelines, and strategies have addressed topics related to pedestrian facilities and trails in Fuquay-Varina. They have addressed improvements to existing parks and facilities and made suggestions for new parks, trails, and other facilities. All of these documents represent important efforts, provide valuable insight and background, and have influenced the development of this plan.

The following plans were reviewed early in the planning process as they relate to existing conditions and future needs for sidewalks, multi-use trails, and intersection improvements. A review of existing plans is included in Chapter 4. For further information, please consult the documents in their entirety.

- Town of Fuquay-Varina Greenway System Master Plan (1999)
- Wake County Consolidated Open Space Plan (2006)
- Town of Fuquay-Varina Community Transportation Plan (2006)
- Town of Fuquay-Varina Facility Master Plan (2009)
- Town of Fuquay-Varina Town Center Plan Guidelines (2009)
- CAMPO 2035 Long Range Transportation Plan (2011)
- NCDOT Complete Streets Design Guidelines (2012)
- Draft - Southwest Wake County Area Study (2012)
- Draft - Wake County Transit Plan (2012)

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Mineral Springs Park, Fuquay-Varina

3 Network Recommendations

Overview

This chapter contains a series of recommended changes to the Town of Fuquay-Varina’s physical environment that will create a more connected, comprehensive pedestrian network. The recommended pedestrian network provides a connected system of sidewalks, multi-use trails, and crossing improvements that connect to schools, parks, community centers, business corridors, libraries, shopping centers, and other key destinations. The network serves multiple users and interests and improves access for residents of varying physical capabilities, ages, and skill levels. This chapter describes the methodology for developing the network recommendations, the overall pedestrian network, and key project recommendations.

- Previous plans and studies
- Maps developed from GIS data (demographic data, sidewalk gap analysis)
- Input from the steering committee
- Input obtained during public involvement events
- Fieldwork inventory and evaluation
- Identification of pedestrian trip attractors
- Guidance from Town staff and officials

Methodology

The guiding philosophy for devising the comprehensive pedestrian network is the “hubs and spokes” model. Pedestrian corridors (spokes) should connect to trip attractors (hubs), such as parks, schools, downtown, shopping areas, commercial centers, and other destinations. The network then becomes a practical solution for pedestrian connectivity. The hubs and spokes model (shown to the right) conceptually illustrates how destinations in Fuquay-Varina will be linked through various types of pedestrian facilities.

A variety of resources were consulted during the development of the recommended pedestrian network, including the following:

CHAPTER CONTENTS

Overview (3-1)

Methodology (3-1)

The Pedestrian Network (3-2)

- *Overall Sidewalk Recommendations (3-3)*
- *Intersection Improvements (3-8)*
- *Gateway Corridors & Traffic Calming (3-16)*
- *Multi-Use Greenway Trails (3-18)*

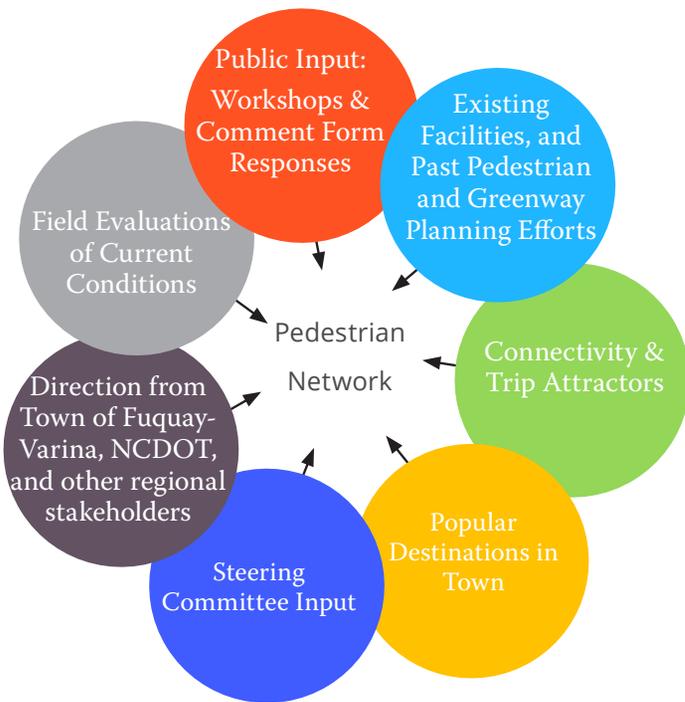
Project Prioritization Process (3-24)

Priority Project Cut-sheets (3-25)

Project Cost Estimates (3-25 and 3-46)



The graphic below illustrates the approach that was taken during the planning process to obtain input from a variety of sources. As described in Chapter 2, fieldwork included an examination of conditions at major intersections along primary corridors and a consideration of sidewalk and trail connectivity. Map review and analysis was conducted at steering committee meetings and public meetings to pinpoint specific areas in need of pedestrian improvements. All recommendations were developed at a planning level and will need a more detailed project-level review prior to implementation.



The Pedestrian Network

The recommended pedestrian infrastructure projects for Fuquay-Varina aim to expand the existing pedestrian network to provide a more connected system that provides safe linkages between origins and destinations. Six project *types*, or groups of projects, were identified during the planning process to complete gaps in the existing system and provide new facilities that meet the goals of this plan.

The following six project *types* are presented in detail in this chapter.

- Network infill areas
- Intersections and crossings
- New sidewalk and multi-use trail corridors
- Walking loop routes (neighborhood connections)
- Corridor enhancements and streetscapes
- Regional connections

All pedestrian infrastructure projects undertaken should aim to meet the highest standards possible when topography and right-of-way allows. The design guidelines in Appendix A provide detailed information regarding facility types and treatments.

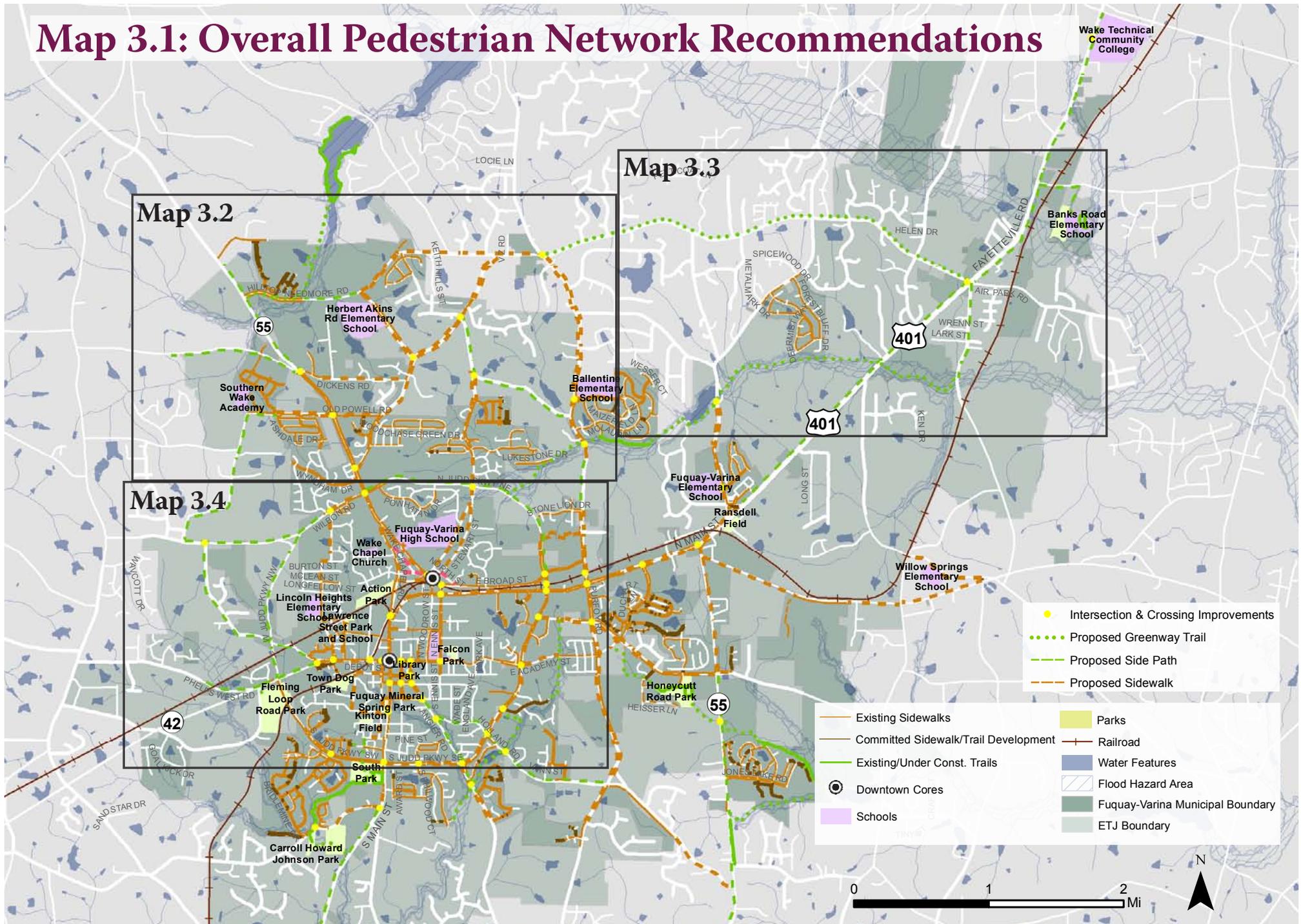
Fuquay-Varina’s subdivision regulations currently require the installation of sidewalks on at least one side of internal streets and along the public roadway frontage of new residential subdivision developments. The Town should focus its efforts on providing sidewalks and multi-use trails in residential, mixed-use, commercial, retail, and other areas that are already developed and do not have pedestrian facilities. Although the

recommendations illustrated by the maps in this chapter do not depict sidewalks or multi-use paths on every street, sidewalks should be provided on both sides of all major roads and on at least one side of local streets where warranted by density and/or system connectivity (See **Chapter 5 for policy recommendations**). Traffic calming techniques and speed limit enforcement should be considered for local streets where sidewalks are not recommended because of right-of-way constraints, topography and other environmental constraints, or density does not warrant the construction of sidewalks. Map 3.1 on page 3-3 presents overall pedestrian network recommendations and also serves as an index map for the maps found on pages 3-4 through 3-6.

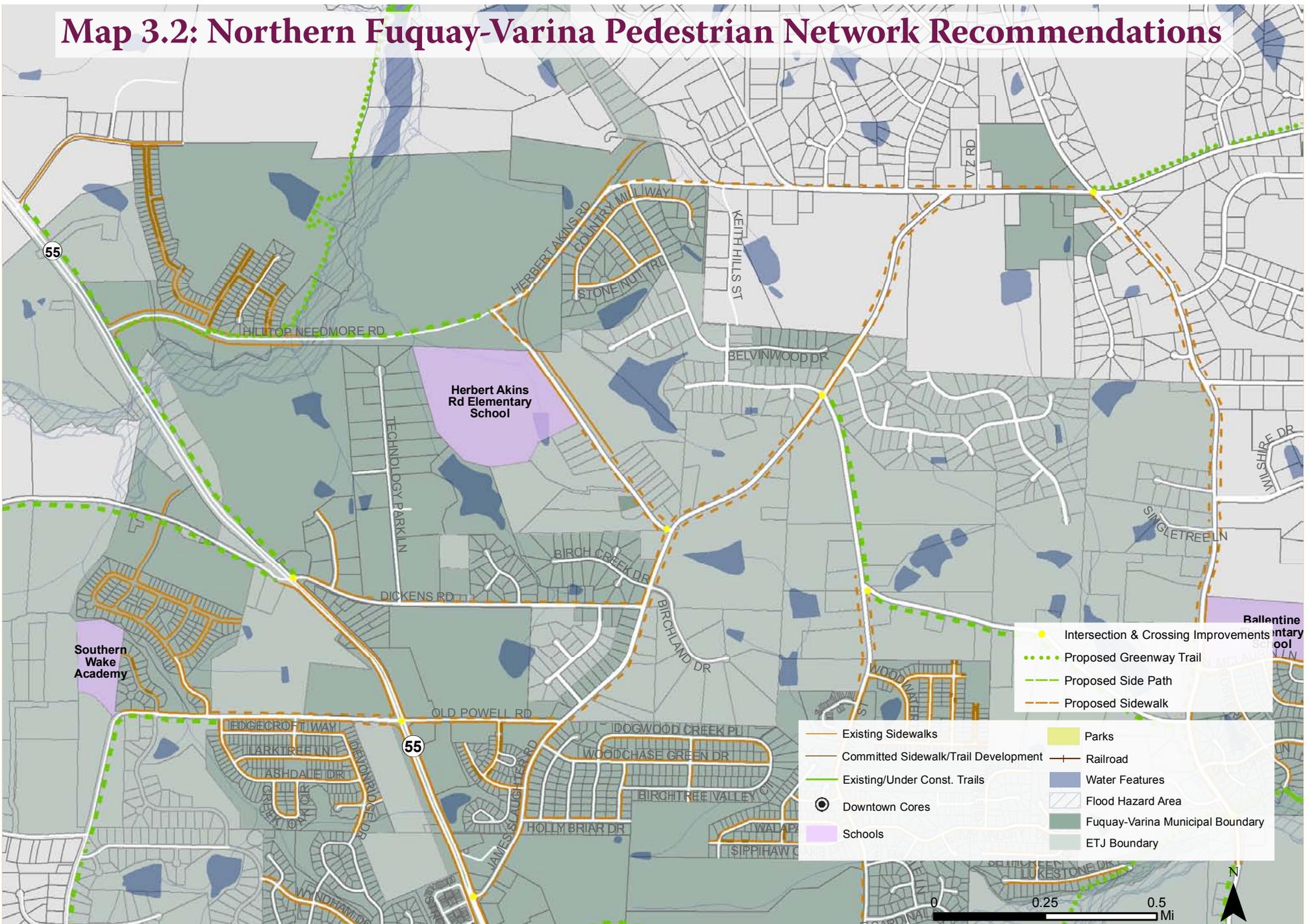
Table 3.1: Pedestrian Network Summary Table

Pedestrian Network	Length (miles)
Existing Sidewalk Mileage	78
Existing Multi-use Trail Mileage	3.25
Proposed Sidewalk Mileage	37.5
Proposed Multi-Use Trail Mileage	30.9
# of Intersection Improvement Recommendations	58 intersections

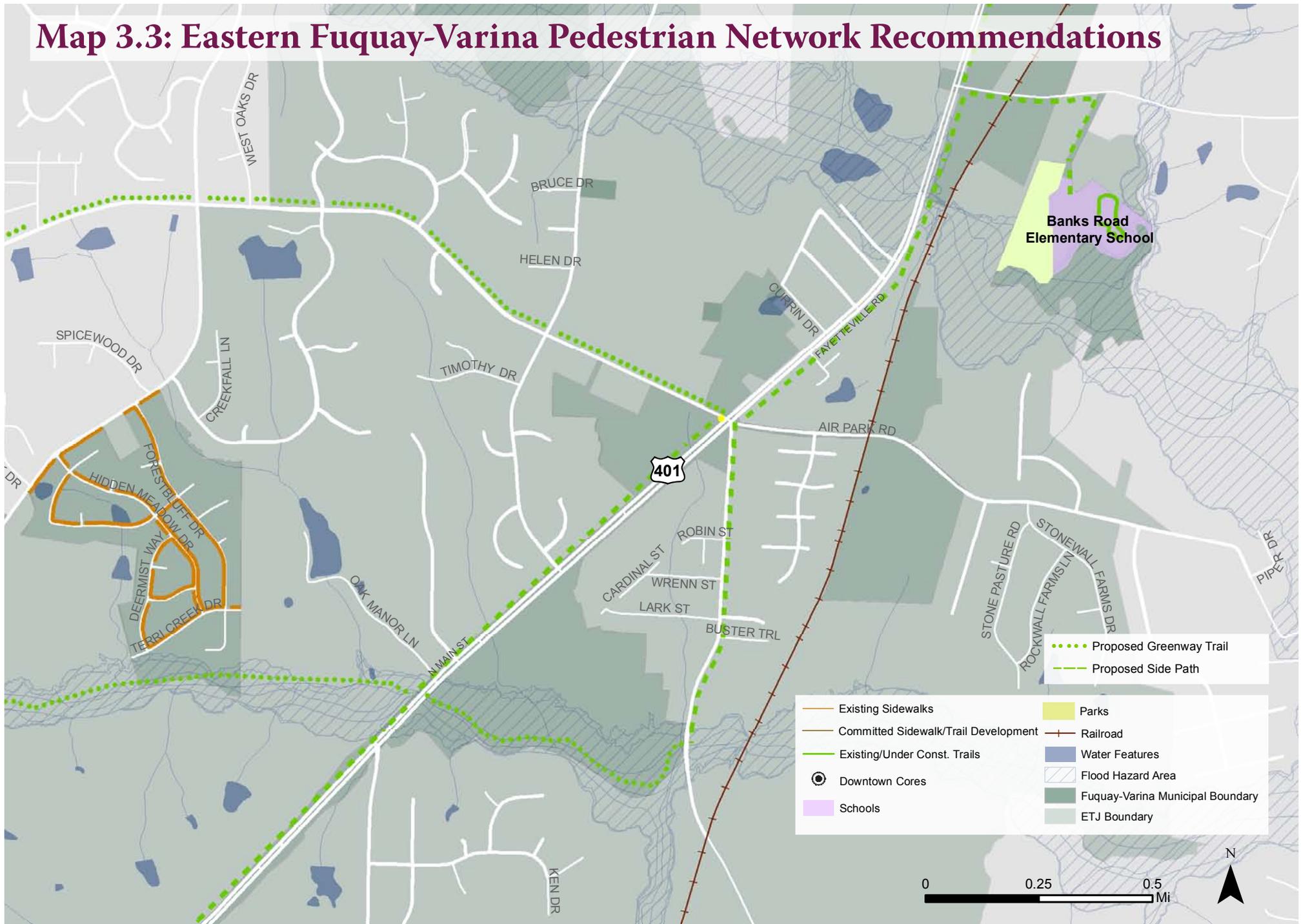
Map 3.1: Overall Pedestrian Network Recommendations



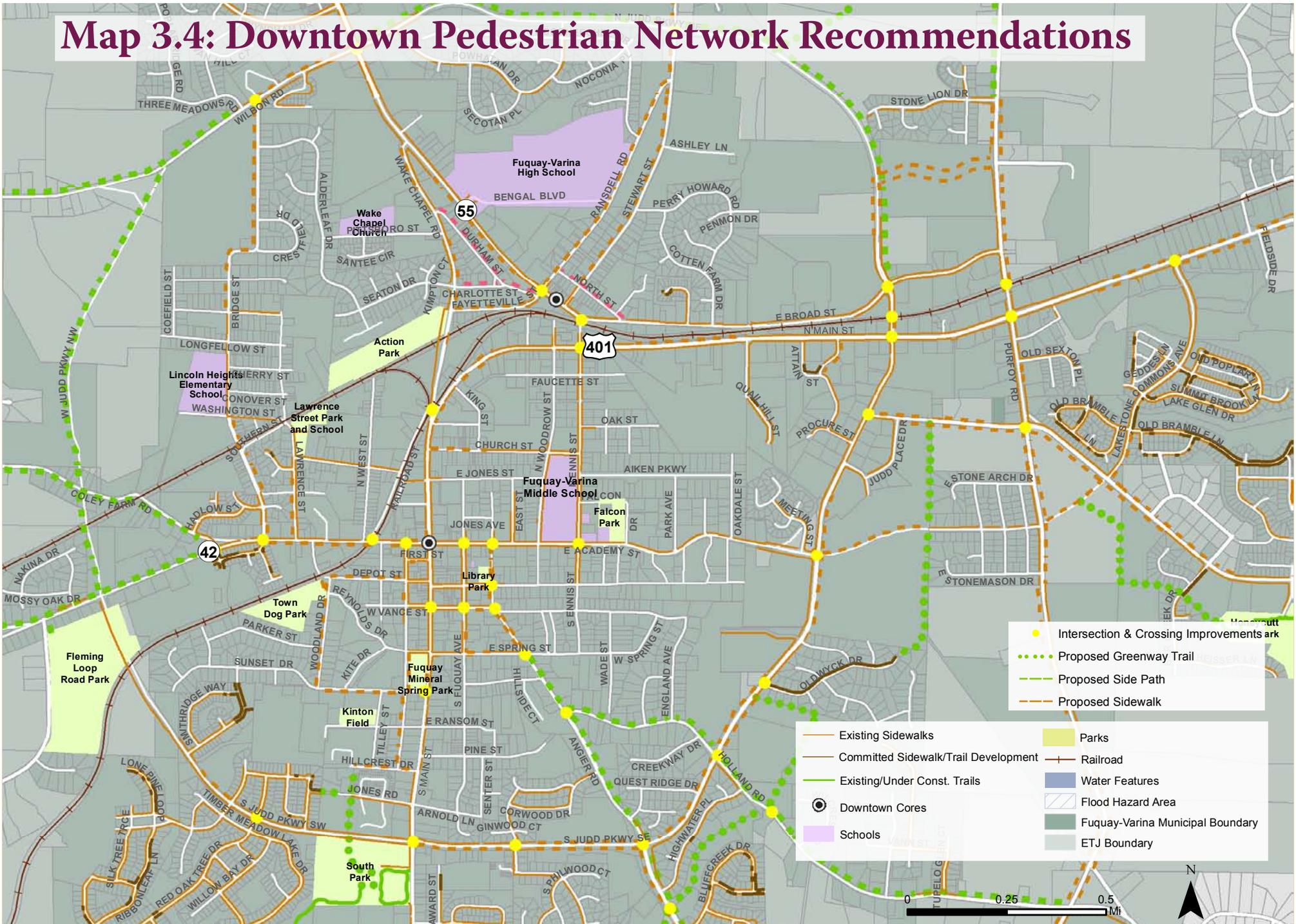
Map 3.2: Northern Fuquay-Varina Pedestrian Network Recommendations



Map 3.3: Eastern Fuquay-Varina Pedestrian Network Recommendations



Map 3.4: Downtown Pedestrian Network Recommendations



Network Infill Areas

The existing pedestrian network lacks connectivity, and, collectively, the disconnected areas pose barriers to pedestrian travel. Gaps in the network remain as a result of sidewalk requirement policies and funding over the previous decades. Performing spot improvements to fill gap areas will have a significant impact on the pedestrian environment and improve the accessibility of the existing sidewalk network.

Spot improvements to fill network gaps include:

- Fill sidewalk gaps – The infill of key sidewalk segments will decrease gaps and improve overall connectivity. Areas for sidewalk infill were selected if the length of the infill area was less than 700 feet, and if the infill area connected to existing sidewalks on either end.
- Fill multi-use trail gaps – Spur trails and other short trail connections between origins and destinations will improve access for residents and visitors.
- Stripe crosswalk gaps – Gaps in the sidewalk network occur when safe crossing treatments do not exist at intersecting roads and driveways.
- Fill Railroad crossing gaps – Gaps in the sidewalk network exist at railroad crossings where sidewalk, Americans with Disabilities Act (ADA) compliance, and signage are lacking.

Maps 3.5 and 3.6, on pages 3-8 and 3-9, respectively, present key infill areas to provide better connectivity within the pedestrian network.



Existing sidewalk gap near the intersection of NC 55 and James Slaughter Road



A marked crosswalk does not exist near the intersection of East Vance Street and South Fuquay Avenue for these two youths to cross

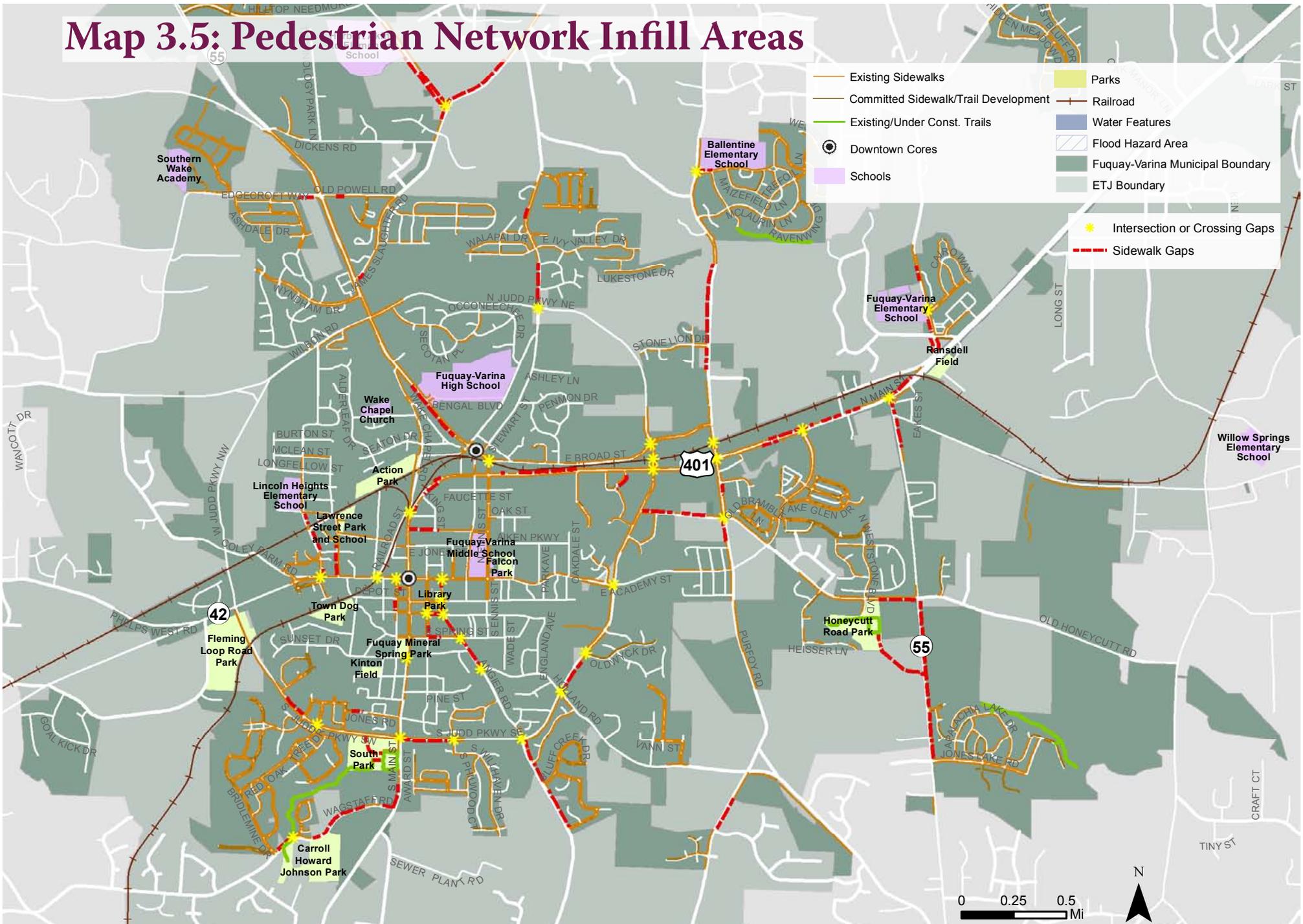


A gap in the multi-use trail system prohibits a connection between existing trails near the Jones Lake neighborhood and in Honeycutt Road Park

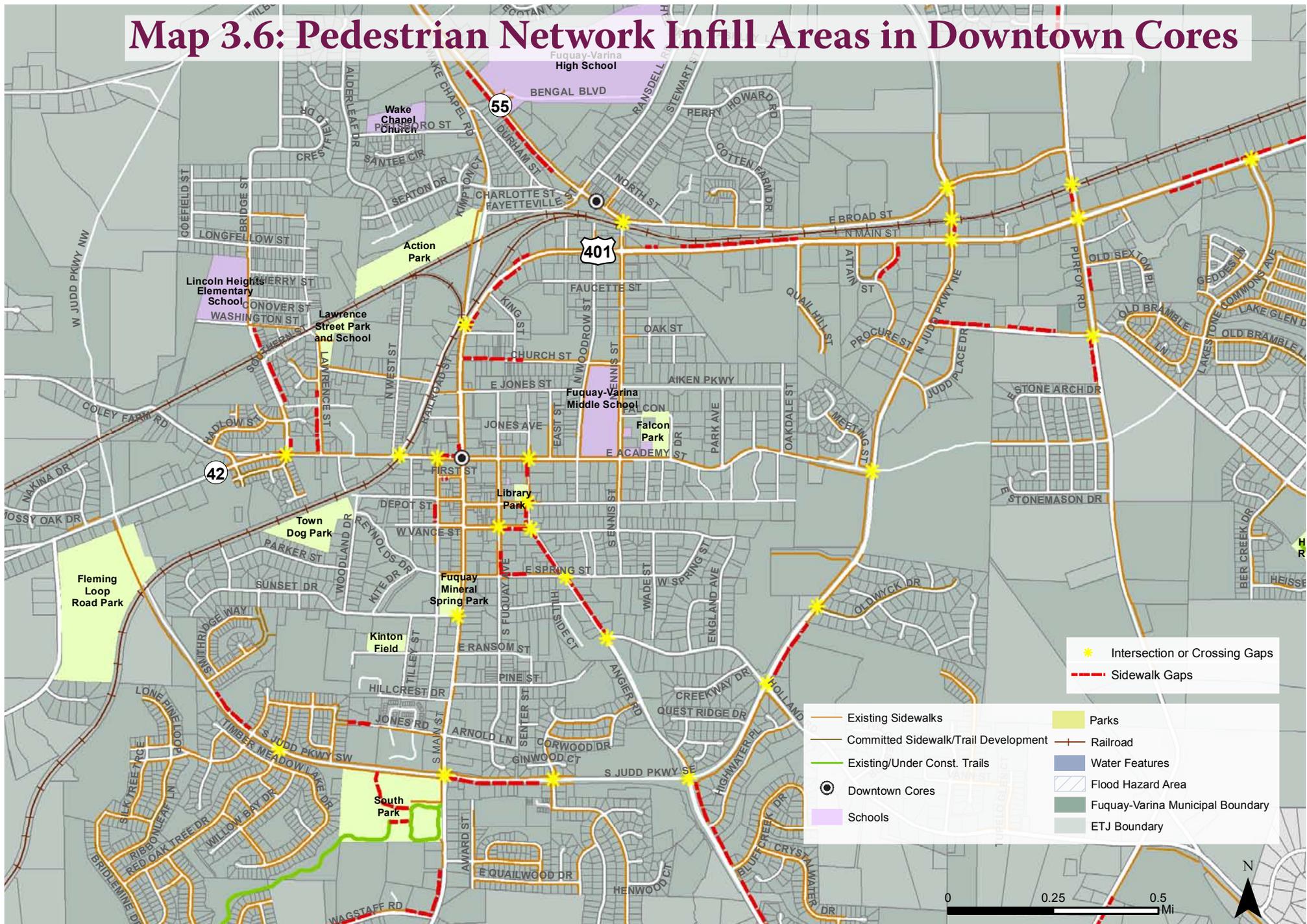


Existing railroad crossing gap on North Ennis Street

Map 3.5: Pedestrian Network Infill Areas



Map 3.6: Pedestrian Network Infill Areas in Downtown Cores



Intersections & Crossings

Intersections and crossings that lack safe and visible treatments are considered gaps in the pedestrian network. These gaps should be filled with context-appropriate pedestrian amenities such as marked crosswalks, pedestrian countdown signals, ADA-compliant curb ramps, and advanced warning signage. The consultant team evaluated pedestrian safety and accessibility at key intersections in Fuquay-Varina and determined that many intersections offered some of the necessary amenities, but not all. Opportunities exist at each intersection for new or retrofitted pedestrian crossing facilities. The at-grade railroad crossings should be the focus of future detailed engineering studies and recommendations made in concert with NCDOT and Norfolk Southern Railroad.

Four primary intersection treatment concepts were developed during this planning process to serve as a guide during implementation for Fuquay-Varina. Each of the 58 intersections have a corresponding intersection treatment concept recommendation. The four concepts are as follows:

- signalized
- mid-block or trail crossing
- non-signalized
- railroad crossing

Fuquay-Varina should not limit intersection improvements to only these 58 intersections, and should apply recommendations presented by the intersection treatments concepts to other intersections in Fuquay-Varina, as appropriate.

The 58 intersections that were evaluated are listed in Table 3.2. Each intersection is identified on Map 3.5 on page 3-9. The design details of the four treatment concepts are included in Appendix D of this plan. Appendix A provides further design guidance based on AASHTO, MUTCD, and NACTO standards and guidelines for intersection and crossing treatments.

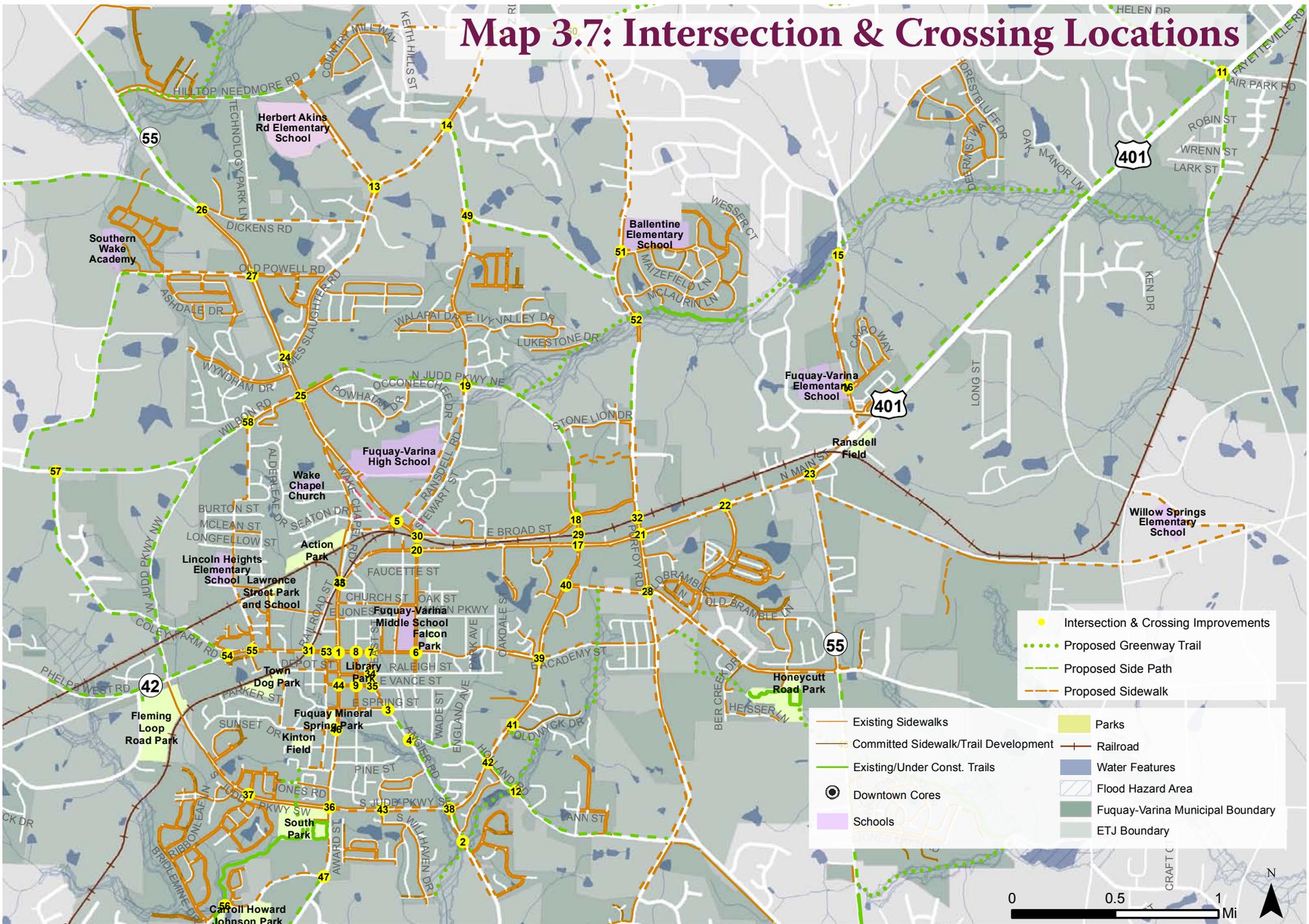
Table 3.2: Intersections & Crossings

ID #	Primary Roadway	Intersecting Roadway	Treatment Concept
1	Academy	S. Main	Signalized
2	Angier	Trail Crossing	Mid-block, Trail Crossing
3	Angier	E. Spring	Non-Signalized
4	Angier	Holland	Non-Signalized
5	Broad	Ransdell	Non-Signalized
6	E. Academy	N. Ennis	Signalized
7	E. Academy	S. Aiken	Non-Signalized
8	E. Academy	N. Fuquay	Signalized
9	E. Vance	S. Fuquay	Signalized
10	Fayetteville	Wake Tech Community College	Signalized
11	Fayetteville	Hilltop-Needmore	Signalized
12	Holland	Trail Crossing	Mid-block, Trail Crossing
13	James Slaughter	Herbert Akins	Non-Signalized
14	James Slaughter	Stewart	Non-Signalized
16	Johnson Pond	Sterling	Non-Signalized
15	Johnson Pond	Trail Crossing	Mid-block, Trail Crossing
17	N. Judd Parkway	N. Main	Signalized
18	N. Judd Parkway	E. Broad	Signalized
19	N. Judd Parkway	Stewart	Signalized
20	N. Main	N. Ennis	Signalized
21	N. Main	Purfoy	Signalized
22	N. Main	Lakestone Commons	Signalized
23	N. Main	NC 55/NC 42	Signalized
24	NC 55	James Slaughter	Signalized
25	NC 55	Judd Parkway/Wilbon	Signalized
26	NC 55	Wade Nash/Dickens	Signalized
27	NC 55	Old Powell	Non-Signalized
28	Purfoy	Old Honeycutt	Signalized
29	Railroad	N. Judd Pkwy	At-grade railroad crossing

Table 3.2: Intersections & Crossings (cont'd)

ID #	Primary Roadway	Intersecting Roadway	Treatment Concept
30	Railroad	N. Ennis	At-grade RR crossing, Signalized
31	Railroad	W. Academy	At-grade RR crossing
32	Railroad	Sunset Lake/Purfoy	At-grade RR crossing
33	Railroad	Wake Chapel/N. Main	At-grade RR crossing, Signalized
34	Raleigh	S. Aiken	Non-Signalized
35	S. Aiken	E. Vance/Angier	Non-Signalized
36	S. Judd Parkway	S. Main	Signalized
37	S. Judd Parkway	Lawson Cypress	Non-Signalized
38	S. Judd Parkway	Angier	Signalized
39	S. Judd Parkway	E. Academy	Signalized
40	S. Judd Parkway	Old Honeycutt	Non-Signalized
41	S. Judd Parkway	Oldwyck Drive	Non-Signalized
42	S. Judd Parkway	Holland	Signalized
43	S. Judd Parkway	S. Phillips Pointe Dr	Non-Signalized
44	S. Main	E. Vance	Signalized
45	S. Main	Wake Chapel	Signalized
46	S. Main	Sunset Dr	Non-Signalized
47	S. Main	Wagstaff	Non-Signalized
48	S. NC 55	Trail Crossing	Mid-block, Trail Crossing
49	Stewart	Ballentine Dairy	Non-Signalized
50	Sunset Lake	Hilltop-Needmore	Signalized
51	Sunset Lake	N. McLaurin	Non-Signalized
52	Sunset Lake	Trail Crossing	Mid-block, Trail Crossing
53	W. Academy	Spring Ave	Non-Signalized
54	W. Academy	Coley Farm	Non-Signalized
55	W. Academy	Bridge St	Non-Signalized
56	Wagstaff	Trail Crossing	Mid-block, Trail Crossing
57	Wilbon	Coley Farm	Non-Signalized
58	Wilbon	Bridge St	Non-Signalized

Map 3.7: Intersection & Crossing Locations



New Sidewalk & Multi-Use Trail Recommendations

The recommendations for new sidewalks and multi-use trails are different than the recommendations for network infill areas, and aim to expand the extent of the current pedestrian network. Special emphasis should be given to providing sidewalks on routes serving major pedestrian destinations. Key roadways in Fuquay-Varina lack sidewalk altogether, and multi-use trails are generally lacking throughout the community. Recommendations for new sidewalks and multi-use trails include projects that do not intersect with existing sidewalk or trails on both ends and are typically longer than the network infill projects discussed on pages 3-5 through 3-11.

New Sidewalks

Sidewalks are defined as paved walkways adjacent to roadways. Sidewalks are fundamental to pedestrian mobility and offer equitable transportation opportunities to all citizens. The new sidewalk recommendations detailed in Table 3.3 on page 3-13 are presented by roadway, and, in many cases, the total length for each roadway recommendation is the result of grouping several segments of new proposed sidewalks. New sidewalk recommendations may include sidewalks along one side or both sides of the roadway, depending on density, proximity to destinations, and the existence of right-of-way and environmental constraints. New sidewalk recommendations are also shown on Map 3.8 on page 3-14.

New Multi-Use Greenway Trails

A multi-use greenway trail, or “greenway trail” for short, is defined as a linear corridor of land that is typically more recreational in character and consists of trails along stream corridors and other open space (e.g., utility corridors, such as power line easements, sewer easements, and railroad right-

of-way). Greenway trails are closed to motorized traffic and designed for two-way travel by bicyclists and pedestrians. Such trails can be constructed of many different materials. However, for trails that serve the purpose of transportation, hard surfaces such as asphalt or concrete are recommended. As described in Appendix A, a greenway trail intended to function as a transportation facility should be an all-weather surface and accessible within urban, suburban, and rural areas.

Each trail project will also require close coordination with nearby property owners. Design features, such as landscaped screening, fencing, and other treatments, should be considered to help ensure privacy where desired.

New Multi-Use Side Paths

A multi-use side path, or “side path” for short, is a type of multi-use trail that follows a road corridor but is separated from on-road traffic. Side paths are more transportation-oriented in character and are used by bicyclists and pedestrians. Where side paths are proposed in Fuquay-Varina, factors such as the distance between destinations, adjacent land use, and population density were considered.

Multi-use trails offer families and novice bicyclists a comfortable environment to pursue active transportation and healthy living activities. Therefore, a comprehensive network of multi-use trails that includes greenway trails and side paths is an integral part of the overall pedestrian network, and its development should be a priority of the Town of Fuquay-Varina. New multi-use trail recommendations are detailed in Table 3.3 on page 3-13 and shown on Map 3.8 on page 3-14.

Walking Loop Routes

Loop routes of varying lengths and environments that cater to different needs and levels of mobility will bridge communities and neighborhoods, benefitting residents and visitors of Fuquay-Varina. The development of loop routes has the potential to increase young people’s freedom for independent exploration, help reduce dependency on private motor vehicles for short trips, and provide informal recreation close to home.

This plan recommends loop routes of three different lengths, one mile, three miles, and five miles, each taking into account existing and proposed future infrastructure. When fully developed and publicly promoted, these loop routes will provide access to the downtown core areas, schools, places of employment, retail areas, and other destinations. The loop routes are presented on Maps 3.9, 3.10, and 3.11 on pages 3-15 through 3-17.



Existing greenway trail near the Carroll Howard Johnson Environmental Park on Wagstaff Road in Fuquay-Varina

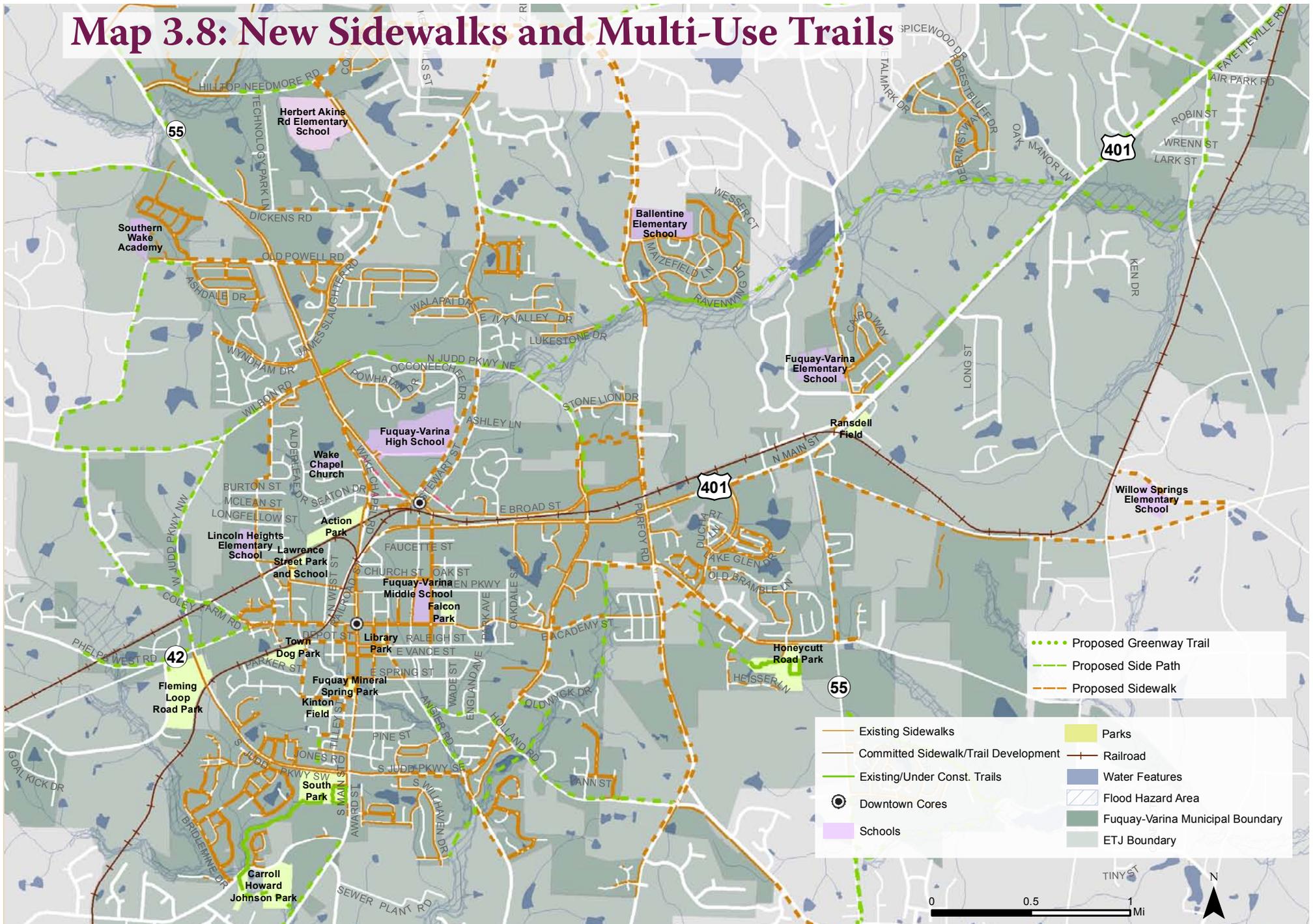
Table 3.3: New Sidewalks & Multi-Use Trails

SW or MUT	Roadway Name	Length (ft)
SW	Angier	3,521.9
SW	Barlang	150.6
SW	Bass Lake	325.3
SW	Bengal Blvd	1,743.9
SW	Bridge	2,900.2
SW	Chimney Ridge	69.9
SW	Dickens	3,098.1
SW	Dunfield	160.3
SW	Dwight Rowland	3,135.9
SW	Fayetteville	966.7
SW	Fiddich Lane	5,632.1
SW	Glenville Lake	1,171.6
SW	Harvest Point	367.8
SW	Herbert Akins	11,806.1
SW	Holland	3,016.9
SW	James Slaughter	10,601.5
SW	Johnson Pond	3,535.3
SW	Lake Artesia	2,136.0
SW	Lake Glen	357.6
SW	Lake Louise	394.0
SW	Lakestone Commons	13.5
SW	Lakestone Village	304.9
SW	Leatherstone	2,515.0
SW	N. Judd Parkway	2,617.9
SW	N. Main	5,534.8
SW	N. NC 55	1,663.2
SW	NC 42	3,957.7
SW	Old Bramble	4,532.8
SW	Old Honeycutt	6,513.0
SW	Old Powell	1,790.7
SW	Purfoy	9,925.8
SW	Ransdell	3,111.6
SW	S. Fuquay	291.7
SW	S. Judd Parkway	5,128.1
SW	S. NC 43	5,196.5
SW	S. NC 55	3,265.5
SW	Stewart	6,836.3
SW	Sunset Lake	10,721.6

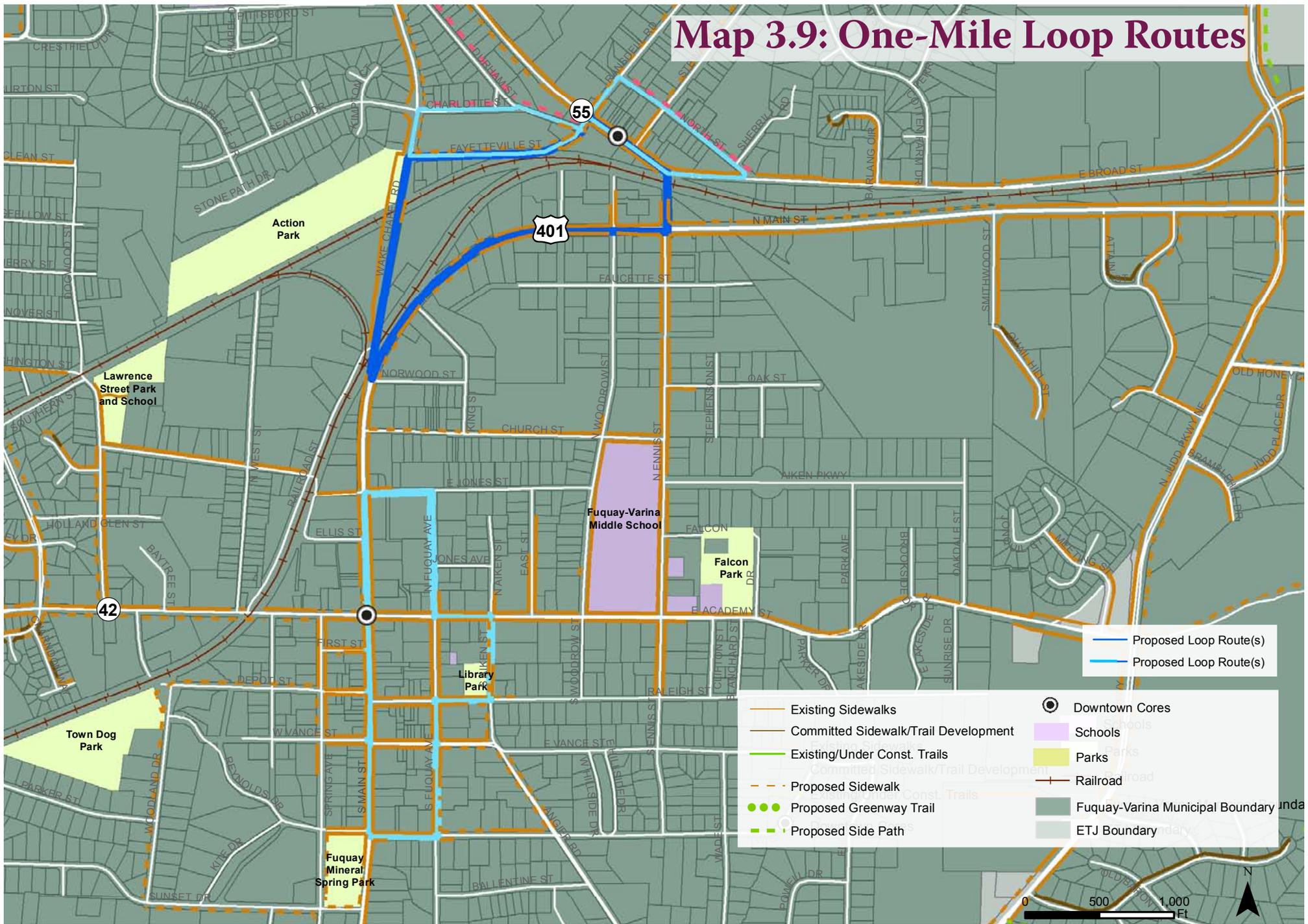
SW or MUT	Roadway Name	Length (ft)
SW	W. Academy	1,379.0
SW	Wake Chapel	1,882.4
SW	Walter Myatt	108.6
SW	Wilbon	1,385.5
MUT	Park Greenway Trail	1,827.2
MUT	Sunset Lake Side Path and upgrade existing sidewalk to side path	2,015.7
MUT	Angier Road Side Path	798.0
MUT	Angier Road Side Path	1,523.6
MUT	Jones Road Trail	319.5
MUT	Holland Road Side Path	1,049.1
MUT	Holland Road Side Path	289.0
MUT	Holland Road Side Path	694.8
MUT	S. NC 55 Side Path	2,651.2
MUT	S. NC 55 upgrade existing sidewalk to side path	1,164.6
MUT	South Park Trail Connector	245.2
MUT	Angier Rd upgrade existing sidewalk to side path	317.9
MUT	Angier Rd upgrade existing sidewalk to side path	522.9
MUT	Angier Rd Side Path	554.9
MUT	Jones Creek Neighborhood Connector Trail	1,628.1

Note: The total length for each roadway recommendation is the result of grouping several segments of new proposed sidewalks. New sidewalk recommendations may include sidewalks along one side or both sides of the roadway.

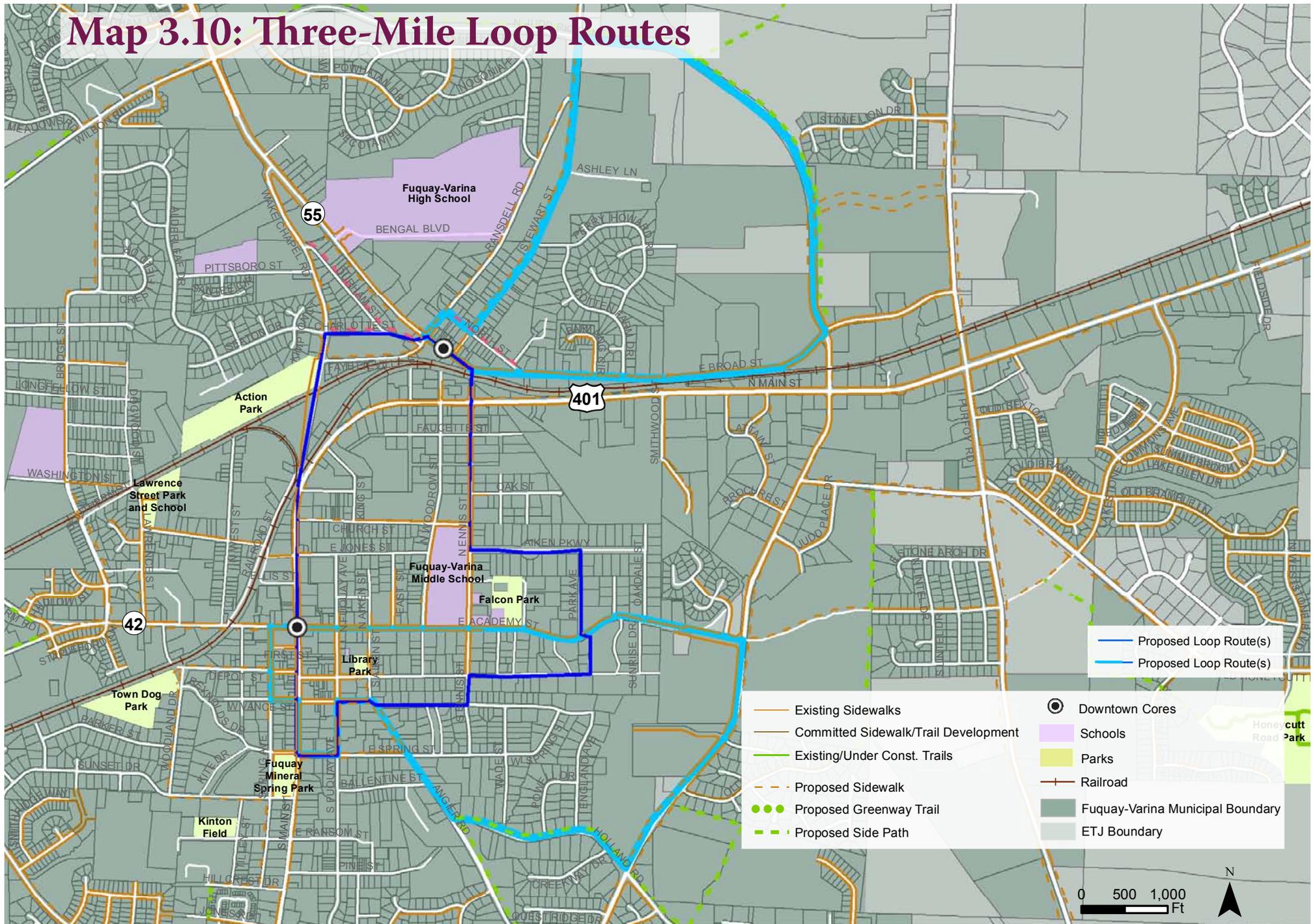
Map 3.8: New Sidewalks and Multi-Use Trails



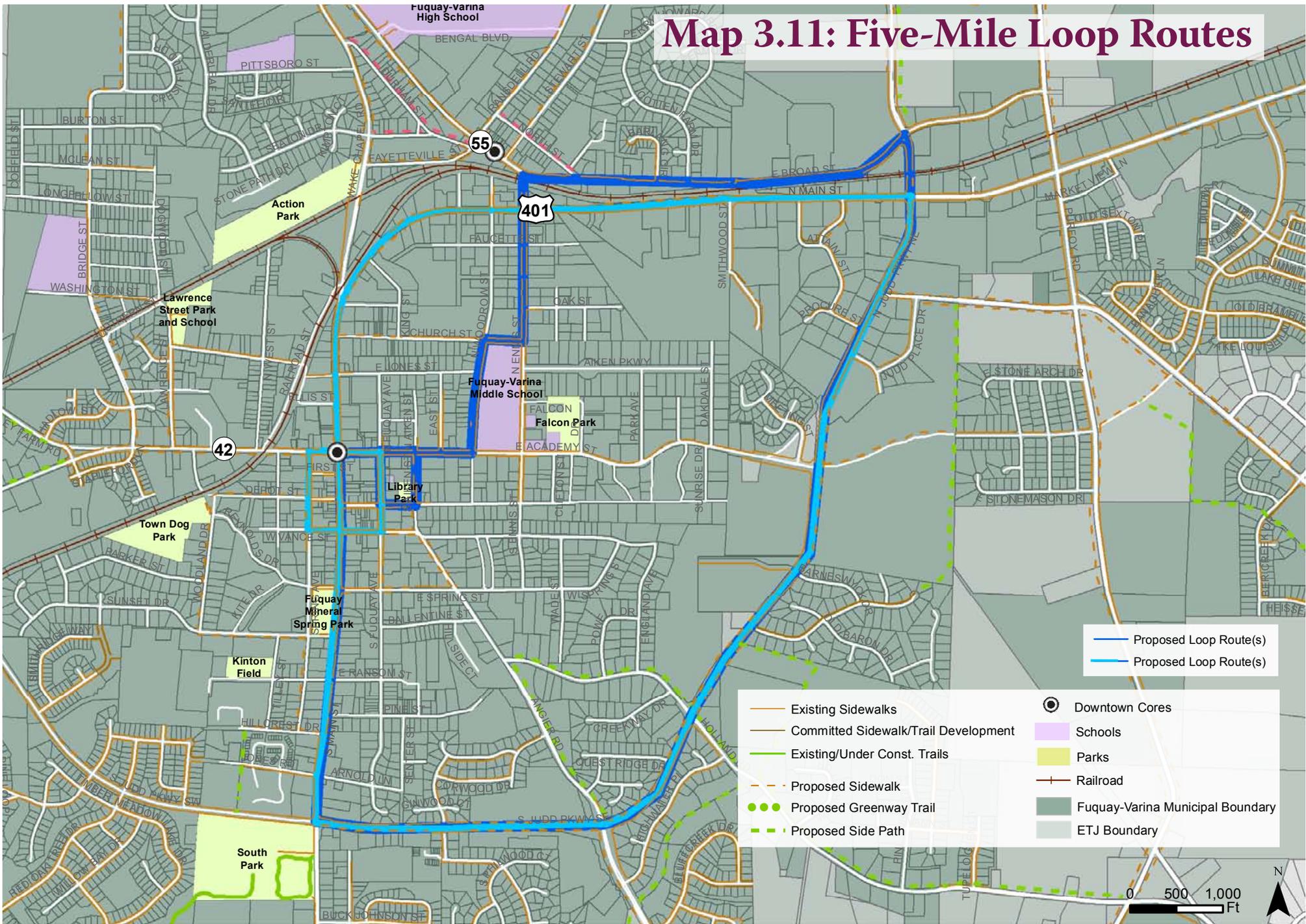
Map 3.9: One-Mile Loop Routes



Map 3.10: Three-Mile Loop Routes



Map 3.11: Five-Mile Loop Routes



Making Regional Connections

Connecting adjacent or nearby municipalities and destinations will be essential as the region continues to grow. It will be necessary to work with Angier, Holly Springs, Wake County, and NCDOT to make these connections over time. Map 3.10 on page 3-17 demonstrates Fuquay-Varina's regional proximity to other municipalities and destinations. Important connections to the following places should be considered by Fuquay-Varina:

- Connection to Holly Springs via NC 55
- Connection to Bass Lake Park in Holly Springs via Sunset Lake Road and Bass Lake Road
- Connection to Angier via NC 55
- Connection to Harris Lake County Park via NC 55 and Avent Ferry Road
- Connection to Raven Rock State Park via US Highway 401



Bass Lake House, Holly Springs

Enhance Key Corridors

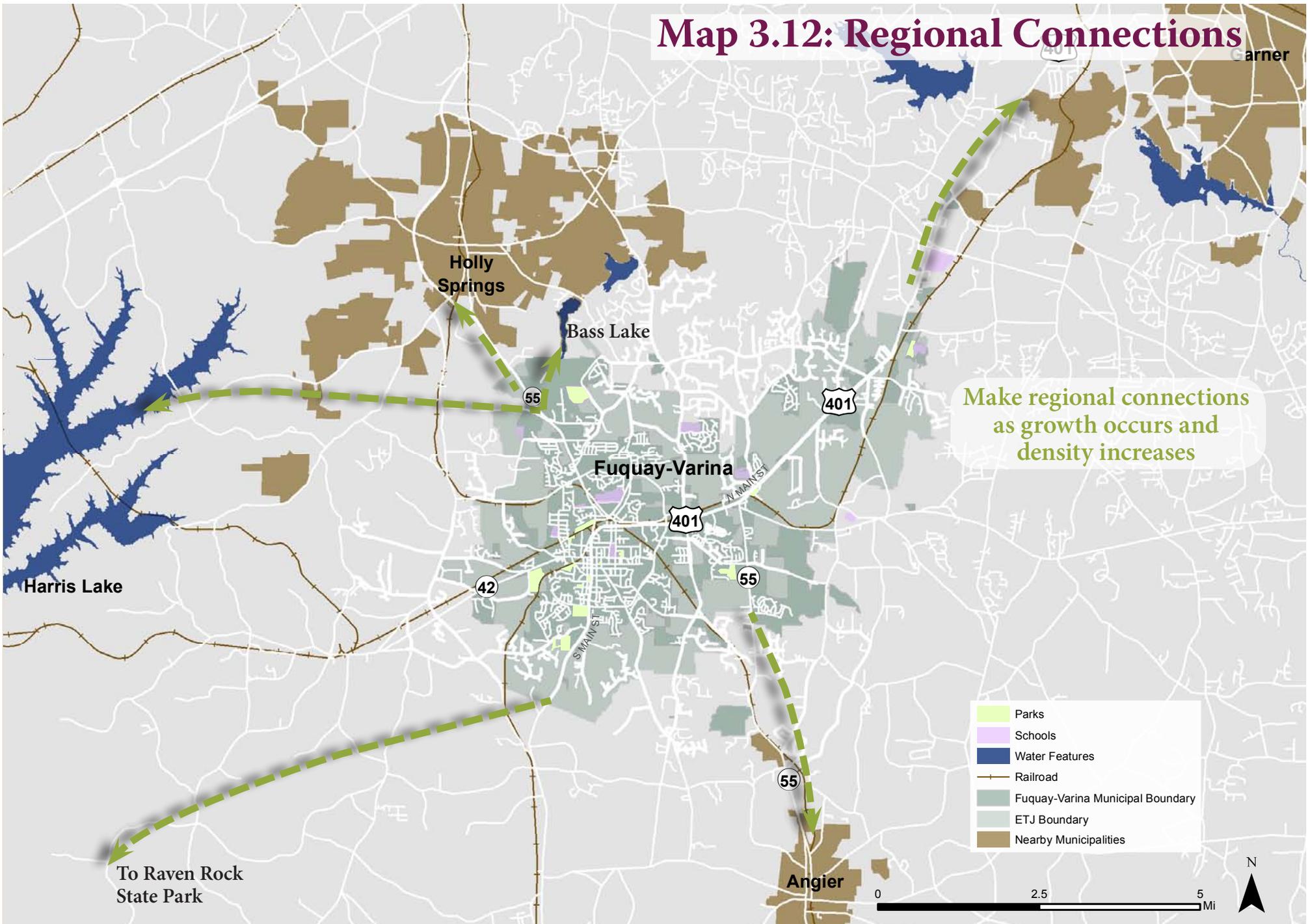
Sidewalks, multi-use trails, and crosswalks are essential elements to pedestrian safety, but overall corridor enhancements that include streetscape improvements and traffic calming techniques can improve the appeal and safety of roadways. Roadways that connect to, and travel through, Fuquay-Varina are the first impressions residents and visitors have of the community, and as such, should be inviting and attractive.

Typical recommendations for amenities along key corridors include sidewalks on both sides of the street, “welcome” signs, street trees, landscaped center medians, landscaped sidewalk buffers, driveway access management policies, wayfinding signage, and pedestrian-scale lighting. Additionally, traffic calming techniques—such as speed limit reduction, speed alert and enforcement, warning signage, gateway signage, raised crosswalks, planted center median islands, mini traffic circles, textured pavement treatments such as cobblestones or bricks, bicycle lanes, curb extensions, or road diets—could also be considered along key corridors in Fuquay-Varina.

The following key corridors were selected due to the concentration of destinations, presence of pedestrians, and need to calm traffic. Photographic renderings that reflect potential enhancement solutions for four of the six corridors are provided for visualization purposes. Photographic renderings were not prepared for East and West Broad Street, as these corridors are the focus of the Varina Streetscape Plan that was under development at the same time as this plan. Further study of each corridor during the design phase is necessary to determine the most appropriate solutions and placements of pedestrian amenities.

- **South Main Street** (from South Park to Fuquay downtown)
- **East Academy Street** (from North Judd Parkway to Fuquay downtown)
- **West Academy Street** (from Coley Farm Road to Fuquay downtown)
- **North Judd Parkway** (from Powhatan Drive to the future Product Drive)
- **West Broad Street** (from Fuquay-Varina High School to Varina downtown)
- **East Broad Street** (from North Ennis Street to South NC 55)

Map 3.12: Regional Connections



South Main Street Photographic Rendering



South Main Street: existing



South Main Street: proposed

East Academy Street Photographic Rendering



East Academy Street: proposed



East Academy Street: existing

West Academy Street Photographic Rendering



West Academy Street: existing



West Academy Street: proposed

North Judd Parkway Photographic Rendering



North Judd Parkway: existing

North Judd Parkway: proposed

Project Prioritization Process

The prioritization process began with input from Town staff and steering committee members during the project kick off meeting. The consultant team then reviewed previous planning documents for Fuquay-Varina and extracted information on priority projects listed in each planning document. During field work investigations the consultant team evaluated and ground-truthed the information obtained from the previous planning efforts.

Extensive public input was collected during the development of this Community Pedestrian Master Plan, including information gathered during the public outreach events and through the responses to the online comment form. All input and opinions on high priority project areas in Fuquay-Varina were taken into account during the project prioritization process.

After field work investigations were conducted, steering committee members were asked to assign a score to each prioritization criterion. The scores were then averaged, and a final weighted score for each criterion was determined. The criteria listed in Table 3.4 were custom designed for Fuquay-Varina based on public input, steering committee input, and available data. The results of the scoring exercise for high priority projects are presented in Table 3.5.

Top priority projects were identified based on the comprehensive project prioritization process described in this section, and the final ten projects highlighted in this chapter were determined by the steering committee, taking into account public opinion, previous planning efforts, guidance from local staff representatives, and the knowledge and expertise of the consultant team.

The final priority projects were reviewed and discussed with the steering committee, Town staff,

and NCDOT DBPT staff. The final priority projects were inventoried and divided into logical segments based on input from the public, the steering committee, Town staff, and connections between destinations. The final priority project segments are presented beginning on page 3-26.

Table 3.4 Weighted Scores for Project Prioritization Criteria

<i>Prioritization Criteria</i>	<i>Weighted Score</i>
Low-vehicle Access Areas/Zero Car Households	2.875
Lower Income Areas	3.125
Near a recent pedestrian crash location	3.125
Top 1 - 3 responses to Fuquay-Varina Pedestrian Master Plan Public Comment Form	3.125
Connectivity or Access to Proposed/Future Sidewalks or Trails	3.5
Within 1/2 mile of a Park or Recreation Center	3.79
Serves as an important link to create one mile, three mile, and five mile walking loop routes	4.00
High Population Density Areas	4.125
Within 1/2 mile of an Elementary, Middle, or High School	4.125
Direct Access/Connectivity to Shopping Areas/Business or Employment Areas/Downtown Cores	4.375
Direct Access to/from an Existing Trail or Sidewalk	4.625

Project Cut Sheets

The following pages offer details for the ten priority project recommendations in Table 3.5 below. The purpose of these project sheets is to provide a detailed assessment of each priority project area to assist the Town during the implementation of this plan’s recommendations. In each map, the priority project segment is highlighted with a bold white background.

Project Cost Estimates

Each project cut sheet offers a *planning-level* cost estimate for the priority project. The cost estimates are based on the most recently available per unit cost information and include a potential contingency or mobilization fee. Project costs vary over time and by geography. Further evaluation during project design will be needed to determine exact project costs. A summary table (Table 3.6) of cost estimates for the eight priority projects is included at the end of this chapter.

Table 3.5: Project Prioritization Results

ID #	Roadway	Length (ft)	Weighted Scores											Total Score
			Low-vehicle Access Areas	Lower Income Areas	Near a recent pedestrian crash location	Top 1-3 Public Input	Connectivity Proposed/Future Sidewalks or Trails	Within 1/2 mile of a Park or Recreation Center	Link for the walking loop routes	High Population Density Areas	Within 1/2 mile of an Elementary, Middle, or High School	Access to Downtown Cores / Business Areas	Direct Access to/ from an Existing Trail or Sidewalk	
1	N. Main/W. Academy/Bridge/Stapleford Area	2,595	2.875	3.125	3.125	3.125	3.5	3.75	4	4.125	4.125	4.375	4.625	40.75
2	Angier/E. Spring St Area	1,942.9	2.875	3.125			3.5	3.75	4	4.125	4.125	4.375	4.625	34.5
3	Aiken/Raleigh St Area	601.1	2.875	3.125			3.5	3.75	4	4.125	4.125	4.375	4.625	34.5
4	Angier Rd Side Path	797.9	2.875	3.125			3.5	3.75	4	4.125	4.125		4.625	30.125
5	Church St Area	711.7	2.875	3.125	3.125			3.75	4	4.125	4.125		4.625	29.75
6	Stewart St Area	3,529.9	2.875				3.5	3.75		4.125	4.125	4.375	4.625	27.375
7	N. NC 55	1,663.2	2.875				3.5	3.75	4		4.125	4.375	4.625	27.25
8	Ransdell/Bengal Blvd Area	4,855.5	2.875				3.5	3.75	4		4.125	4.375	4.625	27.25
9	S. Judd Parkway	3,880.8	2.875	3.125		3.125	3.5	3.75	4				4.625	25.00
10	Wagstaff Rd Area	2,479.3	2.875		3.125		3.5	3.75		4.125			4.625	22.00

1. West Academy Street/Bridge Street/North Main Street Area Sidewalks

Priority Project Score: 40.75

Project Distance: 2,595 feet

Roadway Corridor Ownership: Local & NCDOT

Reasons for Priority Ranking:

- Serves Fuquay downtown core and Main Street commercial corridor
- Connects to existing sidewalk on East Academy Street, Main Street, and Bridge Street
- Connects to proposed sidewalk on Lawrence Street
- High proportion of low-income households and households without access to a vehicle
- Near a recent pedestrian crash location
- Within one-half mile of a park and school
- Serves as an important link in the proposed town walking loop routes
- One of top three responses to the pedestrian master plan public comment form (North Main Street)

Planning Level Cost Estimate: \$107,713

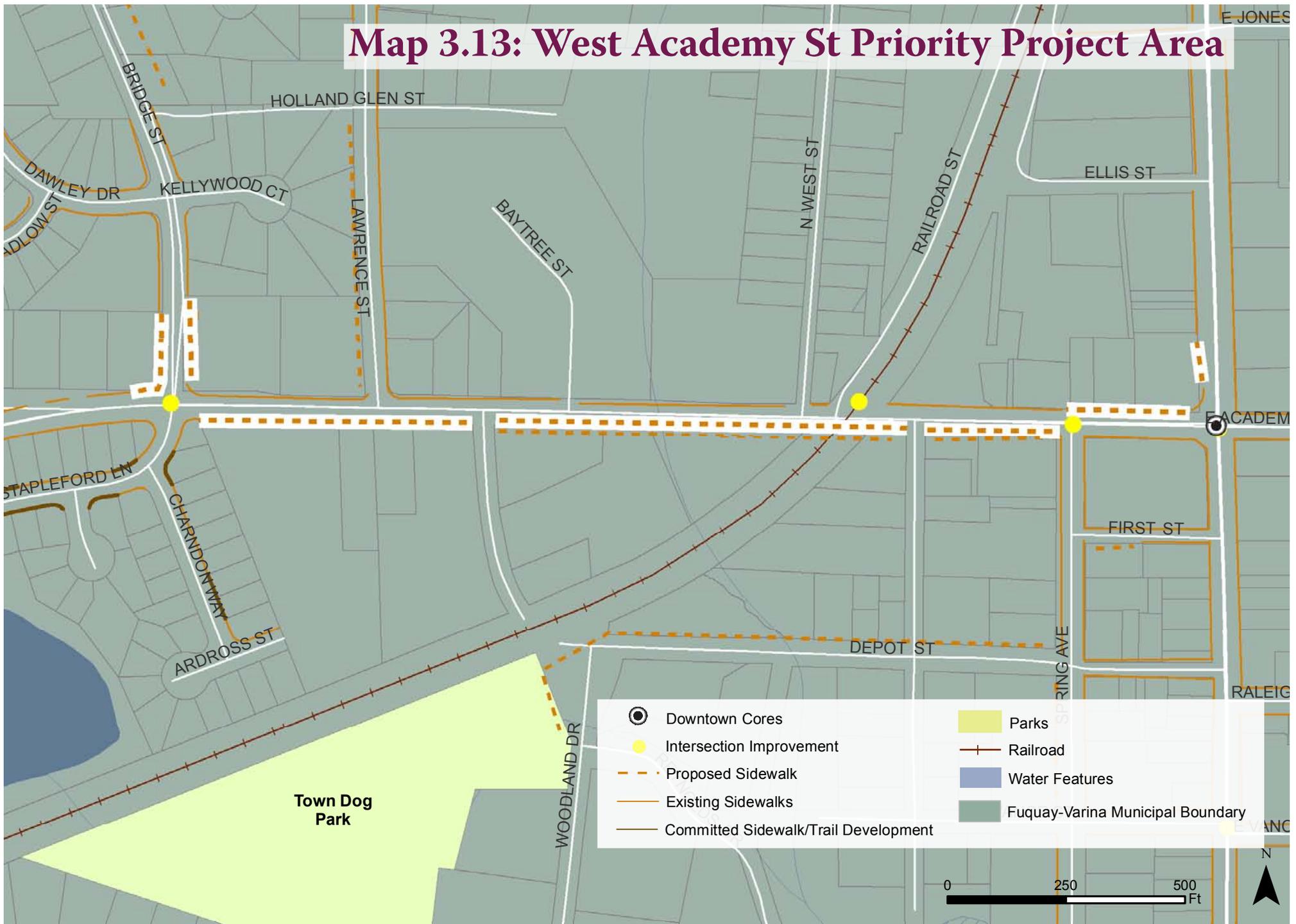
Project Recommendation

1. West Academy Street from Bridge Street to Main Street
 - Sidewalk one side
 - High-visibility crosswalks at all roadway intersections
 - ADA compliant curb ramps
 - Improved railroad crossing treatment
2. Bridge Street from West Academy Street to existing sidewalk
 - Sidewalk both sides to fill sidewalk gaps
3. North Main Street from West Academy Street to existing sidewalk to fill sidewalk gap
 - Sidewalk one side
4. Stapleford Lane from West Academy Street to existing sidewalk
 - Sidewalk both sides to fill sidewalk gaps



West Academy Street at South Main Street

Map 3.13: West Academy St Priority Project Area



2. Angier Road/East Spring Street/East Vance Street Area Sidewalks

Priority Project Score: 34.5

Project Distance: 1,943 feet

Roadway Corridor Ownership: NCDOT, Fuquay-Varina

Reasons for Priority Ranking:

- Serves Fuquay downtown core and Main Street commercial corridor
- Access to Fuquay-Varina Public Library and Library Park
- Access to Fuquay Mineral Spring Park
- Connects to existing sidewalk on East Spring Street and East Vance Street
- Connects to proposed side path on Angier Road and to proposed sidewalk on Soth Aiken Street
- High proportion of low-income households and households without access to a vehicle
- Serves as an important link in the proposed Town walking loop routes

Planning Level Cost Estimate: \$120,594

Project Recommendation

1. East Spring Street from South Fuquay Avenue to existing sidewalk
 - Sidewalk one side
 - ADA-compliant curb ramps
2. Angier Road from East Spring Street to East Vance Street
 - Sidewalk both sides
 - High-visibility crosswalks at intersection
 - ADA-compliant curb ramps
3. East Vance Street from South Fuquay Avenue to Angier Road
 - Sidewalk one side
 - High-visibility crosswalks at intersections
 - ADA-compliant curb ramps

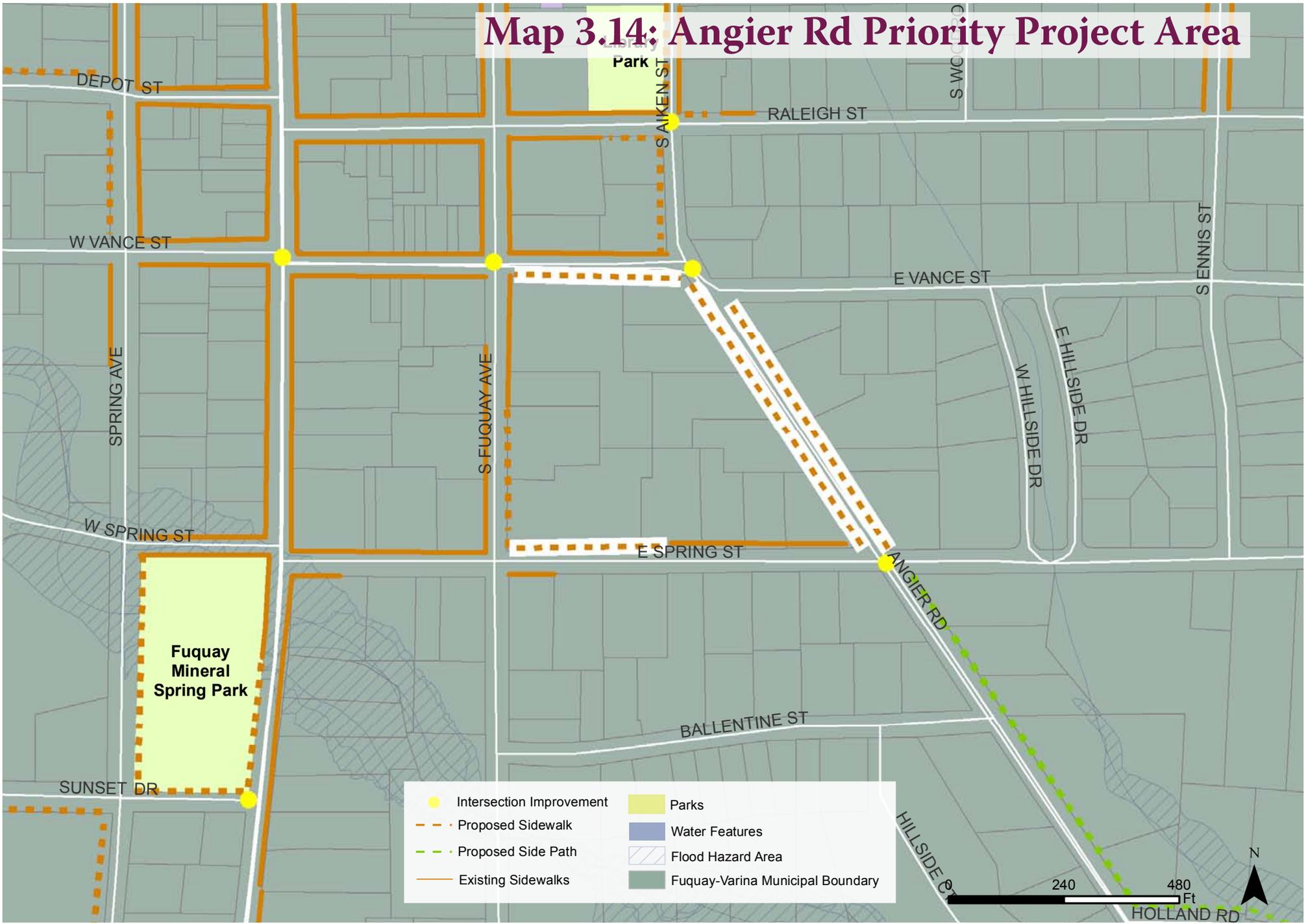


Angier Road at East Vance Street



Angier Road near East Spring Street

Map 3.14: Angier Rd Priority Project Area



3. South Aiken Street and Raleigh Street Area Sidewalks

Priority Project Score: 34.5

Project Distance: 806 feet

Roadway Corridor Ownership: Fuquay-Varina

Reasons for Priority Ranking:

- Serves Fuquay downtown core and Main Street commercial corridor
- Access to Fuquay-Varina Public Library and Library Park
- Access to Fuquay-Varina Middle School
- Access to Falcon Park
- Connects to existing sidewalk on East Vance Street, Raleigh Street, and South Aiken Street
- Connects to proposed sidewalk on Angier Road and East Vance Street
- High proportion of low-income households and households without access to a vehicle
- Serves as an important link in the proposed Town walking loop routes

Planning Level Cost Estimate: \$22,870

Project Recommendation

1. Raleigh Street from South Fuquay Avenue to South Aiken Street
 - Sidewalk one side
 - High-visibility crosswalks at all intersections
 - ADA-compliant curb ramps
2. South Aiken Street from East Academy Street to Raleigh Street
 - Sidewalk one side
 - High-visibility crosswalks at all intersections
 - ADA-compliant curb ramps
3. South Aiken Street from Raleigh Street to East Vance Street
 - Sidewalk both sides
 - High-visibility crosswalks at all intersections
 - ADA-compliant curb ramps

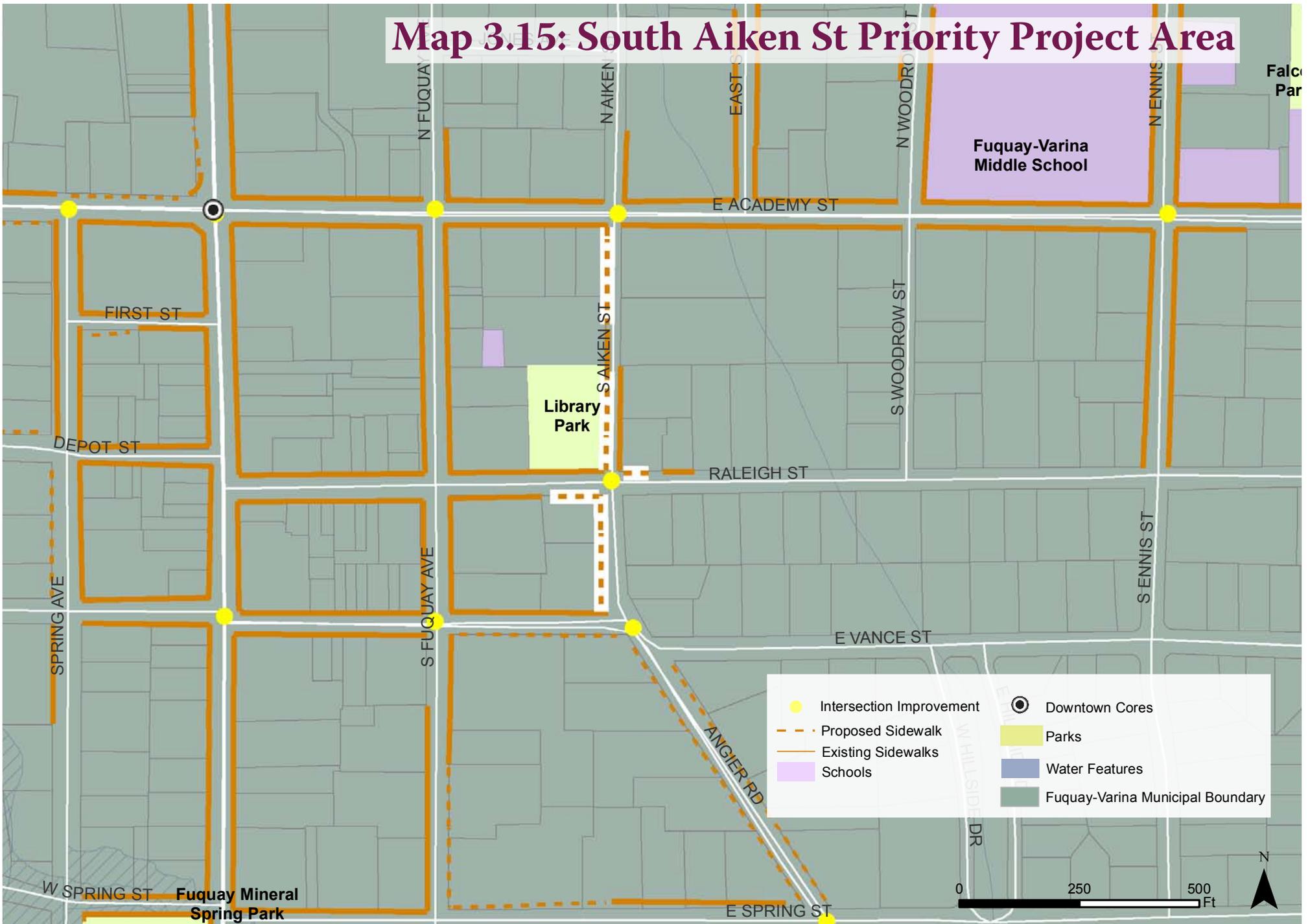


Sidewalk infill area on South Aiken Street



Raleigh Street near South Aiken Street

Map 3.15: South Aiken St Priority Project Area



4. Angier Road Side Path

Priority Project Score: 30.125

Project Distance: 798 feet

Roadway Corridor Ownership: Fuquay-Varina, NCDOT

Reasons for Priority Ranking:

- Access to Fuquay Mineral Spring Park
- Access to Fuquay-Varina Public Library and Library Park
- Connects to existing sidewalk on East Spring Street
- Connects to proposed sidewalk on Angier Road and proposed side path on Holland Road
- High proportion of low-income households and households without access to a vehicle
- Within one-half mile of a school
- Serves as an important link in the proposed Town walking loop routes

Planning Level Cost Estimate: \$24,721

Project Recommendation

1. Angier Road from East Spring Street to Holland Road
 - 10' Multi-use side path one side
 - ADA-compliant curb ramps
 - High-visibility crosswalks at East Spring Street and Holland Road intersections

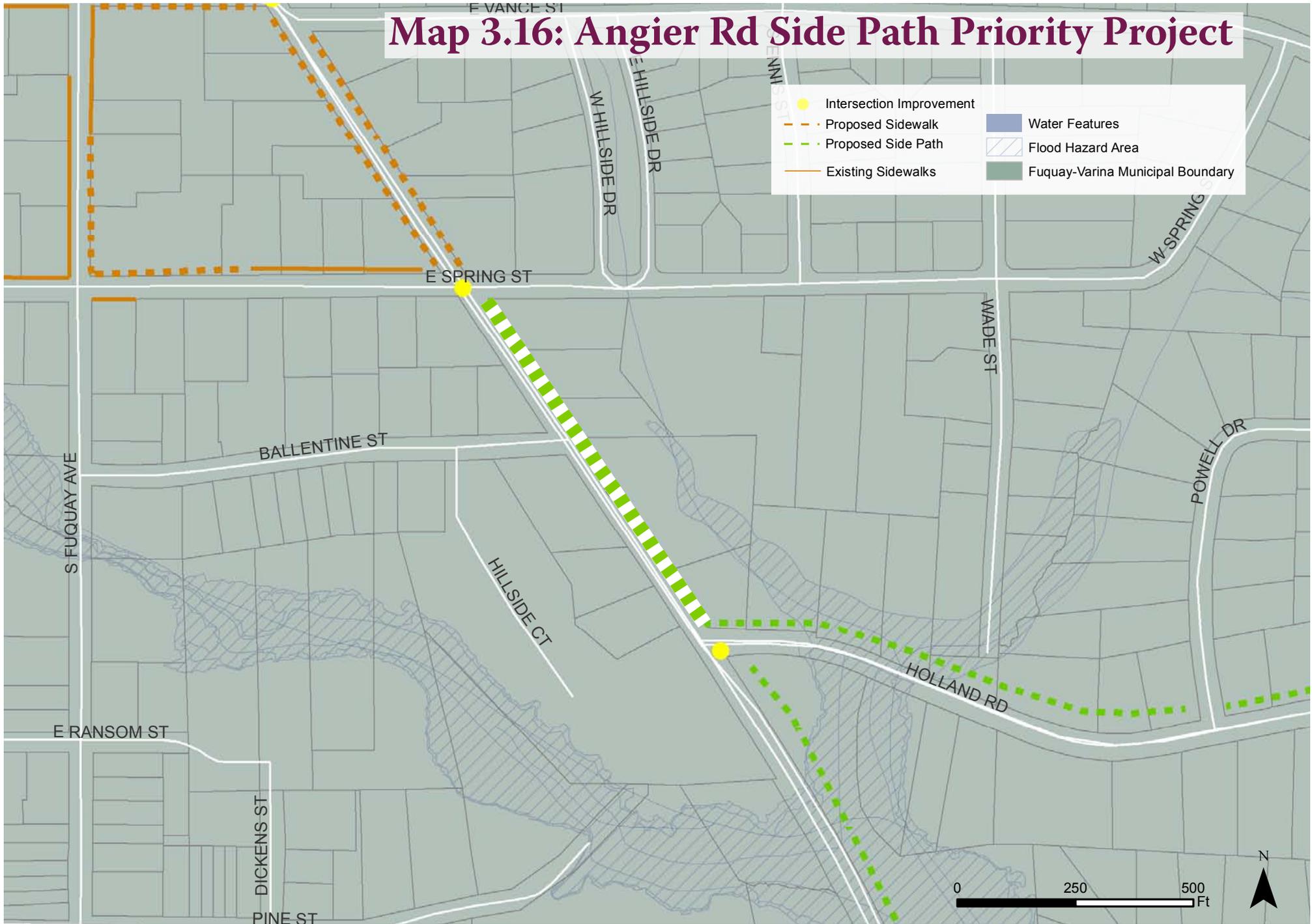


Angier Road at South Judd Parkway



Angier Road at Ballentine Street

Map 3.16: Angier Rd Side Path Priority Project



5. Church Street Sidewalks

Priority Project Score: 29.75

Project Distance: 712 feet

Roadway Corridor Ownership: Fuquay-Varina

Reasons for Priority Ranking:

- Access to Fuquay-Varina Middle School
- Access to Falcon Park
- Access to downtown historic Fuquay
- Connects to existing sidewalk on South Main Street and Church Street
- High proportion of low-income households and households without access to a vehicle
- Near a recent pedestrian crash location
- Serves as an important link in the proposed Town walking loop routes

Planning Level Cost Estimate: \$16,136

Project Recommendation

1. Church Street from South Main Street to existing Church Street sidewalk
 - Sidewalk one side
 - High-visibility crosswalks
 - ADA-compliant curb ramps
 - High-visibility crosswalks across King Street and at South Main Street

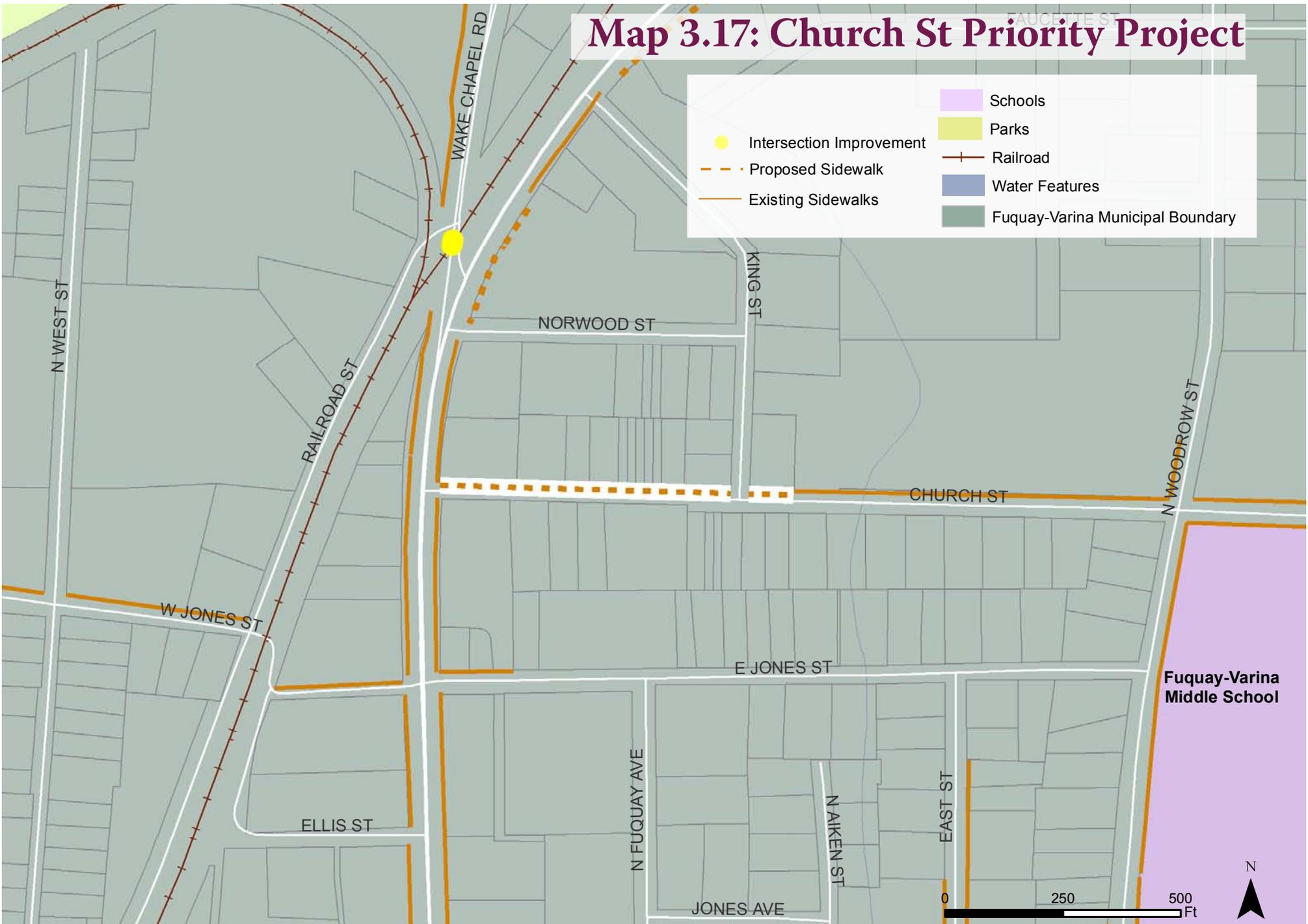


Church Street at King Street



Church Street at South Main Street

Map 3.17: Church St Priority Project



6. Stewart Street Sidewalks

Priority Project Score: 27.375

Project Distance: 3,530 feet

Roadway Corridor Ownership: Fuquay-Varina, NCDOT

Reasons for Priority Ranking:

- Serves Varina downtown core and Broad Street commercial corridor
- Access to Fuquay-Varina High School
- Connects to existing sidewalk on Stewart Street and East Broad Street
- Connects to proposed sidewalk on Ransdell Road
- High proportion of households without access to a vehicle
- Within one-half mile of a park

Planning Level Cost Estimate: \$148,907

Project Recommendation

1. Stewart Street from North Street to North Judd Parkway NE
 - Sidewalk one side
 - ADA-compliant curb ramps
 - High-visibility crosswalks across roadway intersections

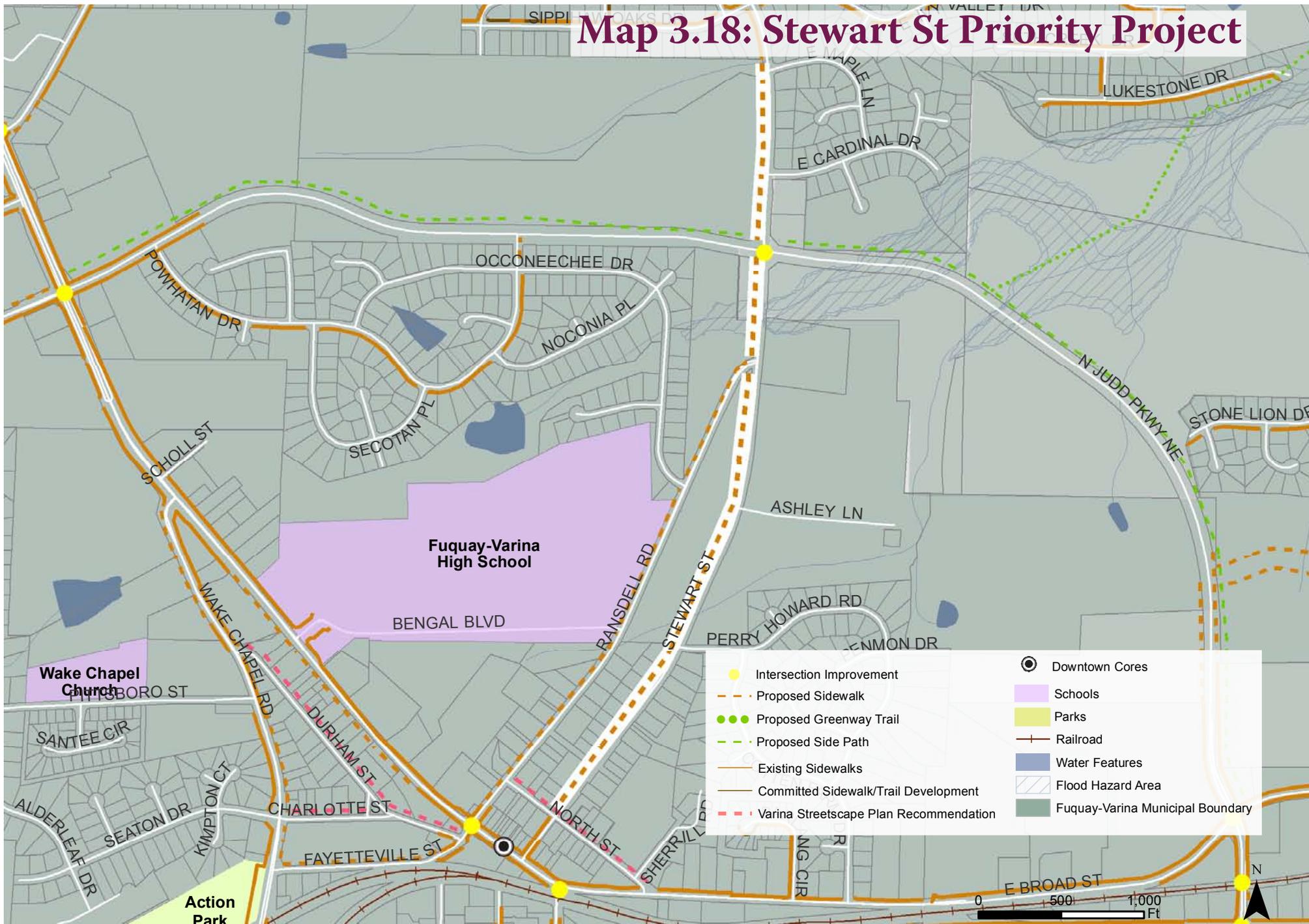


Stewart Street north of Broad Street



Stewart Street near North Judd Parkway

Map 3.18: Stewart St Priority Project



7. North NC 55 Sidewalks

Priority Project Score: 27.25

Project Distance: 1,663 feet

Roadway Corridor Ownership: NCDOT

Nearby Destinations and Key Connections:

- Serves Varina downtown core and Broad Street commercial corridor
- Access to Fuquay-Varina High School
- Connects to existing sidewalk on East Broad Street and recommended sidewalks on Bengal Boulevard
- High proportion of households without access to a vehicle
- Within one-half mile of a park
- Serves as an important link in the proposed Town walking loop routes
- Identified in Varina Streetscape Plan

Planning Level Cost Estimate: \$33,011

Project Recommendation

1. North NC 55 between Scholl Street and Ransdell Road
 - Sidewalk one side
 - ADA-compliant curb ramps

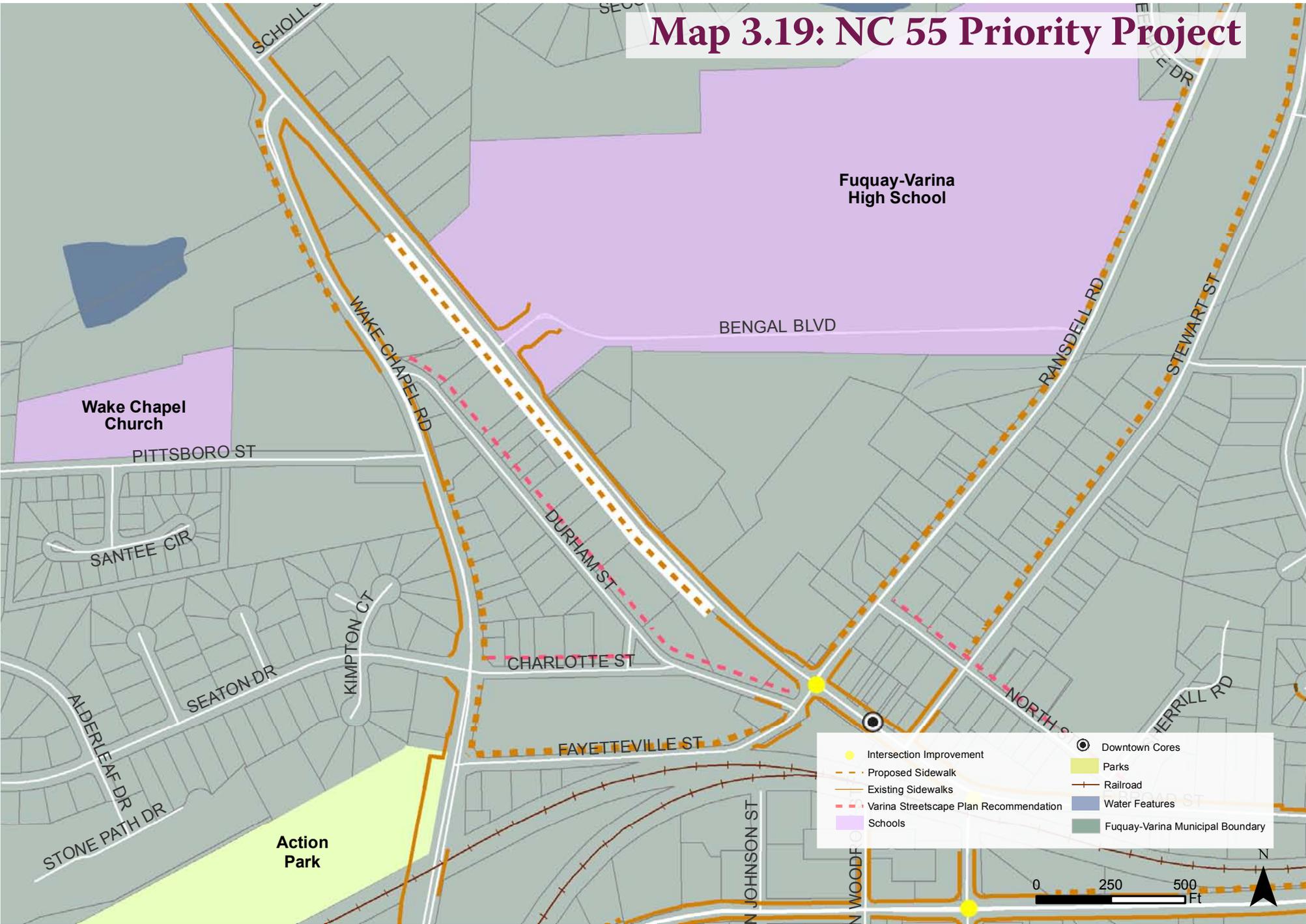


A female pedestrian runs on existing sidewalk along NC 55, north of Fuquay-Varina High School



NC 55 should serve as a welcoming gateway corridor into historic downtown Varina

Map 3.19: NC 55 Priority Project



8. Ransdell Road and Bengal Boulevard Area Sidewalks

Priority Project Score: 27.25

Project Distance: 4,855 feet

Roadway Corridor Ownership: Fuquay-Varina

Nearby Destinations and Key Connections:

- Serves Varina downtown core and Broad Street commercial corridor
- Access to Fuquay-Varina High School
- Connects to existing sidewalk on East Broad Street
- Connects to proposed sidewalk on Stewart Street
- High proportion of households without access to a vehicle
- Within one-half mile of a park
- Serves as an important link in the proposed Town walking loop routes

Planning Level Cost Estimate: \$106,508

Project Recommendation

1. Ransdell Road from East Broad Street to Stewart Street
 - Sidewalk one side
 - ADA-compliant curb ramps
 - High-visibility crosswalks across roadway intersections
2. Bengal Boulevard from East Broad Street to Ransdell Road
 - Sidewalk one side
 - ADA-compliant curb ramps

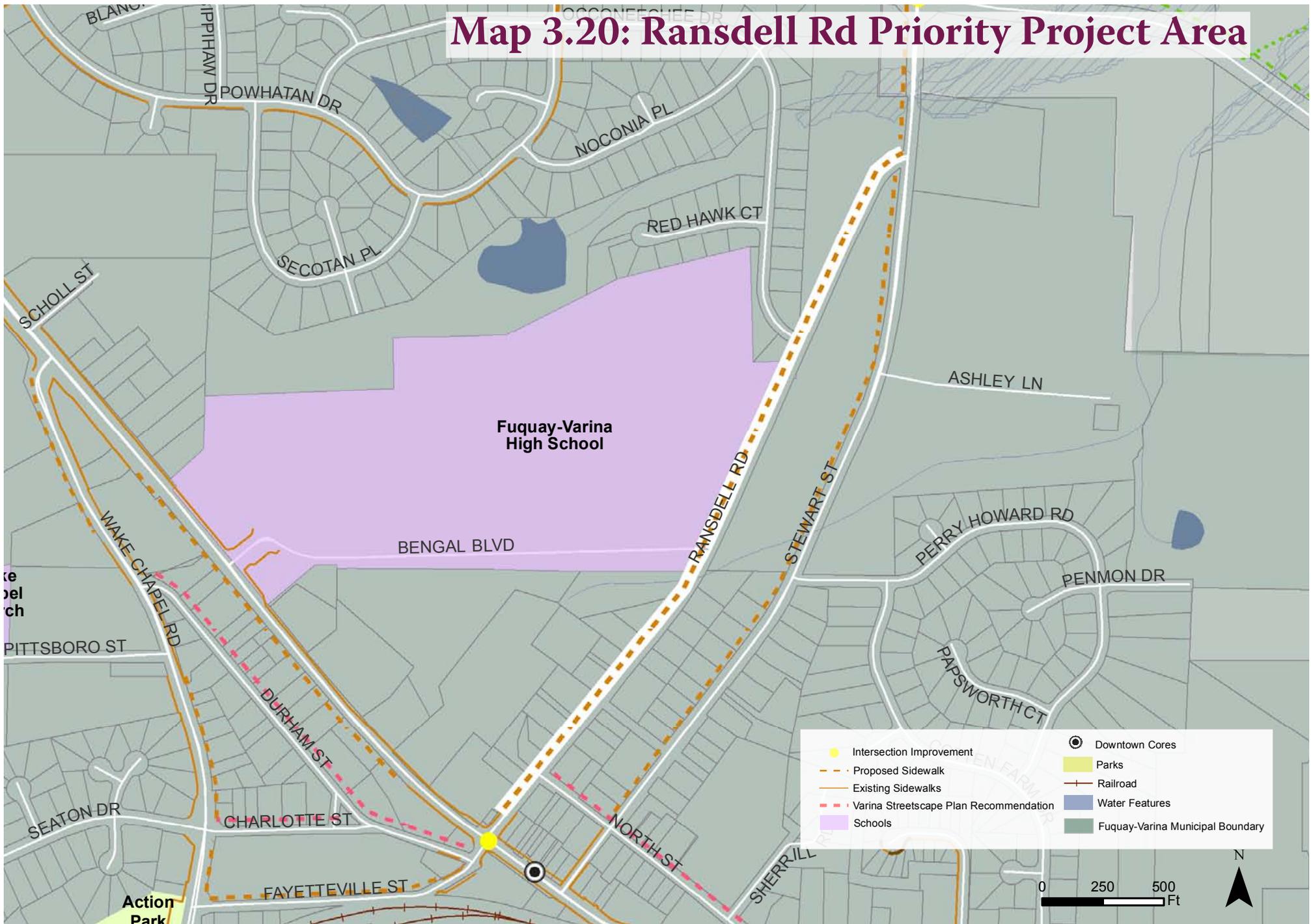


Fuquay-Varina High School



Bengal Boulevard, adjacent to Fuquay-Varina High School

Map 3.20: Ransdell Rd Priority Project Area



9. South Judd Parkway Sidewalks

Priority Project Score: 25.00

Project Distance: 3,881 feet

Roadway Corridor Ownership: Fuquay-Varina

Nearby Destinations and Key Connections:

- Access to South Park and walking trail
- Connects to existing sidewalk on South Judd Parkway
- Connects to existing sidewalks in Phillips Pointe Drive neighborhoods
- Connects to proposed side path on Angier Road
- Serves as an important link in the proposed Town walking loop routes
- High proportion of low-income households and households without access to a vehicle

Planning Level Cost Estimate: \$209,619

Project Recommendation

1. South Judd Parkway from Angier Road to east of Phillips Pointe Drive
 - Sidewalk both sides
 - ADA-compliant curb ramps
1. South Judd Parkway from west of Phillips Pointe Drive to South Main Street
 - Sidewalk one side
 - ADA-compliant curb ramps
 - High-visibility crosswalks at Phillips Pointe Drive intersection

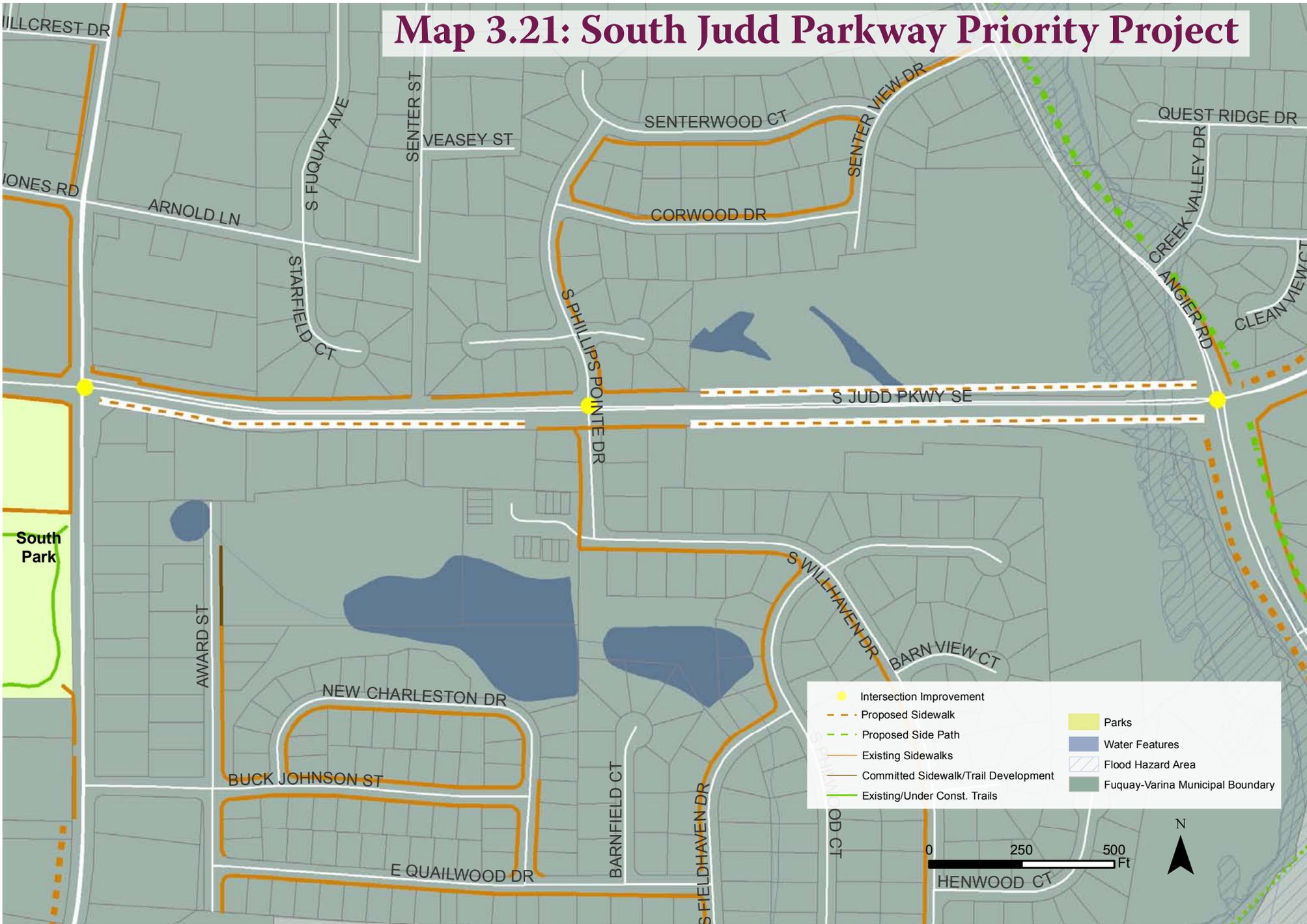


South Judd Parkway and Angier Road intersection



South Park, at intersection of South Judd Parkway and South Main Street

Map 3.21: South Judd Parkway Priority Project



10. Wagstaff Road Area Sidewalks

Priority Project Score: 22.00

Project Distance: 2,479 feet

Roadway Corridor Ownership: Fuquay-Varina

Nearby Destinations and Key Connections:

- Access to Carroll Howard Johnson Environmental Park
- Connects to existing sidewalk on South Main Street and Wagstaff Road and to Jeff Wells Trail
- Connects to proposed side path on South Main Street
- High proportion of households without access to a vehicle
- Near a recent pedestrian crash location
- Serves higher population density area

Planning Level Cost Estimate: \$53,544

Project Recommendation

1. South Main Street to Wagstaff Road
 - Sidewalk one side
 - ADA-compliant curb ramps
2. Wagstaff Road from South Main Street to Bridlemine Drive
 - Sidewalk one side
 - ADA-compliant curb ramps
 - High-visibility crosswalks across roadway intersections



Wagstaff at Felmet where existing sidewalk ends



Carroll Howard Johnson Environmental Park & Nature Trail

Map 3.22: Wagstaff Rd Priority Project Area

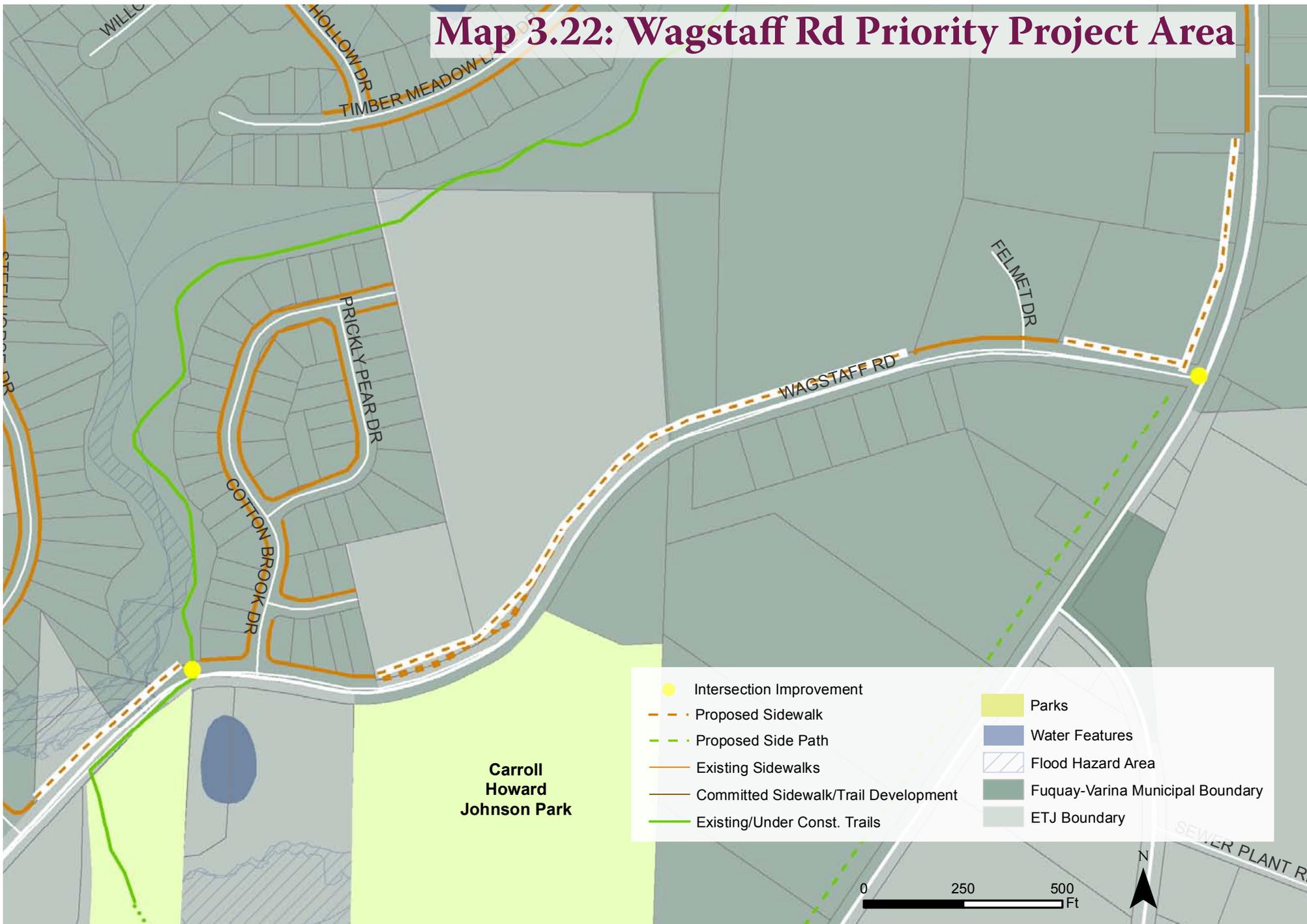


Table 3.6 Priority Project Cost Estimate Information

ID #	Priority Project Name	From	To	Project Length (feet)	Concrete Sidewalk Cost \$27 / per Sq Yard	Asphalt Multi-Use Side Path Cost \$33 / per TON	Aggregate Base Course Cost \$20 / per TON	# of Crosswalks	High-visibility Thermo Plastic Crosswalk Marking \$68 / per marking*	# of Curb Ramps	ADA Curb Ramps \$1200 / per curb ramp	# of Pedestrian Countdown timers	Pedestrian Countdown Timers \$6000 / per timer	Wayfinding Signage \$170 / per sign	Total Cost Estimate (\$)**
1	N. Main/W. Academy/Bridge/Stapleford Area Sidewalks	Bridge St	Main St	1,441.63	\$38,924	0	0	25	\$13,940	34	\$40,800	0	0	0	\$107,714
2	Angier/E. Spring St Area Sidewalks	E. Vance St	E. Spring St	1,079.42	\$29,144	0	0	12	\$6,120	18	\$21,600	8	\$48,000	0	\$120,594
3	Aiken/Raleigh St Area Sidewalks	E. Academy St	Angier Rd	333.88	\$9,015	0	0	8	\$3,672	6	\$7,200	0	0	0	\$22,870
4	Angier Rd Sidepath	E. Spring St	Holland Rd	798.00	0	\$1,621	\$6,499	3	\$1,700	6	\$7,200	0	0	3	\$24,721
5	Church St Sidewalks	Wake Chapel Rd	Existing sidewalk	395.55	\$10,680	0	0	2	\$952	2	\$2,400	0	0	0	\$16,136
6	Stewart St Area Sidewalks	North St	E. Maple Ln	1,961.06	\$52,949	0	0	13	\$6,936	18	\$21,600	8	\$48,000	0	\$148,907
7	N. NC 55 Sidewalks	SE of Wake Chapel Rd	NW of Ransdell Rd	923.87	\$24,944	0	0	2	\$1,360	2	\$2,400	0	0	0	\$33,010
8	Ransell/Bengal Blvd Area Sidewalks	N. NC 55	Stewart St	2,697.16	\$72,823	0	0	8	\$2,992	14	\$16,800	0	0	0	\$106,508
9	S. Judd Pkwy Sidewalks	Main St	Angier Rd	2,156.06	\$58,214	0	0	12	\$10,064	15	\$18,000	16	\$96,000	0	\$209,619
10	Wagstaff Rd Area Sidewalks	Bridlemine Dr	S. Main St	1,377.19	\$37,184	0	0	4	\$2,176	6	\$7,200	0	0	0	\$53,544

*Cost estimates for crosswalks vary from intersection to intersection, depending on the width of the roadway.

**A 15% contingency cost for potential mobilization fee has been included in the total price.

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New sidewalk along Hilltop-Needmore Road

4 Program & Plan Review

Overview

Meeting the goals of this pedestrian master plan will not only require new facilities; it also requires implementation of pedestrian-related programs and policies. In order to increase the safety and comfort of walking, and become designated as a Walk-Friendly Community under the Pedestrian and Bicycle Information Center, a comprehensive approach that incorporates the “5 E’s” (Engineering, Education, Encouragement, Enforcement, and Evaluation) is recommended. The approach must focus on overall livability and walkability in all planning decisions involving land use, growth, and transportation. Recommendations addressing the first “E”, engineering, are covered in Chapter 3: Network Recommendations, while the other four “E’s” are addressed in this chapter under “New Program Recommendations and Resources” starting on page 4-3.

Existing Pedestrian Programs

Watch for Me NC Campaign to Educate Motorists and Pedestrians

In 2013, the Fuquay-Varina Planning Department and Police Department partnered with the NCDOT to participate in the pilot program for this pedestrian education campaign. The purpose of Watch for Me NC is to increase pedestrian safety and awareness through educational messages to both pedestrians and motorists. The program will also help to highlight and support current pedestrian planning efforts, including the development of this plan and the “Varina Streetscape Plan.”



Recommendation: During the implementation of Watch for Me NC, the Town should seek creative ways to promote the program’s message. Informational materials can be handed out at festivals and events around Town and distributed to local businesses. A banner could be placed at Town hall and rotated between other civic buildings, such as the library and community center. In addition, police officers should attend the Watch for Me NC pedestrian training to learn how to conduct crosswalk “stings” (see enforcement section) and enforce pedestrian laws.

Mayor’s Public Safety Committee

This committee has met monthly since February 2011 to improve traffic safety around local schools. Working with NCDOT, Wake County Public Schools, and local citizens, the committee’s work has led to the following improvements at and around Fuquay-Varina schools:

- Fuquay-Varina High School: A pedestrian crosswalk is being installed on NC 55 in front of the school. Sidewalks are also being installed

CHAPTER OUTLINE

Overview (4-1)

Existing Pedestrian Programs (4-1)

New Program Recommendations and Resources (4-2)

Safe Routes to School Toolkit (4-9)

Programmatic Recommendations Table (4-12)

Previous Planning Efforts (4-14)

so that kids can navigate the area better, and the speed limit has been reduced from 35 mph to 25 mph in front of the school

- Fuquay-Varina Middle School: The no-parking ordinance on Ennis Street in front of the school will be enforced. Parents are directed to use the car pool lane to drop off and pick up students
- Fuquay-Varina Elementary: The speed limit has been lowered in front of the school from 35 mph to 25 mph

Recommendation: This committee should continue to meet on a regular basis to evaluate opportunities to improve safety at and near schools. The committee should also investigate and recommend improvements for safety issues in other areas with high pedestrian activity, including parks, the community center, downtown, at major intersections, and at popular road crossings near neighborhoods and trails.

Youth and Adult Sports Programs

The Department of Parks, Recreation, and Cultural Resources offers a variety of physical activity programs to youth and adults for a small fee. Youth programs include team sports, sports clinics, Tae Kwon Do, gymnastics, and dance. A number of fitness and sports programs are available for adults as well.

Recommendation: Expand youth and adult athletic program offerings to also include pedestrian fitness and education programs. Education should span all age groups. Local community groups could partner and consider adding the following fitness and educational program and event offerings:

- Walking School Buses to athletic practice
- A Pedestrian Safety Roadshow at the community center or local park
- Fun runs and walks led by a running club or high school athlete volunteers
- A Family Field Day at the park

Open Gym, Tracks, and Trails

The Department of Parks, Recreation, and Cultural Resources hosts open gym times for walking, fitness activities, and sports. The department also advertises local tracks and trails that are open to the public. Monthly schedules with open facility times are available online and at the community center.

Recommendation: Organize local walking or running groups that meet regularly at the community center or a local park. This informal group could be advertised through the Fuquay-Varina programs brochure. These clubs could be specialized to attract different interest groups. Examples include:

- Mother's Morning Club (moms with strollers)
- Wednesday Walks (weekly walk during lunch break or after work)
- Lunch Bunch (workers who walk or run during their lunch hour)
- Senior Strolls (walking group for seniors)

New Programmatic Recommendations and Resources

Pedestrian-related programs fall into four main categories: education, encouragement, enforcement, and evaluation. The programs listed in this chapter are provided to demonstrate the variety of opportunities available for promoting walking and active lifestyles in Fuquay-Varina. Links to useful resources are highlighted in blue and are included for reference. The Town should work closely with local volunteers and community organizations to implement events and activities, research new program ideas, and improve upon existing programs.

Education

Safe Routes to School Community Workshops

Safe Routes to School is an international campaign to improve the safety, convenience, and fun of children walking and bicycling to school. NCDOT's



Safe Routes to School (SRTS) program offers a customized version of the “Safe Routes to School National Course,” developed by the National Center for Safe Routes to School and the Pedestrian and Bicycle Information Center. Designed to help communities develop sound SRTS programs based on their unique local context, this one-day event provides information on best practices, useful strategies, and available resources. See the Safe Routes to School Toolkit section later in this chapter for more information on SRTS.

Bicycle and Pedestrian Advocacy Committee

Fuquay-Varina should support the creation of a local bicycle and pedestrian committee. The plan’s steering committee is a good starting point for establishing this group. Even though this is a pedestrian plan, the needs and objectives of bicycle and pedestrian advocates are closely related and stand to benefit mutually from their combined efforts. Local advocacy groups are beneficial resources for promoting safety, providing feedback on opportunities for and challenges with the bicycle and pedestrian network, and coordinating events and outreach campaigns (such as the programs outlined throughout this section). Advocacy groups also play a critical role in encouraging and evaluating the progress of overall plan implementation.

Internal Education

Internal education refers to the training of people who are involved in the actual implementation of the pedestrian plan. Key Town staff, members of the Town Board, pedestrian plan steering committee, NCDOT Division staff, and Wake County staff should all be included in training sessions whenever possible. This training could cover

aspects of the transportation and development process, including planning, design, development review, construction, and maintenance. This type of ‘inreach’ can be in the form of brown bag lunches and attendance at special sessions or conferences. Even simple meetings to go over the pedestrian plan and communicate its strategies and objectives can prove useful for staff and newly elected officials that may not have otherwise learned about the plan. Guidance and materials for internal education methods is available from the NCDOT DBPT and the Institute for Transportation Research and Education (ITRE).

Below are several training course examples:

www.michaelronkin.com/courses

www.pps.org/training/custom-tailored-training/

www.fhwa.dot.gov/context/trainingguide/ExistingClasses.htm

Designing Pedestrian Facilities for Accessibility

This program provides an overview of the Americans for Disabilities Act (ADA) and provides detailed information on policies and design guidance related to accessibility. The Division last offered the course in 2006.



Environmental and Historic Education/Interpretation

Educational programs and interpretive signage could be developed along future trails and pedestrian routes. Off-road multi-use trails provide opportunities for learning outside the classroom. Specific programs that focus on water quality and animal habitat are popular examples. Events such as learning walks about specific animals or insects, tree identification, wildflower walks, environmental issues, stewardship education, and sustainability could be led by area experts. Also, simple educational signage would offer interactive learning opportunities for people who use the trail.

Let’s Go NC - Pedestrian Curriculum

Let’s Go NC is a bicycle and pedestrian safety skills program for children in North Carolina. The pedestrian component is based on the National Traffic and Safety Highway Administration (NHTSA) pedestrian curriculum. Both components are modified for North Carolina and to instruct children in grades K-5. The program encourages children to be healthy and active by teaching the skills necessary for safe walking. The curriculum is currently under development and includes SRTS

components, classroom curriculum materials, and videos and exercises.

Eat Smart Move More NC

Eat Smart, Move More is a statewide movement that promotes increased opportunities for healthy eating and physical activity wherever people live, learn, earn, play, and pray. Several nearby County Public Health Departments have recently received grants to implement physical activity programs in County schools. Wake County could apply for Eat Smart, Move More grants to incorporate physical activity programs into Fuquay-Varina schools.



Pedestrian Safety Roadshow

The objectives of this program are to increase awareness of pedestrian safety and walkability concerns, provide participants with information about the elements that make a community safe and walkable, and channel community concerns into a plan of action for addressing pedestrian issues. Fuquay-Varina could partner with local schools or the police department to offer a Pedestrian Safety Roadshow on an annual or semi-annual basis.



Education Resources

America Walks is a national coalition of local advocacy groups dedicated to promoting walkable communities. Their mission is to foster the development of community-based pedestrian advocacy groups, to educate the public about the benefits of walking, and, when appropriate, to act as a collective voice for walking advocates. They provide a support network for local pedestrian advocacy groups.

<http://americawalks.org>



“One text or call, you can wreck it all” is a campaign of the USDOT to discourage texting and cellphone usage while driving. Downloadable materials, research, and facts are available online.

<http://www.distraction.gov>

Stepping Out is an online resource for mature adults to learn about ways to be healthy by walking more often and walking safely.

Pedestrian Safety is a program of the National Highway Traffic Safety Administration (NHTSA) designed to improve the safety of pedestrians through education, enforcement, and outreach programs. The website includes materials pertaining to school age children available for download.

<http://www.nhtsa.gov/Pedestrians>

Safe Kids Worldwide is a global network of organizations whose mission is to prevent accidental childhood injury, a leading killer of children 14 and under. More than 450 coalitions in 15 countries bring together health and safety

experts, educators, corporations, foundations, governments, and volunteers to educate and protect families. Visit their website to receive information about programs, involving media events, device distribution, and hands-on educational activities for kids and their families.

<http://www.safekids.org/>



Speed Campaign Tool Kit is intended to provide marketing materials, media tools, and marketing ideas for communities to distribute to fit local needs and objectives while partnering with other states, communities, and organizations all across the country on a speed management program. It includes messaging and templates you may choose from to support your speed management initiatives. Free TV and radio materials, posters, billboards, and other media materials can be downloaded here:

<http://www.nhtsa.gov/Driving+Safety/Enforcement+E+Justice+Services>

Pedestrian and Bicycle Safety: Pedestrian information related to children from the FHWA can be found here:

http://safety.fhwa.dot.gov/ped_bike/

The NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) has an extensive selection of how-to manuals, informative guidebooks, and kits that provide comprehensive information on a variety of topics. These educational materials may be used by the general public, event organizers, teachers, or others. All are downloadable in PDF format. Manuals and guidebooks that are available in hard copy may be requested through the safety materials order form:

www.ncdot.gov/bikeped/safetyeducation/manuals/
www.ncdot.org/transit/bicycle/

For more information and program examples, visit the following websites:

- www.pedbikeinfo.org (Pedestrian and Bicycle Information Center)
- www.bicyclinginfo.org (Pedestrian and Bicycle Information Center)
- www.bikewalk.org/workshops (National Center for Bicycling and Walking)
- www.saferoutesinfo.org (Safe Routes to School)
- www.active-living.org (Partners for Active Living)
- <http://www.campo-nc.us/bikepedestrian.html> (Capital Area Metropolitan Planning Organization)
- www.smartcommutechallenge.org (Triangle Area - Smart Commute Challenge)
- www.usa.safekids.org (Safe Kids Worldwide)
- www.eatsmartmovemorenc.com (Eat Smart, Move More)
- www.worldcarfree.net (Worldcarfree)
- www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html (National Resource on Pedestrian & Bicycle Safety Laws)



Encouragement School Programs

Many programs focus on developing safer pedestrian facilities around schools. Programs can be adopted by parents and schools to provide initiatives for walking.

Community leaders, parents and schools across the US are using Safe Routes to School programs to encourage and enable more children to safely walk and bike to school. The National Center for Safe Routes to School aims to assist these communities in developing successful Safe Routes programs and strategies. The Center offers a centralized resource of information on how to start and sustain a Safe Routes to School program, case studies of successful programs, and many other resources for training and technical assistance. For more information on Safe Routes to School, refer to the SRTS toolkit included in this chapter.

“Weekend Walkabout” Program

Walking programs, such as “Weekend Walkabout,” are regularly occurring events that promote walking while also bringing attention to pedestrian infrastructure. “Weekend Walkabouts” walking routes should highlight safe and inviting places to walk in the public realm (rather than private or enclosed facilities, such as walking tracks) and should be three miles or less in length. These events are ideal for families and seniors.

Walk to School Day

School systems can offer incentives to students who participate in Walk to School Day activities and events to promote initiative and reward their participation. For example, the Town should encourage schools to partner with parents to organize walking school buses for the children who will participate in Walk to School Day. Each group of students should be led safely to school by a parent or teacher volunteer.

Walk Friendly Community (WFC) Designation

The Walk Friendly Communities program, administered by the Highway Safety Research Center's Pedestrian and Bicycle Information Center (PBIC), is a national recognition program developed to encourage towns and cities across the US to establish or recommit to supporting safer walking environments. The WFC program recognizes communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort.



<http://www.walkfriendly.org/>

Awareness Days & Events

A specific day of the year can be devoted to a theme to raise awareness and celebrate issues relating to that theme. A greenway trail and its amenities can serve as a venue for events that will put the greenway on display for the community. Popular Town events serve as excellent opportunities to distribute pedestrian information.

The following are examples of other national events that can be used to increase use of pedestrian facilities:

Walk to Work Day/International Car Free Day

(September 22) Designate one day a year for people to walk to work to help advance programs, promote active living, and raise awareness for environmental issues. Walk to Work Day can be at the end of an entire week or month of pedestrian promotional activities, including fitness expos, walking and jogging group activities, running and bicycling races and rides, etc.

Strive Not to Drive Day

This event example, from the Town of Black Mountain, NC, is an annual event to celebrate and promote the town's pedestrian achievements for the year throughout their region. Awards for pedestrian commuters, as well as booths, contests, and other events are organized through their local MPO Bicycle and Pedestrian Task Force and the Land-of-Sky Regional Council. A similar event could be held in Fuquay-Varina as the pedestrian plan is implemented.

National Trails Day

This event is held every year in June. Other events, competitions, races, and tours can be held simultaneously to promote future greenways in Fuquay-Varina.

Earth Day

Earth Day is April 22nd every year and offers an opportunity to focus on helping the environment. Efforts can be made to encourage people to help the environment by walking to destinations and staying out of their vehicles. This provides an excellent opportunity to educate people of all ages.

Pedestrian Activities/Promotion within Local Organizations

Fuquay-Varina has numerous organizations that could promote pedestrian activities (e.g. the Fuquay-Varina Police Department). Education, enforcement, and encouragement programs can be advertised and discussed in local organization newsletters, seminars, and meetings. Such organizations could even organize their own group walks, trail clean-ups, and other activities listed in this section.

Adopt - a - Trail

Local clubs and organizations provide great volunteer services for maintaining and patrolling trails. This idea could be extended to follow tour routes or specified streets and sidewalks. A sign to recognize the club or organization could be posted as an incentive to sustain high quality volunteer service. The Boy Scouts of America serve as a good model for participation in this type of program.

Revenue Generating Events

Fuquay-Varina should consider holding events that can help fund future facilities. Program and event ideas that could be used to generate revenue in Fuquay-Varina include the following:

- Races/triathlons (fees or donations)
- Educational walks/nature walks/historic walks (fees or donations)
- Fund-raisers, including dinners/galas
- Concerts (fees or donations)
- Events coinciding with other local events, such as fairs, festivals, or historic/folk events



Downtown Art Walk

Fuquay-Varina could work with local artists to plan and promote “Downtown Art Walks”, a series of events during which local artists may display pieces of their work for sale along a designated walking route through the two downtown cores. A Downtown Art Walk event would raise awareness of pedestrian amenities, attract people to the downtown, create opportunities to socialize and meet new people, and promote local artists. Artists would benefit from the increased public exposure, especially those who do not have their own gallery or store front to display and sell their work.

A Downtown Art Walk event could be held in conjunction with the existing En Plein Air Paint-Off, a NC Main Street Award Winning Event. This event is a contest of skills will challenge each artist to create an original painting of Fuquay-Varina Downtown’s historic landscape.



Open Streets Event

Car-free street events have many names-Sunday Parkways, Ciclovias, Summer Streets, and Sunday Streets-and involve periodic street “openings” that create a temporary park that is open to the public for walking, bicycling, dancing, and other physical activity. The purpose of the event is to encourage physical activity by providing a fun, welcoming environment for activity. Car-free street events have been very successful internationally and are rapidly becoming popular in the US. Local businesses open doors and set up tables along sidewalks to support the event and generate foot traffic for their businesses.

Walking Youth Engagement Contest

Students in grades four, five, and six would be the best age group for this contest. By partnering with the state, school districts should coordinate and schedule a poster, Photovoice, YouTube, or other audiovisual media and develop a scoring criteria. Students would be tasked with creating media that highlight the benefits and value of walking. A selection panel made up of representatives from the Town and the school would choose the winner of the contest.

Encouragement Resources

National Walk our Children to School Day is usually held in October with the objective to encourage adults to teach children to practice safe pedestrian behavior, to identify safe routes to school, and to remind everyone of the health benefits of walking. To register walking events, go to the main webpage, and follow the International Walk to School links:

www.walktoschool-usa.org



Walk a Child to School in North Carolina. A growing number of community groups throughout the nation, such as health professionals, ‘Smart Growth’ advocates, traffic safety groups, local PTAs, and elected officials, are promoting walking to school initiatives. In North Carolina, Walk a Child to School Programs have gained a foothold and are growing each year. To date more than 5,000 students in 12 communities in the state have participated.

<http://www.walktoschool.org>

Kids Walk-to-School is a resource guide sponsored by the CDC to help communities develop and implement a year-long walk-to-school initiative.

<http://www.cdc.gov/nccdphp/dnpa/kidswalk/>

‘Preventing Pedestrian Crashes: Preschool/Elementary School Children’ provides information to parents on pedestrian risks for preschool and elementary school children. Information about the Safe and Sober Campaign is available on the NHTSA website.

<http://www.nhtsa.gov/Driving+Safety/Enforcement+&+Justice+Services>

Enforcement

Speed Feedback Signs

These signs serve as traffic calming devices when used temporarily at strategic roadway locations. The Town should use speed feedback signs on streets with new pedestrian facilities and should



include information about requesting a speed feedback sign on the Town's website.

Motorist Enforcement

Based on observed patterns of behavior, local police can use targeted enforcement to focus on key issues, such as motorists speeding, not yielding to pedestrians in crosswalks, and parking on sidewalks. The goal is for pedestrians and motorists to recognize and respect each other's rights on the roadway.

The NCDOT DBPT funded a study on pedestrian issues, including school zone safety, and decided to establish a consistent training program for

law enforcement officers responsible for school crossing guards. According to the office of the North Carolina Attorney General, school crossing guards may be considered traffic control officers when proper training is provided, as specified in NC General Statute (GS) 20-114.1.

Enforcement Actions

- Local police should use targeted enforcement to focus on key issues, such as motorists speeding, not yielding to pedestrians in crosswalks, parking on sidewalks, etc.
- Establish a crossing guard program for peak school hours and for peak pedestrian activity
- Require crossing guards to complete an NCDOT Crossing Guard Training Program

Enforcement Resources

- NCDOT School Crossing Guard Program: www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing.html
- NCDOT's "A Guide to North Carolina Bicycle and Pedestrian Laws":

www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html



Evaluation

Pedestrian Needs Checklist

A Pedestrian Needs Checklist would ensure the full participation and timely review of the NCDOT Bicycle and Pedestrian Transportation staff in the development of new projects which have the potential to benefit pedestrians. One component of the checklist would be to increase pedestrian related amenities at intermodal facilities and any existing or future Park & Ride facilities. There are many examples of checklists available online in the form of Complete Streets Checklists.



Maintenance Hotline

A maintenance hotline and online feedback page could be used to efficiently collect information regarding problematic facilities, such as potholes, sidewalk upheaval, etc. This program would provide the public with an efficient way to report infrastructure problems and would help to make Public Works staff aware of existing deficiencies that could affect the safety of road users.



Safe Routes to School Toolkit

Safe Routes to School (SRTS) is a program with a simple goal: helping more children get to school safely by walking and bicycling. Envision active kids using safe streets, helped by engaged adults (from teachers to parents to police officers), surrounded by responsible drivers.

Safe Routes to School programs use a variety of strategies to make it easy, fun and safe for children to walk and bike to school. These strategies are often called the “Five E’s.”

Education: programs designed to teach children about traffic safety, bicycle and pedestrian skills, and traffic decision-making.

Encouragement: programs that make it fun for kids to walk and bike. These programs may be challenges, incentive programs, regular events (e.g. “Walk and Bike Wednesdays”) or classroom activities.

Engineering: physical projects that are built to improve walking and bicycling conditions.

Enforcement: law enforcement strategies to improve driver behavior near schools.

Evaluation: strategies to help understand program effectiveness, identify improvements, and ensure program sustainability.

This plan recommends that Fuquay-Varina and its elementary schools seek grants to participate in a SRTS program to help promote and encourage active transportation choices for children to go to and from school.

Who is This Toolkit For?

This Toolkit is for any adult who wants to improve traffic safety and air quality around schools, help children be more physically active and ready to learn, and improve our neighborhoods.

Whether you are a parent, a teacher, a school administrator, a neighbor, a public health professional, town staff, or a town official, this Toolkit will provide you with facts and figures, as well as ideas, inspiration and proven techniques. This Toolkit covers the Why, Who, and How of Safe Routes to School.

Benefits of Walking and Bicycling to School (Why)

Active kids are healthy kids, and walking or bicycling to school is an easy way to make sure that children get daily physical activity. Benefits to children include:

- Increased physical fitness and cardiovascular health
- Increased ability to focus on school
- A sense of independence and confidence

SRTS also benefits neighborhoods:

- Improved air quality as fewer children are driven to school
- Decreased crashes and congestion as fewer children are driven to school
- More community involvement as parents, teachers and neighbors get involved and put “eyes on the street”

Schools also benefit:

- Fewer discipline problems because children arrive “ready to learn”
- Fewer private cars arriving to drop off and pick up children
- Opportunities to integrate walking, bicycling and transportation topics into curriculum (e.g. “Walk & Bike Across America,” mapping lessons, graphs and charts of distance walked or biked)
- Potential to reduce student transportation costs through reduced busing needs

Local Resources (who)

Local Safe Routes to School programs are sustained by parents, community leaders, and citizens to improve the health and well-being of children by enabling and encouraging them to walk and bicycle to school. Recently, the state of North Carolina has started the NC Safe Routes to School Program based off of the national program. The state has funding for infrastructure improvements within two miles of schools. This funding can also be used towards the development of school related programs to improve safety and walkability initiatives. The state requires the completion of a competitive application to apply for funding and a workshop at the school to determine what improvements are needed. www.saferoutesinfo.org



The Five E's Tools (how)

Education

Safe Routes to School refers to a variety of multi-disciplinary programs aimed at increasing the number of students walking and bicycling to school. Education programs are an essential component of a Safe Routes to School program. Education programs generally include outreach to students, parents and guardians, and motorists. Students are taught bicycle, pedestrian and traffic safety skills. Parents and motorists receive information on transportation options and driving safely near schools. A menu of SRTS education programs include:

- Safety education classes
- Bicycle rodeos
- Classroom lessons and activities
- School zone traffic safety campaign
- Bus safety campaign

Encouragement

Encouragement programs focus on bringing the fun back to walking and bicycling while increasing public awareness of the benefits of walking and biking to school. Events and activities help increase the number of students walking and biking to school. The activities often include a variety of special events and contests, outreach campaigns, and presentations to school and community groups. Encouragement programs can be used to educate parents, school personnel, students, and the community about the health and safety benefits of a successful Safe Routes to School program.



Encouragement programs do not need much funding, but their success depends on a school champion or group of volunteers for sustained support. Some examples include:

- Walk and bike to school day/week/month
- Suggested route to school maps
- Friendly walk and bike to school incentive programs
- Walking school buses
- Bike trains

Engineering

The environment near the school is often a determining factor when a parent or guardian decides whether or not to allow their child to walk or bicycle to school. There are a variety of engineering solutions available to enhance pedestrian and bicyclist safety and comfort near schools. Engineering improvements are implemented to slow cars, increase the visibility of students walking and biking, and make it easier for students to cross the street. While some engineering efforts can be costly, many, such as posting signs and striping crosswalks or bike lanes, are relatively inexpensive. Some of the following examples of engineering

improvements are described in detail in **Appendix A: Design Guidelines:**

- High visibility school zone signage
- Sidewalks
- Trails and greenways
- High visibility crossing markings
- Pedestrian scale lighting
- Advance stop lines and yield lines at mid-block crosswalks
- Pedestrian Countdown Signals
- Medians and pedestrian refuge islands
- Curb extensions/bulb-outs
- Speed tables and speed humps



Enforcement

Enforcement tools are aimed at ensuring compliance with traffic and parking laws in school zones. Enforcement activities help to reduce common poor driving behavior, such as speeding, failing to yield to pedestrians, turning illegally, parking illegally, and other violations. Enforcement strategies, in conjunction with education efforts, are intended to clearly demonstrate what is expected of drivers of motor vehicles and to hold them

accountable for the consequences of their actions. While most enforcement is the responsibility of police and other law enforcement, there are numerous complementary strategies that can be undertaken by school officials, crossing guards, parents and volunteers. Some examples include:

- School safety patrols and crossing guards
- Crosswalk enforcement
- School parking “citation”
- Neighborhood speed watch

Evaluation

Evaluation of the Safe Routes to School program is important to understand the effectiveness of the program, identify improvements that are needed and ensure that the program can continue in the long-term. Evaluation can measure shifts in travel behavior, changes in attitudes toward biking and walking, awareness of the Safe Routes to School program, grant money received and projects completed. Evaluation tools include:

- Student and parent surveys before and after targeting programs
- School site audits



Table 4.1: Programmatic Recommendations

Strategy	Target Audience	Lead Facilitator	Partnerships for Success	Time Frame	Duration	Projected Cost
Education						
Safe Routes to School Community Workshops	Schoolchildren	Fuquay-Varina schools; School administration; District administration	Town of Fuquay-Varina; National Center for Safe Routes to School	Short-term	Ongoing	\$\$
Bicycle and Pedestrian Advocacy Committee	General public	Town administration; Town Board	Fuquay-Varina Planning Dept; Parks, Recreation, & Cultural Resources Dept	Short-term	Ongoing	\$\$
Internal Education	Town staff; Law enforcement	Fuquay-Varina Planning Dept	NCDOT; CAMPO; HSRC; ITRE	Medium-term	Annual	\$\$\$
Designing Pedestrian Facilities for Accessibility Course	Town staff	Fuquay-Varina Planning Dept; Public Works Dept	NCDOT	Medium-term	Annual	\$
Environmental and Historical Education / Interpretation	General public	Fuquay-Varina Parks, Recreation, & Cultural Resources Dept	Town of Fuquay-Varina; DENR	Medium-term	Ongoing	\$
Let's Go NC - Pedestrian Curriculum	Schoolchildren	Fuquay-Varina schools	School administration; District administration; Town of Fuquay-Varina	Medium-term	Ongoing	\$
Eat Smart Move More NC	Schoolchildren; General public	Fuquay-Varina schools; School administration	Town agencies; Wake County Human Services Dept	Medium-term	Ongoing	\$
Pedestrian Safety Roadshow	Schoolchildren	Fuquay-Varina schools	School administration; District administration; Town of Fuquay-Varina	Medium-term	Ongoing	\$
Encouragement						
School Programs	Schoolchildren	Fuquay-Varina schools; School administration	Town agencies; Fuquay-Varina Police Department; Wake County Human Services Dept	Short-term	Ongoing	\$\$-\$\$\$
Walk to School Day	Schoolchildren	Fuquay-Varina schools	School administration; District administration	Short-term	Monthly	\$
"Weekend Walkabout" Program	General public	Fuquay-Varina Parks, Recreation, & Cultural Resources Dept; Neighborhoods; Non-profits	Local advocacy groups	Short-term	Weekly	\$
Walk-Friendly Community (WFC) Designation	General public	Fuquay-Varina Planning Dept	Town agencies; Town administration	Medium-term	Annual	\$
Strive Not to Drive Day	General public	Town of Fuquay-Varina; Town agencies	Local non-profit; Local running and cycling clubs; DENR	Medium-term	Annual	\$

Strategy	Target Audience	Lead Facilitator	Partnerships for Success	Time Frame	Duration	Projected Cost
<i>Encouragement (cont'd.)</i>						
Pedestrian Activities / Promotion within Local Organizations	General public	Local non-profit; Fuquay-Varina Chamber of Commerce	Town agencies; local businesses	Medium-term	Ongoing	\$
Adopt-a-Trail	Advocacy groups; Non-profits; Businesses	Fuquay-Varina Parks, Recreation, & Cultural Resources Dept	DENR	Medium-term	Ongoing	\$
Revenue Generating Events	General public	Town of Fuquay-Varina	Fuquay-Varina Chamber of Commerce; Wake Chamber of Commerce; Advocacy groups; Non-profits	Medium-term	Biannual	\$\$\$
Downtown Art Walk	General public	Fuquay-Varina Parks, Recreation, & Cultural Resources Dept	Fuquay-Varina Chamber of Commerce; Wake County Chamber of Commerce; Non-profits; local artists	Medium-term	Biannual	\$\$\$
Open Streets Event	General public	Fuquay-Varina Parks, Recreation, & Cultural Resources Dept; Fuquay-Varina Planning Dept	Local advocacy groups; Non-profits; Businesses	Short-term	Biannual	\$\$\$
Walking Youth Engagement Contest	Children and teens	Fuquay-Varina schools	Local advocacy groups; Non-profits	Medium-term	Annual	\$\$
<i>Enforcement and Evaluation</i>						
Speed Feedback Signs	Motorists	Fuquay-Varina Police Department	Town agencies	Short-term	Ongoing	\$\$\$
Motorist Enforcement	Motorists	Fuquay-Varina Police Department	Town of Fuquay-Varina	Short-term	Ongoing	\$\$
Pedestrian Needs Checklist	Town staff	Fuquay-Varina Public Works Dept	Fuquay-Varina Planning Dept; Police Dept; Wake County staff; NCDOT	Medium-term	Ongoing	\$\$
Maintenance Hotline	Town staff	Fuquay-Varina Public Works Dept	Fuquay-Varina Planning Dept; Parks, Recreation, & Cultural Resources Dept	Medium-term	Annual	\$\$\$\$

Previous Planning Efforts

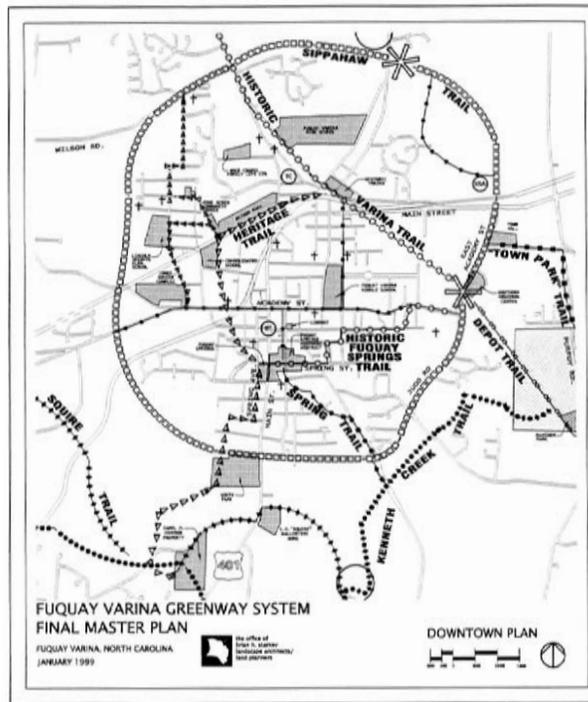
Numerous plans, guidelines, and strategies have addressed topics related to pedestrian facilities and trails in Fuquay-Varina. They have addressed improvements to existing parks and facilities and made suggestions for new parks, trails, and other facilities. All of these documents represent important efforts, provide valuable insight and background, and have influenced the development of this plan. For more information, please consult the plans in their entirety.

Greenway System Master Plan (1999)

This plan identifies corridors for a planned greenway network for Fuquay-Varina, including six primary greenway trails near the center of town and 13 secondary connector trails. The goal of the plan is to create a connected system of greenway trails that offers a transportation alternative to driving and promotes active recreation throughout the Town. The planned network connects major employment centers, public services, schools, parks, historic sites, libraries, churches, and neighborhoods via planned off-road paths, sidewalks, and bike lanes.

Primary Greenway Trails

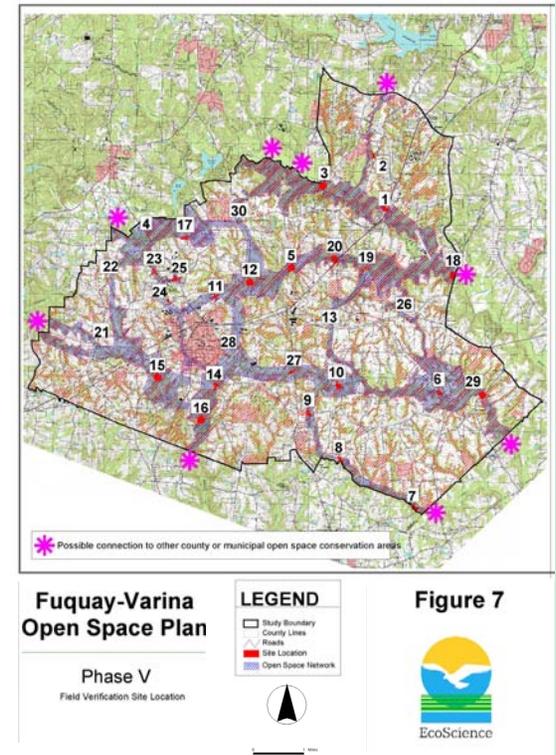
- Heritage Trail
- Historic Varina Trail
- Depot Trail
- Terrible Creek Trail
- Sippahaw Trail
- Parkway Trail



Wake County Consolidated Open Space Plan (2006)

This plan identifies thirty areas of open space for the Town of Fuquay-Varina to consider for protection. The plan also proposes that the Town preserve stream buffers through a greenway network that includes:

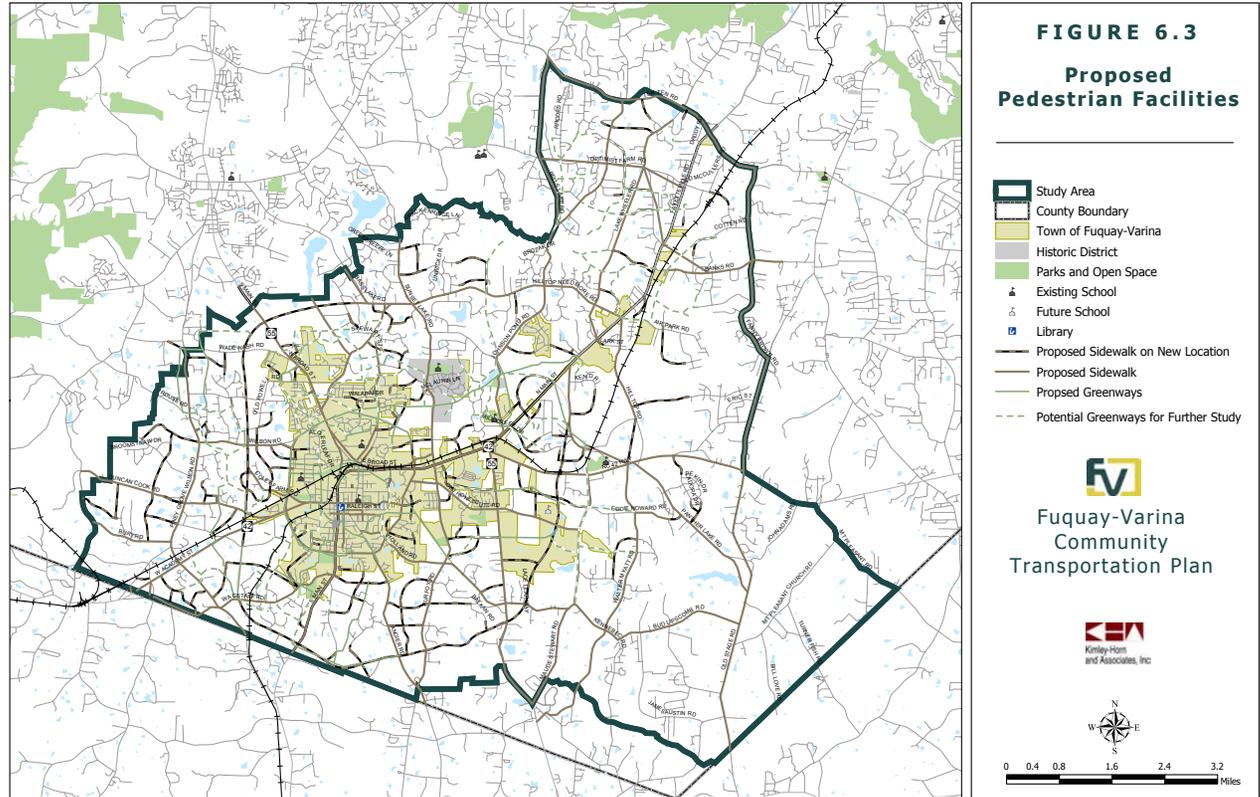
- Middle Creek
- Terrible Creek
- Black Creek
- Little Black Creek
- Basal Creek
- Kenneth Creek
- Kenneth Branch



Community Transportation Plan (2006)

The Community Transportation Plan (CTP) provides a transportation plan to accommodate the Town's rapid residential and employment growth. The plan includes a network of road, transit, rail, pedestrian facilities, and bikeways to facilitate efficient travel around town and to the surrounding region. A primary goal of the plan is to create a community with transportation choices. The Town is interested in creating walkable districts that connect surrounding neighborhoods with a business district that is itself safe, convenient, and enjoyable to walk within. Strategies identified in the plan include:

1. Develop standards and locations for park-and-ride facilities that will tie to future mass transit systems.
2. Develop plans and strategies for bus routes to Raleigh and RTP as a short-range need.
3. Develop mixed-use planning guidelines that utilize alternative modes of transportation, including pedestrian friendly access, as part of the transportation concept.
4. Integrate pedestrian movement within the community with transportation corridors (sidewalks) greenways and service areas.
5. Encourage private development to provide transportation management systems and reserve corridors for a future transit system to the Town.
6. Promote and develop means to establish a local bus transportation service for the Town and pursue regional links.



During the public involvement process, citizens identified a need for a more connected sidewalk network; sidewalks on Main Street between downtown and uptown; greenway connections to downtown; and continuous sidewalks to the high school and Walmart.

Facility Master Plan (2009)

The Facility Master Plan recommends a series of public recreational facilities to be funded and developed in Fuquay-Varina over the next 10 years. This plan includes \$4.6 million in facility recommendations for the town, including a Dog Park (location TBD), Skate Park (location TBD), Baseball/Softball Complex (at Fleming Loop Complex), and Cultural Arts Center (location TBD). No pedestrian recommendations were made in this plan.

Town Center Plan Guidelines (2009)

This adopted guidelines plan provides information and direction for making Downtown Fuquay-Varina a mixed-use and pedestrian-friendly area for living and shopping. The guidelines are broken down into two phases: Phase One provides information for the development of the downtown core, and Phase Two offers guidelines for development surrounding the core. The plan outlines form-based zoning standards and regulations for new zoning district types to be employed in the downtown. The plan encourages a mix of retail, residential, and office uses in the Downtown District, a continuous

building face along downtown streets, eliminated or reduced off-street parking requirements, and uniform building and façade design to create a pedestrian-friendly environment.

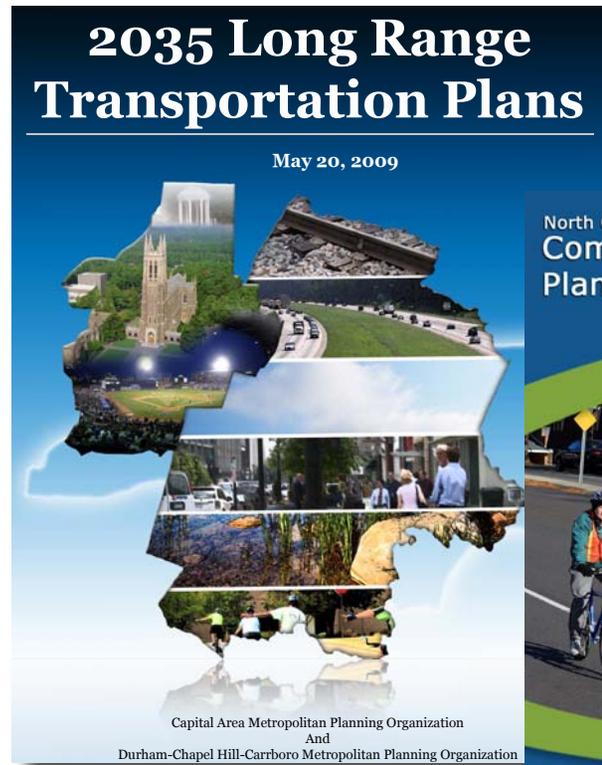
CAMPO 2035 Long Range Transportation Plan (LRTP) (2011)

The CAMPO LRTP sets a 25-year transportation vision and action plan for the MPO, including the Town of Fuquay-Varina. The plan lists major roadway projects that are recommended for the region and sets a timeline for completion. On a regional level, the MPOs encourage pedestrian projects. Most roadway projects in the 'Roadway Element' of the LRTP are expected to provide appropriate accommodations for pedestrians, concurrent with roadway improvements. Priority is generally given to areas with heavy pedestrian traffic generators, such as schools, parks and

business districts. Between 2016-2025, the plan recommends widening US 401 south of Fuquay-Varina, including eastern and western bypasses. In 2026-2035, US 401 from Garner to Fuquay-Varina is identified as a priority for road widening.

NCDOT Complete Streets Design Guidelines (2012)

In 2012, the North Carolina Department of Transportation (NCDOT) developed a set of guidelines for the design of complete streets that accommodate all road users, including pedestrians and bicyclists. These guidelines provide a valuable resource for developing transportation corridors and intersections that are safe, efficient, and



Wake County transit plan



CONNECTING PEOPLE, CONNECTING THE COUNTY

EXECUTIVE SUMMARY

People love to be connected. In our cyberspace driven world, people can stay connected pretty much all of the time. Connecting by text or phone or email is fast, but people still need to move around and get to places physically, not just digitally.

In Wake County, our citizens are continually looking for the best ways to get around, to connect

with their jobs and their friends, to connect our cities and towns with each other.

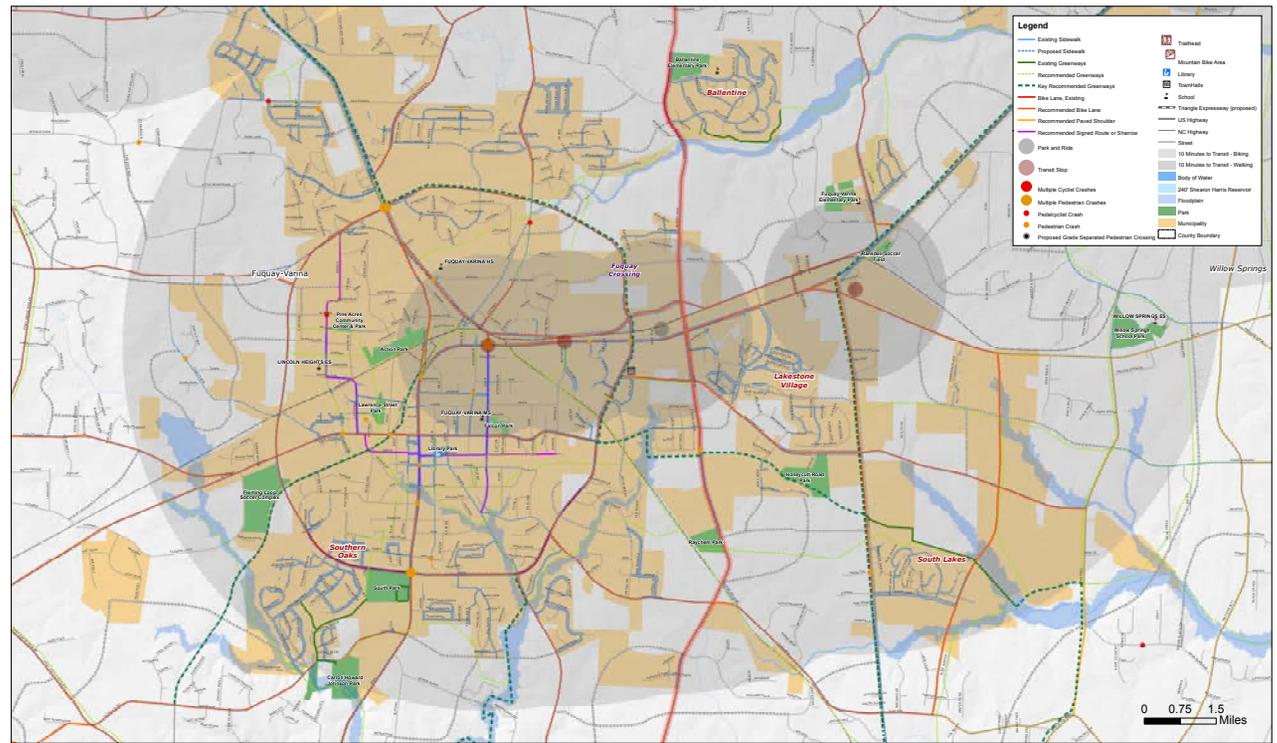
People want to move around easily—by car, bus, train and plane, or even by bicycle. They want to get to work, to school, and to shopping, restaurants, medical appointments, museums and symphony halls. They want to get to parks and lakes, to



accessible to a variety of transportation modes. They focus on designs that simultaneously serve the needs of pedestrians, bicyclists, transit, and drivers and provide guidance for complete streets design, planning, construction, maintenance, and operations of all roadway types. These guidelines informed the recommendations that are provided within this Pedestrian Master Plan.

Wake County Transit Plan (Draft) (2012)

The Wake County Transit Plan was developed through the collaboration of Wake County Government; the municipalities of Apex, Cary, Fuquay-Varina, Garner, Holly Springs, Knightdale, Morrisville, Raleigh, Rolesville, Wake Forest, Wendell, and Zebulon; the Capital Area Metropolitan Planning Organization; Regional Transportation Alliance; and Triangle Transit. The plan provides a vision for improving and expanding regional transit service in Wake County, with a framework for future capital improvements. Pedestrian-related recommendations include encouraging mixed-use and pedestrian-friendly development; improving the quality of streets and sidewalks along all bus lines; and improving bus facilities and amenities such as bus stops, shelters, and signage. The plan identifies \$18.1 million in capital investment for shelters, benches, and sidewalks for Fiscal Years 2014-2018.



Proposed Pedestrian and Bicycle Facilities - Fuquay-Varina

Southwest Area Study



Southwest Wake County Area Study (Draft) (2012)

This study covers approximately 230 square miles of southwest Wake County, including the Towns of Angier, Apex, Fuquay-Varina, and Holly Springs. In light of rapid population growth in the area, the Capital Area Metropolitan Planning Organization (CAMPO) commissioned a study to create a sustainable transportation strategy that includes a variety of transportation options, along with land use, development, and environment alternatives. The study's comprehensive bicycle and

pedestrian network map expanded upon the 2006 Fuquay-Varina Community Transportation Plan recommendations to suggest a more comprehensive and connected system. Sidewalks are recommended to connect the gaps between existing pedestrian facilities downtown and outside of Judd Parkway. Key greenway recommendations include the NC 55 sidepath and the greenway loop that connects Judd Parkway eastward to Honeycutt Road Park and the South Lakes subdivision, and two greenways to the east that run south along the railroad bed and stream corridor.



E. Broad Street and Ransdell Road, Fuquay-Varina

5 Policy Review

Pedestrian Policies

Town planning staff should become familiar with (and, in many cases, continue to support) the following policies and regulations. Walkability should be an item considered with all future development and growth decisions. More people will walk when their proximity to key destinations is reasonable. For example, a mixed use development will engage more walking while the development of a school at the outskirts of town will promote less walking and more driving. Suggested policy statements and paragraphs by category are provided below.

Pedestrian Network and Connectivity

Goal: Create and maintain a pedestrian network that provides direct connections between city center, trip attractors, schools, and residential/commercial areas.

- To the maximum extent possible, make walkways accessible to people with physical disabilities.
- Develop a system of informational and directional signage for pedestrian facilities and multi-use trails.
- Provide sidewalks on all roads surrounding schools with safe crosswalks.
- Provide pedestrian access through cul-de-sacs and large parking lots, which are typical obstacles to pedestrian connectivity.

- Accommodate pedestrians and bicyclists on future roadway bridges, underpasses, and interchanges and on any other roadways that are impacted by a bridge, underpass, or interchange project (except on roadways where they are prohibited by law).

Safety

Goal: Strive to maintain a complete, safe sidewalk network free of broken or missing sidewalks, curb cuts, or curb ramps and that include safety features such as traffic calming, lighting, and sidewalk repairs.

- Provide raised medians or pedestrian refuge islands where practical, at crosswalks on streets with more than three lanes, especially on streets with high volumes of traffic. They should be six- to ten-foot wide.
- Monitor and identify pedestrian facilities that are not ADA-compliant including missing, damaged, or non-compliant curb ramps, stairs, or sidewalk segments of inadequate width and create a plan for improving them.
- Develop a traffic calming program to slow traffic through downtown and on major residential corridors, making them aware that they share the corridors with pedestrians.
- Make pedestrian crossings a priority and initiate improvements recommended in **Chapter 3**. Consider variations in pavement texture and clear delineation of crosswalks. Also, ensure that crosswalks are properly lit at night.

APPENDIX CONTENTS

Pedestrian Policies (5-1)

Town Code of Ordinance Review (5-3)

- Implement pedestrian-scale lighting at regular intervals in areas of high pedestrian activity to promote pedestrian safety and discourage criminal activity.
- Develop and expand the City's maintenance program of sidewalk repairs, debris removal, and trimming of encroaching vegetation.
- Follow design guidelines in **Appendix A** to the maximum extent possible. For example, the buffer space between the sidewalk and the curb and gutter should be maximized within the available right-of-way.

Aesthetics Comfort and Enjoyment

Goal: Encourage the inclusion of art, historic, and natural elements along with street furniture and landscaping in pedestrian improvement projects.

- Require street trees and planting buffers between the sidewalk and the street along all new roadways and sidewalk construction. Keep all vegetation trimmed.
- Encourage and/or require private owners (of residences and businesses) to keep their area in and around the sidewalk free of debris and litter.

- Require benches, shelters, sheltered transit stops, trees, and other features to facilitate the convenience and comfort of pedestrians.
- Require pedestrian scale lighting along multi-use trails and most traveled sidewalks across the city.

Land Use and Development

Goal: Promote land uses and site designs that make walking convenient, safe, and enjoyable.

- Encourage a mix of uses through building, zoning, and development codes to connect entrances and exits to sidewalks, and eliminate “blank walls” to promote street level activity.
- Require sidewalks have a minimum width of five feet but where pedestrian traffic is higher, including near schools, senior centers, multi-family housing, and commercial areas or where sidewalks connect or overlap with recommended on-road multi-use trail connections.
- Require applicable buildings to build to the sidewalk. Also, prohibit parking lots from being developed in front of buildings where possible to develop pedestrian oriented areas.
- Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips. Specifically, promote the connectivity of parking lots between businesses for increased safety and avoidance of roadway traffic.
- Disallow parked vehicles from blocking pedestrian walkways.

Multi-Use Trails

Goal: Establish multi-use trails as part of Fuquay-Varina’s public infrastructure.

- Define ‘Multi-use trails’ as part of the Fuquay-Varina’s public infrastructure. Multi-use trails are public infrastructure that provide important functions to not only offer transportation alternatives, but to protect public health safety and welfare. Within flood-prone landscapes, multi-use trails offer the highest and best use of floodplain land, mitigate the impacts from frequent flooding and offer public utility agencies access to floodplains for inspection, monitoring and management. Multi-use trails filter pollutants from stormwater and provide an essential habitat for native vegetation that serves to cleanse water of sediment. Multi-use trail trails provide viable routes of travel for cyclists and pedestrians and serve as alternative transportation corridors for urban and suburban commuters. Multi-use trails serve the health and wellness needs of our community, providing close-to-home and close-to-work access to quality outdoor environments where residents can participate in doctor prescribed or self-initiated health and wellness programs. All of these functions make multi-use trails a vital part of community infrastructure.
- Require subdividers to provide natural buffers along both sides of all perennial streams. Public multi-use trail trails with limited disturbance along perennial and intermittent streams are excellent uses for these spaces and should be dedicated during the subdivision process.

- Encourage utility corridor development practices that allow for maximum compatibility with pedestrian and bikeway corridors. Land and easements purchased for the purpose of providing utilities (such as water and sewer) can serve a greater community benefit if developed to accommodate a multi-use trail.

Town Code of Ordinances

Existing land development, zoning and subdivision ordinances, and technical standards have a significant effect on pedestrian travel and multi-use trail development in Fuquay-Varina. The Town of Fuquay-Varina “Code of Ordinances” includes the subdivision regulations and was reviewed as part of this pedestrian transportation planning process. Recommendations have been made for revisions to the existing language to assist Fuquay-Varina become a more walkable community, and are presented in Tables 5.1 and 5.2 of this chapter.

Table 5.1: Code of Ordinance Review and Recommendations

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
PART 1: Introduction		This introductory section is a suitable location to emphasize the importance of considering walking access and safety for users of all ages and abilities as a healthy transportation alternative for Town residents.
1-1001 DEFINITIONS AND RULES OF CONSTRUCTION	SIDEWALK. The word "sidewalk" shall mean any portion of a street between the curb line and the adjacent property line intended for the use of pedestrians.	The MUTCD 2009 definition is broader: Sidewalk—that portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.
	STREET. The word "street" shall mean and include any public way, road, highway, street, avenue, boulevard, parkway, alley, lane, viaduct, or bridge and the approaches thereto within the Town.	Consider amending to use the MUTCD 2009 definition of 'Street': Street—see 'Highway': Highway—a general term for denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.
	Suggested adding definition for 'pedestrian'.	MUTCD 2009 definition of 'Pedestrian': Pedestrian - a person on foot, in a wheelchair, on skates, or on a skateboard.
PART 2: Government and Administration	No comments	
PART 3: Public Safety		
3-1005 DUTIES OF POLICE OFFICERS.	"It shall be the duty of the police officers to: (1) Preserve public peace, prevent crimes, detect and arrest offenders, suppress riots and unlawful gatherings which obstruct the free passage of public streets, sidewalks, parks and public places for users of all ages and abilities ."	The additional wording clarifies that 'free passage' covers the needs of all pedestrians such as those in wheelchairs.
PART 4: Public Works		

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
Chapter 1: Streets and Sidewalks		
4-1002 REQUIREMENTS FOR THE ACCEPTANCE OF NEW STREETS.	(1) Prior to opening any street, alley or other public way, the property owner, owners or developer shall submit a preliminary plan to the Board for their approval. Such preliminary plan shall show the location of the proposed street, alley or other public way, the right-of-way width, sidewalks, side paths and trails , all adjacent property owners, water courses and such other information as the Board may require.	It is valuable to show proposed walking facilities as early as possible. This assists in bringing attention to needs that are not being addressed by the project or opportunities to connect to other facilities that may not be envisioned as part of the project but which may create valuable links that could address an existing problem or create a new connection. The earlier in the development process that awareness is brought to opportunities, the easier it will be for officials and others to take advantage of the opening created by the project.
4-1005 SIDEWALK IMPROVEMENTS.	Petitions for street improvements may include requests for sidewalk improvements in accordance with Town specifications. Such sidewalk improvements may be constructed as part of the street improvement project and in the same manner except that 100% of the total cost of sidewalk improvements exclusive of the cost at intersections shall be assessed against the property owner.	Consider amending to suggest that all street improvement projects be viewed as an opportunity to install a sidewalk and that installation be provided routinely as part of any project. The new facility provides broad benefit in terms of access and public safety. In addition, this is generally the most cost-efficient means to add such facilities.
4-1007 RESPONSIBILITY OF PROPERTY OWNERS.	"Property owners along streets which are surfaced and have curb and gutter are responsible for replacing any driveway or walkway within the street right-of-way as a result of new street construction improvements. Driveway entrances and aprons at the curb line will be constructed by the Town at the location designated by the property owner and the cost thereof will be included in the total cost assessed for street improvements. Replacement driveway cuts must meet ADA requirements and provide a continuous clear pedestrian access route. "	Consider amending to add further guidance on the responsibility to make sure that the driveway design serves the needs of pedestrian users where there is a sidewalk. Intersections of driveways and sidewalks are the most common locations of severe cross-slopes for sidewalk users. This type of crossing can be very difficult for people who use wheelchairs or walking aids.
	Property owners shall be responsible for seeding, landscaping or otherwise improving the area between curbs and the property line as they may desire provided no walls or other permanent structures are located within the street right-of-way. The sight triangle area for any entrance, driveway or intersection must be kept clear of trees, plantings and overhanging vegetation.	Sight triangles are key both for drivers and pedestrians: drivers need to be able to see pedestrians while pedestrians need to be able to see so that they can make good crossing decisions. The view of children and other lower profile pedestrians needs to be kept clear also. Routine maintenance is a key factor in maintaining sight distance, particularly over time so that it is not allowed to degrade.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
4-1010 RESURFACING IMPROVEMENTS	Whenever it is necessary to resurface any street which has been surfaced under this policy as herein established, the Town will undertake such resurfacing when funds are appropriated and the Town shall bear the entire cost of such work. High-visibility crosswalk markings shall be added wherever crosswalks are part of the resurfacing project.	Resurfacing projects provide an excellent opportunity to upgrade crossing markings and install high visibility markings.
4-1021 PERMIT TO DIG IN STREETS	Provided, that a permit shall not be required where such work is performed under a contract with the Town but in the event such work requires a sidewalk or street to be wholly or partially obstructed, the person shall notify the Building Inspector, the Public Works Department and the Police Department at least two (2) hours before obstruction the sidewalk or street, unless prevented by sudden emergency.	Construction sites contain a variety of hazardous conditions that are potential obstacles and dangers to pedestrians when not correctly cordoned off from public use. Roadway and sidewalk maintenance and construction activities can adversely affect pedestrian access. Consider amending to include information about the requiring of an alternative accessible route for the duration of the disruption as well as adequate advance warning so that users can plan to cross street in advance at appropriate location. This issue particularly impacts the least-able and most mobility-impaired users of sidewalk facilities.
4-1022 SAME; APPLICATION FOR PERMIT	All persons desiring a permit in order to make an opening in any street or sidewalk, as set forth in § 4-1021, shall make written application therefore, which application shall show the location of the proposed opening, the purpose therefore, the approximate number of square yards of surface to be cut, and details of alternative temporary access provisions and signage. Such application shall be accompanied by the fee required by § 4-1023 of this article. The fee required for making any opening in any street or sidewalk shall be determined by the Town Board.	It is unclear whether this requirement applies to multi-use trails. Consider amending to provide further clarification.
4-1024 STREET REPAIR	When any part of any street, sidewalk, alley or other public place of the Town shall be torn, or dug up for any purpose, the person making such excavation or opening shall have the duty of refilling such excavation or opening so as to restore it to essentially the same condition that existed prior to the excavation or opening and such refilling shall be done in accordance with the standards and specifications issued by the Director of Public Works or his duly authorized representative.	Openings can make a facility unsafe or completely unusable for some, particularly those with the most mobility issues. In addition, openings cause particular problems for the visually impaired users. Consider amending to add wording about minimizing the duration of work and ensuring the provision of safe, accessible and convenient alternative access as well as providing advance warning for facility users so that they can divert their route until full restoration is complete. It is suggested also to provide a deadline for restoration to minimize the inconvenience to those impacted in their daily travels.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face. Attention is drawn to green text .	Comments/Suggested Language
4-1029 SIDEWALK CONSTRUCTION	No sidewalk of any description shall be built by any individual, firm or corporation, of any brick, wood, or other material without a written permit from the Town.	Concrete is the preferred sidewalk material for most users and provides the longest life for the lowest maintenance. In addition, a smooth sidewalks such as those possible with concrete, area a necessity for pedestrians with limited mobility. Bricks settling or fracturing can cause tripping hazards for those with reduced mobility or using canes or crutches. Bricks and pavers can also create vibrations that are painful for users of mobility devices, including wheelchairs.
4-1030 STREETS NOT TO BE DAMAGED	It shall be unlawful for any person, firm or corporation to drag, or run, or cause to be dragged or run any harrow or other implement, engine, machine or tool upon any asphalt, bithulitic, warrenite, or other type of permanently paved street of the Town which shall be liable, in any way to injure or cut the surface thereof. It shall also be unlawful to injure any dirt street in the same manner.	Damaging the surface can make a facility unsafe or completely unusable for some, particularly those with mobility issues and the visually impaired. Suggest adding wording about minimizing the duration of work, providing a safe and convenient alternative access, providing advance warning for facility users and providing a restoration deadline to minimize the inconvenience to pedestrians.
4-1031 HOUSE MOVING	No person shall move any house or building upon or across the public streets or sidewalks without the written consent of the Board and the deposit of a good and sufficient bond in an amount to be determined by the Town Board to cover damage done to such street or sidewalk or to any property of any person.	Consider amending to add wording about minimizing the duration of work, providing a safe and convenient alternative access, providing advance warning for facility users and providing a restoration deadline to minimize the inconvenience to pedestrians.
4-1041 PERMIT REQUIRED FOR PLACING POLES	No permit shall be issued for the erection of poles on any street where there exists a line on such street for the purpose of supporting electric, telephone or telegraph wires. All walkways must be in compliance with the Americans with Disabilities Act of 1990, which mandates the establishment of minimum walkway clearance widths, most recently updated to 48 inches.	An inaccessible minimum clearance width is created when obstacles such as utility poles protrude into the sidewalk and reduce the design width. These situations can make walking difficult or impossible, especially for people pushing strollers, older pedestrians, those with impaired vision and people with mobility difficulties who may be using walkers, canes, wheelchairs, and crutches.
PART 5: Municipal Utilities		
No comments		
PART 6: Licensing and Regulation		
No comments		

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
PART 7: Motor Vehicles and Traffic		
7-1011 DEFINITION OF WORDS AND PHRASES	(4) CROSSWALK. That portion of a roadway which lies between the prolongation of the lateral sidewalk or boundary lines over an intersection. Any portion of a roadway distinctly indicated for pedestrian crossing, by lines or other markings on the surface.	Consider amending to use the MUTCD 2009 definition as it is more comprehensive: Crosswalk— (a) that part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway, and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the center line; (b) any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by pavement marking lines on the surface, which might be supplemented by contrasting pavement texture, style, or color.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
	<p>(6) INTERSECTION. The area embraced within the prolongation of the lateral curb or boundary lines of two or more roadways or highways which join and cross one another at an angle.</p>	<p>Consider amending to use the MUTCD definition as it is more comprehensive: Intersection—intersection is defined as follows:</p> <p>(a) The area embraced within the prolongation or connection of the lateral curb lines, or if none, the lateral boundary lines of the roadways of two highways that join one another at, or approximately at, right angles, or the area within which vehicles traveling on different highways that join at any other angle might come into conflict.</p> <p>(b) The junction of an alley or driveway with a roadway or highway shall not constitute an intersection, unless the roadway or highway at said junction is controlled by a traffic control device.</p> <p>(c) If a highway includes two roadways that are 30 feet or more apart (see definition of Median), then every crossing of each roadway of such divided highway by an intersecting highway shall be a separate intersection.</p> <p>(d) If both intersecting highways include two roadways that are 30 feet or more apart, then every crossing of any two roadways of such highways shall be a separate intersection.</p> <p>(e) At a location controlled by a traffic control signal, regardless of the distance between the separate intersections as defined in (c) and (d) above:</p> <p>(1) If a stop line, yield line, or crosswalk has not been designated on the roadway (within the median) between the separate intersections, the two intersections and the roadway (median) between them shall be considered as one intersection;</p> <p>(2) Where a stop line, yield line, or crosswalk is designated on the roadway on the intersection approach, the area within the crosswalk and/or beyond the designated stop line or yield line shall be part of the intersection; and</p> <p>(3) Where a crosswalk is designated on a roadway on the departure from the intersection, the intersection shall include the area extending to the far side of such crosswalk.</p>

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
(12) PEDESTRIAN.	Any person afoot.	MUTCD 2009 definition of 'Pedestrian': Pedestrian -- a person on foot, in a wheelchair, on skates, or on a skateboard.
(15) PRIVATE ROAD OR DRIVEWAY.	Every road or driveway not open to the use of the public for purpose of vehicular travel.	The MUTCD 2009 includes a definition of 'Private Roads' that addresses other access scenarios and also includes reference to the possibility of pedestrian use: Private Road Open to Public Travel—private toll roads and roads (including any adjacent sidewalks that generally run parallel to the road) within shopping centers, airports, sports arenas, and other similar business and/or recreation facilities that are privately owned, but where the public is allowed to travel without access restrictions. Roads within private gated properties (except for gated toll roads) where access is restricted at all times, parking areas, driving aisles within parking areas, and private grade crossings shall not be included in this definition.
(20) RIGHT-OF-WAY.	The privilege of the immediate use of the roadway not inconsistent with regulations and conditions.	The term 'right-of-way' can have various meanings leaning to confusion. The following MUTCD 2009 definition clarifies when it is being used to denote assignment: Right-of-Way [Assignment]—the permitting of vehicles and/or pedestrians to proceed in a lawful manner in preference to other vehicles or pedestrians by the display of a sign or signal indications.
(21) ROADWAY.	That portion of a street which has been improved and designed for, or which is ordinarily used for vehicular traffic.	Consider amending to use the MUTCD definition: Roadway—that portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by persons riding bicycles or other human-powered vehicles. In the event a highway includes two or more separate roadways, the term roadway as used in this Manual shall refer to any such roadway separately, but not to all such roadways collectively.
(22) SAFETY ZONE.	The area officially set apart within a roadway for the exclusive use of pedestrians which area is either protected or plainly marked at all times while so set apart as a safety zone.	

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
	(23) SIDEWALK. That portion of a street between the curb lines or the lateral lines of a roadway and the adjacent property lines exclusively, intended for the use of pedestrians. The sidewalk will be considered to extend across any service station lot or driveway.	Consider amending to use the MUTCD 2009 definition: Sidewalk—that portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.
	(24) SIGNS. See TRAFFIC SIGNS.	
	(28) STREET, HIGHWAY. The entire area between internal property lines which is open to the use of the public, as a matter of right, for purposes of vehicular traffic.	Consider amending to use the MUTCD 2009 definition of 'Street': Street—see 'Highway': Highway—a general term for denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.
	(29) TRAFFIC. Pedestrians, ridden or herded animals, vehicles, streetcars and other conveyances, either singly or together, while using any street for purpose of travel.	Consider amending to use the MUTCD 2009 definition: Traffic—pedestrians, bicyclists, ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using for purposes of travel any highway or private road open to public travel.
	(30) TRAFFIC SIGNS. Traffic signs are authorized signs or markers which are assumed to be permanently or temporarily placed or erected or installed at certain places and which purport to give warning or notice of direction or to convey a prohibition or warning; the presence of such signs, though not compulsory, is generally dictated by necessity or common sense, with a view to furtherance of public safety.	The MUTCD 2009 definition is broader in nature: Traffic Control Device—a sign, signal, marking, or other device used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, private road open to public travel, pedestrian facility, or shared-use path by authority of a public agency or official having jurisdiction, or, in the case of a private road open to public travel, by authority of the private owner or private official having jurisdiction.
7-1029 DRIVING OF VEHICLES ON SIDEWALK	No person shall drive a vehicle upon any sidewalk area with the exception of a permanent or temporary driveway. It is the driver's responsibility to yield to the pedestrian at the driveway-sidewalk interface. No person shall park a vehicle upon any sidewalk area including at the driveway-sidewalk interface.	
7-1036 LEFT TURNS	Any driver of a vehicle making a left turn at an intersection of within a block shall first give the proper signal by hand or signal light and then move the vehicle as near to the center line as possible, and shall then make the left turn after seeing that the movement could be made in safety. Turns at an intersection shall be made beyond the center of the intersection and the driver of such vehicle shall then proceed in the new direction along the right hand lane.	Consider amending to add additional language to address how left-turning vehicular traffic should yield or stop for pedestrians crossing the roadway within a crosswalk.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
7-1039 TRAFFIC CONTROL SIGNALS, ELECTRICAL, STOP AND GO	(b) Pedestrians facing said signal may proceed across the roadway within the crosswalk area, whether marked or unmarked.	Consider amending to add language about how turning drivers should behave when the pedestrian is using the crosswalk.
	(b) Pedestrians facing such signal are thereby warned that there will not be sufficient time to safely cross the roadway, and any such pedestrian then starting to cross such roadway shall yield the right-of- way to all vehicles.	Consider amending to add language about how turning drivers should behave when the pedestrian is using the crosswalk.
	(b) No pedestrian facing such signal shall enter the roadway unless he can do so without interfering with any vehicular traffic.	Consider amending to add language about how turning drivers should behave when the pedestrian is using the crosswalk.
7-1042 INTERSECTION WHERE STOP IS REQUIRED.	At any intersection where there is a clearly visible stop sign so located, any driver of any vehicle shall be required to bring such vehicle to a complete stop before entering into or across such intersection, and shall remain in such stopped position until his movement into or across such intersection can be made in safety, and when such movement shall not interfere with any vehicle lawfully using such intersection.	Consider amending to add language regarding pedestrians. It may be helpful to install a marked crosswalk at a STOP-controlled intersection, especially when there is a moderate to high number of pedestrians that use the crossing or if the crossing is near a school or in a business district. Crosswalk markings discourage stopped vehicles from blocking the path across the intersection and remind motorists of the possible presence of pedestrians.
7-1044 EMERGING FROM ALLEY OR DRIVEWAY	The driver of any vehicle emerging from an alley, driveway, or building, shall bring such vehicle to a complete stop prior to entering onto a sidewalk or the sidewalk area extending across the alleyway, driveway or building frontage, and shall remain in such stopped position until his movement into or across the street can be made in safety without interfering with any vehicular traffic lawfully using such street. It is the driver's responsibility to yield to the pedestrian at the driveway-sidewalk interface. No person shall park a vehicle upon any sidewalk area including at the driveway-sidewalk interface.	

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
"7-1045 SPEED LIMITATIONS—GENERAL"	Except as otherwise provided in this article, it shall be unlawful to operate a vehicle in excess of thirty-five (35) miles per hour inside the municipal corporate limits.	Pedestrians are at risk whenever they cross the roadway. A primary risk posing the greatest threat to pedestrians is vehicles and the speed at which they travel because the motorist's attention is focused primarily on other motorists. A small increase in roadway traffic speeds results in a disproportionately large increase in pedestrian fatalities. Risks vary but the pedestrian fatality rate is above 50% in encounters with vehicles at 35mph. Consider amending to limit traffic speeds to levels that are unlikely to result in severe injury or death in places where pedestrians and vehicles may encounter one another.
7-1063 LIGHTS REQUIRED DURING CERTAIN TIMES	Every vehicle operated upon a public street during the period from a half hour after sunset to a half hour before sunrise, and at any other times when there is not sufficient light to render clearly discernible any person on the public street at a distance of two hundred feet ahead shall display lights on such vehicle as determined by the Commissioner of Motor Vehicles.	Improving overhead lighting can also improve safety and security for pedestrians during these times of the day also. Overhead and brighter nighttime lights should be at the pedestrian level and should not be placed in a location that would block access to sidewalks or curb ramps.
7-1069 PLAY STREET	Whenever authorized signs are placed indicating any street, or part thereof, as a play street, no person shall drive a vehicle upon any such street, except persons who have business, or who reside, within the designated areas; all such persons operating a vehicle on such street shall exercise the greatest care when driving upon such street.	Signs can provide important information that can improve road safety. By letting people know what to expect, there is a greater chance that they will react and behave appropriately. It is expected that drivers should drive with the greatest of care at all times, not just in some situations.
7-1070 SCHOOL ZONE	Whenever authorized signs are placed designating any street, or part thereof, as a school zone, the driver of any motor vehicle using such street or part thereof, shall exercise the greatest care for the protection of children.	
7-1091 PEDESTRIANS SUBJECT TO TRAFFIC SIGNALS	At any intersection controlled by traffic signals, any pedestrian thereby using such intersection shall be subject to the control of the said traffic signals.	Consider amending to further clarify, as many pedestrians and drivers may be unclear regarding their rights and responsibilities at signal controlled locations. Pedestrian signal indications should be used at traffic signals wherever warranted, according to the MUTCD. The use of WALK/DON'T WALK pedestrian signal indications at signal locations are important in many cases, including when vehicle signals are not visible to pedestrians or when signal timing is complex.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
7-1092 PEDESTRIANS' RIGHT-OF-WAY AT CROSSWALK	(a) Where traffic control signals are not in place or in operation, the driver of any vehicle shall yield right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway within any marked crosswalk, or within any unmarked crosswalk at an intersection, except as otherwise stated in this article.	Legal crosswalks exist at all public street intersections, unless otherwise signed, regardless of whether they are marked or unmarked. Pedestrians have the same legal protections and rights when crossing in marked or unmarked crosswalks.
	(b) Whenever any vehicle is stopped at a marked crosswalk or at any unmarked crosswalk at an intersection to permit a pedestrian to cross the roadway, the driver of any vehicle to the rear shall not overtake and pass the stopped vehicle.	Legal crosswalks exist at all public street intersections, unless otherwise signed, regardless of whether they are marked or unmarked. Pedestrians have the same legal protections and rights when crossing in marked or unmarked crosswalks.
7-1093 CROSSING AT OTHER THAN CROSSWALK	(a) Every pedestrian crossing a roadway at any point other than within a marked crosswalk, or within an unmarked crosswalk at an intersection, shall yield the right-of-way to all vehicles upon such roadway.	This wording differs from the NC statute in regard non-marked crosswalks at intersections. Generally, pedestrians have the same legal protections and rights when crossing in marked or unmarked crosswalks at public street intersections. The 2000 Uniform Vehicle Code and Model Traffic Ordinance (Uniform Vehicle Code) (Section 1-112) defines a crosswalk as: "That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs, or in the absence of curbs, from the edges of the traversable roadway; and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the existing sidewalk at right angles to the centerline." Thus, a crosswalk at an intersection is defined as the extension of the sidewalk or the shoulder across the intersection, regardless of whether it is marked or not.
	(e) Every driver of every vehicle shall exercise due care to avoid colliding with any pedestrian upon any roadway, and shall give warning by sounding of horn where necessary, and shall observe proper precaution upon observing any child, or any confused, or any incapacitated person upon such roadway. Drivers should exercise due care around all pedestrians upon the roadway.	

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
7-1095 RIGHT-OF-WAY AT CROSSINGS, INTERSECTIONS AND TRAFFIC CONTROL POINTS; WHITE CANE OR GUIDE DOG TO SERVE AS SIGNAL FOR THE BLIND	At any street crossing or intersection, where the movement of traffic is not regulated by a traffic officer or by traffic control signal, any blind or partially blind person shall be entitled to the right-of-way at such crossing or intersection, if such blind or partially blind person shall extend before him at arms length a cane white in color or white tipped with red or if such person is accompanied by a guide dog. Upon receiving such a signal, all traffic at or approaching such crossing or intersection shall come to a complete stop, leaving a clear lane through which such blind person may pass, and such vehicle shall remain stationary until such blind person has completed such crossing or intersection. At such intersection or crossing where the movement of traffic is controlled by traffic control signals, blind or partially blind persons shall be entitled to the right-of-way if such person having such cane or accompanied by such dog shall be partly across such crossing or intersection at the time that the traffic control signal changes, and all vehicles shall stop and remain stopped until such person has completed the crossing.	This may need to be evaluated in the context of some intersections being very complex and wide with multiple lanes and turning movements. Design features that create special challenges for visually impaired pedestrians include right-turns-on-red, right-slip lanes, or roundabouts without controlled crossings.
7-1125 PARKING AT INTERSECTIONS	Adequate sight distances between pedestrians and motorists increase pedestrian safety. Restricting parking at corners will improve visibility of the crossing for both drivers and pedestrians. No person shall park a vehicle or permit it to stand, whether attended or unattended within twenty-five feet of the intersection of curb lines or if none, then within fifteen feet of the intersection of property lines at the intersection of highways.	Consider amending to include information that clarifies the safety reason for this requirement. Sight distance at intersections is a principal element in the safety of pedestrians: they need to see and be seen. Consider increasing the restricted area to 30 feet.
7-1137 PARKING IN CROSSWALK	No person shall park a vehicle whether attended or unattended in a designated crosswalk.	Consider amending to include information that clarifies the safety reason for this requirement.
7-1138 PARKING ON SIDEWALK	Blocking of a sidewalk facility creates a safety hazard and blocks access for users. No person shall park a vehicle on the public sidewalk of any street. For the purpose of this section the sidewalk will be continued in front of all places of business including service stations, from a direct line of the sidewalk on each side of such business.	Consider amending to include information that clarifies the safety reason for this requirement.
7-1143 PARKING AT ENTRANCES TO PUBLIC BUILDINGS	Restricting parking around entrances will improve visibility and conflicts for both drivers and pedestrians. No person shall park a vehicle within fifteen feet of the entrance to a hotel, theater, hospital, sanatorium or any public building.	Consider amending to include information that clarifies the safety reason for this requirement.

Table 5.1: Code of Ordinance Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged) Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
7-1146 VEHICLES NOT TO STOP IN STREET, EXCEPTIONS	No person shall stop a vehicle in the street, except for the purpose of parking, unless such stop is made necessary by the approach of fire apparatus, by the approach of a funeral or other procession which is given right-of-way, by the stopping of a school bus, by the lowering of railroad gates, by being given countermanding traffic signals, or by the passing of some other vehicle or pedestrian, or by some emergency, or when proceeding can not be done in safety. In all cases covered by these exceptions, such vehicle shall stop so as not to obstruct any footpath, pedestrian aisle, crosswalk, curb ramp , safety zone, crossing, or street intersection if possible to avoid doing so.	
7-1149 PARKING IN OR ON CROSSWALKS	Adequate sight distances between pedestrians and motorists increase pedestrian safety. Restricting parking at corners will improve visibility of the crossing for both drivers and pedestrians. No person shall park a vehicle within a crosswalk whether attended or unattended or within 25 feet of either side of a crosswalk where such crosswalk is marked by white lines indicating it to be a crosswalk.	Consider amending to increase the restricted area to 30 feet.
PART 8: Offenses		
8-1018 DISRUPTIVE BEHAVIOR IN PUBLIC.	"(a) It shall be unlawful for any person in a public place, street or highway, or public vehicular area to be disruptive in any of the following ways: (2) blocking or lying across or otherwise preventing or interfering with access to or passage across a sidewalk, curb ramp, crossing , or entrance to a building or parking area;"	

Table 5.2: Subdivision Regulations Review and Recommendations

Ordinance	Existing Ordinance Text (Abridged). Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
9-3001 PURPOSE	The purpose of this chapter is to regulate and control the subdivision of land within the corporate limits and extraterritorial jurisdiction of the Town of Fuquay-Varina in order to promote the public health, safety and general welfare of the community. The regulations herein are designed to lessen congestion in the streets and highways; to further the orderly layout and use of land; to insure proper legal description and proper monumenting of subdivided land; to secure safety from fire, panic, and other dangers; to provide adequate light and air; to prevent the overcrowding of land and to avoid undue concentration of population; to facilitate adequate provision for transportation, water, sewerage, parks, schools, playgrounds and other public requirements; and to facilitate the further resubdivision of larger tracts into smaller parcels of land.	This introductory section is a good location to emphasize the importance of considering walking access and safety for users of all ages and abilities as a healthy transportation alternative for City residents. Consider amending to include the following additional introductory wording: The Town of Fuquay-Varina hereby finds and determines that an interconnected street system is necessary in order to protect the public health, safety, and welfare in order to ensure that streets will function in an interdependent manner, to provide adequate access for emergency and service vehicles, to connect neighborhoods, to promote walking [and biking], to reduce miles of travel that result in lower air emissions and wear on the roadway, and to provide continuous and comprehensible traffic routes. This introductory section is a good location to emphasize the importance of considering walking access and safety for users of all ages and abilities as a healthy transportation alternative for City residents.
§ 9-3021 DEFINITIONS.	(5) STREETS AND THOROUGHFARES: A dedicated and accepted public right-of-way for public use and vehicular traffic.	Consider amending to clarify 'public use' through definition. In addition, terms as 'vehicular traffic' should be clearly defined.
	a. MAJOR AND MINOR THOROUGHFARES: Streets and highways which are used primarily for fast or heavy traffic and also defined as the thoroughfares identified on the Town's adopted thoroughfare plan.	While these streets may accommodate 'fast and heavy' traffic, the main function of minor streets, like neighborhood collectors and local streets, is generally to provide access. Minor roads must operate at slower speeds so people can enter and exit homes and businesses safely and conveniently.
	c. MINOR STREETS: Streets which are used primarily for access to the abutting properties.	Minor roads must operate at slower speeds so people can enter and exit homes and businesses safely and conveniently. Pedestrian access is an important part of the operation of minor streets
	d. MARGINAL ACCESS STREETS: Minor streets which are parallel to and adjacent to major and minor thoroughfares and which provide access to abutting properties, protection from through traffic and limited access to and major and minor thoroughfares.	See previous comments regarding minor streets.
	e. LIMITED ACCESS THOROUGHFARES: Highways which are designed to carry through traffic with minimal access points.	Consider amending to provide consideration of the impact of these routes on the network as such facilities frequently create gaps for pedestrians. The corridor may be suitable for an adjacent pedestrian trail, located within the right-of-way or in a new adjacent right-of-way.

Table 5.2: Subdivision Regulations Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged). Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
	Additional suggested definitions: 'Pedestrians' and 'Sidewalks'	Suggested wording from MUTCD 2009: Pedestrian - a person on foot, in a wheelchair, on skates, or on a skateboard. Sidewalk—that portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.
§ 9-3082 STREET LAYOUT AND MINIMUM RIGHT-OF-WAY.	(l) Cul-de-sac streets shall be no longer than 800 feet in residential zones, except as provided in (m) below, and except that a maximum length of 1200 feet may be permitted where all lots on the cul-de-sac street are greater than 100 feet wide measured along the front property line and lots on the turn-around of the cul-de-sac street shall have a minimum width of 100 feet measured along the front setback line between property lines.	Cul de sacs at upper end of the stated range may have an impact on access and rates of usage of pedestrian facilities. Pedestrians may have to take lengthy routes and detours to make short journeys within their neighborhood or local community. This discourages walking and in some cases may make walking impossible. Suggested alternative: Cul-de-sacs shall only be permitted if they are: a. less than [four hundred (400)] feet in length or b. less than [six hundred sixty (660)] feet in length and have a pedestrian connection from the end of the cul-de-sac to another street.
	(a) The proposed street layout shall be made according to good land planning practice for the type development proposed, and shall be coordinated with the street system of the surrounding areas. The street system must provide for the continuation or appropriate projection of principal streets in surrounding areas and provide reasonable means of ingress and egress for surrounding acreage tracts. The arrangement of streets shall make provisions for pedestrian connections and connectivity with existing and proposed streets, trails and parks in adjoining areas.	Consider amending to add additional general standards: General Standards 1. A proposed development shall provide multiple direct connections in its local street system to and between local destinations, such as parks, schools, and shopping, without requiring the use of arterial streets. 2. Each development shall incorporate and continue all collector or local streets stubbed to the boundary of the development plan by previously approved but unbuilt development or existing development.
	(k) Cul-de-sac streets shall be no longer than 400 feet in non-residential zones, except as provided in (m) below. Multiple cul-de-sac streets connected to one entrance street shall not exceed a maximum length of 400 feet to the end of any one cul-de-sac street.	It is noted that the maximum length of cul de sacs allowed is shorter than in residential areas where local walking trips may be most useful for the widest range of ages and abilities. (See previous comment related to residential cul-de-sacs).

Table 5.2: Subdivision Regulations Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged). Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
	<p>"(r) Dead end streets shall be prohibited unless otherwise defined herein. No dead-end streets shall be permitted except in cases where such streets are designed to connect with future streets on abutting land, in which case a temporary turnaround easement at the end of the street with a diameter of at least 100 feet must be dedicated and constructed. Where a dead end street exists adjacent to property proposed for development said stub street shall be connected and be a part of any proposed development. This does not preclude the use of stub streets as part of a phased development or anticipation of future development. The Town Board may grant an exception to this requirement after it has been determined by the Board that the public health, safety and welfare of the Town has not been jeopardized."</p>	<p>Additional wording is suggested to address the desirability of pedestrian connections even where the dead end stub is discouraged. In addition, it may be desirable to facilitate the pedestrian connection sooner rather than having to wait for the future development. As currently written, the requirement seems to only contemplate the relationship between dead end and stub streets and motorized connections.</p>
	<p>"(s) The number of public access points, regardless of the number of phases, required for a proposed subdivision is as follows:.... (5) Access points are defined as the physical entrances into the subdivision from a non-neighborhood road. After the first access point; street stubs, as part of a phased development or for anticipation of future development, may also be defined as access points. Street stubs shall be located where logical connections to adjacent property would be made taking into consideration topography and barriers such as railroads and flood plains. Street stubs to railroad right of way should be avoided."</p>	<p>The requirements for access points are proscribed based on lot numbers rather than based on the need for connections and connectivity. By increasing the number of street connections or local street intersections, pedestrian travel is enhanced.</p>
	<p>"(7) Where the Town determines that future street connections would serve the safety and welfare of the Town, additional access and/or street stubs may be required based on the following criteria: (a) An existing street that may or may not be adjacent to the proposed development, however it is intended to connect other existing or proposed streets. (b) The extension of existing or proposed collector streets based on a Collector Street Plan or projected traffic movement to reduce congestion and provide multiple ingress and egress points for traffic disbursement. (c) Existing and projected development within a 500 feet block of the proposed development. (d) Improved pedestrian network connectivity."</p>	
<p>§ 9-3085 BLOCKS.</p>	<p>(b) Block lengths shall not exceed 1,500 feet or be less than 400 feet. Blocks longer than 400 feet in length shall have a mid-block pedestrian pathway connecting adjacent blocks.</p>	<p>Note that the lengthier blocks at the upper end of range may have an impact on access and rates of usage of pedestrian facilities. Pedestrians may have to take lengthier routes and may find the longer stretches less comfortable. Minimizing the block length allows better access for pedestrians, as well as bicyclists and motorized users. The number may be changed to lower than 660 feet. The appropriate length may be determined based from a typical block length based on historical precedence in the area. It is common for American cities to have block lengths between 200 and 400 feet."</p>

Table 5.2: Subdivision Regulations Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged). Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
	(d) Pedestrian ways or crosswalks, not less than 10 feet in width shall be provided near the center and entirely across any block 900 feet or more in length where deemed essential, in the opinion of the Planning Board, to provide adequate pedestrian circulation or access to schools, shopping centers, churches or transportation facilities.	Consider amending to reduce the requirements so that blocks longer than 400 feet in length shall have a mid-block pedestrian way or crosswalks.
9-3101 SKETCH DESIGN PLAN.	"At the time of the preliminary conference it would be helpful to the discussion if the applicant would provide a sketch plan showing the following:..... (8) Pedestrian sidewalks, trails and opportunities for improving walking and bicycling connectivity. "	
9-3102 PRELIMINARY PLAT.	" The preliminary plat shall be at a scale of 200 feet equals one (1) inch or larger. The preliminary plat will show the following:... (6) Proposed streets, street names, rights-of-way, roadway widths, sidewalk and trails width , and approximate grades."	
9-3104 FINAL PLAT.	(16) Sketch vicinity map showing relationship between subdivision and surrounding area. Show proposed sidewalks, trails and street stubs . "The final plat will show:.... (1) The lines of all streets, roads, sidewalks and trails. "	

Table 5.2: Subdivision Regulations Review and Recommendations - cont'd

Ordinance	Existing Ordinance Text (Abridged). Suggested additions shown in red font face . Attention is drawn to green text .	Comments/Suggested Language
9-3127 SIDEWALKS.	<p>"(a) Sidewalks shall be required on both sides of a major and minor thoroughfare, one side of a thoroughfare collector and on curb and guttered streets as follows:</p> <p>Residential</p> <p>Less than 26 lots on:</p> <ul style="list-style-type: none"> Minor residential streets Marginal access streets Loop street Cul-de-sac <p>No sidewalk required</p> <p>26 - 100 lots:</p> <ul style="list-style-type: none"> Residential collector street <p>Sidewalk required on one side</p> <p>101 - 200 lots:</p> <ul style="list-style-type: none"> Thoroughfare collector <p>Sidewalk required on one side</p> <p>201 - 350 lots</p> <ul style="list-style-type: none"> Minor thoroughfare (70 feet ROW) <p>Sidewalk required on both sides</p> <p>351 plus lots</p> <ul style="list-style-type: none"> Minor thoroughfare (80 feet ROW) <p>Sidewalk required on both sides</p> <p>Non-residential</p> <p>Less than 5 lots on</p> <ul style="list-style-type: none"> Marginal access street Loop street Cul-de-sac <p>No sidewalk required</p> <p>Greater than 5 lots</p> <ul style="list-style-type: none"> Thoroughfare collector <p>Sidewalks required on one side"</p>	<p>The sidewalk requirements based on numbers of dwelling units do not consider the many reasons for sidewalks and when particular locations may be of particular importance. Sidewalks are particularly critical in the vicinity of schools in providing easy local access. The requirement for construction of sidewalks on one side only has a disproportionate impact on some facility users, particularly those with mobility issues. It also inconveniences all users, thus discouraging use and participation in general. Not requiring sidewalks or requiring installation on one side only because of low numbers of dwelling units can contribute to critical gaps and a lack of connectivity in the network. Providing sidewalk on one side only, may cause the users to have to cross over and back, exposing them to additional risk. It is particularly undesirable and discouraging for those who may have impairments (including age) or who may be accompanying small children. Continuous and connected sidewalks on both sides that are separated from the roadway are the preferred accommodation for pedestrians and provide many benefits including safety and mobility as well as contributing to the overall network.</p> <p>Suggested additional language to address wider sidewalk widths:</p> <p>Where identified in adopted town, regional, and state planning documents, side paths shall be required for all new construction and in connection with improvements, renovations, additions or expansions [associated with new subdivisions]. Side paths shall be required along the entire length of any portions of public streets which abut the development parcel [associated with the new subdivision]. Side path will be constructed to 8' to 10' wide and will be constructed in accordance with the town design standards. Any deviation from the requirements must be approved by the Administrator. Deviations may only be allowed when strict compliance with the town design standards is impractical due to topography or because of existing site conditions.</p>

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New sidewalk construction on East Broad

6 Implementation Strategies

Overview

This chapter defines a structure for managing the implementation of the Town of Fuquay-Varina Community Pedestrian Master Plan. Implementing the recommendations within this Plan will require leadership and dedication to pedestrian facility development on the part of a variety of agencies. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue. Even small amounts of local funding could be very useful and beneficial when matched with outside sources. Most importantly, the Town of Fuquay-Varina need not accomplish the recommendations of this Plan by acting alone; success will be realized through collaboration with state and federal agencies, the private sector, and non-profit organizations. Funding resources that may be available to Fuquay-Varina are presented in Appendix C of this Plan.

Given the present day economic challenges faced by local governments (as well as their state, federal, and private sector partners), it is difficult to know what financial resources will be available at different time frames during the implementation of this Plan. However, there are still important actions to take in advance of major investments, including key organizational steps, the initiation of education and safety programs, and the development of important, lower-cost pedestrian facilities. Following through on these priorities will allow the key stakeholders to prepare for the development of the regional network over time while taking advantage of strategic opportunities, as they arise. Key action steps fall into three categories: *policies*, *programs*, and *infrastructure*. Each of the recommendations

that constitute these categories have been presented in the previous chapters of this plan. Infrastructure recommendations are presented in Chapter 3, program recommendations are presented in Chapter 4, and policy recommendations are presented in Chapter 5. More detailed action steps tied to each of these categories are found in the table at the end of this chapter along with the responsible agency and expected time frame for completion.

Policy Action Steps

Several policy steps are crucial to the success of future facility development. These steps will legitimize the recommendations found in this Plan and enable the right-of-way acquisition necessary to carry out those recommendations.

Adopt This Plan

Adoption procedures vary from community to community depending on existing plans and policies. In each jurisdiction, the planning board (as applicable) should review and recommend the plan to its governing body, which in turn must consider and officially incorporate the recommended pedestrian improvements of this plan into its land-use plans. The following entities should consider adopting this plan:

- The Town of Fuquay-Varina
- Wake County
- Capital Area Metropolitan Planning Organization

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Adoption of this plan also signifies that the design guidelines provided in Appendix A are established as pedestrian facility standards for each of the adopting agencies. This will establish consistency in design across jurisdictional boundaries, ensuring that future facilities will be developed with consistency and will accommodate a variety of user types.

This plan and its recommended on- and off-road facilities should be approved by the NCDOT and NCDENR, and they should be included in the future planning of each agency. This Plan's recommendations should be integrated into an update to the Wake County Comprehensive Transportation Plan (CTP). NCDOT should refer to this document when assessing the impact for future projects and plans.

Establish Land Right-of-Way Acquisition Mechanisms

It is recommended that each local zoning and subdivision ordinance be amended to ensure that, as developments are planned and reviewed, the pedestrian facilities and multi-use trail corridors identified in this plan are protected. This would entail amending development regulations to have developers set aside land for trails whenever a development proposal overlaps with the proposed facilities, as adopted. Town of Fuquay-Varina staff should ensure that an effective review of all pedestrian and bicycle elements of proposed developments takes place.

In addition, local policies should be revised so that all new sewer and utility easements allow for public access for trail users, as a matter of right. Although many easements do not currently prohibit multi-use trail development, they do require the approval of landowners, increasing the complexity of trail development in these easements.

Multi-use trail right-of-way acquisition can be accomplished through a number of other methods where trail recommendations run through currently developed areas. Wherever acquisition is successful, property owners should be approached and informed by the implementing agency (e.g., the municipality, the county, NCDENR, etc.) in advance of the design process.

Programmatic Action Steps

While policies provide a legal basis for on- and off-road facility development, the program recommendations included in Chapter 4 of this plan will build community support for the creation of new facilities and establish a strong walking and bicycling culture.

Form a Bicycle and Pedestrian Advisory Commission

The Town of Fuquay-Varina should establish a Bicycle and Pedestrian Advisory Commission (BPAC) to assist in the implementation of this plan. The Town Planning Department would oversee this group. The BPAC would be comprised of both bicycle and pedestrian advocates, including commuting and recreational cyclists, and it should champion the recommendations of this plan. Formation of the BPAC will also represent a significant step toward becoming a Walk Friendly Community. The BPAC would provide a communications link between the citizens of the community and the government. The BPAC should meet periodically to assist Town staff in community outreach, marketing, and educational activities recommended by this plan.

Become Designated as a Walk Friendly Community

A long term goal for Fuquay-Varina should be for the Town to seek a “Walk Friendly Community” (WFC) designation. The Walk Friendly Community campaign is an award program that recognizes municipalities that actively support pedestrian activities and safety. A Walk Friendly Community provides safe accommodation for walking and encourages its residents to walk for

transportation and recreation. The program is maintained by the University of North Carolina Highway Safety Research Center’s Pedestrian and Bicycle Information Center with support from a variety of partners. In North Carolina, Davidson, Cary, and Charlotte, along with others, have each become designated as bronze level Walk Friendly Communities.

The development and implementation of this plan is an essential first step toward becoming a Walk Friendly Community. With ongoing efforts and the short-term work program recommended here, the Town should be in a position to apply for and receive WFC status within a few short years.

Communication and Outreach

A subgroup of the BPAC should be created to establish a communication campaign to celebrate successes as facilities are developed and otherwise raise awareness of the overall pedestrian network and its benefits. A key first task of this group is to design and implement a pedestrian and bicycle wayfinding system. Please refer to Appendix A: Design Guidelines for more information about signage and wayfinding.

Establish a Monitoring Program

From the beginning, and continuously through its life, the BPAC should brainstorm specific benchmarks to track through a monitoring program and honor their completion with public events and media coverage. Monitoring should be supported by the programmatic recommendations included in Chapter 4, such as a pedestrian and bicycle needs checklist and a facility inspection and maintenance program. Benchmarks should be revisited and revised periodically as the pedestrian facility network evolves.

Infrastructure Action Steps

While establishing the policies and programs described, Fuquay-Varina should move forward with the design and construction of priority projects, described in Chapter 3. They should also work to identify funding for long-term, higher-cost projects.

Identify Funding

Achieving the goals that guide this plan will require, among other things, a stable and recurring source of funding. Communities across the country that have successfully engaged in pedestrian programs have relied on multiple funding sources to achieve their goals. No single source of funding will meet the recommendations identified in this plan. Instead, the Town will need to work cooperatively with other municipalities, state, and federal partners to generate funds sufficient to implement the program.

A stable and recurring source of revenue is needed that can then be used to leverage grant dollars from state, federal, and private sources. The ability of local agencies to generate a source of funding for pedestrian facilities depends on a variety of factors, such as taxing capacity, budgetary resources, voter preferences, and political will. It is very important that Fuquay-Varina explore the ability to establish a stable and recurring source of revenue for facilities.

Donations from individuals or companies are another potential source of funding. The BPAC should establish an Adopt-A-Greenway program as a mechanism to collect these donations for the development of the multi-use trail recommendations discussed in Chapter 3. Federal

and state grants should be pursued along with local funds to pay for necessary right-of-way acquisition and project design, construction, and maintenance expenses. “Shovel-ready” designed projects should be prepared in the event that future federal funds become available. Additional recommended funding sources may be found in Appendix C: Funding.

Complete Short-Term Priority Projects

By quickly moving forward on priority projects, Fuquay-Varina will demonstrate their commitment to carrying out this plan and will better sustain the enthusiasm generated during the public outreach stages of the planning process. Refer to Chapter 3: Network Recommendations for priority project ranking and the prioritization methodology.

Key Partners in Implementation

The following are suggested roles for the core stakeholders involved in implementation. Actual roles may vary depending on how this plan is implemented over time and the ongoing level of interest and involvement by specific stakeholders.

Role of State Agencies (NCDENR and NCDOT)

As key supporting partners in the development of this plan, NCDOT and NCDENR should continue to play a role in implementation, including participation in the following tasks.

The NCDOT Division of Bicycle and Pedestrian Transportation should be prepared to provide guidance and technical support to local NCDOT

offices that are implementing pedestrian-related facilities, such as sidewalks, multi-use paths in roadway corridors, roadway crossings, and improvements that increase safety for pedestrians and bicyclists crossing bridges or railroads on state roadways.

NCDOT should also continue to work with local and regional planners to coordinate upcoming and future roadway projects with pedestrian and trail recommendations.

NCDENR should be a supporting partner and provide guidance on recommendations, such as pedestrian interface with natural resource areas and proper alignment of trails through sensitive and regionally significant environmental features.

Role of the Local NCDOT, Division 5

Division 5 of the NCDOT is responsible for the construction and maintenance of pedestrian facilities on NCDOT-owned and maintained roadways in the Town of Fuquay-Varina, except where it allows for the Town to do so with encroachment agreements. Division 5 should be prepared to:

- Recognize this plan as an adopted plan of the Town of Fuquay-Varina, and assist in the integration of this plan’s recommendations into an update to the NCDOT’s Comprehensive Transportation Plan for Wake County.
- Become familiar with the pedestrian facility recommendations for NCDOT roadways in this plan (Chapter 3); take initiative in incorporating this plan’s recommendations into the Division’s schedule of improvements whenever possible.

- Become familiar with the standards set forth in Appendix A of this Pedestrian Plan as well as state and national standards for pedestrian facility design; construct and maintain pedestrian facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial basis).
- Notify the Town of Fuquay-Varina Public Works Department of all upcoming roadway reconstruction, resurfacing and restriping projects in Fuquay-Varina by no later than the design phase and provide sufficient time for comments from the planning staff.
- If needed, seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this plan and its implementation.

Role of the Capital Area Metropolitan Planning Organization (CAMPO)

CAMPO is the transportation planning agency serving the Town of Fuquay-Varina and the surrounding communities. Local governments are represented by an elected official on the Transportation Advisory Committee (TAC) and staff members, NCDOT, and FHWA staff comprise the Technical Coordinating Committee (TCC). The MPO should be prepared to:

- Become familiar with the recommendations of this plan and support its implementation.
- Oversee long range transportation planning and ensure the development of a multi-modal transportation network.



- Ensure recommendations from this Community Pedestrian Master Plan are integrated into regional planning and project implementation.
- Follow upcoming roadway reconstruction and resurfacing projects and work early in the design process with Town and NCDOT staff to ensure pedestrian facilities are incorporated into the design.
- Keep up with current and changing funding sources and opportunities such as the Strategic Transportation Investment legislation.

Role of the Town Board

The Town Board will be responsible for adopting this plan. Through adoption, the Town's leadership would further recognize the value of pedestrian transportation and put forth a well thought-out set of recommendations for improving public safety and overall quality of life (see the 'Benefits of a Walkable Community' in Chapter 1). By adopting this plan, the Town Board would also signify that they are prepared to support the efforts of other key partners in the plan's implementation, including the work of Town departments and NCDOT Division 5.





Public Works crew example

Role of the Town of Fuquay-Varina Planning Department

The planning staff handles comprehensive planning, zoning, and code enforcement. The department will take primary responsibility for the contact with new development to implement this plan, with support from the Public Works Department. The staff should be prepared to:

- Communicate and coordinate with local developers on adopted recommendations for pedestrian facilities, including paved multi-use trails.
- Assist the Public Works Department in communicating with the NCDOT and regional partners.
- Maintain and update the pedestrian and bicycle facility GIS database which includes sidewalks, trails, bicycle facilities and crossing facilities.

Role of the Town of Fuquay-Varina Public Works Department

The Public Works Department handles the responsibility for the construction and maintenance of pedestrian facilities on Town-owned and maintained roadways, as well as on NCDOT roadways, where encroachment agreements are secured. The department also operates and maintains traffic signalization, traffic signs, and markings. The department should be prepared to:

- Communicate and coordinate with other Town departments and the BPAC on priority pedestrian projects
- Become familiar with the design standards set forth in Appendix A of this plan, as well as state and national standards for pedestrian facility design



Sidewalk construction on East Broad Street

- Secure encroachment agreements for work on NCDOT-owned and maintained roadways
- Assist with local roadway projects and ensure pedestrian accommodations are being made
- Design, construct, and maintain pedestrian facilities
- Communicate and coordinate with NCDOT Division 5 on this plan's recommendations for NCDOT-owned and maintained roadways. Provide comment and reminders about this plan's recommendations no later than the design phase
- Work with Division 5 to ensure that when NCDOT-owned and maintained roadways in Fuquay-Varina are resurfaced or reconstructed, that this plan's adopted recommendations for pedestrian facilities are included on those streets. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives.

Role of the Town of Fuquay-Varina Parks, Recreation & Cultural Resources Department

The Town of Fuquay-Varina Parks, Recreation & Cultural Resources Department operates 15 parks with more than 200 acres of land, 30 soccer fields, 7 multi-purpose fields, 11 baseball fields, a gymnasium, and a community center. They also sponsor seasonal activities such as football, soccer, baseball, softball, volleyball, basketball, cheerleading, instructional classes, summer camp programs, and a program for senior citizens.

The Parks, Recreation & Cultural Resources Department should be prepared to:

- Meet with the BPAC, provide progress updates for plan implementation, and gather input regarding pedestrian and trail related issues
- Pursue grants for funding priority projects and priority programs
- Select and carry out walking-related programs; Work with locale advocacy groups and the BPAC to assist in organizing walking/running events, educational activities, and enforcement programs
- Communicate and coordinate with Wake County and neighboring municipalities and counties on regional facilities; partner for joint funding opportunities
- Identify safety concerns and work with residents to improve trail safety and the perception of safety



Action Park, Wake Chapel Road

Role of the Fuquay-Varina Police Department

The Town of Fuquay-Varina Police Department is responsible for providing the community the highest quality law enforcement service and protection to ensure the safety of the citizens and visitors to Fuquay-Varina. The Police Department should be prepared to:

- Become experts on pedestrian-related laws in North Carolina
- Develop pedestrian/bicycle unit of pedestrian/bicycle-trained law enforcement officers to utilize existing equipment
- Continue to enforce not only pedestrian-related laws, but also motorist laws that affect the safety of pedestrians, such as speeding, running red lights, aggressive driving, etc.
- Participate in pedestrian-related education programs, such as Watch for Me NC
- Review safety considerations with the Public Works Department as projects are implemented

Role of the Bicycle and Pedestrian Advisory Committee

The Committee should be prepared to:

- Meet with staff from the MPO, Planning Department, and the Public Works Department
- Evaluate progress of the plan's implementation and offer input regarding pedestrian-related issues; assist Town staff in applying for grants and organizing pedestrian-related events and educational activities
- Build upon current levels of local support for pedestrian issues and advocate for local project funding

Role of Developers

Developers in Fuquay-Varina can play an important role in facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of sidewalks, trails, or crossing facilities. Developers should be prepared to:

- Become familiar with the benefits, both financial and otherwise, of providing amenities for walking and biking (including trails) in residential and commercial developments
- Become familiar with the standards set forth in Appendix A of this plan, as well as state and national standards for pedestrian facility design
- Be prepared to account for a pedestrian circulation and connectivity in future developments

Role of Local & Regional Stakeholders

Stakeholders for pedestrian facility development and related programs, surrounding jurisdictions, the Wake County Human Services Department, the Wake County School system, and local economic development organizations play important roles in the implementation of this plan. Local and regional stakeholders should be prepared to:

- Become familiar with the recommendations of this plan, and communicate & coordinate with the Town for implementation, specifically in relation to funding opportunities, such as grant writing and developing local matches for facility construction
- Wake County should coordinate with the Town on regional trail development and SRTS grants



Bicycle club example

- The local school system and school leaders should assist in carrying out SRTS workshops, programs, and also assist in SRTS grant applications

Role of Local Residents, Clubs and Advocacy Groups

Local residents, clubs, and advocacy groups play a critical role in the success of this plan. They should be prepared to:

- Continue offering input regarding pedestrian issues in Fuquay-Varina
- Assist Town staff and the BPAC by volunteering for pedestrian-related events and educational activities and participate in such activities
- Assist Town staff and the BPAC by speaking at Town Board meetings and advocating for local pedestrian project and program funding

Role of Volunteers

Services from volunteers, student labor, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as an Adopt-a-Trail (or greenway) or Adopt-a-Highway can be used to provide a regulated service agreement with volunteers. Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service group. Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride, and personal connections to the Town's pedestrian and trail networks.

Facility Development Methods

This section describes different construction methods for the proposed pedestrian network outlined in Chapter 3. Note that many types of transportation facility construction and maintenance projects can be used to create new pedestrian facilities. It is much more cost-effective to provide pedestrian facilities during roadway construction and re-construction projects than to initiate the improvements later as “retrofit” projects.

To take advantage of upcoming opportunities and to incorporate pedestrian facilities into routine transportation and utility projects, the Town should keep track of NCDOT’s projects and any other local transportation improvements. While doing this, the Town should be aware of the different procedures for local and state roads.

NCDOT Transportation Improvement Program

The Transportation Improvement Program (TIP) is an ongoing program at NCDOT which includes a process asking localities to present their transportation needs to state government. Pedestrian facility and safety needs are an important part of this process. Every other year, a series of TIP meetings are scheduled around the state. Following the conclusion of these meetings, all requests are evaluated. Pedestrian improvement requests, which meet project selection criteria, are then scheduled into a four-year program as part of the state’s long-term transportation program.

There are two types of projects in the TIP:

Incidental and **independent**. Incidental projects



Greenway construction example

are those that can be incorporated into a scheduled roadway improvement project. Independent are those that can stand alone such as a trail project, not related to a particular roadway.

The Town of Fuquay-Varina, guided by the priority projects within this Plan, should present pedestrian projects along state roads to the CAMPO and NCDOT. Local requests for small pedestrian projects, such as crosswalks and smaller segments of sidewalk, can be directed to the CAMPO or the local NCDOT Division 5 office.

Local Roadway Construction or Reconstruction

Pedestrians should be accommodated any time a new road is constructed or an existing road is reconstructed. All new roads with moderate to heavy motor vehicle traffic should have sidewalks and safe crossings at intersections. The Town of Fuquay-Varina should take advantage of any



Pedestrians on Bridge Street



Retrofit Intersections and Roadways with New Pedestrian Facilities

There may be critical locations in the pedestrian network that have pedestrian safety issues or are essential links to destinations. In these locations, it may be justifiable to add new pedestrian facilities before an intersection or roadway is scheduled to be repaved or reconstructed.

In some places, it may be relatively easy to add crosswalk markings but others may require constructing curb extensions, building refuge islands or ADA compliant curb ramps. Retrofitting intersections with curb dimensions or roadways with side paths create challenges. Improvements in these locations are typically recommended in the long-term.

Some roads may require a “road diet” solution in order to accommodate pedestrian facilities. Road diets can involve removing vehicle travel lanes, reducing lane widths, or removing on-street parking to accommodate pedestrian treatments and amenities. These are generally recommended only in situations where the vehicular traffic count can be safely and efficiently accommodated with a reduced number of travel lanes. Further study may be necessary for recommended road diets to ensure that capacity needs are balanced against pedestrian needs, maintaining expected levels of service for each.

Main Street and Purfoy Road intersection



Intersection construction example

upcoming construction projects, including roadway projects outlined in local comprehensive and transportation plans. Also, case law surrounding the ADA has found that roadway resurfacing constitutes an alteration, which requires the addition of curb ramps at intersections where they do not yet exist.

Residential And Commercial Redevelopment

The construction of sidewalks and safe crosswalks should be required during development. Construction of pedestrian facilities that corresponds with site construction is more cost-effective than retro-fitting. In commercial development, emphasis should also be focused on safe pedestrian access into, within, and through large parking lots.

This ensures the future growth of the pedestrian network and the development of safe communities.

Rail-to-Trail Process

Many communities in the Southeastern United States, and North Carolina in particular, are beginning to more frequently pursue the development of multi-use trail projects along former railroad corridors, known as “rail to trail” projects, through the federal process of “railbanking.”

The following information on “railbanking” was obtained from the Rails-to-Trails Conservancy website. Railbanking takes place during the rail corridor abandonment process. Official negotiations with the railroad begin after the railroad submits an initial notification to abandon the line (similar to a letter of intent to abandon) to the Surface Transportation Board (STB). Negotiations end with either railbanking or line abandonment.

Railroads must follow one of three abandonment procedures that the STB has developed: Regulated Abandonment (the most stringent and least common), Individual Exemption, or Class Exemption. Railroads that follow the Individual Exemption procedure will file a Petition for Exemption, which is used when the transaction is of “limited scope,” or when regulation of the transaction is “not needed to protect the shippers from the abuse of market power.” Class Exemptions, currently the most common option, apply if the line has not been in use for two or more years, or if the STB finds there is no vital interest in continuing rail service on that line.

Under the railbanking statute, a railroad is allowed to remove all of its equipment, with the exception of bridges, tunnels, and culverts, from a corridor and to turn the corridor over to any qualified private organization or public agency that has agreed to maintain the corridor for future rail use. This property transfer precludes abandonment.



Abandoned rail bed example

In 1990 the U.S. Supreme Court unanimously ruled, in the case of *Preseault v. United States*, that preserving a corridor for future rail use through railbanking is a legitimate exercise of governmental power. Although the corridor will no longer have tracks and ties, it is still being used for railroad purposes, legally speaking. This means that a railroad can legally transfer all forms of its ownership, including easements, to a trail group.

Any railroad may legally decide to re-establish rail service on a railbanked corridor. Should that occur, the trail managing agency would be entitled to compensation from the railroad that wants to reestablish rail service. In most cases, a trail group could expect to receive fair market value for the property as well as payment for all improvements. However, this issue may need to be specifically addressed in the initial contract with the abandoning railroad, since it may want to develop other payment terms.



Rail trail example





Railroad crossing at Academy Street



Wake Chapel Road railroad overpass

As railbanking is voluntary, Fuquay-Varina will need to convince the railroad that railbanking an inactive is in the railroad's best interest. This is particularly important because most railroad personnel have historically relied on the piecemeal sale of a corridor as their preferred method for disposing of a corridor.

Information on railbanking obtained from:

[http://www.railstotrails.org/our Work/trailBuilding/toolbox/informationSummaries/how_to_railbank.html](http://www.railstotrails.org/our%20Work/trailBuilding/toolbox/informationSummaries/how_to_railbank.html)

Bridge Replacement

Provisions should always be made to include a walking facility as a part of vehicular bridges, underpasses, or tunnels, especially if the facility is part of the pedestrian network. All new or replacement bridges should accommodate pedestrians with wide sidewalks on both sides of the bridge. Even though bridge construction and replacement does not occur regularly (especially

in Fuquay-Varina) it is important to consider these policies for long-term pedestrian planning.

NCDOT bridge policy states that sidewalks shall be included on new NCDOT road bridges with curb and gutter approach roadways. A determination of providing sidewalks on one or both sides is made during the planning process. Sidewalks across a new bridge shall be a minimum of five to six feet wide with a minimum handrail height of 42".

Bridge replacement projects on controlled access freeways where pedestrians and bicyclists are prohibited by law should not include facilities to accommodate pedestrians and bicyclists. In cases, however, where a bridge replacement project on a controlled access freeway impacts a non-controlled access roadway (i.e., a new overpass over an arterial roadway), the project should include the necessary access for pedestrians and bicyclists on the non-limited access roadway (e.g., paved shoulders, sidewalks, and pedestrian/bicycle crossing improvements).

At-Grade Railroad Crossings

Railroad crossings are particularly hazardous to those who rely on wheeled devices for mobility (railroad crossings have flangeway gaps that allow passage of the wheels of the train, but also have the potential to catch wheelchair casters and bicycle tires). In addition, rails or ties that are not embedded in the travel surface create a tripping hazard.

Several crossings of the Norfolk and Southern railroad line occur through Fuquay-Varina. These crossings were carefully considered during the development of the recommendations for this plan and details for each crossing can be found in Appendix D: Intersections and Railroad Crossings. As roadway improvements for these sections are

planned, the Town Public Works Department and NCDOT should work with Norfolk and Southern to ensure railroad crossing improvements are communicated and prioritized during the planning and design process.

Signage and Wayfinding Projects

Signage programs that include informational, warning, and regulatory signage along specific routes or in an entire community can be updated to include wayfinding signage, to make it easier for people to find destinations. Pedestrian-scale signage as a component of a wayfinding signage program should be installed along roadways independently of other signage projects or as a part of a more comprehensive wayfinding improvement project. More information on signage design standards can be found in Appendix A of this plan.

Maintenance

All facilities, including sidewalks and crosswalks, require regular maintenance to reduce the damage caused over time by the effects of weather, use, and surrounding human and natural infrastructure (such as tree roots). A connected sidewalk system is useless if maintenance is neglected and sidewalks degrade or marked crosswalks fade. Walkway maintenance includes: fixing potholes, sidewalk decay, damaged benches, and restriping crosswalks.

In order to maintain passable sidewalk conditions, it is important to have a system in place to identify maintenance needs on existing sidewalks. Options include:

- Devoting a branch of the Public Works Department to sidewalk inspection and repair
- Developing a public reporting system where

pedestrians can report maintenance issues

- Establishing maintenance of existing sidewalks and crosswalks as part of the overall pedestrian facility component of the capital improvement program

Typical pedestrian facility maintenance problems include:

- Step separation (vertical displacement at any point in the walkway that could cause pedestrians to trip or prevent wheelchair or stroller wheels from rolling smoothly)
- Badly cracked concrete/asphalt
- Settled areas that trap water (depressions in sidewalk or curb ramp that hold water)
- Tree root damage
- Vegetation overgrowth
- Obstacles in sidewalk
- Pedestrian countdown signal malfunction
- Faded, invisible marked crosswalks
- Damaged ancillary facilities such as benches, garbage cans, and pedestrian-scale lighting

It is recommended that the Town of Fuquay-Varina take a three-step approach to pedestrian facility maintenance. First, the Town should provide a hotline and/or maintenance request form to accept resident complaints for improvement and repair. Resident complaints should be given first consideration for improvement or repair if the reporting involves a safety or access issue. Secondly, the Town should devote some of its Public Works staff to conducting routine sidewalk and crosswalk inspection. Public Works staff will need to work closely with NCDOT staff to ensure sidewalk and crosswalk maintenance on all roads in Fuquay-

Varina as part of regular practice. Third, the Town should make it the responsibility of individual property owners to maintain clear sidewalks, free of debris, and vegetation.

Table 6.1 Implementation Action Steps Table

Action Step	Lead Agency	Support	Details	Phase
Present Plan to Town	Project Consultants	Planning Department Staff	Presentation to Town Board of Commissioners in Winter 2013	Short term
Adopt this plan	Town Board	Planning Department Staff, Project Consultants	Through adoption, the Plan becomes an official planning document of the Town. Adoption shows that the Town of Fuquay-Varina has undergone a successful, supported planning process.	Short term
Present this Plan to other local and regional bodies and agencies.	Planning Department Staff	Bicycle and Pedestrian Advisory Committee (BPAC) (see top of page 6-14 for description of BPAC)	This Plan should be presented to other local and regional bodies and agencies. Possible groups to receive a presentation might include the regional transportation and greenway planners, health clubs and fitness facilities, schools and youth organizations, environmental clubs, civic organizations, chambers of commerce, and large neighborhood groups.	Short term
Present this Plan's recommendations to NCDOT Division and District Offices, as well as other Departments.	Planning Department Staff	NCDOT Bike/Ped Division	This Plan should be presented to other NCDOT Divisions, Districts and Departments to integrate this Plan's recommendations into an update to the Wake County Comprehensive Transportation Plan.	Short term
Designate Staff	Town Board & Town Manager	Leadership of Town/ Town Departments	Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. It is recommended that a combination of existing Planning Department and Public Works Staff oversee the day-to-day implementation of this plan.	Short term
Establish Land Right-of-way Acquisition Mechanisms	Town Board	Planning Department Staff	Amend each local zoning and subdivision ordinance to ensure that, as developments are planned and reviewed, the pedestrian facilities and greenway corridors identified in this Plan are protected. Town of Fuquay-Varina staff should ensure that an effective review of all pedestrian and bicycle elements of proposed developments takes place. Local policies should be revised so that all new sewer and utility easements allow for public access for trail users, as a matter of right.	Short term/ Ongoing

Table 6.1 Implementation Action Steps Table ~ (cont'd)

Action Step	Lead Agency	Support	Details	Phase
Create a Bicycle and Pedestrian Advisory Committee (BPAC)	Town	Planning Department Staff	The committee should help coordinate the implementation of this Plan, develop programs, listen to community needs, promote the pedestrian network, and keep positive momentum going.	Short term
Provide police officers with educational material to hand out with warnings	Police Department	NCDOT Bike/Ped Division	Provide officers with an informational handout to be used during pedestrian and bicycle-related citations and warnings.	Short term
Adopt the Recommendations for Amendments to the Town Code of Ordinances	Town Board	Planning Department Staff, Town Public Works, Town Legal, NCDOT Bike/Ped Division	Changing current policy has the greatest long-term implication of any action that a government can take to alter its future conditions. By doing so, it implies that the community is committed to providing an efficient multi-modal transportation network such that access, mobility, and safety needs of motorists, pedestrians, and bicyclists are accommodated.	Short term
Design Orientation	Town Engineer and NCDOT Division 5	NCDOT Bike/Ped Division	Become familiar with the guidelines featured in Appendix A of this Plan, as well as state and national standards for pedestrian facility design.	Short term
Launch Programs as New Projects are Built	BPAC	Planning Department Staff	Assist in the coordination of education and encouragement programs, such as Bicycle/Pedestrian Month Activities.	Ongoing/ Medium term
Begin Semi-annual Meeting With Key Project Partners	Planning Department Staff	Town Departments, NCDOT, BPAC, and local & regional stakeholders	Key project partners should meet on a semi-annual basis to evaluate the implementation of this Plan. Meetings could also occasionally include on-site tours of locations where facilities are recommended. CAMPO meetings could also serve as an opportunity to coordinate.	Ongoing/ Medium term
Seek Multiple Funding Sources and Begin Facility Development	Planning Department Staff	Finance Director, BPAC	Chapter 3 contains recommended projects. See Appendix C for potential funding opportunities.	Ongoing/ Medium term
Develop Pedestrian Facility and Trail Specifications	Public Works Staff	Planning Department Staff	Town staff could prepare these using the design guidelines in Appendix A.	Ongoing/ Medium term

Table 6.1 Implementation Action Steps Table ~ (cont'd)

Action Step	Lead Agency	Support	Details	Phase
Notify Town Planning Department staff of all upcoming roadway reconstruction or resurfacing/restriping projects, no later than the design phase.	Public Works Director, and NCDOT Division 5	Planning Department Staff, NCDOT Bike/Ped Division, & NCDOT Wake County Maintenance Engineer	Provide sufficient time for comments. Incorporate pedestrian recommendations from this Plan. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives. Also, coordinate with the NCDOT Wake County Maintenance Engineer on the Annual Resurfacing Plan's 3-year project list.	Ongoing/ Medium term
Establish a Monitoring Program	BPAC	Town Department Staff	Brainstorm specific benchmarks to track and honor their completion with public events and media coverage. Monitoring should be supported by the programmatic recommendations included in Chapter 4, such as a pedestrian and bicycle needs checklist and a facility inspection and maintenance program. Benchmarks should be revisited and revised periodically as the pedestrian facility network evolves.	Ongoing/ Medium term
Develop a long term funding strategy	Town Manager & Finance Director	Planning Department Staff & Town Board	To allow continued development of the overall system, capital and Powell Bill funds for pedestrian facility construction should be set aside every year, even if only a small amount (small amounts of local funding can be matched to outside funding sources). Funding for an ongoing maintenance program should also be included in the Town's operating budget.	Medium term
Ensure planning efforts are being integrated regionally	Planning Department Staff	Regional planning organizations, neighboring municipalities, BPAC	Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial, especially with trail development. Communicate and coordinate with the regional partners on regional trails and pedestrian facilities and partner on joint-funding opportunities. After adoption by the Town, this document should also be recognized in regional transportation plans.	Ongoing/ Medium term

Table 6.1 Implementation Action Steps Table ~ (cont'd)

Action Step	Lead Agency	Support	Details	Phase
Apply for further Safe Routes to School Grants and Infrastructure Funding	Planning Department Staff	NCDOT Division 5 & BPAC	Establish 'walking school buses', 'bike-to-school' groups, or other similar activities for children through the Safe Routes to School Program. Inquire about pedestrian infrastructure funding for projects within 1.5 miles of schools through NCDOT Division 5.	Medium term
Explore possibility of a regional multi-modal coordinator	Town Manager	Planning Department Staff, BPAC, regional planning organizations, and neighboring municipalities	Explore the possibility of partnership with neighboring municipalities or the MPO in hiring a regional Multi-Modal Transportation Coordinator	Medium term
Become familiar with the pedestrian facility recommendations for NCDOT roadways in this Plan (Chapter 3); take initiative in incorporating this Plan's recommendations into the Division's schedule of improvements.	NCDOT Division 5	Planning Department Staff, NCDOT Bike/Ped Division	Construct and maintain all pedestrian facilities using the highest standards allowed by the State including Complete Streets guidelines (as well as considering the possibility of using innovative treatments on a trial-basis). Seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this Plan and its implementation.	Ongoing
Become designated as a Walk Friendly Community	BPAC	Planning Department Staff	The development and implementation of this Plan is an essential first step toward becoming a Walk Friendly Community. With ongoing efforts and the short-term work program recommended here, the Town should be in a position to apply for and receive WFC status within a few short years.	Long term

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East Academy Street, near Fuquay-Varina Middle School

A Design Guidelines

Overview

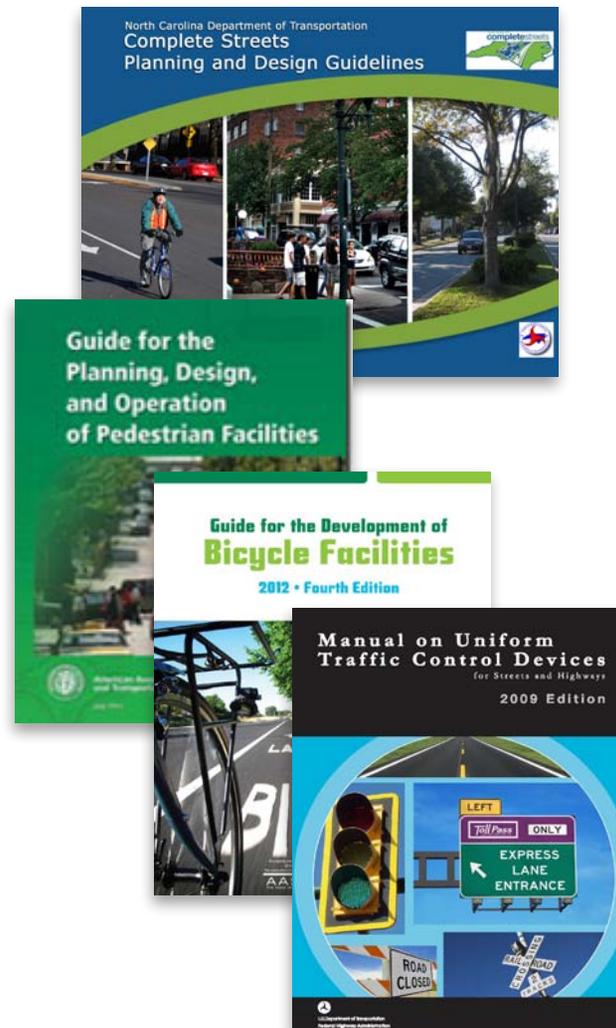
The sections that follow serve as an inventory of pedestrian design treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent the tools for creating a pedestrian-friendly, safe, accessible community. The guidelines are not, however, a substitute for a more thorough evaluation by a landscape architect or engineer upon implementation of facility improvements. Some improvements may also require cooperation with the NCDOT for specific design solutions. The following standards and guidelines are referred to in this guide.

The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design and Operation of Pedestrian Facilities, provides guidance on dimensions, use, and layout of specific pedestrian facilities, including sidewalks and street crossings.

Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any pedestrian facility project. The United States Access Board's proposed Public Rights-of-Way Accessibility Guidelines (PROWAG) and the 2010 ADA Standards for Accessible Design (2010 Standards) contain standards and guidance for the construction of accessible facilities.

Should the national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions. A qualified engineer or landscape architect should be consulted for the most up-to-date and accurate cost estimates.



APPENDIX CONTENTS

Overview (A-2)

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Sidewalks (A-3)

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Design Needs of Pedestrians

Types of Pedestrians

Pedestrians in Fuquay-Varina have a variety of characteristics and the transportation network in the community should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians’ physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assisted devices for walking stability, sight, and hearing. Table A.1 summarizes common pedestrian characteristics for various age groups.

The MUTCD recommends a normal walking speed of three and a half feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to three feet per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

Table A.1: Pedestrian Characteristics by Age

Age	Characteristics
0-4	Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision Poor depth perception
9-13	Susceptible to “dart out” intersection dash Poor judgment Sense of invulnerability
14-18	Improved awareness of traffic environment Poor judgment
19-40	Active, fully aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind

Sidewalks

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments.

Attributes of well-designed sidewalks include the following:

Accessibility: A network of sidewalks should be accessible to all users.

Adequate width: Two people should be able to walk side-by-side and pass a third comfortably. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate a high volume of walkers.

Safety: Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.

Continuity: Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.

Landscaping: Plantings and street trees should contribute to the overall psychological and visual comfort of sidewalk users, and be designed in a manner that contributes to the safety of people.

Drainage: Sidewalks should be well graded to minimize standing water.

Social space: There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.

Quality of place: Sidewalks should contribute to the character of neighborhoods and business districts.

Sidewalk Widths

Description

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of each sidewalk zone according to general street type. Standardizing sidewalk guidelines for different areas of the town, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.

Discussion

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The Americans with Disabilities Act requires a 4 foot clear width in the pedestrian zone plus 5 foot passing areas every 200 feet.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Surfaces must be firm, stable, and slip resistant.

Additional References and Guidelines

USDOJ. (2010). ADA Standards for Accessible

Design.
United States Access Board. (2007).

Public Rights-of-Way Accessibility Guidelines (PROWAG).

NCDOT. (2012). Complete Streets Planning and Design Guidelines.



Street Classification	Parking Lane/Enhancement Zone	Furnishing/ Green Zone	Pedestrian Through Zone	Frontage Zone	Total Sidewalk Area
Local Streets	7 feet	4 - 8 feet	5 - 6 feet	N/A	9 - 12 feet
Commercial Areas	8 - 10 feet	6 - 8 feet	6 - 12 feet	2 - 8 feet	14- 28 feet
Arterials and Collectors	8 - 10 feet	6 - 8 feet	4 - 12 feet	2 - 4 feet	12 -24 feet

↑
Six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably

↑
Total sidewalk area excludes parking dimensions

Recommended dimensions shown here are based on the NCDOT Complete Streets Planning and Design Guidelines. Exact dimensions should be selected in response to local context and expected/desired pedestrian volumes.

Sidewalk Obstructions and Driveway Ramps

Description

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal poles, mailboxes, fire hydrants, and street furniture.

Guidance

- Reducing the number of accesses reduces the need for special provisions. This strategy should be pursued first.
- Obstructions should be placed between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

Discussion

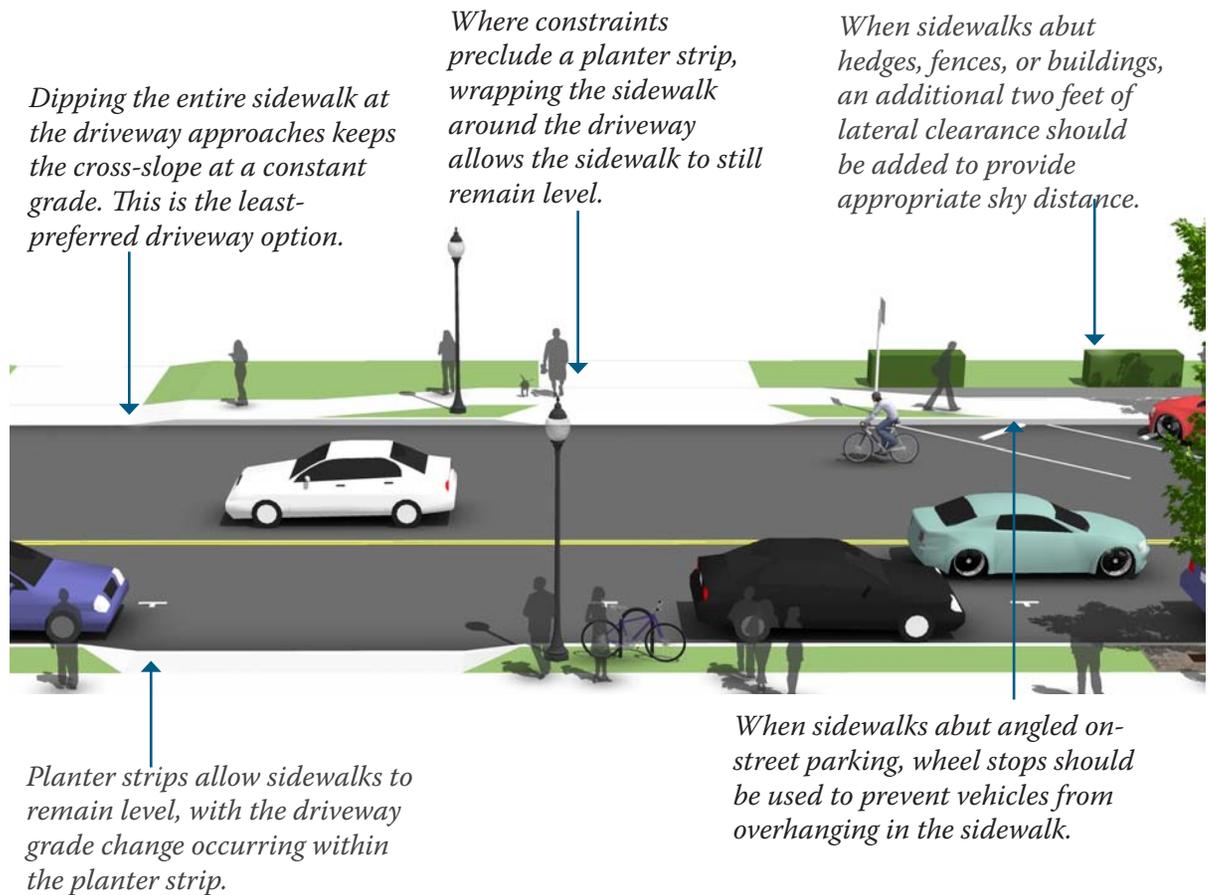
Driveways are a common sidewalk obstruction, especially for wheelchair users. When constraints only allow curb-tight sidewalks, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.

Materials and Maintenance

Excessive cracks, gaps, pits, settling, and lifting of the sidewalk creates a pedestrian tripping hazard and reduces ADA accessibility; damaged sidewalks should be repaired.

Additional References and Guidelines

USDOJ. (2010). ADA Standards for Accessible Design.
United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.



Pedestrian Amenities

Description

A variety of streetscape elements can define the pedestrian realm, offer protection from moving vehicles, and enhance the walking experience. Pedestrian amenities should be placed in the furnishing zone on a sidewalk corridor. Signs, meters, and tree wells should go between parking spaces. Key features are presented below.

Street Trees

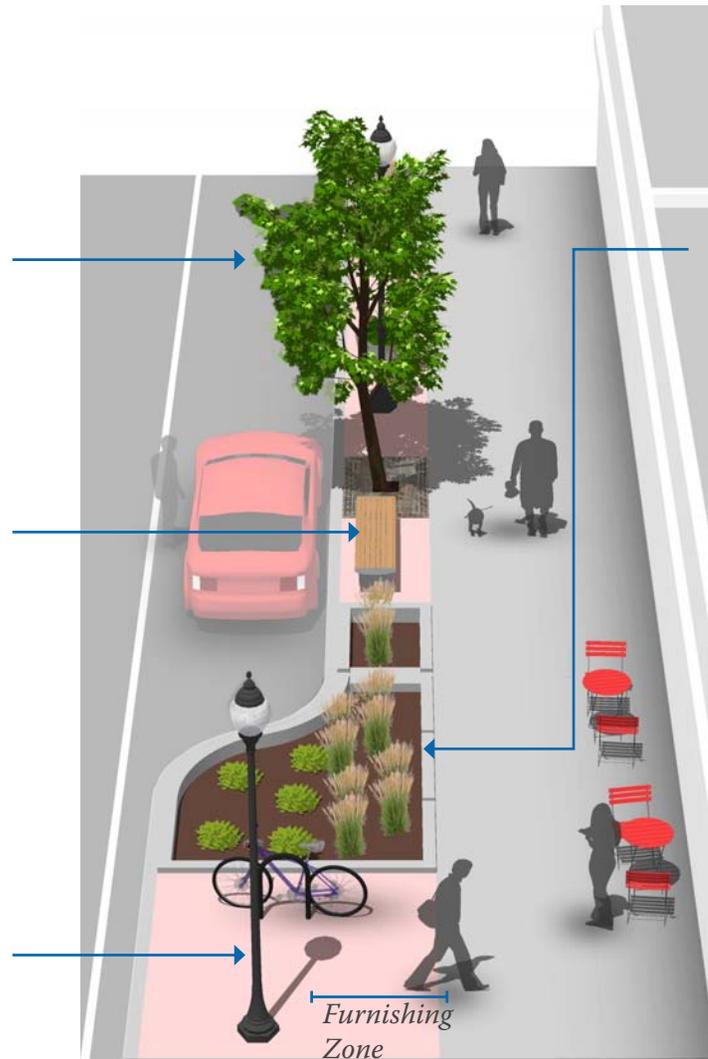
In addition to their aesthetic and environmental value, street trees can slow traffic and improve safety for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down. It is important that trees do not block light or the vision triangle.

Street Furniture

Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Benches should be 20" tall to accommodate elderly pedestrians comfortably. Benches can be simple (e.g., wood slats) or more ornate (e.g., stone, wrought iron, concrete). If alongside a parking zone, street furniture must be 3 feet from the curb-face.

Lighting

Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections. Pedestrian scale lighting can provide a vertical buffer between the sidewalk and the street, defining pedestrian areas.



Green Features

Green stormwater strategies may include bioretention swales, rain gardens, tree box filters, and pervious pavements (pervious concrete, asphalt and pavers). Bioswales are natural landscape elements that manage water runoff from a paved surface. Plants in the swale trap pollutants and silt from entering a river system.

Materials and Maintenance

Establishing and caring for your young street trees is essential to their health. Green features may require routine maintenance, including sediment and trash removal, and clearing curb openings and overflow drains.

Additional References and Guidelines

United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).

NCDOT. (2012). Complete Streets Planning and Design Guidelines.

Pedestrians at Intersections

Attributes of pedestrian-friendly intersection design include:

Clear Space: Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.

Visibility: It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.

Legibility: Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.

Accessibility: All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.

Separation from Traffic: Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.

Lighting: Adequate lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, suburban and rural intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.



Marked Crosswalks

Description

A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

Discussion

Continental crosswalk markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: school crossings, across arterial streets for pedestrian-on-

ly signals, at mid-block crosswalks, and at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

Guidance

- At signalized intersections, all crosswalks should be marked. At unsignalized intersections, crosswalks may be marked under the following conditions:
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.

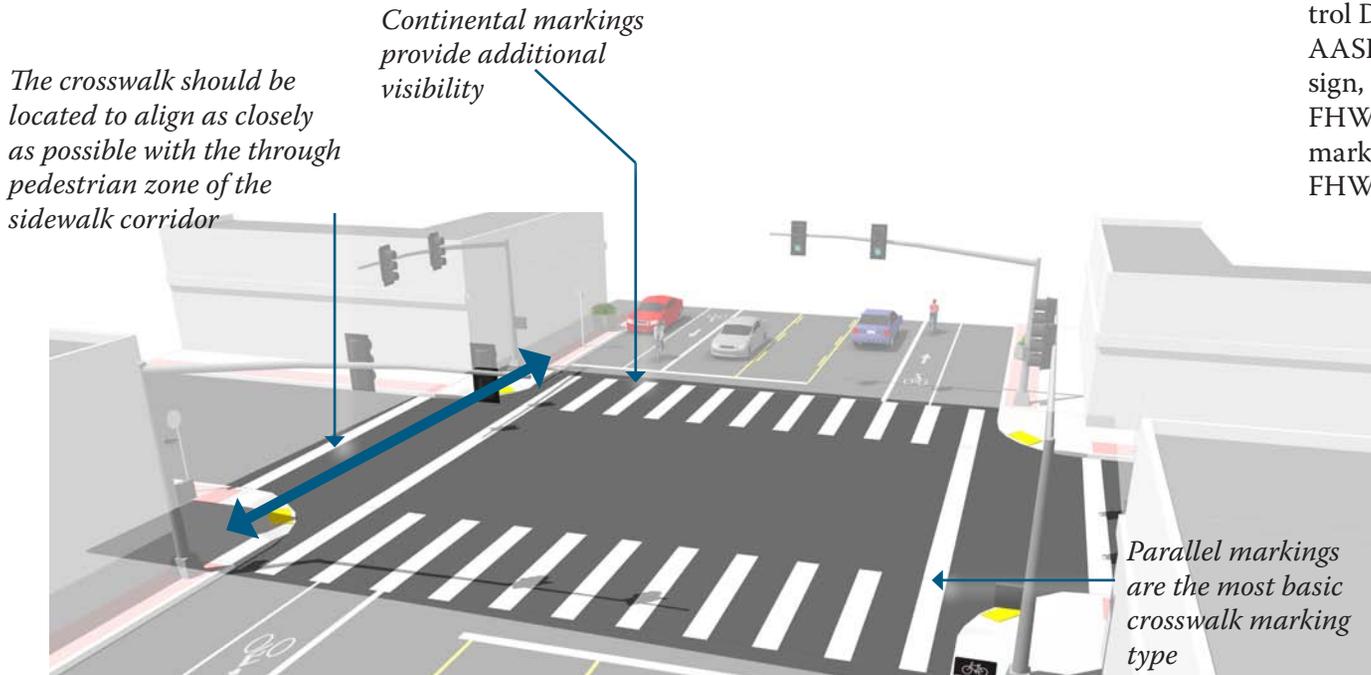
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability compared to conventional paint.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices. (3B.18)
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
FHWA. (2005). Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations.
FHWA. (2010). Crosswalk Marking Field



Raised Crosswalks

Description

A raised crosswalk or intersection can eliminate grade changes from the pedestrian path and give pedestrians greater prominence as they cross the street. Raised crosswalks should be used only in very limited cases where a special emphasis on pedestrians is desired, and application should be reviewed on case-by-case basis.

Guidance

- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.
- Approaches to the raised crosswalk may be designed to be similar to speed humps.
- Raised crosswalks can also be used as a traffic calming treatment.

Discussion

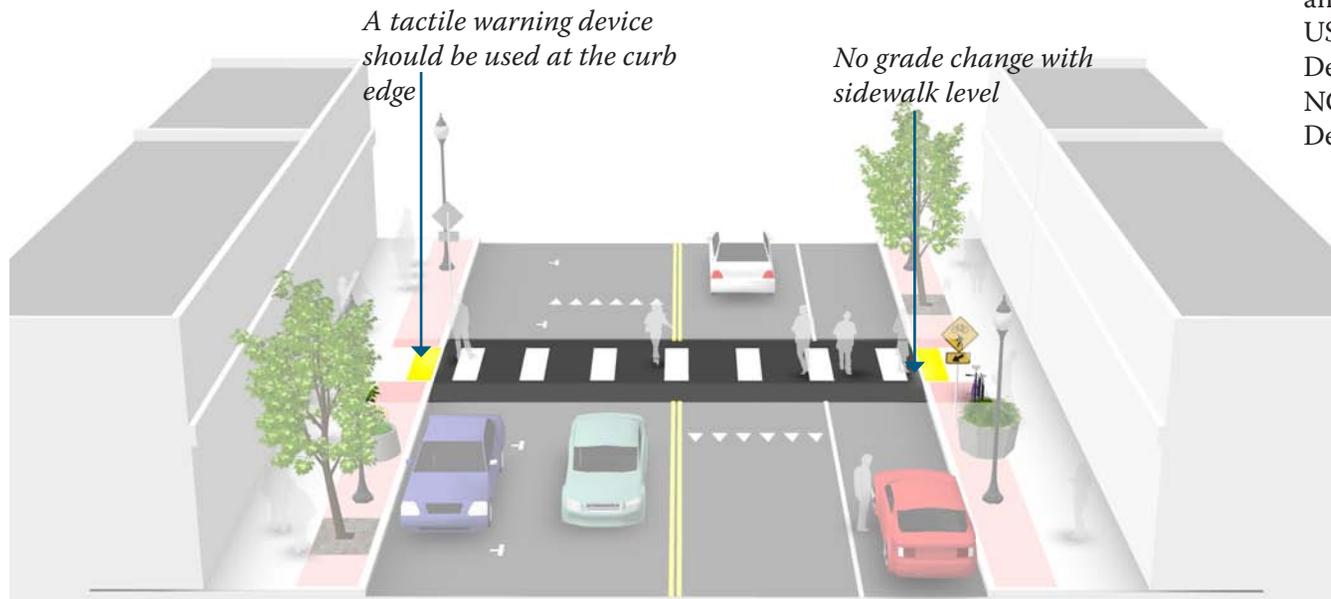
Like a speed hump, raised crosswalks have a traffic slowing effect which may be unsuitable on emergency response routes.

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices. (3B.18)
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
USDOJ. (2010). ADA Standards for Accessible Design.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.



Median Refuge Islands

Description

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian safety by allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure by shortening crossing distance and increasing the number of available gaps for crossing.

Guidance

- Can be applied on any roadway with a left turn center lane or median that is at least 6' wide.
- Appropriate at signalized or unsignalized crosswalks
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.

- The island should be at least 6' wide between travel lanes (to accommodate bikes with trailers and wheelchair users) and at least 20' long.
- On streets with speeds higher than 25 mph there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage.

Discussion

If a refuge island is landscaped, the landscaping should not compromise the visibility of pedestrians crossing in the crosswalk. Shrubs and ground plantings should be no higher than 1 ft 6 in.

On multi-lane roadways, consider configuration with **active warning beacons** for improved yielding compliance.

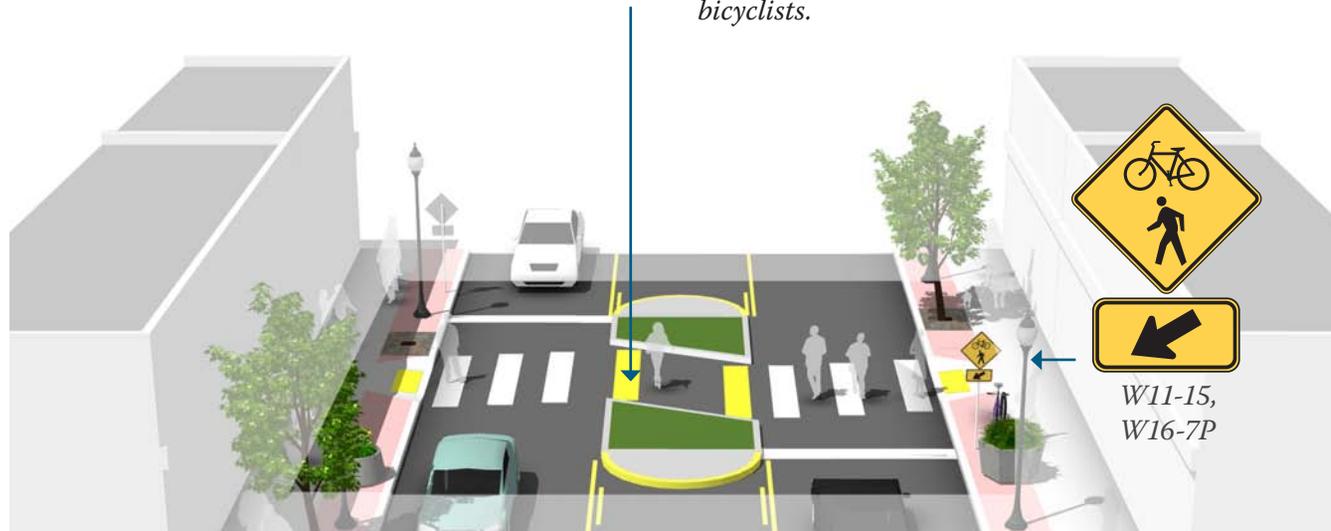
Materials and Maintenance

Refuge islands may collect road debris and may require somewhat frequent maintenance. Refuge islands should be visible to snow plow crews and should be kept free of snow berms that block access.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices.
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
NACTO. (2012). Urban Bikeway Design Guide.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.

Cut through median islands are preferred over curb ramps, to better accommodate bicyclists.



Pedestrian At-grade Railroad Crossings

Description

Locations where sidewalks must cross railroad tracks are problematic for pedestrians, particularly for those with mobility or vision impairments.

Wheelchair and scooter casters can easily get caught in the flangeway gap, and slippery surfaces, degraded rough materials, or elevated track height can cause tripping hazards for all pedestrians.

Angled track crossings also limit sight triangles, impacting the ability to see oncoming trains.

Guidance

Bells or other audible warning devices may be included in the flashing-light signal assembly to provide additional warning for pedestrians and bicyclists.

Pedestrians need clear communication and warning to know that they may encounter a train and when a train is coming. Provide clear definition of where the safest place to cross is.

The crossing should be as close as practical to perpendicular with tracks. Ensure clear lines of sign and good visibility so that pedestrians can see approaching trains

The crossing must be level and flush with the top of the rail at the outer edge and between the rails.

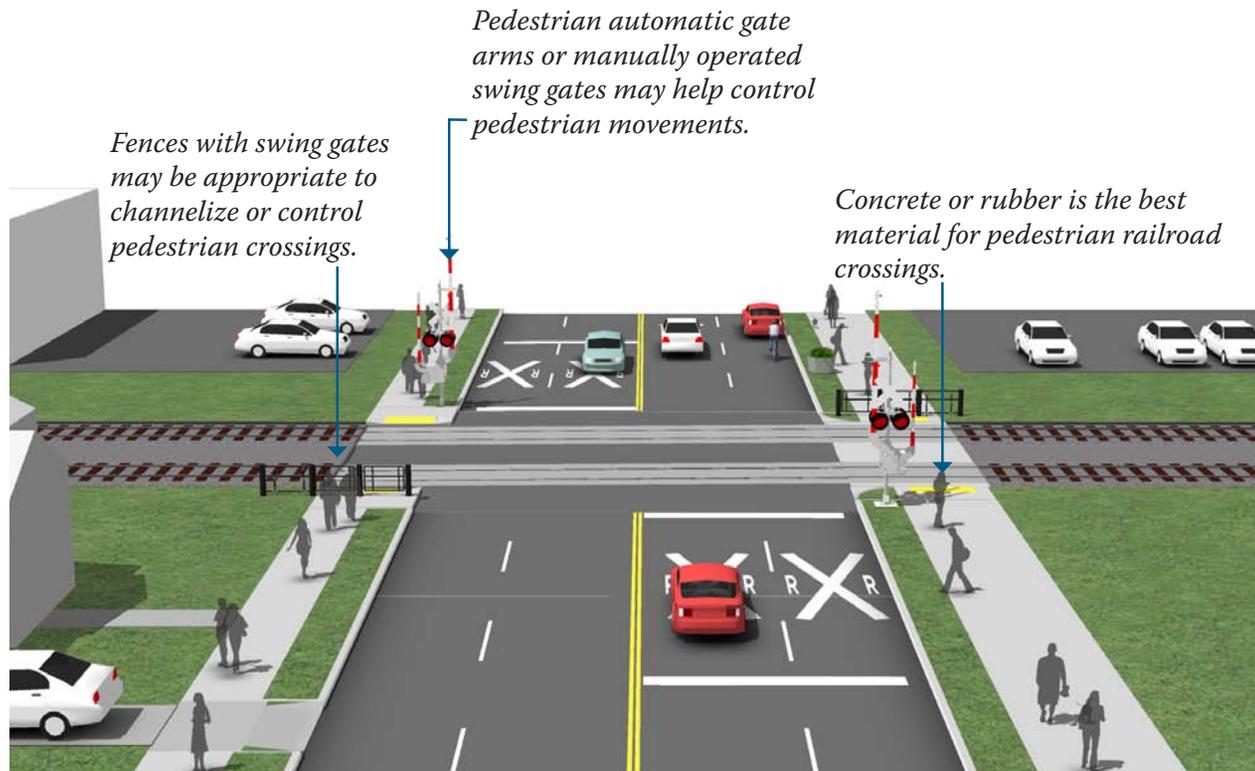
Flangeway gaps should not exceed 2.5 in (3.0 in for tracks that carry freight.)

Discussion

Crossing design and implementation is a collaboration between the railroad company and highway agency. The railroad company is responsible for the crossbucks, flashing lights and gate mechanisms, and the highway agency is responsible for advance warning markings and signs. Warning devices should be recommended for each specific situation by a qualified engineer based on various factors including train frequency and speed, path and trail usage and sight distances.

Additional References and Guidelines

- AASHTO. Planning, Design, and Operation of Ped. Facilities. 2004.
- FHWA. Manual on Uniform Traffic Control Devices. 2009.
- FHWA. Railroad-Highway Grade Crossing Handbook. 2007.
- TRB. TCRP 17: Integration of Light Rail Transit into City Streets. 1996.
- NCDOT. Complete Street Planning and Design Guidelines. 2012.
- Rails-to-Trails Conservancy. Rails-with-Trails: A Preliminary Assessment of Safety and Grade Crossings. 2005.



Bicyclist At-grade Railroad Crossings

Description

Bikeways that cross railroad tracks at a diagonal may cause steering difficulties or loss of control for bicyclists due to slippery surfaces, degraded rough materials, and the size of the flangeway gaps.

Angled track crossings also limit sight triangles, impacting the ability to see oncoming trains.

Bicyclist crashes at railroad tracks are often sudden and unexpected. Improvements to track placement, surface quality, flangeway opening width and crossing angle can minimize risks to people riding.

Guidance

6 ft minimum shoulder/bike lane width.

If the skew angle is less than 45 degrees, special attention should be given to the sidewalk and bicycle alignment to improve the approach angle to at least 60 degrees (90 degrees preferred where possible).

Consider posting W-10 or W-12 signs to alert bicyclists.

Sight triangles of 50 feet by 100 feet will be provided at the railroad and street right of way. (Sight triangles are measured from the centerline of the railroad track.

Discussion

Crossing design and implementation is a collaboration between the railroad company and highway agency. The railroad company is responsible for the crossbucks, flashing lights and gate mechanisms, and the highway agency is responsible for advance warning markings and signs. Warning devices should be recommended for each specific situation by a qualified engineer based on various factors including train frequency and speed, path and trail usage and sight distances.

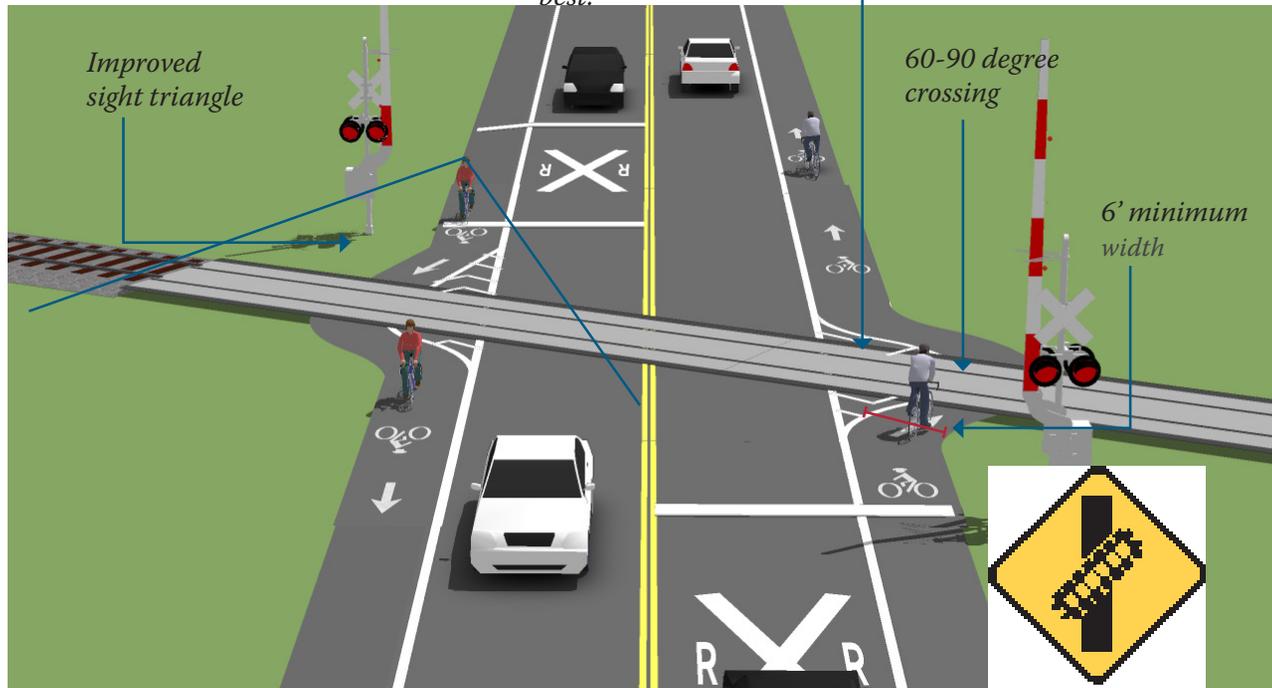
Materials and Maintenance

Concrete is the preferred material for use at bike-way railroad crossings. Rubber crossings are rideable when new and dry, but become slippery when wet and degrade over time. (AASHTO 2012)

Additional References and Guidelines

- AASHTO. Guide for the Development of Bicycle Facilities. 2012.
- FHWA. Manual on Uniform Traffic Control Devices. 2009.
- TRB. TCRP 17: Integration of Light Rail Transit into City Streets. 1996.
- FHWA. Railroad-Highway Grade Crossing Handbook. 2007.
- NCDOT. Complete Street Planning and Design Guidelines. 2012.
- Rails-to-Trails Conservancy. Rails-with-Trails: A Preliminary Assessment of Safety and Grade Crossings. 2005.

Allow bicyclists access to the full widened pavement area to allow them to choose the path that suits their needs best.



Minimizing Curb Radii

Description

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances.

Guidance

- The radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements, adequate street width, and a larger effective curb radius created by parking or bike lanes.

Discussion

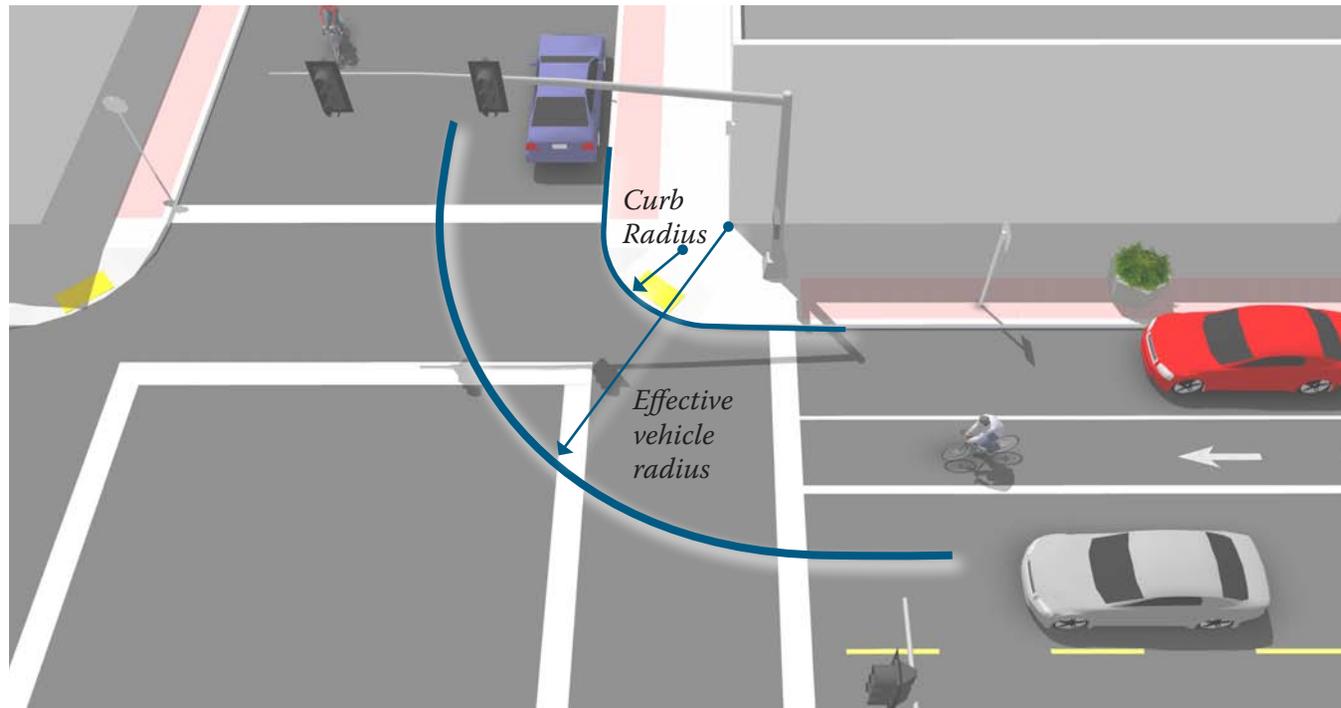
Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is parking or a bike lane (or both) between the travel lane and the curb.

Materials and Maintenance

Improperly designed curb radii at corners may be subject to damage by large trucks.

Additional References and Guidelines

AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.



Curb Extensions

Description

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and giving pedestrians a better chance to see and be seen before committing to crossing. They are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.

Guidance

- In most cases, the curb extensions should be designed to transition between the extended curb and the running curb in the shortest practicable distance.
- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.
- Curb extensions should terminate one foot short of the parking lane to maximize bicyclist safety.

Discussion

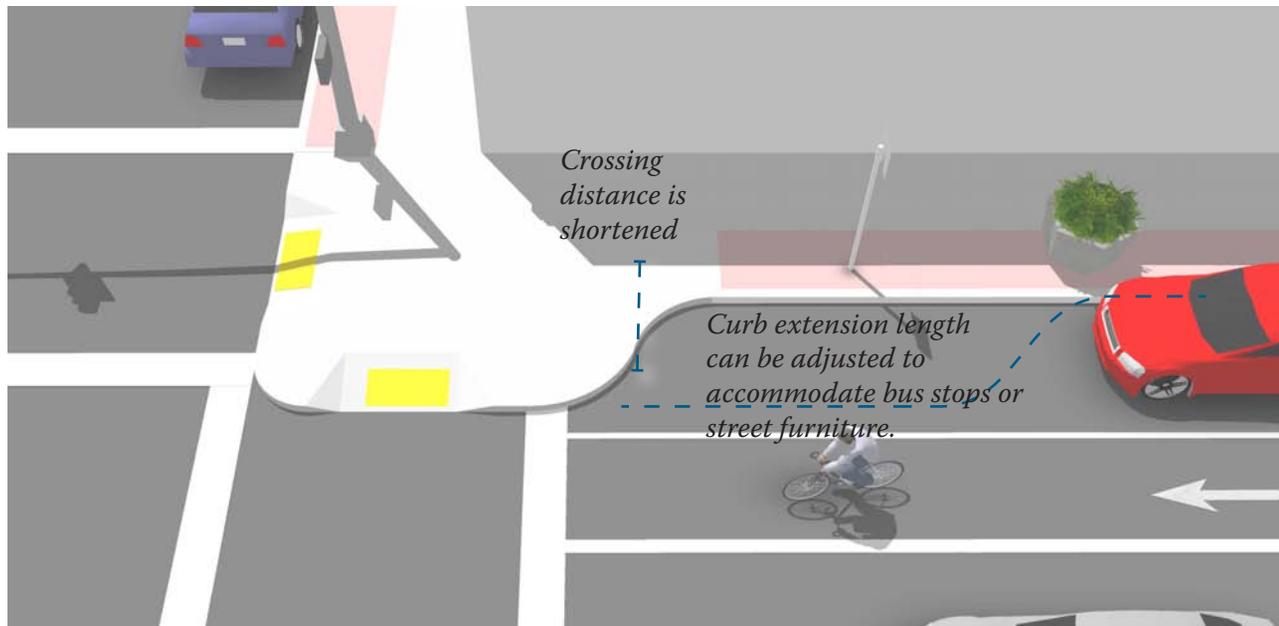
If there is no parking lane, adding curb extensions may be a problem for bicycle travel and truck or bus turning movements.

Materials and Maintenance

Planted curb extensions may be designed as a bio-swale, a vegetated system for stormwater management.

Additional References and Guidelines

AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
AASHTO. (2004). A Policy on Geometric Design of Highways and Streets.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.



ADA Compliant Curb Ramps

Description

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes. Diagonal curb ramp configurations are the least preferred of all options.

Guidance

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.

- The ramp shall slope no more than 1:50 (2.0%) in any direction.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long and at least as wide as the ramp, although a width of 5'-0" is preferred.

Discussion

The edge of an ADA compliant curb ramp will be marked with a tactile warning device (also known as truncated domes) to alert people with visual impairments to changes in the pedestrian environment. Contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident. These devices are most effective when adjacent to smooth pave-

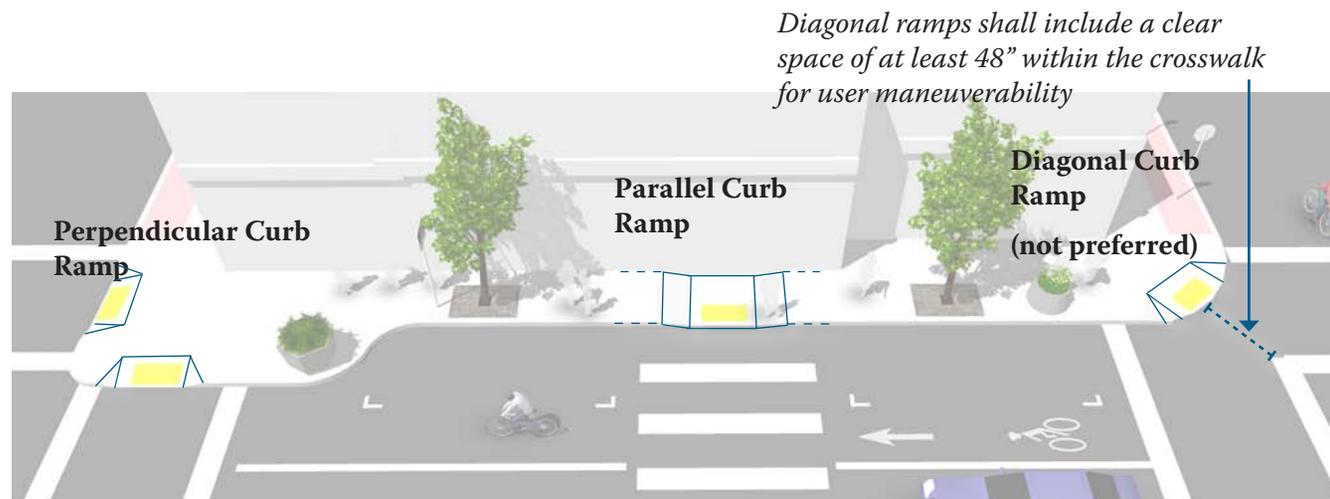
ment so the difference is easily detected. The devices must provide color contrast so partially sighted people can see them.

Materials and Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop potholes at the foot of the ramp, which can catch the front wheels of a wheelchair.

Additional References and Guidelines

United States Access Board. (2002). Accessibility Guidelines for Buildings and Facilities.
United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
USDOJ. (2010). ADA Standards for Accessible Design.



Crosswalk spacing not to scale. For illustration purposes only.

Signalization

Crossing beacons and signals facilitate crossings of roadways for pedestrians and bicyclists. Beacons make crossing intersections safer by clarifying when to enter an intersection and by alerting motorists to the presence of pedestrians and bicyclists.

Flashing amber warning beacons can be utilized at unsignalized intersection crossings. Push buttons, signage, and pavement markings may be used to highlight these facilities for pedestrians, bicyclists and motorists.

Determining which type of signal or beacon to use for a particular intersection depends on a variety of factors. These include speed limits, traffic volumes, and the anticipated levels of pedestrian and bicycle crossing traffic.

An intersection with crossing beacons may reduce stress and delays for crossing users, and discourage illegal and unsafe crossing maneuvers.



Pedestrians at Signalized Crossings

Description

Pedestrian Signal Head

- All traffic signals should be equipped with pedestrian signal indications except where pedestrian crossing is prohibited by signage.
- Countdown signals should be used at all signalized intersections to indicate whether a pedestrian has time to cross the street before the signal phase ends.

Signal Timing

- Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The MUTCD recommends traffic signal timing to assume a pedestrian walking speed of 4' per second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street.
- At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3' per second may be assumed.
- In busy pedestrian areas such as downtowns, the pedestrian signal indication should be built into each signal phase, eliminating the requirement for a pedestrian to actuate the signal by pushing a button.

Discussion

When push buttons are used, they should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk, and marked (for example, with arrows) so that it is clear which signal is affected.

In areas with very heavy pedestrian traffic, consider an all-pedestrian signal phase to give pedestrians free passage in the intersection when all motor vehicle traffic movements are stopped.

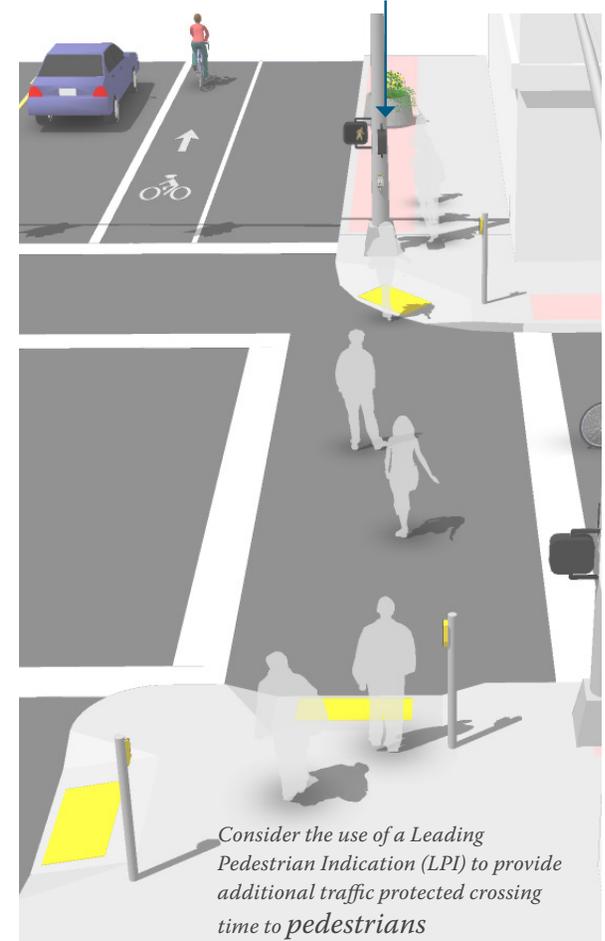
Materials and Maintenance

It is important to repair or replace traffic control equipment before it fails. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and loop detectors.

Additional References and Guidelines

United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.

Audible pedestrian traffic signals provide crossing assistance to pedestrians with vision impairment at signalized intersections



Pedestrian Hybrid Beacon

Description

Hybrid beacons are used to improve non-motorized crossings of major streets. A hybrid beacon consists of a signal-head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk.

Guidance

- Hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable pedestrian crossings.

Should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs

- If installed within a signal system, signal engineers should evaluate the need for the hybrid signal to be coordinated with other signals.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.

Discussion

Hybrid beacon signals are normally activated by push buttons, but may also be triggered by infrared, microwave, or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

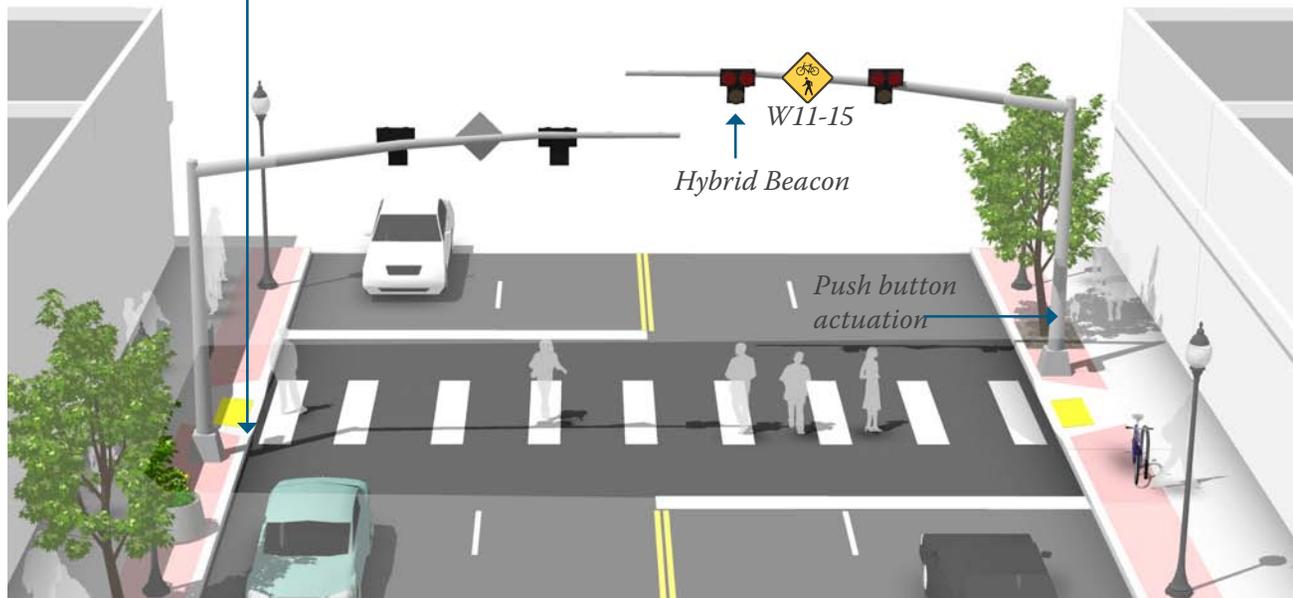
Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

Materials and Maintenance

Hybrid beacons are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices.
NACTO. (2012). Urban Bikeway Design Guide.
NCDOT. (2012). Complete Streets Planning and Design Guidelines.



Pedestrian Signs and Wayfinding

Signage provides important safety and wayfinding information to motorist and pedestrian residents and tourists. From a safety standpoint, motorists should be given advance warning of upcoming pedestrian crossings or of traffic calming areas. Signage of any type should be used and regulated judiciously. An inordinate amount of signs creates visual clutter. Under such a condition, important safety or wayfinding information may be ignored resulting in confusion and possible pedestrian vehicle conflict. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic.

Regulatory Signage

Regulatory signage is used to inform motorists or pedestrians of a legal requirement and should only be used when a legal requirement is not otherwise apparent (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities).

Warning Signage

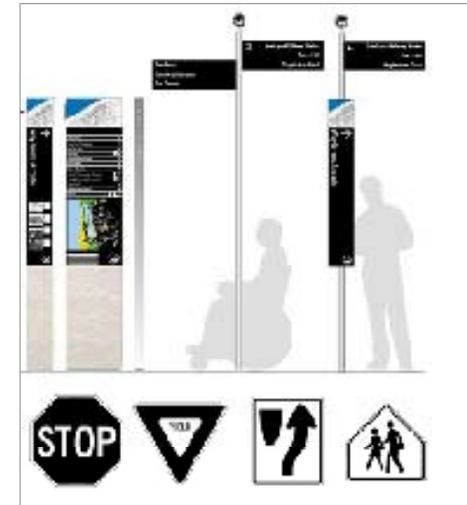
Warning signage is used to inform motorists and pedestrians of unexpected or unusual conditions. When used, they should be placed to provide adequate response times. These include school warning signs and pedestrian crossing signs.

Informational and Wayfinding Signage

Informational and wayfinding signage can provide information providing guidance to a location along a trail or other pedestrian facility. Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity.

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

Below: Wayfinding signs promote aesthetics as well as provide important information (image from Stefton, UK: <http://www.sefton.gov.uk>)



Regulatory Signs



School, Warning, and Informational Signs



S1-1



S3-1



W11-2



W15-1



I-4

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

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

For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website:

http://www.pps.org/info/amenities_bb/signage_guide

Multi-Use Trail

A multi-use trail allows for two-way use by pedestrians, skaters, bicyclists, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

Key features of multi-use trails include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

Neighborhood Greenways

Also included in this section is a facility called a Neighborhood Greenway. Unlike conventional multi-use trails, this facility is not a separate path, but is rather a calm street designed for a broad spectrum of users. Traffic calming treatments for neighborhood greenways are selected as necessary to create appropriate automobile volumes and speeds, and to provide safe crossing opportunities of busy streets.



General Design Practices

Description

Multi-use trails can provide a desirable facility for users of all skill levels preferring separation from traffic, particularly for recreation. Multi-use trails should generally provide directional travel opportunities not provided by existing roadways.

Guidance

Width

- 8 feet is the minimum allowed for a two-way multi-use trail and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

Lateral Clearance

- A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.

Overhead Clearance

- Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping

When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines. Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

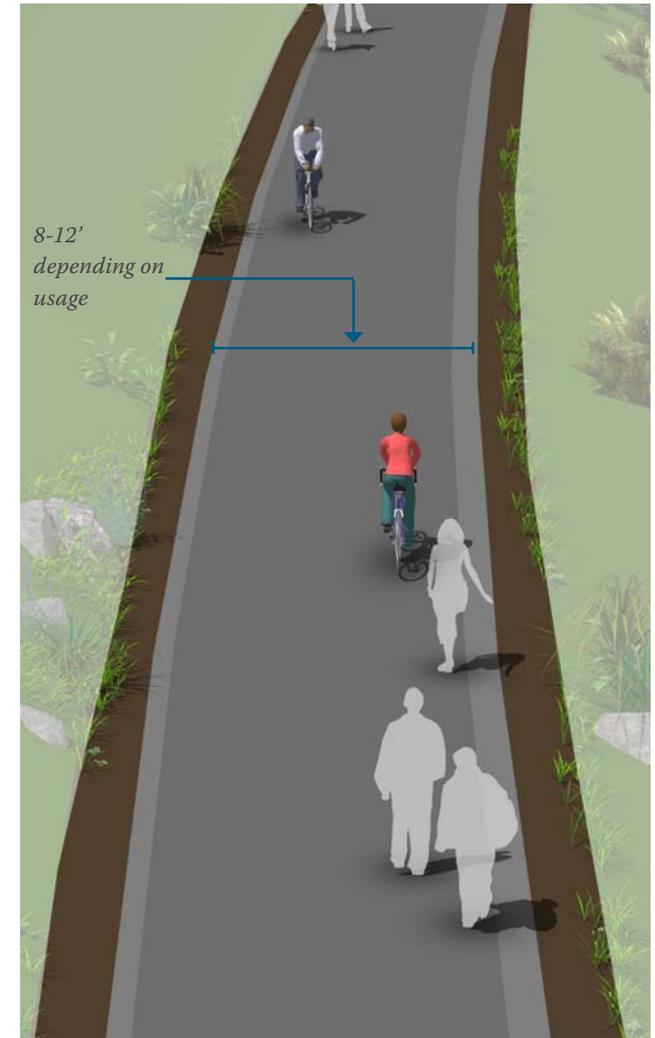
Materials and Maintenance

Asphalt is the most common surface for multi-use trails. Thicker asphalt sections and a well-prepared subgrade will reduce deformation over time and reduce long-term maintenance costs.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities. FHWA. (2009). Manual on Uniform Traffic Control Devices. Flink, C. (1993). Greenways: A Guide To Planning Design And Development. NCDOT. (2012). Complete Streets Planning and Design Guidelines.

Terminate the path where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.



Neighborhood Greenways

Description

Neighborhood greenways are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Guidance

- Signs and pavement markings are the minimum treatments necessary to designate a street as a neighborhood greenway.
- Neighborhood greenways should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Implement volume control treatments based on the context of the neighborhood greenway, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

Discussion

Neighborhood greenway retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments to assist pedestrian crossing, these intersections can become major barriers along the neighborhood greenway and compromise safety.

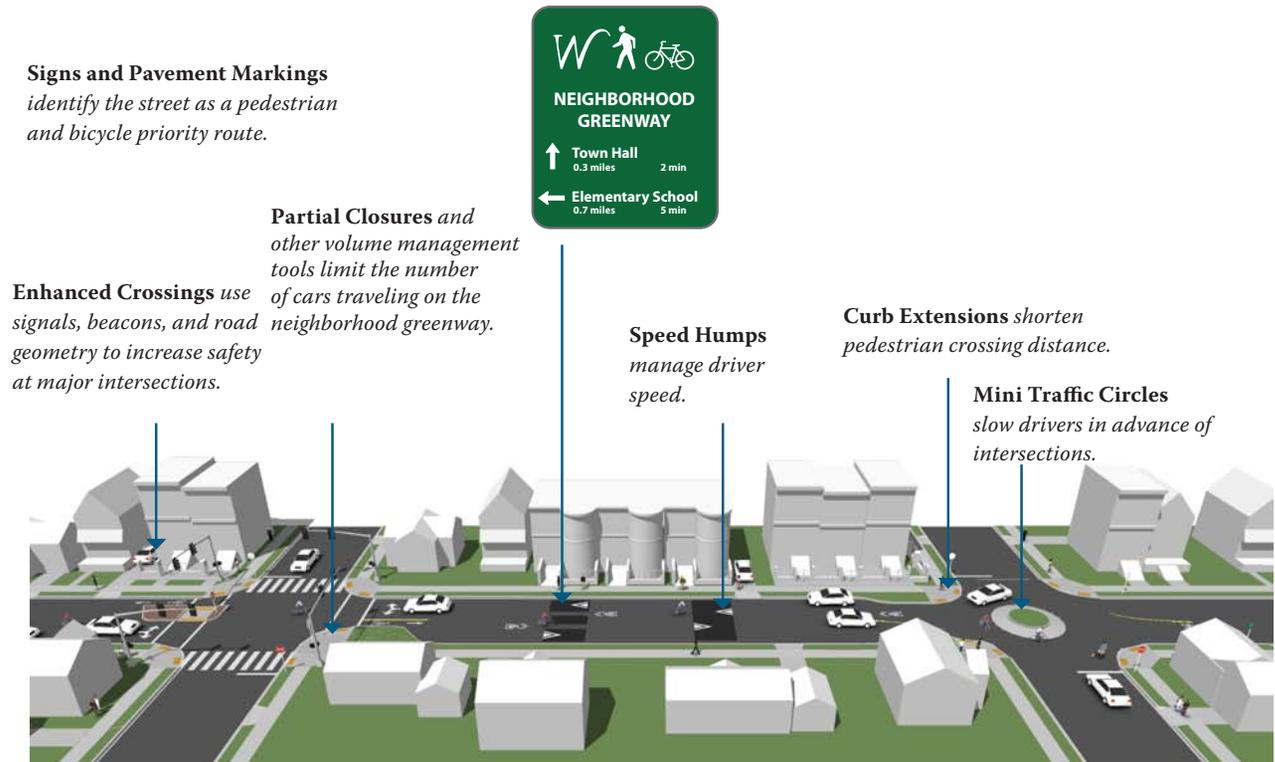
Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes.

Materials and Maintenance

Maintenance needs for bicycle signs are similar to other signs. Signs will need periodic replacement due to wear.

Additional References and Guidelines

- Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.
- BikeSafe. (No Date). Bicycle countermeasure selection system.
- Ewing, Reid. (1999). Traffic Calming: State of the Practice.
- Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming Manual.



Local Neighborhood Accessways

Description

Neighborhood accessways provide residential areas with direct pedestrian access to parks, trails, greenspaces, and other recreational areas. They most often serve as small trail connections to and from the larger trail network, typically having their own rights-of-way and easements.

Additionally, these smaller trails can be used to provide pedestrian connections between dead-end streets, cul-de-sacs, and access to nearby destinations not provided by the street network.

Guidance

- Neighborhood accessways should remain open to the public.
- Trail pavement shall be at least 8' wide to accommodate emergency and maintenance vehicles, meet ADA requirements, and be considered suitable for multi-use.

- Trail widths should be designed to be less than 8' wide only when necessary to protect large mature native trees over 18" in caliper, wetlands, or other ecologically sensitive areas.
- Access trails should slightly meander whenever possible.

Discussion

Neighborhood accessways should be designed into new subdivisions at every opportunity and should be required by City/County subdivision regulations.

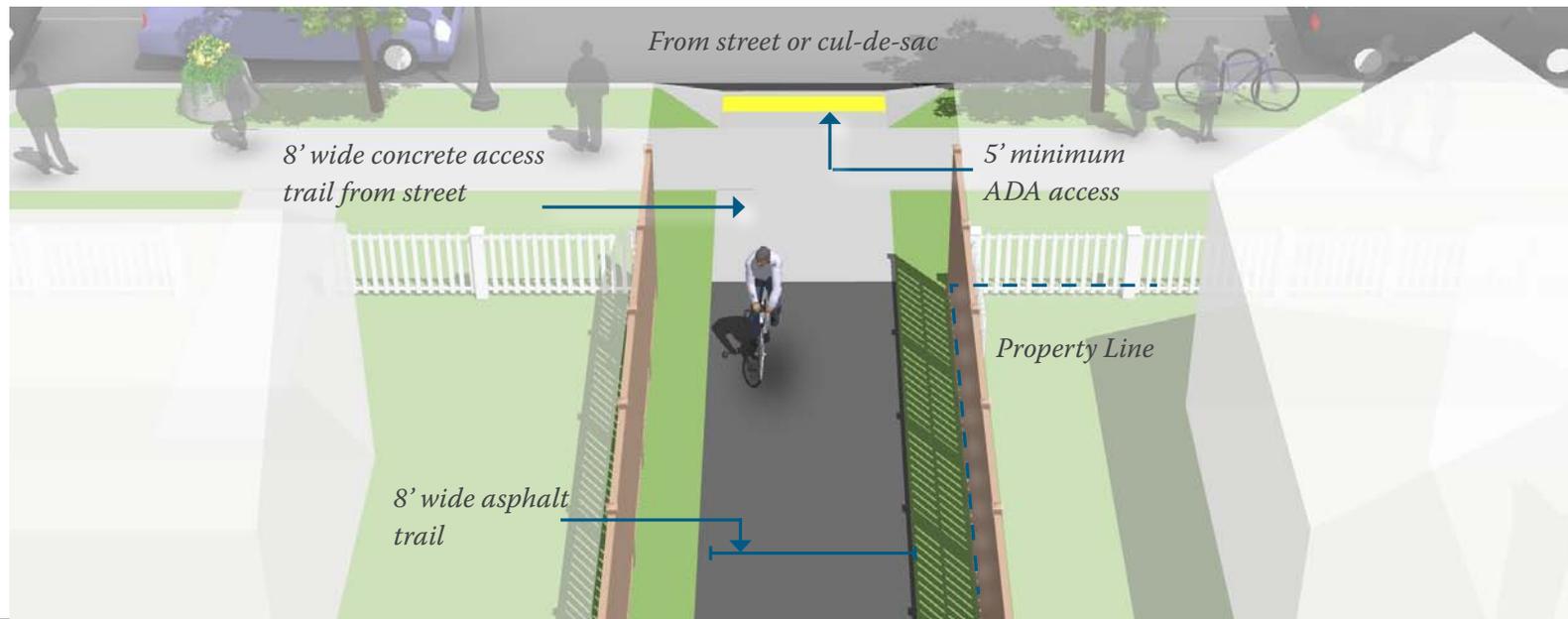
For existing subdivisions, neighborhood and homeowner association groups are encouraged to identify locations where such connects would be desirable. Nearby residents and adjacent property owners should be invited to provide landscape design input.

Materials and Maintenance

Asphalt multi-use trails should be designed with sufficient surfacing structural depth for the sub-grade soil type to support maintenance and emergency vehicles.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities. FHWA. (2009). Manual on Uniform Traffic Control Devices. FHWA. (2006). Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Lesson 19: Greenways and Shared Use Paths.



Multi-Use Trails Along Roadways

Description

A multi-use trail (also called side path) allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles.

Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.

The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of multi-use trail directly adjacent to roadways.

Guidance

- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers and pedestrians. A separate track (5' minimum) can be provided for pedestrian use.
- Bicycle lanes should be provided as an alternate (more transportation-oriented) facility whenever possible.

Discussion

When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bicycle lane width on the roadway, as the on-street bicycle facility will generally be superior to the “side path” for experienced bicyclists and those who are cycling for transportation purposes.

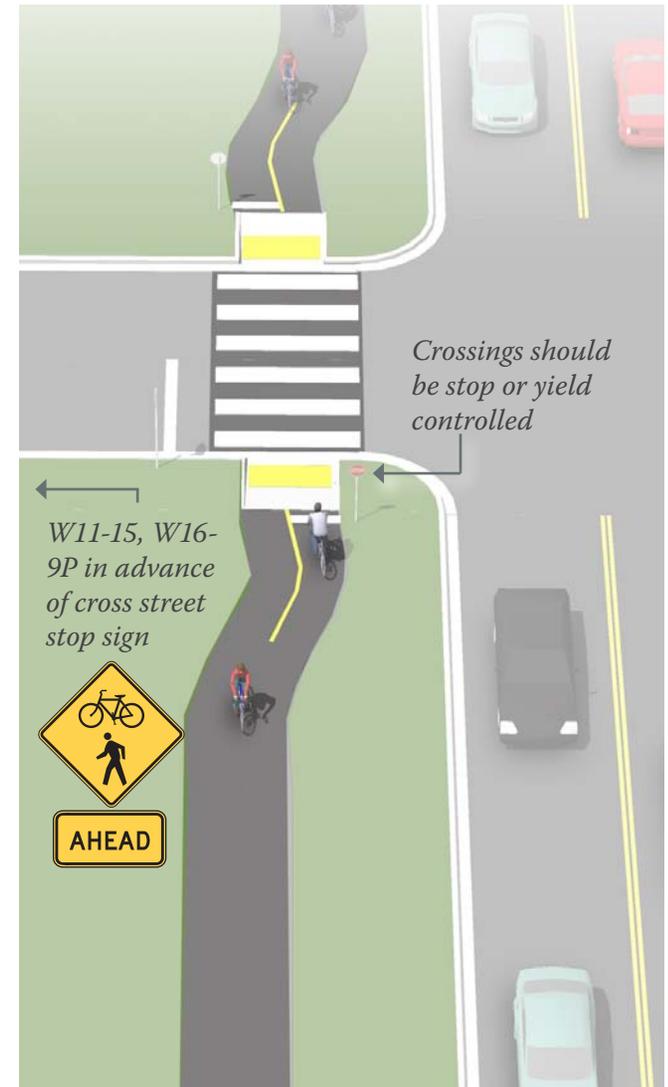
Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Additional References and Guidelines

- AASHTO. (2012). Guide for the Development of Bicycle Facilities.
- NACTO. (2012). Urban Bikeway Design Guide. See entry on Raised Cycle Tracks.
- NCDOT. (1994). Bicycle Facilities Planning and Design Guidelines.

Pay special attention to the entrance/exit of the path as bicyclists may continue to travel on the wrong side of the street.



Natural Surface Trails

Description

Sometimes referred to as footpaths or hiking trails, the natural surface trail is used along corridors that are environmentally-sensitive but can support bare earth, wood chip, or boardwalk trails. Natural surface trails are a low-impact solution and found in areas with limited development or where a more primitive experience is desired.

Guidance presented in this section does not include considerations for bicycle users. Natural surface trails designed for bicycle users are typically known as single track trails.

Guidance

- Trails can vary in width from 18 inches to 6 feet or greater; vertical clearance should be maintained at nine-feet above grade.
- Base preparation varies from machine-worked surfaces to those worn only by usage.

- Trail surface can be made of dirt, rock, soil, forest litter, or other native materials. Some trails use crushed stone (a.k.a. “crush and run”) that contains about 4% fines by weight, and compacts with use.
- Provide positive drainage for trail tread without extensive removal of existing vegetation; maximum slope is five percent (typical).

Discussion

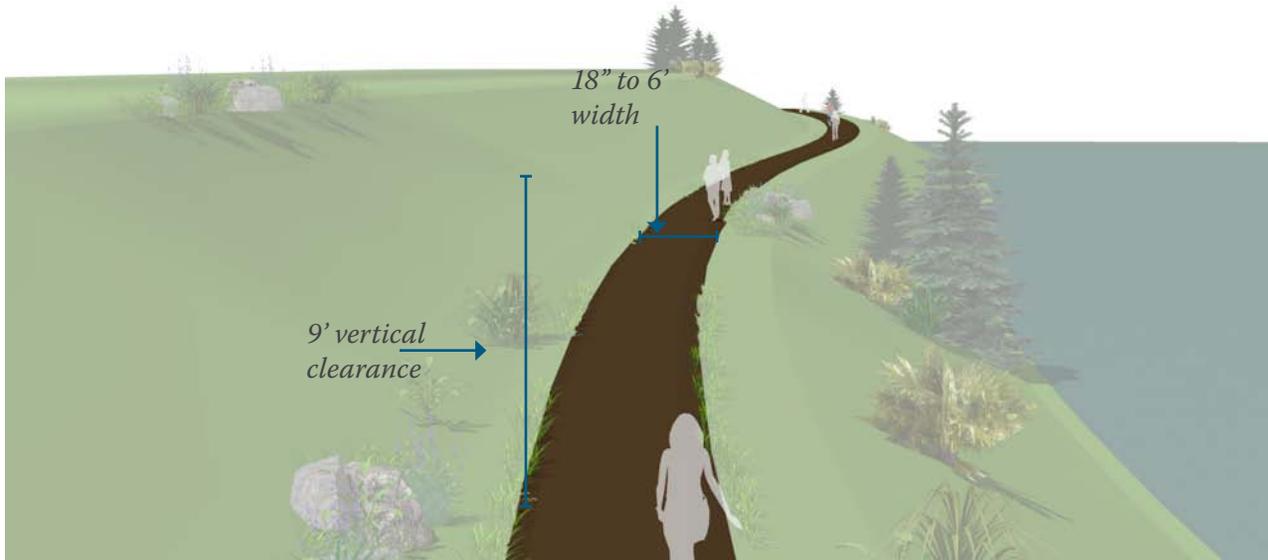
Trail erosion control measures include edging along the low side of the trail, steps and terraces to contain surface material, and water bars to direct surface water off the trail; use bedrock surface where possible to reduce erosion.

Materials and Maintenance

Consider implications for accessibility when weighing options for surface treatments.

Additional References and Guidelines

Flink, C. (1993). *Greenways: A Guide To Planning Design And Development*.



Multi-Use Trails in Active Rail Corridors

Description

Rails-with-Trails projects typically consist of paths adjacent to active railroads. It should be noted that some constraints could impact the feasibility of rail-with-trail projects. In some cases, space needs to be preserved for future planned freight, transit or commuter rail service. In other cases, limited right-of-way width, inadequate setbacks, concerns about safety/trespassing, and numerous mid-block crossings may affect a project's feasibility.

Guidance

- Multi-use trails in active rail corridors should meet or exceed general design standards. If additional width allows, wider paths and landscaping are desirable.

- If required, fencing should be a minimum of 5 feet in height with higher fencing than usual next to sensitive areas such as switching yards. Setbacks from the active rail line will vary depending on the speed and frequency of trains, and available right-of-way.

Discussion

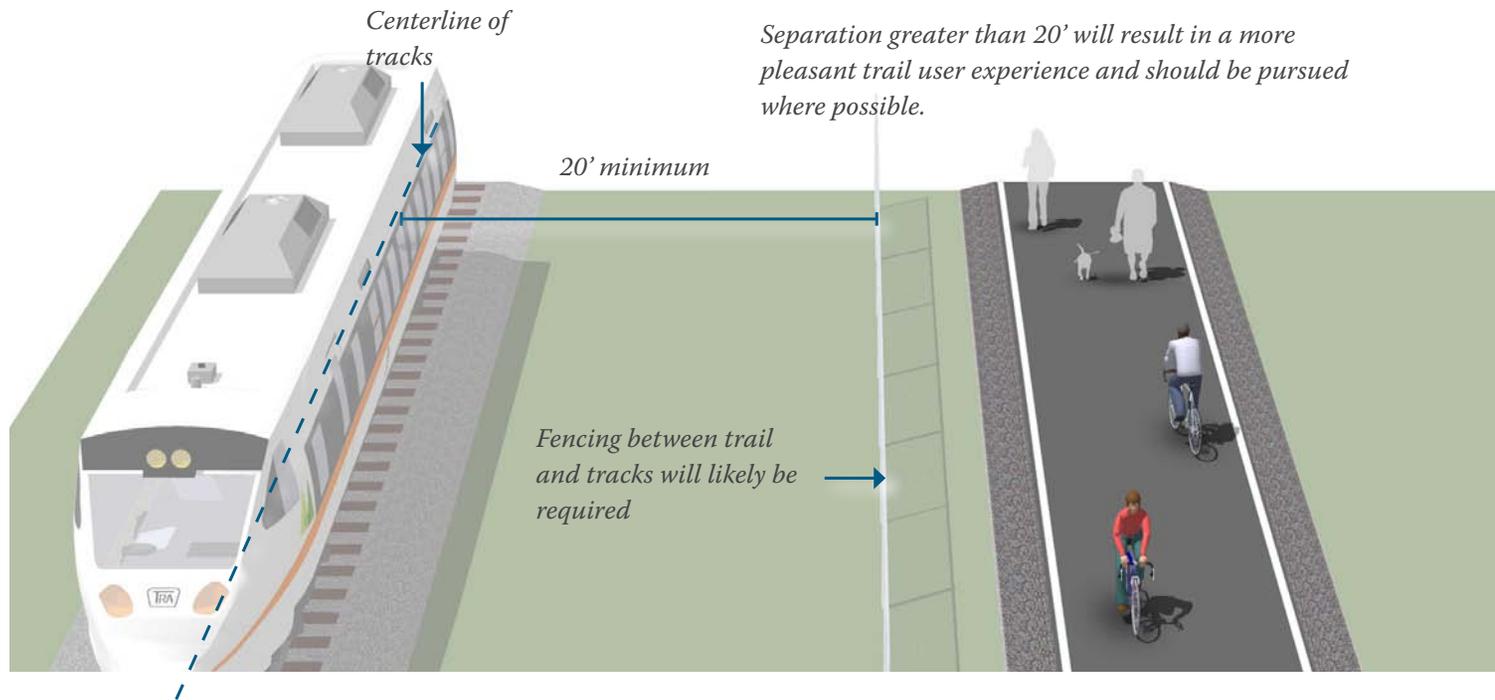
Railroads typically require fencing with all rail-with-trail projects. Concerns with trespassing and security can vary with the amount of train traffic on the adjacent rail line and the setting of the Multi-use trail, i.e. whether the section of track is in an urban or rural setting.

Materials and Maintenance

Concrete paths may cost more to build than asphalt paths but do not become brittle, cracked and rough with age, or deformed by roots.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities. FHWA. (2009). Manual on Uniform Traffic Control Devices. FHWA. (2002). Rails-with-Trails: Lessons Learned.



Multi-Use Trails in Inactive Rail Corridors

Description

Commonly referred to as Rails-to-Trails or Rail-Trails, these projects convert vacated rail corridors into off-street paths. Rail corridors offer several advantages, including relatively direct routes between major destinations and generally flat terrain.

In some cases, rail owners may rail-bank their corridors as an alternative to a complete abandonment of the line, thus preserving the rail corridor for possible future use.

The railroad may form an agreement with any person, public or private, who would like to use the banked rail line as a trail or linear park until it is again needed for rail use. Municipalities should acquire abandoned rail rights-of-way whenever possible to preserve the opportunity for trail development.

Guidance

- Multi-use trails in abandoned rail corridors should meet or exceed general design practices. If additional width allows, wider paths and landscaping are desirable.
- In full conversions of abandoned rail corridors, the sub-base, superstructure, drainage, bridges, and crossings are already established. Design becomes a matter of working with the existing infrastructure to meet the needs of a rail-trail.
- If converting a rail bed adjacent to an active rail line, see Multi-use trails in Existing Active Rail Corridors.

Discussion

It is often impractical and costly to add material to existing railroad bed fill slopes. This results in trails that meet minimum path widths, but often lack preferred shoulder and lateral clearance widths.

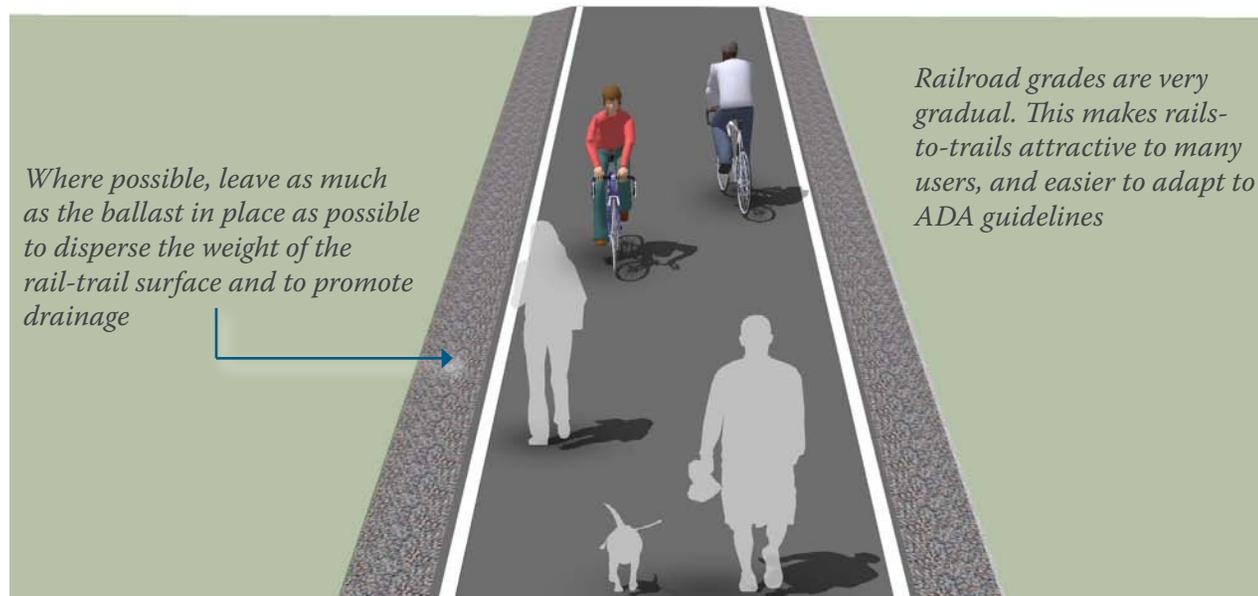
Rail-to-trails can involve many challenges including the acquisition of the right of way, cleanup and removal of toxic substances, and rehabilitation of tunnels, trestles and culverts. A structural engineer should evaluate existing railroad bridges for structural integrity to ensure they are capable of carrying the appropriate design loads.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities. FHWA. (2009). Manual on Uniform Traffic Control Devices. Flink, C. (1993). Greenways: A Guide To Planning Design And Development.



Multi-Use Trail Crossings

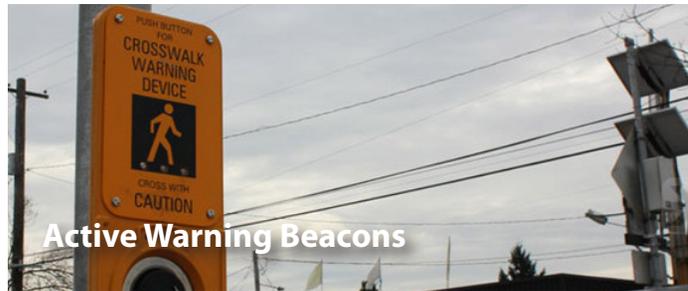
At-grade roadway crossings can create potential conflicts between path users and motorists. However, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. This is evidenced by the thousands of successful facilities around the United States with at-grade crossings. In most cases, at-grade path crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Path facilities that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians.

Consideration must be given to adequate warning distance based on vehicle speeds and line of sight, with the visibility of any signs absolutely critical. Directing the active attention of motorists to roadway signs may require additional alerting devices such as a flashing beacon, roadway striping or changes in pavement texture. Signing for path users may include a standard “STOP” or “YIELD” sign and pavement markings, possibly combined with other features such as bollards or a bend in the pathway to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.

A number of striping patterns have emerged over the years to delineate path crossings. A median stripe on the path approach will help to organize and warn path users. Crosswalk striping is typically a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically yield to crosswalk users, additional measures may be required to increase compliance.



Marked/Unsignalized Crossings



Active Warning Beacons



Route Users to Existing Signals

Unsignalized Marked Crossings

Description

An unsignalized marked crossing typically consists of a marked crossing area, signage, and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.

Guidance

- Refer to the FHWA report, “Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations” for specific volume and speed ranges where a marked crosswalk alone may be sufficient.
- Where the speed limit exceeds 40 miles per hour, marked crosswalks alone should not be used at unsignalized locations.
- Crosswalks should not be installed at locations that could present an increased risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices.

Discussion

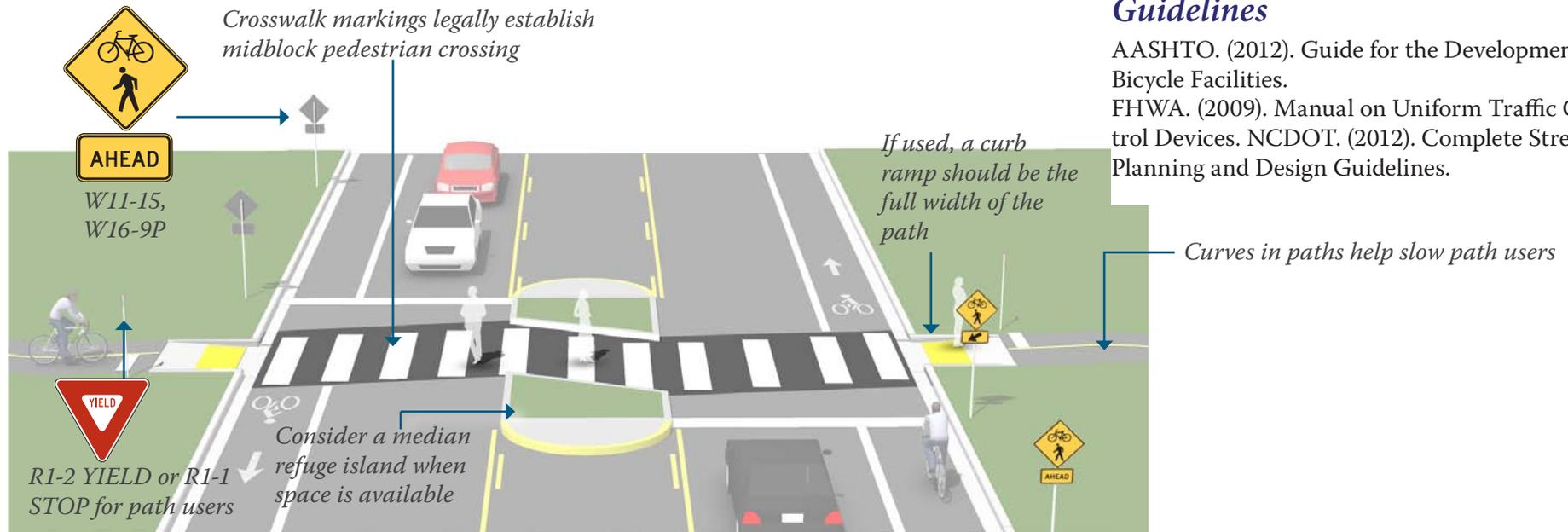
Marked crosswalks alone will not make crossings safer, nor will marked crosswalks necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g. raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions, etc.) as needed to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding which treatment to use.

Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs.

Additional References and Guidelines

- AASHTO. (2012). Guide for the Development of Bicycle Facilities.
- FHWA. (2009). Manual on Uniform Traffic Control Devices.
- NCDOT. (2012). Complete Streets Planning and Design Guidelines.



Active Warning Beacons

Description

Enhanced marked crossings are unsignalized crossings with additional treatments designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways.

These enhancements include pathway user or sensor actuated warning beacons, Rectangular Rapid Flash Beacons (RRFB) shown below, or in-roadway warning lights.

Guidance

- Guidance for Unsignalized Marked Crossings applies.

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- Warning beacons shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.

Discussion

Rectangular rapid flash beacons show the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81

percent. A four-beacon arrangement raised compliance to 88 percent. Additional studies of long term installations show little to no decrease in yielding behavior over time.

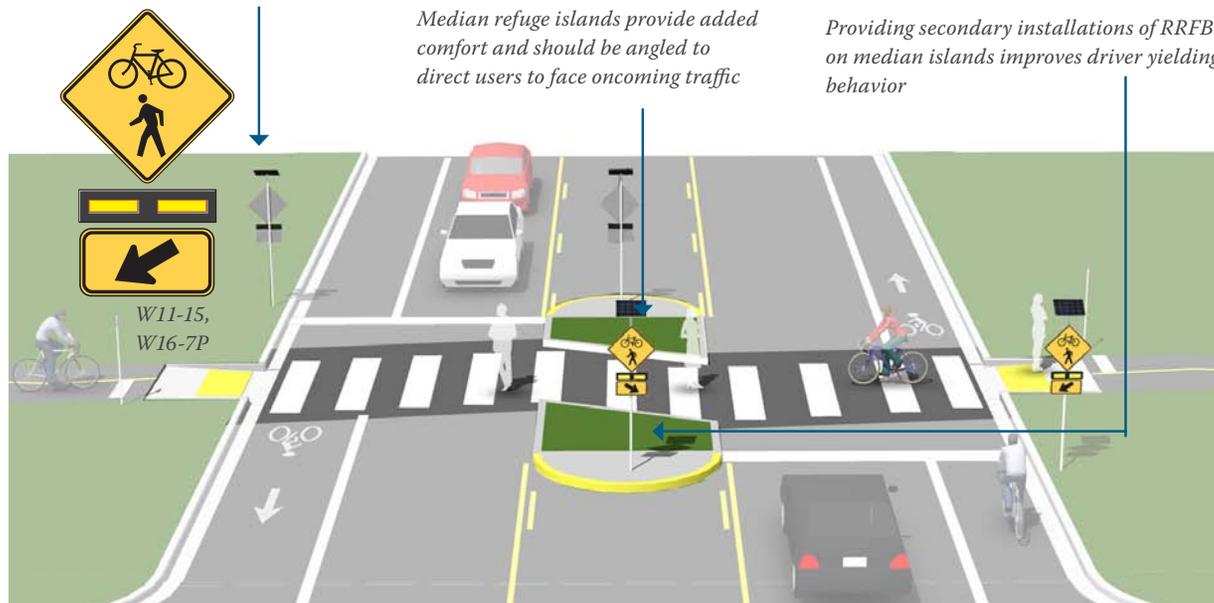
Materials and Maintenance

Depending on power supply, maintenance of active warning beacons can be minimal. If solar power is used, signals should run for years without issue.

Additional References and Guidelines

NACTO. (2012). Urban Bikeway Design Guide.
FHWA. (2009). Manual on Uniform Traffic Control Devices.
FHWA. (2008). MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)
NCDOT. (2012). Complete Streets Planning and Design Guidelines.

Rectangular Rapid Flash Beacons (RRFB) dramatically increase compliance over conventional warning beacons



Median refuge islands provide added comfort and should be angled to direct users to face oncoming traffic

Providing secondary installations of RRFBs on median islands improves driver yielding behavior

Route Users to Signalized Crossings

Description

Path crossings within approximately 400 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal. For this restriction to be effective, barriers and signing may be needed to direct path users to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.

Guidance

- Path crossings should not be provided within approximately 400 feet of an existing signalized intersection. If possible, route path directly to the signal.

Discussion

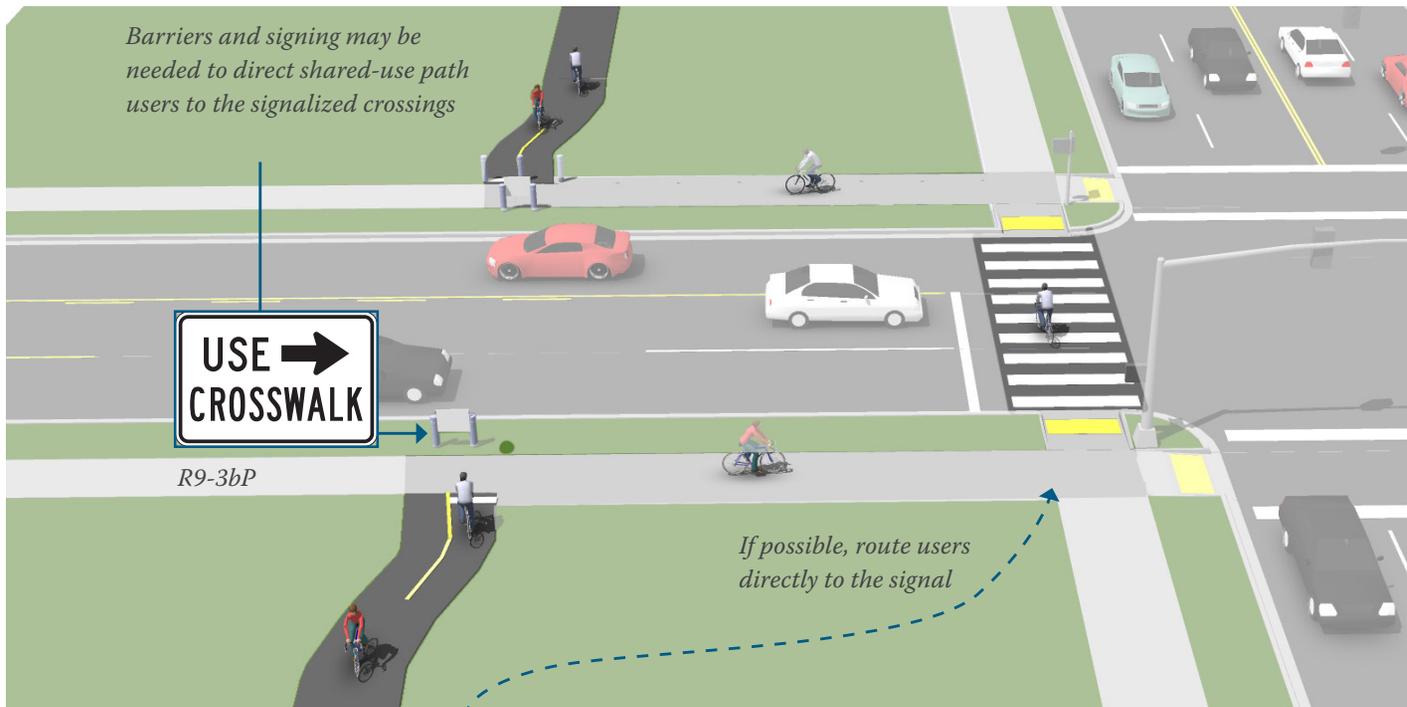
In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 feet. Engineering judgement and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and jaywalking may become prevalent if the distance is too great.

Materials and Maintenance

Municipalities should maintain comprehensive inventories of the location and age of bicycle way-finding signs to allow incorporation of bicycle way-finding signs into any asset management activities.

Additional References and Guidelines

- AASHTO. (2012). Guide for the Development of Bicycle Facilities.
- AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.



Mayor Byrne kicks off the Fourth of July Celebration



B Public Outreach

Overview

Public engagement involved numerous components to spread awareness of the Pedestrian Master Plan and to ensure a variety of local perspectives containing essential insight were appropriately incorporated into the plan. Various mediums and resources were constructed so that all residents and stakeholders in Fuquay-Varina and the surrounding areas had the opportunity to participate.

The public engagement component of this Plan included the following:

1. Steering Committee Meetings
2. Public Outreach Events
3. Project Information Resources
 - Project website with link to online comment form
 - Project comment forms
 - Project information cards

Steering Committee Meetings

The Steering Committee was involved throughout the planning process. During the kick-off meeting, the group reviewed and provided feedback on the project website, project comment form, established a vision statement and goals for the plan, and discussed the timeline and schedule of the planning process. Members of the Steering Committee worked with the consultant team to mark up local and regional maps to identify gaps in the current network, unsafe crossing locations, and other high priority areas. Input from the Steering Committee is reflected throughout the recommendations of this planning document.



Steering committee kick-off meeting, May 2013

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Stakeholder Meetings & Public Outreach Events (B-2)

Project Resources (B-3)

Public Comment Form Responses (B-4)



Steering committee kick-off meeting, May 2013

Stakeholder Meetings & Public Outreach Events

Celebrate Fuquay-Varina!

Plan information materials, including project information cards and hard copies of the public comment form, were sent to the Town for display and distribution during the Celebrate Fuquay-Varina! event that was held on June 1, 2013.

Fuquay-Varina 4th of July Fireworks Event

The project consultant team set up a booth at the Fuquay-Varina 4th of July Fireworks event. People were invited to learn about the plan and provide comments about where they would like to see improvements for walking. A public input map, brochures, and posters were displayed and a project consultant answered questions and took comments. Dozens of people stopped by to learn about the plan and directly provide input. The general feedback was highly positive, with many people interested in seeing Fuquay-Varina become a more walk-friendly community.

Pedestrian Plan Public Workshop

A public workshop to review the draft plan was held in Fall 2013. (Further description to be added.)

At all meetings, events, and workshops, public input was obtained in the form of map markups, written comments, verbal question and answer sessions, and discussions between citizens, consultant staff and representatives of the Steering Committee. In addition, hardcopy public comment forms were distributed for hand written responses during each event. These were important opportunities to connect with a wide range of citizens in the area.

placeholder for photo and write up about “Day in Downtown” - upcoming workshop



Fourth of July Fireworks Celebration at South Park, Fuquay-Varina

Project Resources

A number of resources were developed to enhance project awareness and participation. These tools also played a significant role in ensuring all members of the general public would have the opportunity to participate.

Project Website

A project website was developed to provide further project information, maps, contact information, and additional resources. The website also featured a link to the online public comment form page, offering an additional medium for the Fuquay-Varina community to become engaged and participate in the planning process.

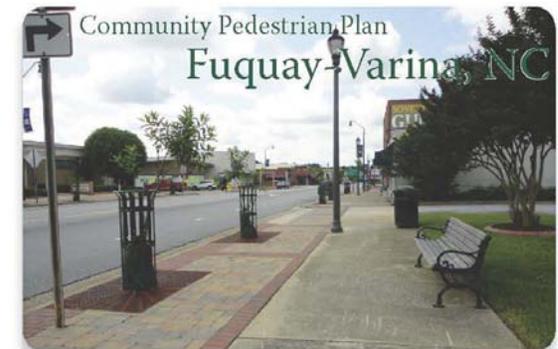
Public Comment Form

A comment form was developed and was made available in both hard copy and online formats. The comment form was available online throughout the duration of the project. To maximize responses to the online form, the web address was distributed at public meetings, advertised in press releases, sent out to local interest groups, and included on flyers that were distributed around town. Over 125 residents completed the comment form.

Results of the comment form were collected and tabulated by the Consultant to provide insight into local residents' values and opinions about the project. The form can be seen on the following page and the results are included in this appendix.

Project Information Cards

The information card shown on the following page was designed to spread awareness of the project as well as to direct interested citizens to the website and to project contacts for further information. By providing the general public with access to different avenues of public input, these public engagement components provided a variety of opportunities for the voices of the Fuquay-Varina community to be heard.



Help Us Make Fuquay-Varina More Walkable!

Where do you wish you could walk in Fuquay-Varina?
Where do you want to see crosswalks?
Where should the next greenway trail be?

Learn More About the Project:

www.FVpedplan.com

Submit Input Using the Public Comment Form!

<https://www.surveymonkey.com/s/FVPedPlan>

Project Contact: Mr. Danny Johnson, AICP
Assistant Planning Director
Email: djohnson@fuquay-varina.org



Town of Fuquay-Varina

Community Pedestrian Master Plan Public Comment Form

Project Contact: Mr. Danny Johnson email: djohnson@fuquay-varina.org

Project Website: www.FVpedplan.com

1. How do you rate present pedestrian conditions (sidewalks, trails, crosswalks, etc.) in Fuquay-Varina? (Check one box below)

Excellent Fair Poor

2. Fuquay-Varina should be a community where: (Check all that apply)

- Sidewalks are only provided on major roadways
- Sidewalks are provided on neighborhood roadways
- Sidewalks are provided on all roadways
- Individuals and families can use greenway trails to get to important destinations
- People have to walk in the street

3. Fuquay-Varina should require commercial and residential developers to construct sidewalks, trails, and ancillary facilities such as bus stops during development.

Yes No

4. Which pedestrian design elements should be required with future construction, reconstruction, and/or developments? (Check all that apply)

- Traffic Calming such as Speed Tables and Stop Signs
- Sidewalks Pedestrian Countdown Signals
- Street Trees Adequate Lighting
- Pedestrian Signage Landscaped Median Refuges
- Grass Buffer between Sidewalk and Roadway
- Safe Walking Spaces within Shopping Centers
- Pedestrian Connectivity between Neighborhoods, Shopping Centers, Parks, and Other Destinations
- Marked Crosswalks

5. Should public funds (grants, taxes, capital improvement funds, etc.) be used to improve pedestrian options and facilities?

Yes No

6. In your opinion, which road, location or neighborhood in Fuquay-Varina is the least safe for pedestrians?

7. In your opinion, which intersection is the least safe for pedestrians to cross? (Check one box below)

- S. Main St & Sunset Dr US 401 & Ennis St
- Woodrow St & Church St S. Main St & Judd Parkway
- Wake Chapel Rd & N. Main St NC 42 & Bridge St

8. How often do you walk now? (Check one)

Never Few times per month
 Few times per week 5+ times per week

9. Would you walk more often if more sidewalks, trails, and safe roadway crossings were provided for pedestrians?

Yes No

10. For what purposes do you walk now, and/or would you want to walk for in the future?

- Fitness or Recreation Spending Time Outdoors
- Transportation to a Destination Social Visits
- Walking to School

Other: _____

Female Male

What is your age?

<18 18-26 27-35 36-44
 45-54 55-64 65-74 75+

Which road or intersection do you live near?

11. Where do you walk, or where would you like to walk? (Check all that apply)

- Downtown Place of Work Place of Worship
 - School Shopping Parks
 - Restaurants Entertainment Pharmacy/Drug Store
 - Trails and Greenways Gym Friend/Relative's House
 - Supermarket Fast Food Restaurant
 - Convenience/Small Grocery Store
 - Non-Fast Food Restaurant Libraries / Public Rec Centers
 - In My Neighborhood/On My Street
 - No Destination / Just for Exercise or Fun
- Other (road, trail, place, etc.): _____
- I don't walk to any of these places/or for any of these reasons

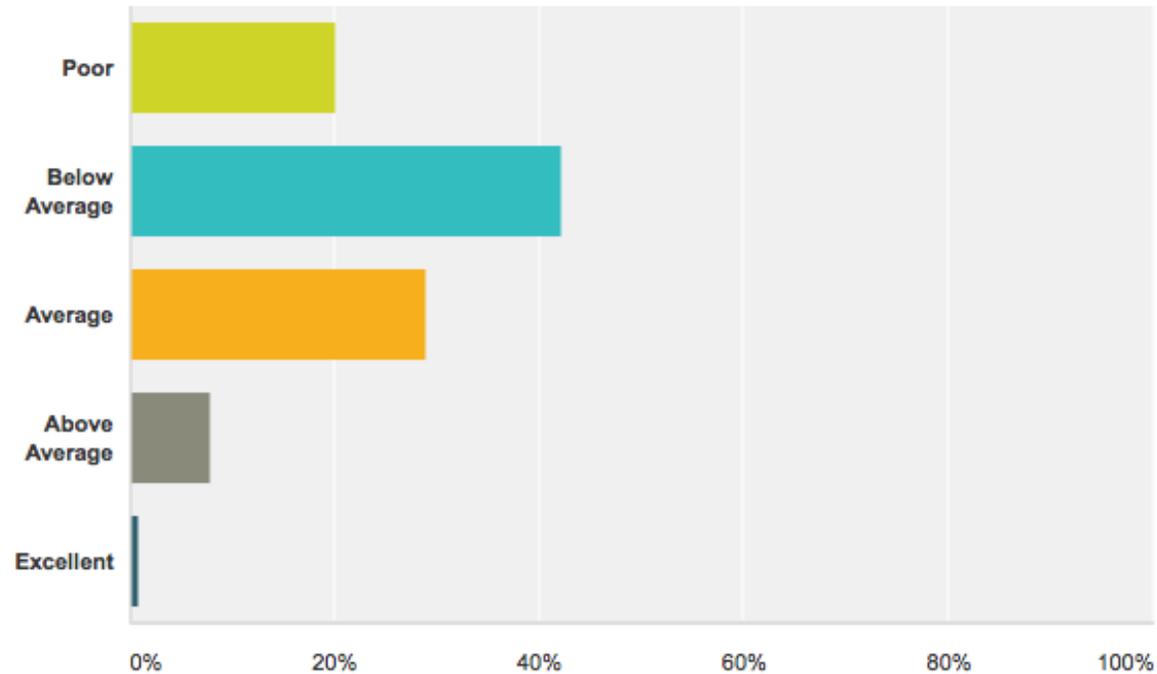
12. What factors discourage walking in Fuquay-Varina? (Check all that apply)

- Lack of Landscaping or Buffer between Sidewalk and Road
- Lack of Sidewalks & Trails Width of Roads
- Lack of Crosswalks at Traffic Signals
- Lack of Pedestrian Countdown Signals
- Lack of Street Lighting Lack of Nearby Destinations
- Automobile Traffic & Speed Aggressive Driver Behavior
- Sidewalks in Need of Repair Criminal Activity

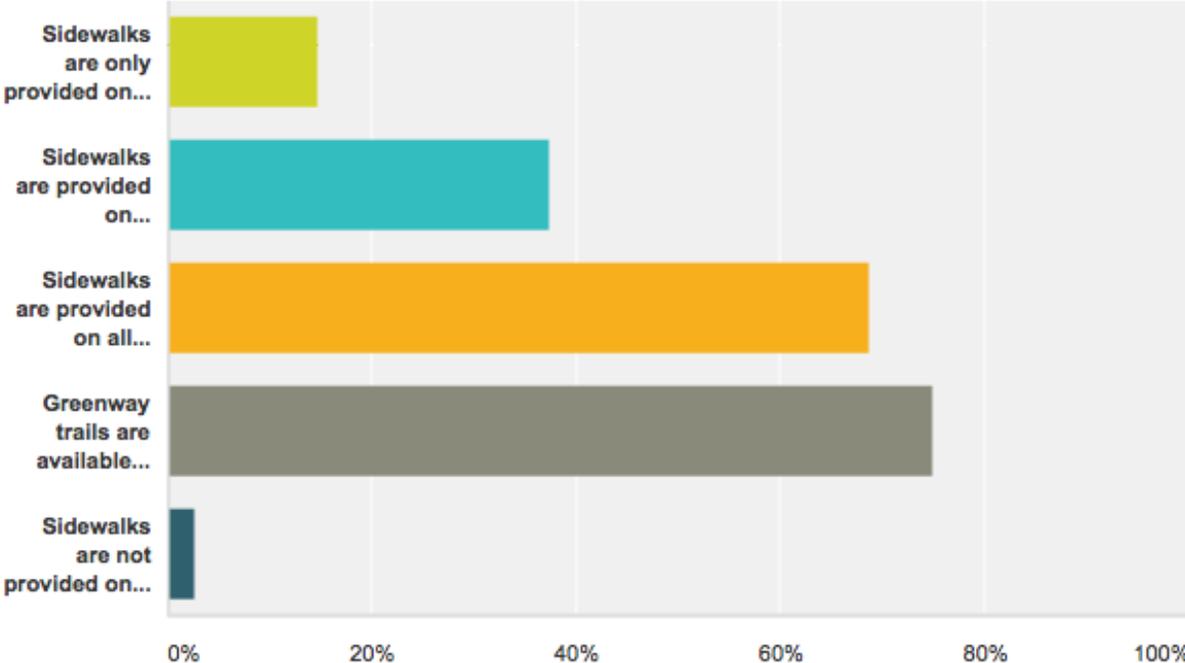
Return Completed Form To: Mr. Danny Johnson, AICP, 401 Old Honeycutt Rd. Fuquay-Varina, North Carolina 27526

Public Comment Form Responses

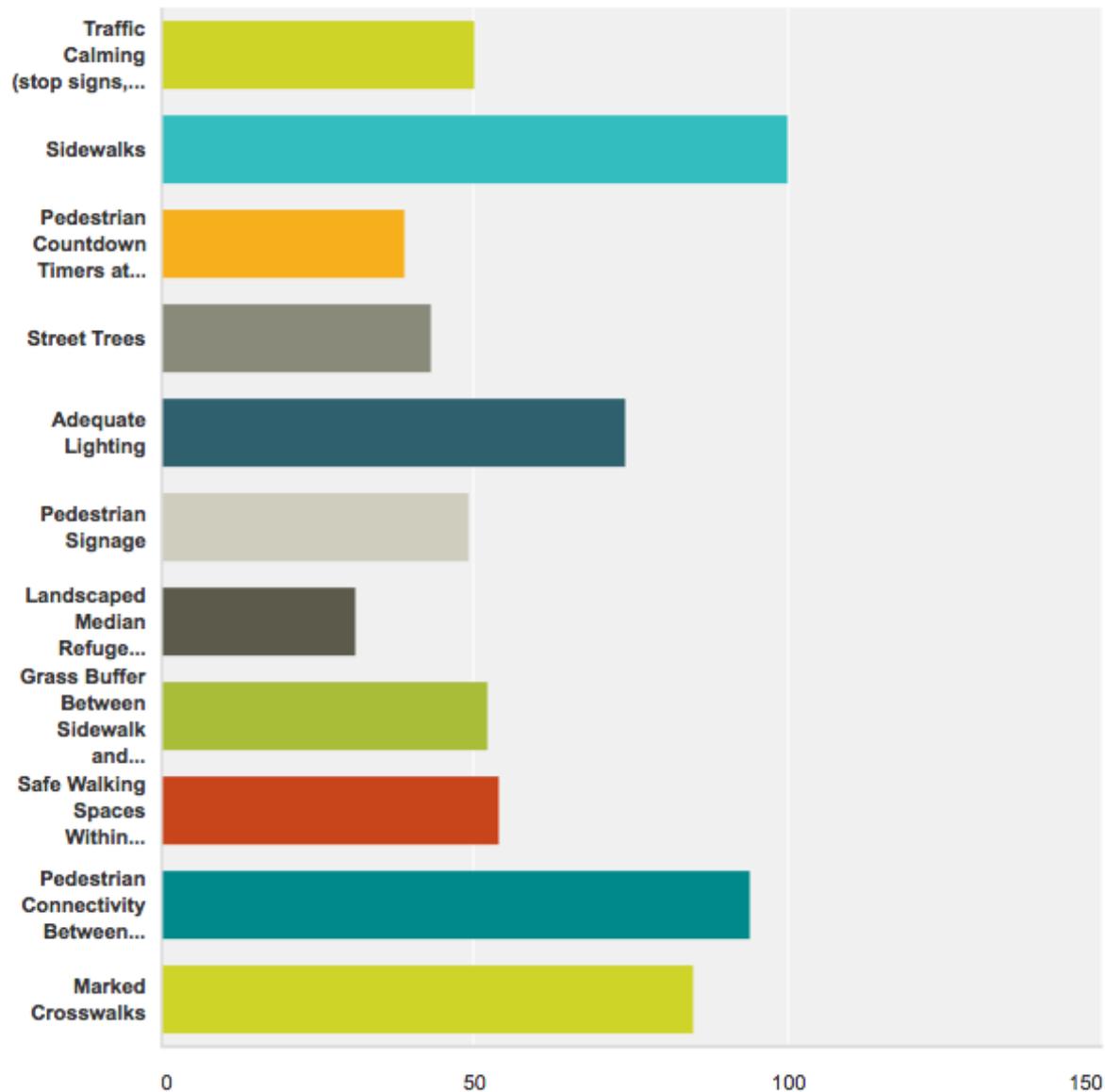
1. How do you rate present pedestrian conditions (sidewalks, trails, crosswalks, etc.) in Fuquay-Varina? (Please select one option)



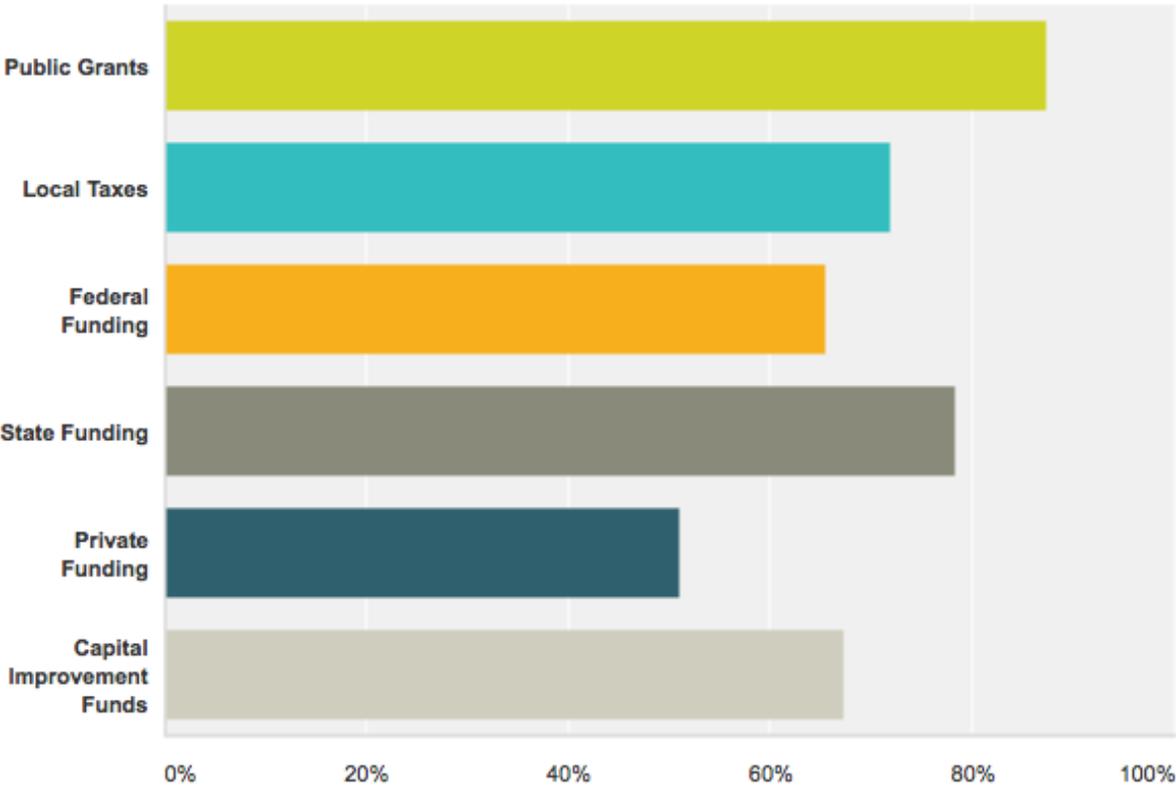
2. Fuquay-Varina should be a community where: (Please select any that apply)



3. Which pedestrian design elements should be required with future construction, reconstruction, and/or developments? (Please select any that apply)



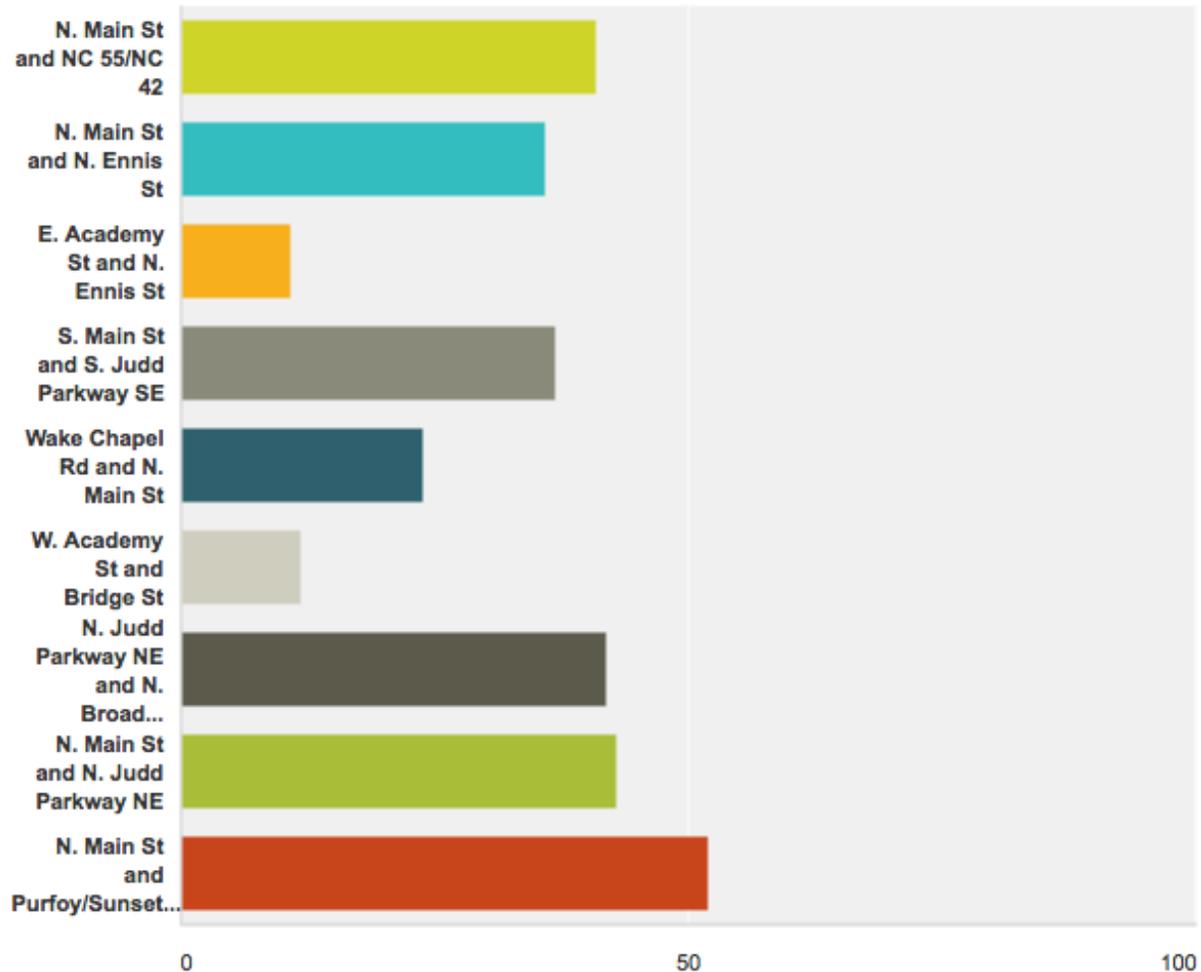
4. Which funding resources should be used to improve pedestrian facilities and options? (Please select any that apply)



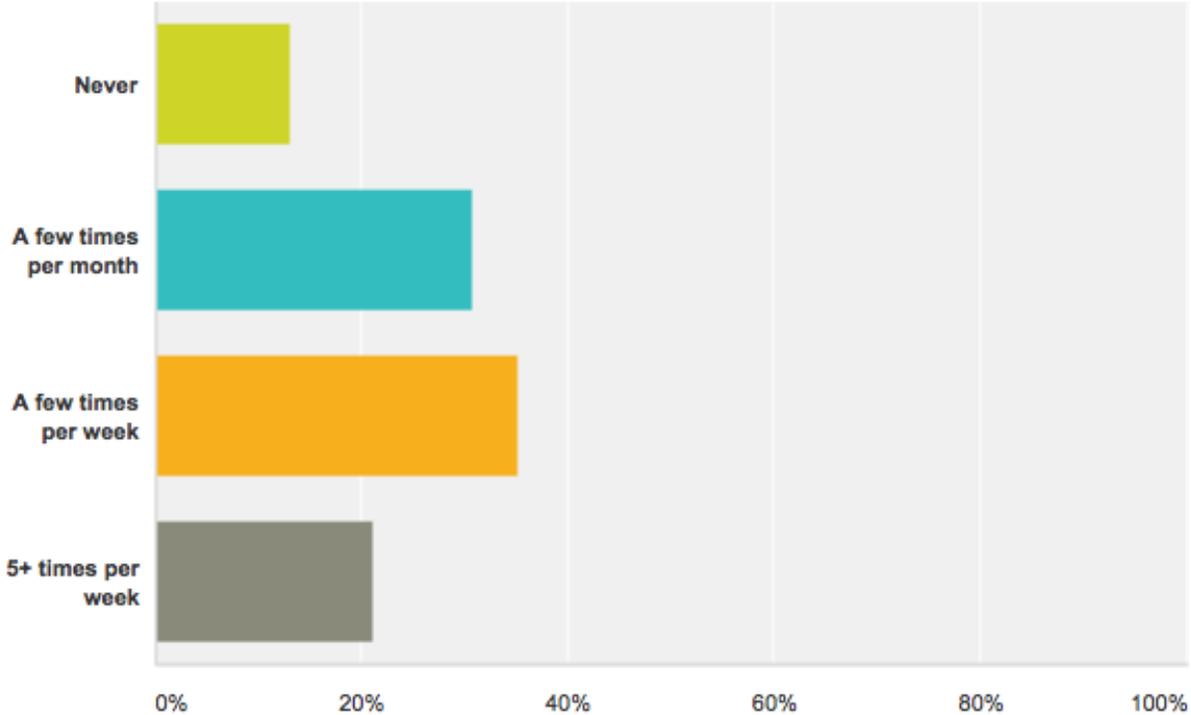
5. In your opinion, which road, location, or neighborhood in Fuquay-Varina is the least safe for pedestrians?

*To be tabulated and included in
final draft*

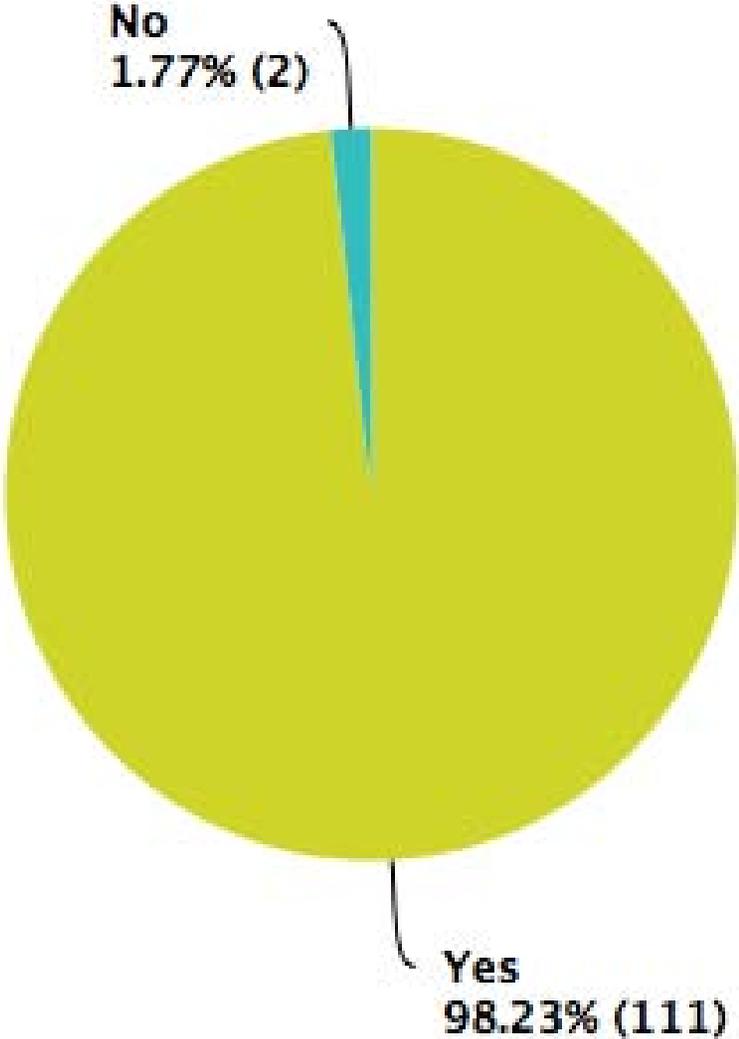
**6. In your opinion, which intersections are the least safe for pedestrians to cross?
(Please select any that apply)**



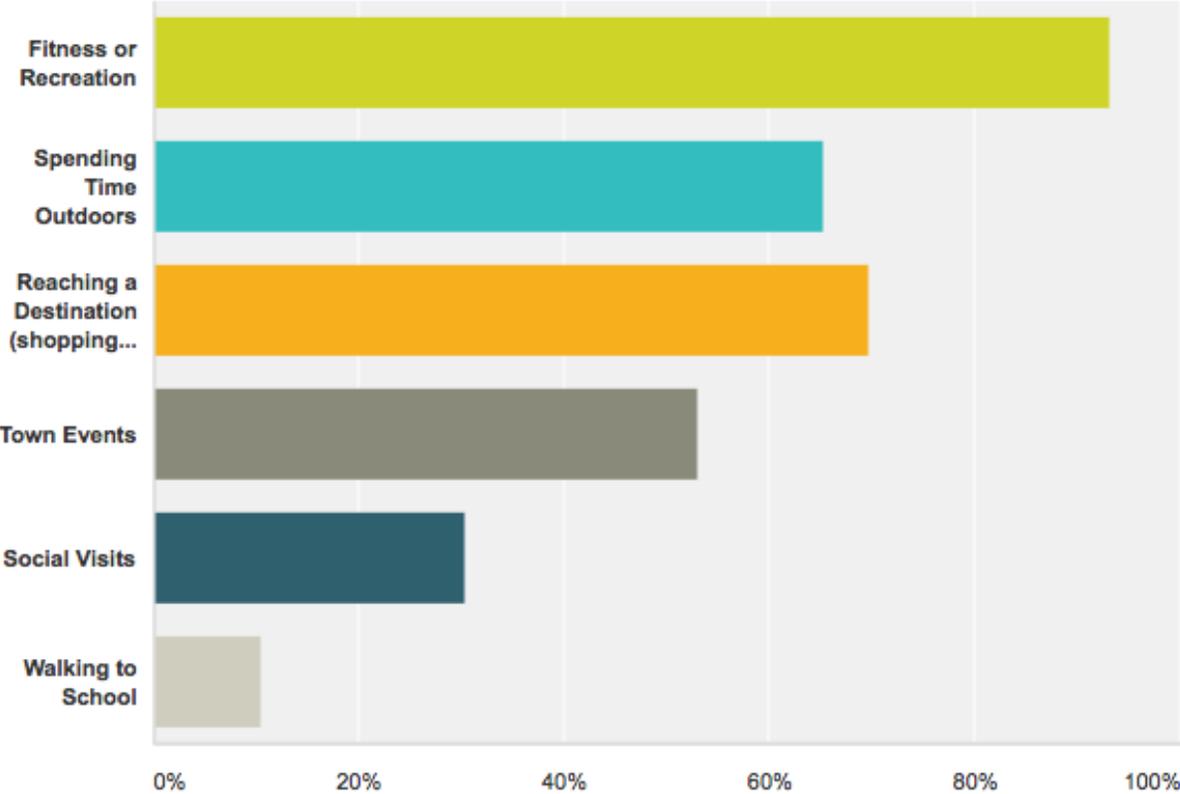
7. How often do you walk now? (Please select one option below)



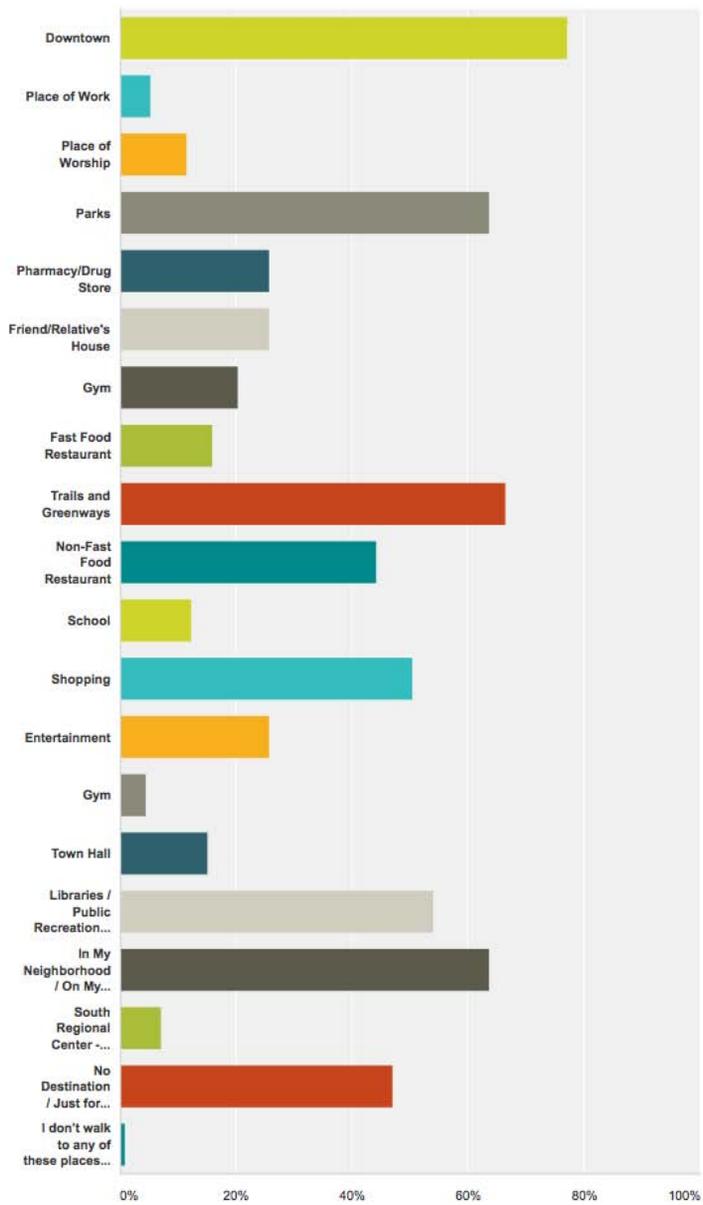
8. Would you walk more often if more sidewalks, trails and safe roadway crossings were provided for pedestrians?



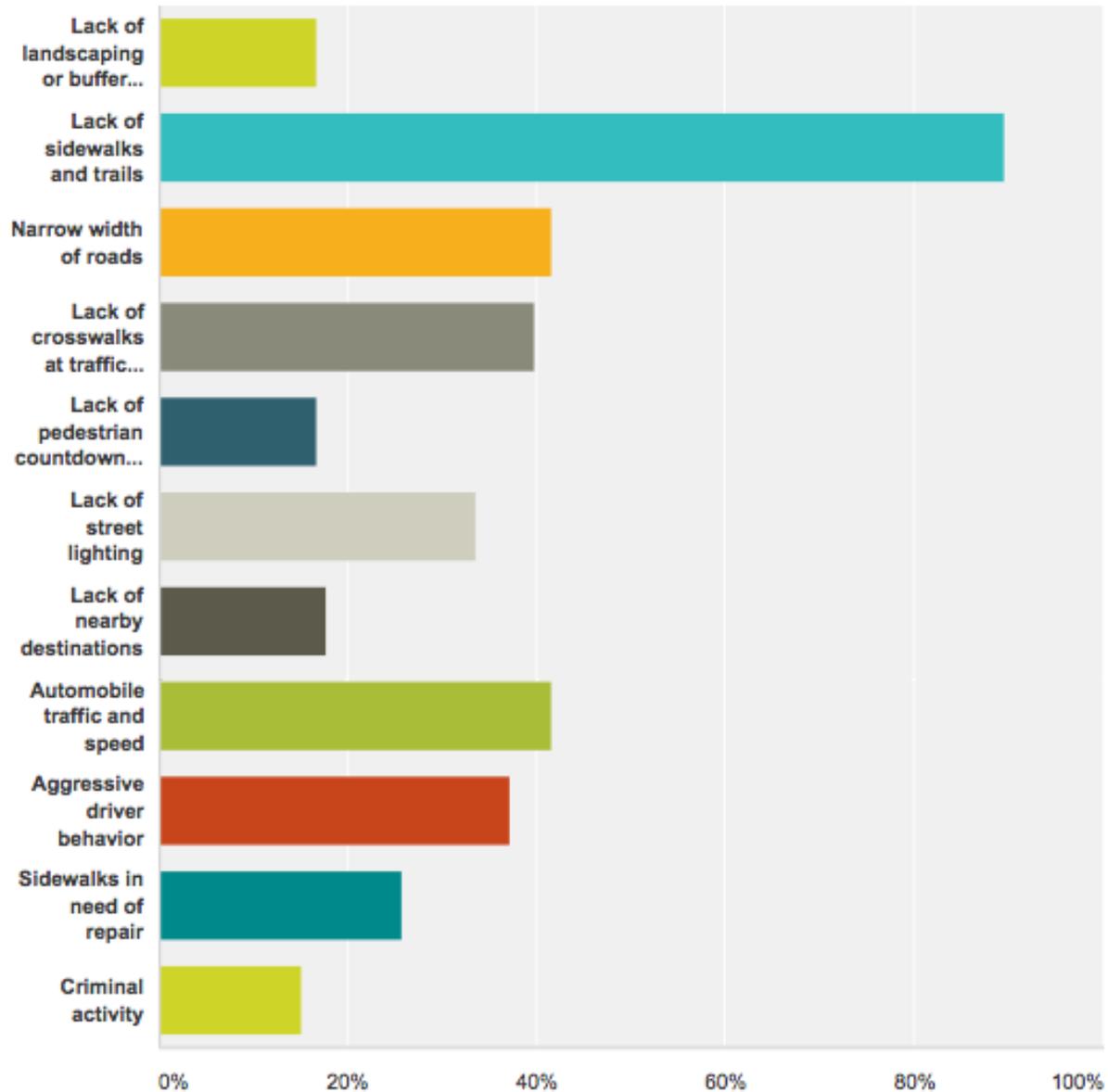
9. For what purposes do you walk now, and/or would you want to walk for in the future? (Please select any that apply)



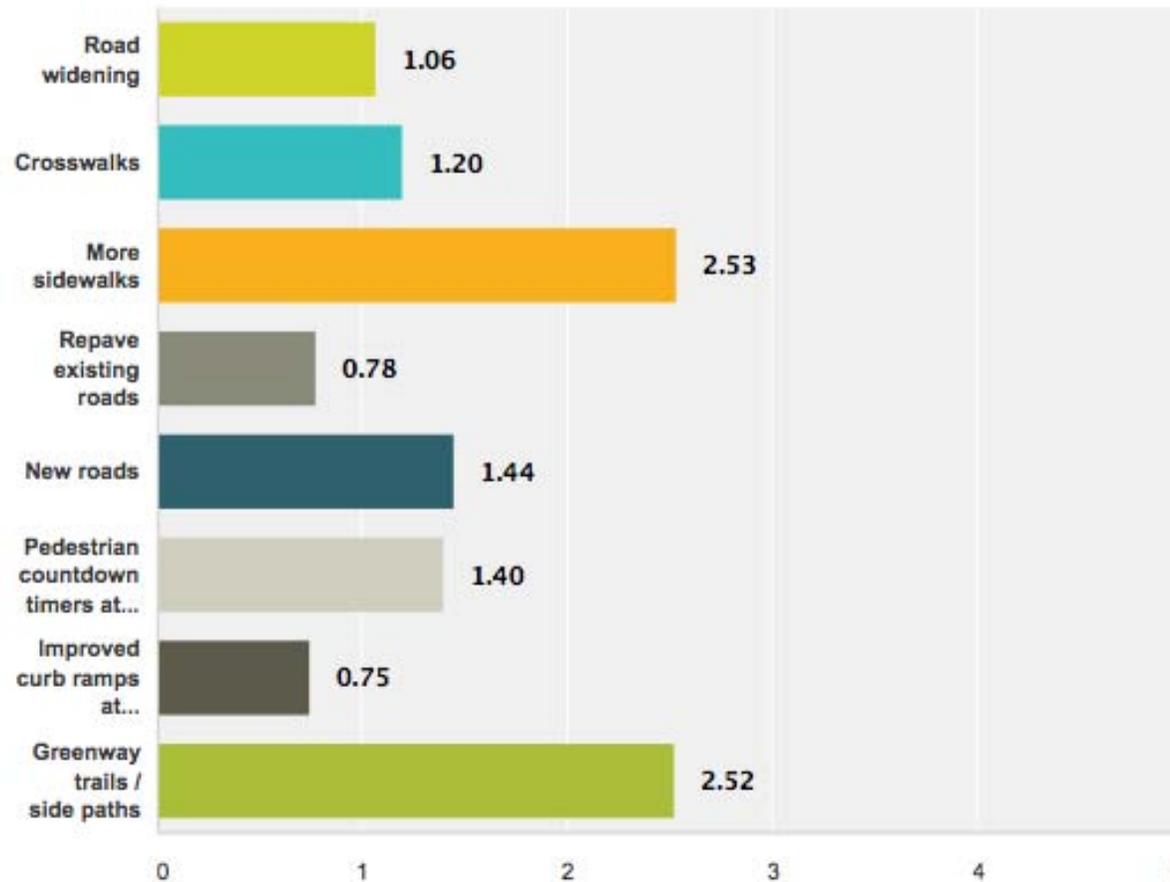
10. Where do you walk, or where would you like to walk? (Please select any that apply)



11. What factors discourage walking in Fuquay-Varina? (Please select any that apply)



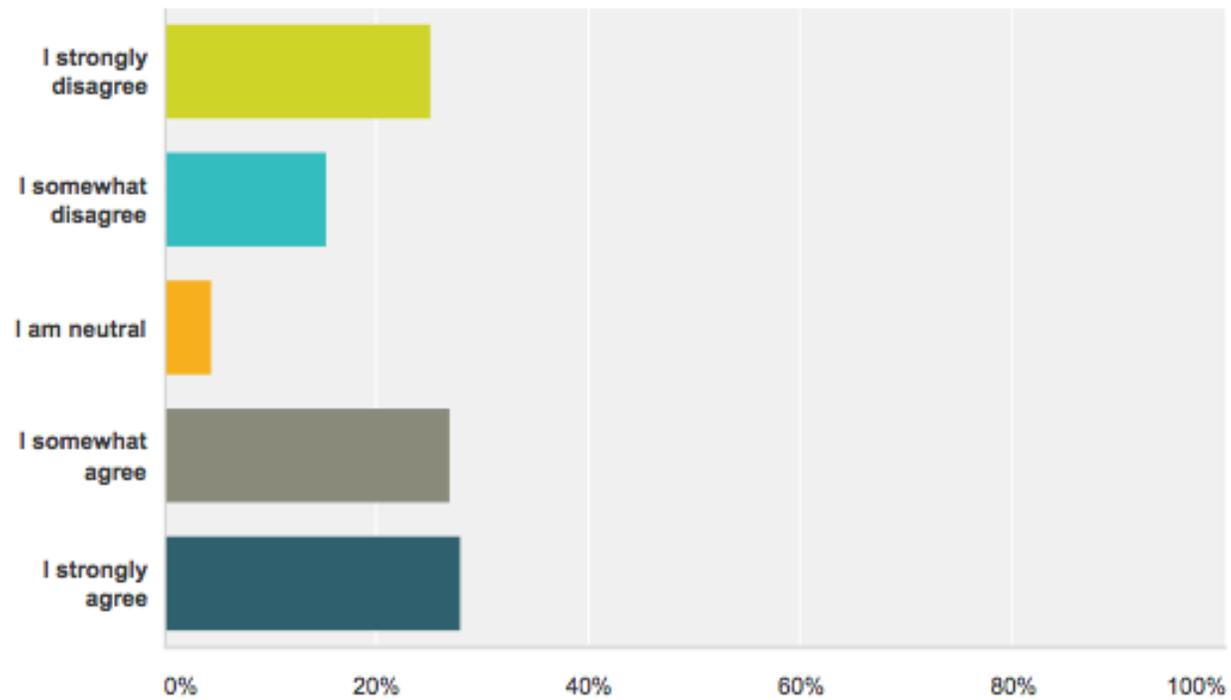
12. If you had five dollars (\$5) to spend on transportation projects in Fuquay-Varina, how would you spend it?



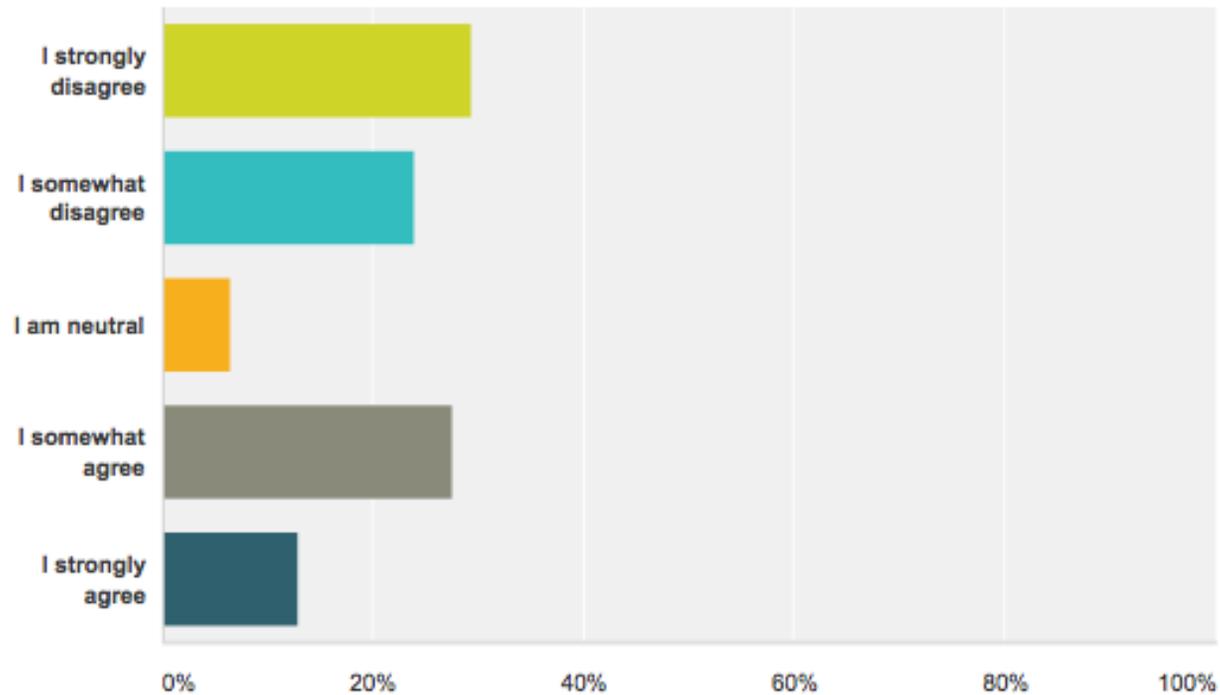
13. About how long does it take you to walk from your home to the nearest of each of the places listed below?

	1-5 Minutes	6-10 Minutes	11-20 Minutes	21-30 Minutes	More than 31 Minutes	I Do Not Know
Convenience/Small grocery store	9.01% 10	27.93% 31	33.33% 37	11.71% 13	6.31% 7	11.71% 13
Supermarket/Large grocery store	0.90% 1	16.22% 18	27.03% 30	24.32% 27	19.82% 22	11.71% 13
School	10% 10	16% 16	18% 18	13% 13	12% 12	31% 31
Restaurant	3.64% 4	23.64% 26	28.18% 31	20.91% 23	10.91% 12	12.73% 14
Park or playground	20% 22	21.82% 24	16.36% 18	16.36% 18	11.82% 13	13.64% 15
Place of worship	4.72% 5	9.43% 10	20.75% 22	13.21% 14	18.87% 20	33.02% 35
Trail or Greenway	10.19% 11	7.41% 8	7.41% 8	7.41% 8	13.89% 15	53.70% 58
Library	7.21% 8	5.41% 6	15.32% 17	25.23% 28	31.53% 35	15.32% 17
Post Office	0% 0	2.68% 3	17.86% 20	33.04% 37	29.46% 33	16.96% 19

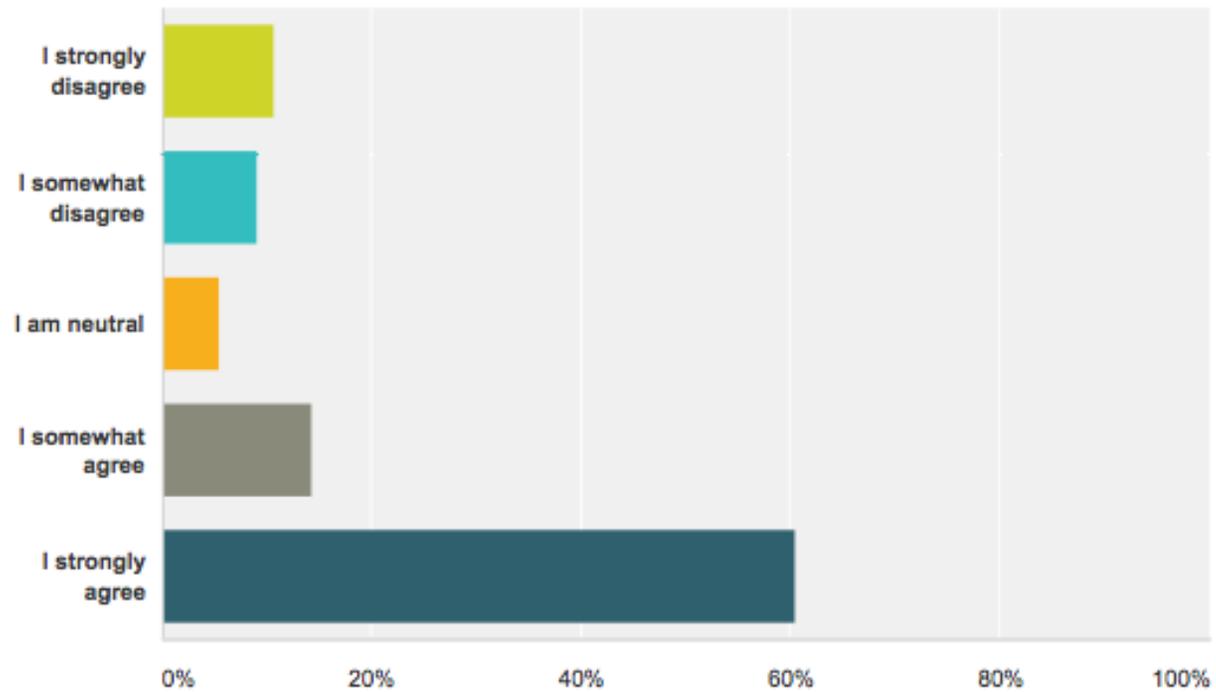
14. Places where I or my family can play or exercise for free are within walking distance of my home.



15. There are many places to go within walking distance of my home.



16. I feel safe walking in my neighborhood or on my street during the day.





Pedestrians along NC 55, Bengal Boulevard

C Funding Resources

Overview

When considering possible funding sources for the Town of Fuquay-Varina's pedestrian projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding, that when combined, will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors. A summary table of funding sources is included at the end of this appendix. It should be noted that this section reflects the funding available at the time of writing. The funding amounts, fund cycles, and even the programs themselves are susceptible to change without notice.

Federal Funding Sources

Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations. Federal funding typically requires a local match of anywhere from five percent to 50 percent, but there are sometimes exceptions, such as the recent American Recovery and Reinvestment Act stimulus funds, which did not require a match. The following is a list of possible Federal funding sources that could be used to support construction of pedestrian and bicycle improvements.

Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for pedestrian and bicycle projects is the USDOT's Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141. The Act replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 - June 2012.

MAP-21 authorizes funding for federal surface transportation programs including highways and transit for the 27 month period between July 2012 and September 2014. It is not possible to guarantee the continued availability of any listed MAP-21 programs, or to predict their future funding levels or policy guidance. Nevertheless, many of these programs have been included in some form since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, and thus may continue to provide capital for active transportation projects and programs.

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these

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Funding Source Summary Table (C-15)

programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

There are a number of programs identified within MAP-21 that are applicable to pedestrian and bicycle projects. These programs are discussed below.

More information, visit: <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>



U.S. Department
of Transportation
**Federal Highway
Administration**

Transportation Alternatives

Transportation Alternatives (TA) is a new funding source under MAP-21 that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SR2S), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did.

Average annual funds available through TA over the life of MAP-21 equal \$814 million nationally, which is based on a 2% set-aside of total MAP-21 allocations. Note that state DOT's may elect to transfer up to 50% of TA funds to other highway programs, so the amount listed on the website represents the maximum potential funding. Remaining TA funds (those monies not re-directed to other highway programs) are disbursed through a separate competitive grant program administered by NCDOT. Local governments, school districts, tribal governments, and public lands agencies are permitted to compete for these funds.

Each State Governor is given the opportunity to “opt out” of the Recreational Trails Program. However, as of the date of the writing of this Plan, only Florida and Kansas have “opted out” of the RTP. For all other states, dedicated funds for recreational trails continue to be provided as a subset of TA. MAP-21 provides \$85 million nationally for the RTP.

For the complete list of eligible activities, visit: http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm

For funding levels, visit: <http://www.fhwa.dot.gov/MAP21/funding.cfm>

Surface Transportation Program

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of pedestrian improvements are eligible, including trails, sidewalks, crosswalks, pedestrian signals, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. 50 percent of each state's STP funds are allocated by population to the MPOs; the remaining 50 percent may be spent in any area of the state.

More information: <http://www.fhwa.dot.gov/map21/stp.cfm>

Highway Safety Improvement Program

MAP-21 doubles the amount of funding available through the Highway Safety Improvement Program (HSIP) relative to SAFETEA-LU. HSIP provides \$2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. MAP-21 preserves the Railway-Highway Crossings Program within HSIP but discontinues the High-Risk Rural roads set-aside unless safety statistics demonstrate that fatalities are increasing on these roads. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects,

and crossing treatments for non-motorized users in school zones are eligible for these funds.

More information: <http://www.fhwa.dot.gov/map21/hsip.cfm>

Congestion Mitigation/ Air Quality Program

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. States with no non-attainment areas may use their CMAQ funds for any CMAQ or STP eligible project. These federal dollars can be used to build bicycle and pedestrian facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible. Communities located in attainment areas who do not receive CMAQ funding apportionments may apply for CMAQ funding to implement projects that will reduce travel by automobile.

More Information: <http://www.fhwa.dot.gov/map21/cmaq.cfm>

Federal Transit Administration (FTA) Metropolitan Planning

This program provides funding for metropolitan coordinated transportation planning. Federal planning funds are first apportioned to State DOTs. State DOTs then allocate planning funding to MPOs. Eligible activities include pedestrian or bicycle planning to increase safety for non-motorized users, and to enhance the interaction and connectivity of the transportation system across and between modes.

More information: <http://www.fhwa.dot.gov/map21/mp.cfm>

Federal Transit Administration Enhanced Mobility of Seniors and Individuals with Disabilities

This program can be used for capital expenses that support transportation to meet the special needs of older adults and persons with disabilities, including providing access to an eligible public transportation facility when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.

More information: http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Enhanced_Mobility_of_Seniors_and_Individuals_with_Disabilities.pdf



Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to “improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide.” The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure (“Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health”).

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including both TIGER I and TIGER II grants). North Carolina jurisdictions should track Partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to

multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to pedestrian improvement efforts.

More information: <http://www.sustainablecommunities.gov/>

<http://www.epa.gov/smartgrowth/partnership/>

Resource for Rural Communities: http://www.sustainablecommunities.gov/pdf/Supporting_Sustainable_Rural_Communities_FINAL.PDF

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the Department of Environment and Natural Resources as a grant program for states and local governments. Maximum annual grant awards for county governments, incorporated municipalities, public authorities, and federally recognized Indian tribes are \$250,000. The local match may be provided with in-kind services or cash.

More information: http://www.ncparks.gov/About/grants/lwcf_main.php



Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation funds available. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may benefit trail development in North Carolina locales indirectly through technical assistance, particularly for community organizations, but is not a capital funding source.

More information: <http://www.nps.gov/ncrc/programs/rtca/> or contact the Southeast Region RTCA Program Manager Deirdre “Dee” Hewitt at (404) 507-5691

National Scenic Byways Discretionary Grant Program

The National Scenic Byways Discretionary Grants program provides merit-based funding for byway-related projects each year, utilizing one or more of eight specific activities for roads designated as National Scenic Byways, All-American Roads, State scenic byways, or Indian tribe scenic byways. The activities are described in 23 USC 162(c). This is a discretionary program; all projects are selected by the US Secretary of Transportation.

Eligible projects include construction along a scenic byway of a facility for pedestrians and bicyclists and improvements to a scenic byway that will enhance access to an area for the purpose of recreation. Construction includes the development of the environmental documents, design, engineering, purchase of right-of-way, land, or property, as well as supervising, inspecting, and actual construction.

More information: <http://www.bywaysonline.org/grants/>



Federal Lands Transportation Program

The FLTP funds projects that improve access within Federal lands (including national forests, national parks, national wildlife refuges, national recreation areas, and other Federal public lands) on federally owned and maintained transportation facilities. \$300 million per fiscal year has been allocated to the program for 2013 and 2014.

More information: <http://www.fhwa.dot.gov/map21/fltp.cfm>

Energy Efficiency and Conservation Block Grants

The Department of Energy’s Energy Efficiency and Conservation Block Grants (EECBG) may be used to reduce energy consumptions and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. Although the current grant period has passed, more opportunities may arise in the future.

More information: <http://www1.eere.energy.gov/wip/eeecbg.html>



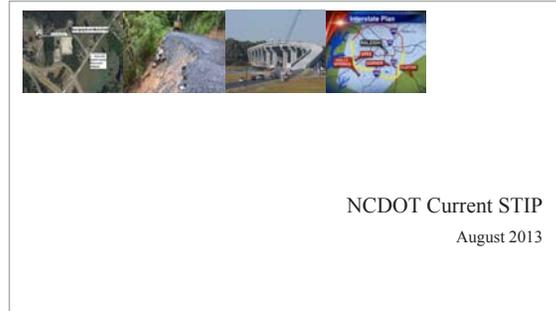
State Funding Sources

The funding sources covered in this section were updated in the Fall of 2013 and reviewed for accuracy by NCDOT staff. However, at the time of development of this plan, the Strategic Transportation Investment initiative was being reviewed by the Joint Legislative Transportation Oversight Committee. Therefore, the status of future funding sources is subject to change. The availability of these funding resources should be confirmed during the implementation of a project.

North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program

The NCDOT's State Transportation Improvement Program is based on the Strategic Transportation Investments bill, signed into law in 2013. The Strategic Transportation Investments (STI) initiative introduces the Strategic Mobility Formula, a new way to fund and prioritize transportation projects to ensure they provide the maximum benefit to our state. It allows NCDOT to use its existing revenues more efficiently to fund more investments that improve North Carolina's transportation infrastructure, create jobs and help boost the economy.

The new Strategic Transportation Investments initiative is scheduled to be fully implemented by July 1, 2015. Projects funded for construction before then will proceed as scheduled under the current Equity Formula; projects slated for after that time will be ranked and programmed according to the new formula. The new Strategic Mobility Formula assigns projects for all modes into one of three categories: Statewide Mobility, Regional Im-



pact, and Division Needs. All independent bicycle and pedestrian projects are placed in the "Division Needs" category, and are ranked on the following five criteria:

- Safety
- Access
- Demand or density
- Constructability
- Benefit/cost ratio

This ranking largely determines which projects will be included in the department's State Transportation Improvement Program (STIP). The STIP is a federally mandated transportation planning document that details transportation improvements prioritized by stakeholders for inclusion in the Work Program over the next ten years. The STIP is updated every two years.

The STIP contains funding information for various transportation divisions of NCDOT including: highways, aviation, public transportation, rail, bicycle and pedestrian, and the Governor's Highway Safety Program. Access to many federal funds require that projects be incorporated into the STIP. The STIP is the primary method for allocating state and federal transportation funds. However, beginning July 1, 2015, state funds cannot be used to match federally funded projects. Only Powell Bill

or local funds can be used as a match for federally funded bicycle and pedestrian projects.

For more information on STI: www.ncdot.gov/strategictransportationinvestments/

To access the STIP: <https://connect.ncdot.gov/projects/planning>

More about the STIP process:

<http://www.ncdot.org/performance/reform/>

Incidental Projects

Bicycle and pedestrian accommodations such as bike lanes, sidewalks, intersection improvements, widened paved shoulders and bicycle and pedestrian-safe bridge design are frequently included as incidental features of highway projects.

In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds or with a local fund match.

More information: <http://www.ncdot.gov/bikeped/funding/process/>



Spot Safety Program

The Spot Safety Program is a state funded public safety investment and improvement program that provides highly effective low cost safety improvements for intersections, and sections of North Carolina's 79,000 miles of state maintained roads in all 100 counties of North Carolina. The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$250,000.

The Spot Safety Program targets hazardous locations for expedited low cost safety improvements such as traffic signals, turn lanes, improved shoulders, intersection upgrades, positive guidance enhancements (rumble strips, improved channelization, raised pavement markers, long life highly visible pavement markings), improved warning and regulatory signing, roadside safety improvements, school safety improvements, and safety appurtenances (like guardrail and crash attenuators).

A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

For more information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

Pedestrian Funds

Each of the 14 NCDOT Highway Divisions administers \$100,000 in pedestrian funds within its jurisdiction. These funds are used for new sidewalk construction. A written request should be submitted to the Division Engineer providing technical information such as justification, location, improvements being requested, timing, etc., for thorough review.

High Hazard Elimination Program

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90% federal funds and 10% state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP).

More information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

NCDOT Contingency Fund

The Statewide Contingency Fund is a \$10 million fund administered by the Secretary of Transportation. The Division Engineer elicits written requests from municipalities, counties, businesses, schools, citizens, legislative members and NCDOT staff.

The appeals are reviewed on their merits by the Contingency and Small Urban Funds Committee, which makes recommendations for funding to the Secretary. Written requests must provide technical information such as justification, location, improvements being requested, timing, etc., for thorough review.

More information: https://connect.ncdot.gov/resources/safety/Tepp/Pages/Tepp-Topic.aspx?Topic_List=F19

Small Urban Funds

Each NCDOT Highway Division administers \$2 million of funds for small-scale improvement projects in urban areas. Projects must be within 2 miles of city limits and have a maximum cost of \$250,000. Requests for small urban funds may be made by municipalities, counties, businesses, school and industrial entities. A written request should be submitted to the Division Engineer providing technical information such as justification, location, improvements being requested, timing, etc., for thorough review.

Spot Improvement Program

The Division of Bicycle and Pedestrian Transportation (DBPT) budgets \$500,000 per year for "spot" safety improvements throughout North Carolina. Eligible improvements include drain grate replacement, bicycle loop detectors, pedestrian signals and other small-scale improvements. These funds are used for small-scale projects not substantial enough to be included in the STIP. Proposals should be submitted directly to the Division of Bicycle and Pedestrian Transportation.



Capital Area Metropolitan Planning Organization's Locally Administered Projects Program (LAPP)

The Locally Administered Projects Program (LAPP) was adopted by the NC Capital Area MPO on October 20, 2010. The program will be used by the MPO to prioritize and program all projects in the region that will utilize federal funding that is the responsibility of the MPO (such as Surface Transportation Program – Direct Allocation (STP-DA), Congestion Mitigation for Air Quality (CMAQ), etc.). This process will involve a once-a-year call for all local highway, bicycle and pedestrian projects, and will result in an annual program of projects in the MTIP. Transit providers in the MPO will receive an annual allocation of program funds through this program using a formula determined annually by the MPO, and will be invited to propose a slate of transit projects that will be considered for programming by the MPO.

More information: <http://www.campo-nc.us/lapp.html>

Small Construction Funds

Each of the 14 NCDOT Highway Divisions administers \$357,000 of small construction funds. The purpose of these funds is to finance improvements on the State System (US, NC, and SR routes) to be used for projects anywhere in the counties. These funds are used to fund a variety of transportation projects for municipalities, counties, businesses, schools, and industries throughout the state. There is a \$250,000 maximum amount per request per fiscal year. Any project with a total cost greater than \$150,000 requires a resolution or a letter of support for the project from the local jurisdiction.

The former NCDOT Statewide Discretionary Funding program has been consolidated into this funding mechanism.

More information: <http://www.nctransportationanswers.org/ourforms/SMALLCONSTRUCTIONFORM.pdf>

Governor's Highway Safety Program

The Governor's Highway Safety Program (GHSP) funds safety improvement projects on state highways throughout North Carolina. All funding is performance-based. Substantial progress in reducing crashes, injuries and fatalities is required as a condition of continued funding. This funding source is considered to be "seed money" to get programs started. The grantee is expected to provide a portion of the project costs and is expected to continue the program after GHSP funding ends. State Highway Applicants must use the web-based grant system to submit applications.

More information: <http://www.ncdot.org/programs/ghsp/>

Bicycle and Pedestrian Planning Grant Initiative

The Bicycle and Pedestrian Planning Grant Initiative is a matching grant program administered through NCDOT that encourages municipalities to develop comprehensive bicycle plans and pedestrian plans. The Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) sponsor this grant. All North Carolina municipalities are eligible and are encouraged to apply. Funding allocations are determined on a sliding scale based on population. Mu-



nicipalities who currently have bicycle plans or pedestrian plans, either through this grant program or otherwise, may also apply to update their plan provided it is at least five years old.

More information: <https://connect.ncdot.gov/municipalities/PlanningGrant/Pages/default.aspx>

Eat Smart, Move More North Carolina Community Grants

The Eat Smart, Move More (ESMM) NC Community Grants program provides funding to local communities to support their efforts to develop community-based interventions that encourage, promote and facilitate physical activity. The current focus of the funds is for projects addressing youth physical activity. Funds have been used to construct trails and conduct educational programs.

More information: <http://www.eatsmartmove-morenc.com/Funding/CommunityGrants.html>

The North Carolina Division of Parks and Recreation

The North Carolina Division of Parks and Recreation and the State Trails Program offer funds to help citizens, organizations and agencies plan, de-



velop and manage all types of trails ranging from greenways and trails for hiking, biking and horseback riding to river trails and off-highway vehicle trails.

More information: <http://www.ncparks.gov/About/grants/main.php>

NC Parks and Recreation Trust Fund (PARTF)

The Parks and Recreation Trust Fund (PARTF) provide dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities and public authorities, as defined by G.S. 159-7, are eligible applicants.

A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match.

More information: http://www.ncparks.gov/About/grants/partf_main.php

NC Department of Environment and Natural Resources – Recreational Trails and Adopt-A-Trail Grants

The State Trails Program is a section of the N.C. Division of Parks and Recreation. The program originated in 1973 with the North Carolina Trails System Act and is dedicated to helping citizens, organizations and agencies plan, develop and man-

age all types of trails ranging from greenways and trails for hiking, biking and horseback riding to river trails and off-highway vehicle trails. The Recreation Trails Program awards grants up to \$75,000 per project. The Adopt-A-Trail Program awards grants up to \$5,000 per project.

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. 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. Beginning July 1, 2015 under the Strategic Transportation Investments initiative, Powell Bill funds may no longer be used to provide a match for federal transportation funds such as Transportation Alternatives.

Community Development Block Grant Funds

Community Development Block Grant (CDBG) funds are available to local municipal or county governments that qualify for projects to enhance the viability of communities by providing decent housing and suitable living environments and by expanding economic opportunities, principally for persons of low- and moderate-income. State CDBG funds are provided by the U.S. Department of Housing and Urban Development (HUD) to the state of North Carolina. Some urban counties and cities in North Carolina receive CDBG funding directly from HUD. Each year, CDBG provides funding to local governments for hundreds of critically-needed community improvement projects throughout

the state. These community improvement projects are administered by the Division of Community Assistance and the Commerce Finance Center under eight grant categories. Two categories might be of support to pedestrian and bicycle projects in 'entitlement communities': Infrastructure and Community Revitalization.

Clean Water Management Trust Fund (CWMTF)

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection, eligible for application by a state agency, local government, or non-profit. At the end of each year, a minimum of \$30 million is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. Funds may be used for planning and land acquisition to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

More information: <http://www.cwmtf.net/#appmain.htm>



Safe Routes to School Program (managed by NCDOT, DBPT)

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



The state of North Carolina was allocated \$15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. In 2009, more than \$3.6 million went to 22 municipalities and local agencies for infrastructure and non-infrastructure projects. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding.

More information: <https://connect.ncdot.gov/projects/BikePed/Pages/Safe-Routes-To-School.aspx>

<http://www.ncdot.gov/download/programs/srts/SRTS.pdf>

Or contact DBPT/NCDOT at (919) 807-0774.

Urban and Community Forestry Grant

The North Carolina Division of Forest Resources Urban and Community Forestry grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. The goal is to improve public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects which will lead to a more effective and efficient management of urban and community forests. Grant requests should range between \$1,000 and \$15,000 and must be matched equally with non-federal funds. Grant funds may be awarded to any unit of local or state government, public educational institutions, approved non-profit 501(c)(3) organizations and other tax-exempt organizations. First-time municipal applicant and municipalities seeking Tree City USA status are given priority for funding.

For more about Tree City USA status, including application instructions, visit: http://ncforestservice.gov/Urban/urban_grant_overview.htm



Local Government Funding Sources

Municipalities often plan for the funding of pedestrian and bicycle facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each category is described below. A variety of possible funding options available to North Carolina jurisdictions for implementing pedestrian and bicycle projects are described below. However, many will require specific local action as a means of establishing a program, if not already in place.

Capital Reserve Fund

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

Capital Project Ordinances

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

Local Improvement District (LID)

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation.

Municipal Service District

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the town-wide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts, and can include projects such as street, sidewalk, or bike-way improvements within the downtown taxing district.

Tax Increment Financing

Project Development Financing bonds, also known as Tax Increment Financing (TIF) is a relatively new tool in North Carolina, allowing localities to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Streets, streetscapes, and sidewalk improvements are specifically authorized for TIF funding in North Carolina. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria that are approved by a local governing body. TIF funds are generally spent inside the boundaries of the TIF district, but they can also be spent outside the district if necessary to encourage development within it.

Other local funding options

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Installment purchase financing
- In-lieu-of fees
- Partnerships

Private and Non-Profit Funding Sources

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available.

Land for Tomorrow Campaign

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign was successful in 2013 in asking the North Carolina General Assembly to continue to support conservation efforts in the state. The state budget bill includes about \$50 million in funds for key conservation efforts in North Carolina. Land for Tomorrow works to enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; and historic downtowns and neighborhoods will be there to enhance the quality of life for generations to come.

More information: <http://www.land4tomorrow.org/>

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

For more specific information about what types of projects are funded and how to apply, visit www.rwjf.org/applications/



Robert Wood Johnson Foundation

North Carolina Community Foundation

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina, that make grants in the areas of human

services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. The foundation also manages various scholarship programs statewide.

More information: <http://nccommunityfoundation.org/>

NORTH CAROLINA
COMMUNITY FOUNDATION



Walmart State Giving Program

The Walmart Foundation financially supports projects that create opportunities for better living. Grants are awarded for projects that support and promote education, workforce development/economic opportunity, health and wellness, and environmental sustainability. Both programmatic and infrastructure projects are eligible for funding. State Giving Program grants start at \$25,000, and there is no maximum award amount. The program accepts grant applications on an annual, state by state basis January 2nd through March 2nd.

Online resource: <http://foundation.walmart.com/apply-for-grants/state-giving>

The Rite Aid Foundation Grants

The Rite Aid Foundation is a foundation that supports projects that promote health and wellness in the communities that Rite Aid serves. Award amounts vary and grants are awarded on a one year basis to communities in which Rite Aid operates. A wide array of activities are eligible for funding, including infrastructural and programmatic projects.

More information: <https://www.riteaid.com/about-us/rite-aid-foundation>

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. They have two grant cycles per year and generally do not fund land acquisition. However, they may be able to offer support in other areas of open space and greenways development.

For more information: www.zsr.org

Bank of America Charitable Foundation, Inc.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development.

More information: www.bankofamerica.com/foundation

Duke Energy Foundation

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

- An internal Duke Energy business “sponsor”
- A clear business reason for making the contribution

The grant program has three focus areas: Environment and Energy Efficiency, Economic Development, and Community Vitality. Related to this project, the Foundation would support programs that support conservation, training and research around environmental and energy efficiency initiatives.

More information: <http://www.duke-energy.com/community/foundation.asp>

American Greenways Eastman Kodak Awards

The Conservation Fund’s American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities.

More information: www.conservationfund.org

National Trails Fund

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a \$200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America’s cherished public trails. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

Projects the American Hiking Society will consider include:

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

More information: <http://www.americanhiking.org/national-trails-fund/>

The Conservation Alliance

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. Grants are typically about \$35,000 each. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to environmental groups across the nation, saving over 34 million acres of wild lands.

The Conservation Alliance Funding Criteria:

- The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation.
- The Alliance does not look for mainstream education or scientific research projects, but rather for active campaigns.
- All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success.
- The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years).
- Funding emphasis may not be on general operating expenses or staff payroll.

More information: <http://www.conservation-alliance.com/grants>



National Fish and Wildlife Foundation (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable outcomes in the conservation of fish, wildlife, plants and the habitats on which they depend. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal match.

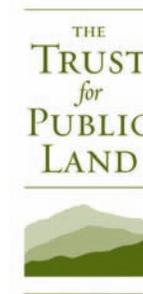
Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals.

More information: <http://www.nfwf.org/pages/grants/home.aspx>

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.

More information: <http://www.tpl.org>



BlueCross BlueShield of North Carolina Foundation (BCBS)

Blue Cross Blue Shield (BCBS) focuses on programs that use an outcome approach to improve the health and well-being of residents. The Health of Vulnerable Populations grants program focuses on improving health outcomes for at-risk populations. The Healthy Active Communities grant concentrates on increased physical activity and healthy eating habits. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms and, depending on the size of the non-profit, provide an audit.

More information: <http://www.bcbsncfoundation.org/>

Alliance for Biking & Walking: Advocacy Advance Grants

Bicycle and pedestrian advocacy organizations play the most important role in improving and increasing biking and walking in local communities. Advocacy Advance Grants enable state and local bicycle and pedestrian advocacy organizations to develop, transform, and provide innovative strategies in their communities. With sponsor support, the Alliance for Biking & Walking has awarded more than \$500,000 in direct grants, technical assistance, and scholarships to advocacy organizations across North America since the Advocacy Advance Grant program's inception. In 2009 and 2010, these one-year grants were awarded twice annually to startup organizations and innovative campaigns to dramatically increase biking and walking. The Advocacy Advance Partnership with the League of American Bicyclists also provides necessary technical assistance, coaching, and training to supplement the grants.

More information, visit www.peoplepowered-movement.org

Local Trail Sponsors

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

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

Corporate Donations

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

Private Individual Donations

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from an individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

Fundraising / Campaign Drives

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

Volunteer Work

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

Table C.1 Funding Source Summary Table

Funding Source	Planning	Programming	Design/Construction
FEDERAL FUNDING			
Transportation Alternatives	x	x	x
Surface Transportation Program			x
Highway Safety Improvement Program		x	x
Congestion Mitigation/Air Quality		x	x
FTA Metropolitan Planning Program	x		
FTA Enhanced Mobility of Seniors and Individuals with Disabilities		x	x
Partnership for Sustainable Communities	x	x	x
Land and Water Conservation Fund	x		x
Rivers, Trails, and Conservation Assistance Program	x		
National Scenic Byways Discretionary Grant Program			x
Federal Lands Transportation Program	x		x
Energy Efficiency and Conservation Block Grants	x		x
STATE FUNDING			
NCDOT State Transportation Improvement Program			x
Incidental Projects			x
Spot Safety Program			x
CAMPO Locally Administered Projects Program			x
Pedestrian Funds			x
High Hazard Elimination Program			x
NCDOT Contingency Fund			x
Small Urban Funds			x
Spot Improvement Program			x
Small Construction Funds			x
Governor's Highway Safety Program			x
Bicycle and Pedestrian Planning Grant Initiative	x	x	
Eat Smart, Move More North Carolina Community Grants		x	x
The North Carolina Division of Parks and Recreation			x
The North Carolina Parks and Recreation Trust Fund (PARTF)			x
Adopt-a-Trail Program			x
Powell Bill Funds			x
Community Development Block Grant	x	x	x
Clean Water Management Trust Fund	x	x	x
Safe Routes to School Program	x	x	x
Urban and Community Forestry Grant	x		x

Funding Source	Planning	Programming	Design/Construction
LOCAL FUNDING			
Capital Reserve Fund			x
Capital Project Ordinance			x
Local Improvement District			x
Municipal Service District			x
Tax Increment Financing			x
Bonds and Loans			x
Revenue Bonds			x
General Obligation Bonds (cities, counties, and service districts)			x
Special Assessment Bonds			x
State Revolving Fund Loans			x
Sales Tax	x		x
Property Tax	x		x
Excise Tax			x
Occupancy Tax			x
Stormwater Utility Fees			x
Streetscape Utility Fees			x
Impact Fees			x
Exactions			x
Installment Purchase Financing			x
In-Lieu-of Fees			x

Funding Source	Planning	Programming	Design/Construction
PRIVATE/NON-PROFIT FUNDING			
The Robert Wood Johnson Foundation	x	x	
North Carolina Community Foundation	x	x	
Walmart State Giving Program	x	x	x
The Rite Aid Foundation Grant		x	x
Z. Smith Reynolds Foundation			x
Bank of America Charitable Foundation	x	x	
Duke Energy Foundation		x	
American Greenways Eastman Kodak Awards	x	x	x
National Trails Fund		x	x
The Conservation Alliance	x	x	
National Fish and Wildlife Foundation	x	x	x
The Trust for Public Land	x	x	
Blue Cross Blue Shield of North Carolina Foundation		x	x
Alliance for Biking and Walking Advocacy Advance Grants			x
Local Trail Sponsors			x
Corporate Donations	x	x	x
Private Individual Donations	x	x	x
Fundraising/Campaign Drives	x	x	x
Volunteer Work	x	x	x



Mid-block crossing on NC 55 near Fuguy-Varina High School

D Intersections and Railroad Crossings

Overview

Pedestrian safety and accessibility were evaluated at 58 roadway intersection and railroad crossing locations in Fuquay-Varina. The majority of intersections that were evaluated, including at-grade railroad crossings, are in need of new and/or retrofitted pedestrian crossing facilities, including new or enhanced pedestrian markings, signals, ADA ramps, and/or improved sidewalks.

Roadway Intersections

Three primary roadway intersection treatment concepts were developed to serve as a guide during implementation for Fuquay-Varina. Each of the 53 roadway intersections evaluated during this Pedestrian Master Plan have a corresponding intersection treatment concept recommendation. Fuquay-Varina should not limit intersection improvements to only the intersections presented in Table D.1, and should apply recommendations presented by the intersection treatments concepts as appropriate to other intersections in Fuquay-Varina. Appendix A, Design Guidelines provides further guidance for intersection treatments.

Railroad Crossings

Five high priority railroad crossing locations are presented in the map on page D-5, and treatment concept recommendations begin on page D-8. Opportunities exist at each of the five railroad crossings to improve pedestrian safety, visibility, and accessibility. Each railroad crossing was carefully evaluated during this pedestrian planning process and a set of feasible recommendations have been developed for each crossing. The five crossings should be the focus of future detailed engineering study and recommendations made in concert with NCDOT and Norfolk Southern Railroad.

Table D.1: Roadway Intersections

Primary Roadway	Intersecting Roadway	Treatment Concept
Academy	S. Main	Signalized
Angier	Trail Crossing	Mid-block, Trail Crossing
Angier	E. Spring	Non-Signalized
Angier	Holland	Non-Signalized
Broad	Ransdell	Non-Signalized
E. Academy	N. Ennis	Signalized
E. Academy	S. Aiken	Non-Signalized
E. Academy	N. Fuquay	Signalized
E. Vance	S. Fuquay	Signalized
Fayetteville	Wake Tech Community College	Signalized
Fayetteville	Hilltop-Needmore	Signalized
Holland	Trail Crossing	Mid-block, Trail Crossing
James Slaughter	Herbert Akins	Non-Signalized
James Slaughter	Stewart	Non-Signalized
Johnson Pond	Sterling	Non-Signalized
Johnson Pond	Trail Crossing	Mid-block, Trail Crossing
N. Judd Parkway	N. Main	Signalized
N. Judd Parkway	E. Broad	Signalized
N. Judd Parkway	Stewart	Signalized
N. Main	N. Ennis	Signalized
N. Main	Purfoy	Signalized
N. Main	Lakestone Commons	Signalized
N. Main	NC 55 / NC 42	Signalized
NC 55	James Slaughter	Signalized
NC 55	Judd Parkway/Wilbon	Signalized
NC 55	Wade Nash/Dickens	Signalized
NC 55	Old Powell	Non-Signalized
Purfoy	Old Honeycutt	Signalized
Raleigh	S. Aiken	Non-Signalized
S. Aiken	E. Vance/Angier	Non-Signalized
S. Judd Parkway	S. Main	Signalized

APPENDIX CONTENTS

Overview (D-1)

Intersection and Railroad Crossing Locations (D-1)

Signalized Intersection Treatment Concept (D-2)

Non-Signalized Intersection Treatment Concept (D-3)

Mid-Block Crossing Treatment Concept (D-4)

Railroad Crossings (D-5)

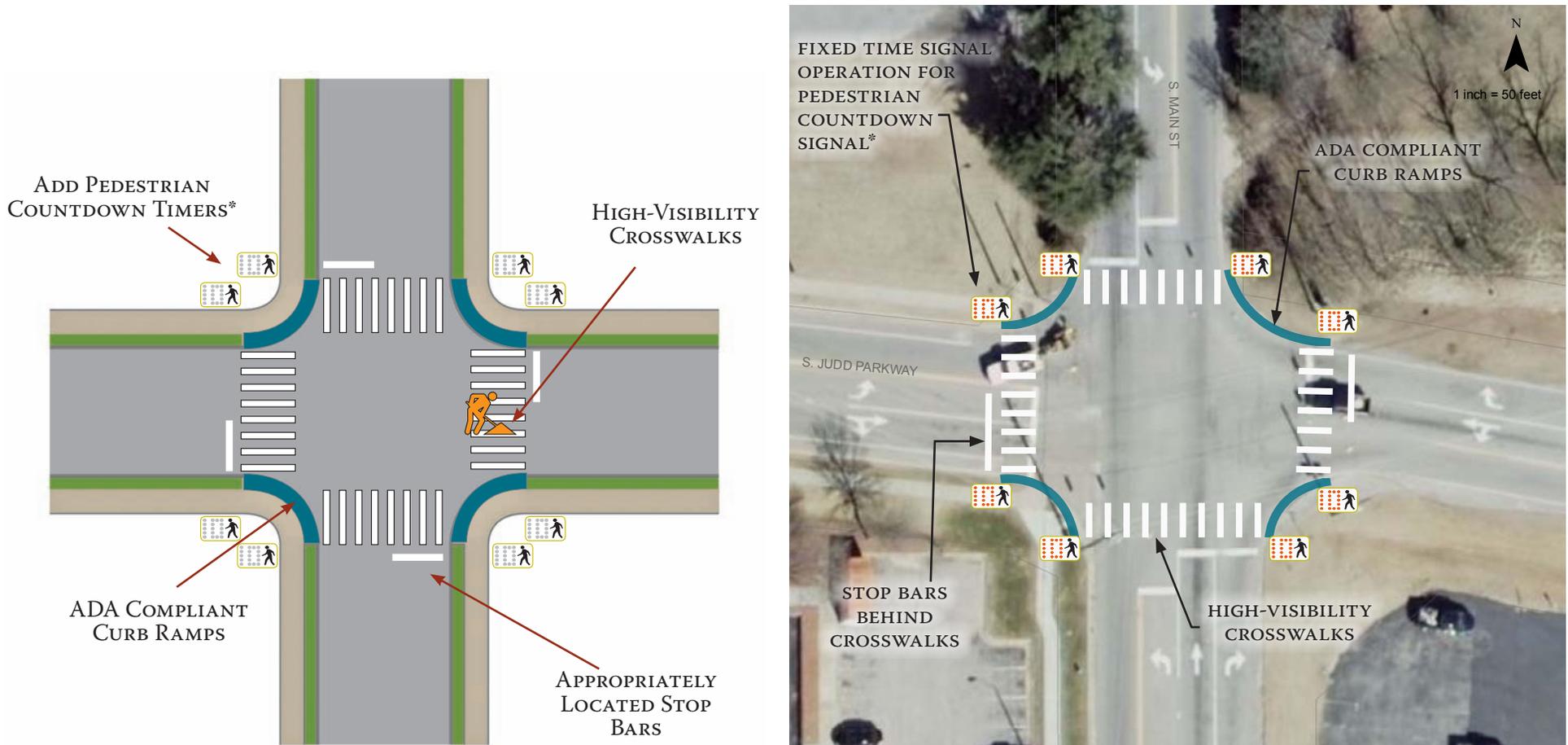
Railroad Crossing Treatment Concepts (D-8)

Table D.1: Roadway Intersections (cont'd)

Primary Roadway	Intersecting Roadway	Treatment Concept
S. Judd Parkway	Lawson Cypress	Non-Signalized
S. Judd Parkway	Angier	Signalized
S. Judd Parkway	E. Academy	Signalized
S. Judd Parkway	Old Honeycutt	Non-Signalized
S. Judd Parkway	Oldwyck Drive	Non-Signalized
S. Judd Parkway	Holland	Signalized
S. Judd Parkway	S. Phillips Pointe Dr	Non-Signalized
S. Main	E. Vance	Signalized
S. Main	Wake Chapel	Signalized
S. Main	Sunset Dr	Non-Signalized
S. Main	Wagstaff	Non-Signalized
S. NC 55	Trail Crossing	Mid-block, Trail Crossing
Stewart	Ballentine Dairy	Non-Signalized
Sunset Lake	Hilltop-Needmore	Signalized
Sunset Lake	N. McLaurin	Non-Signalized
Sunset Lake	Trail Crossing	Mid-block, Trail Crossing
W. Academy	Spring Ave	Non-Signalized
W. Academy	Coley Farm	Non-Signalized
W. Academy	Bridge St	Non-Signalized
Wagstaff	Trail Crossing	Mid-block, Trail Crossing
Wilbon	Coley Farm	Non-Signalized
Wilbon	Bridge St	Non-Signalized

Figure D.1 Signalized Intersection Treatment Concept

Example: South Judd Parkway & South Main Street Intersection



GENERAL NOTES:

Shorter traffic signal cycle lengths and longer walk intervals would provide optimal service to pedestrians and encourage better signal compliance.

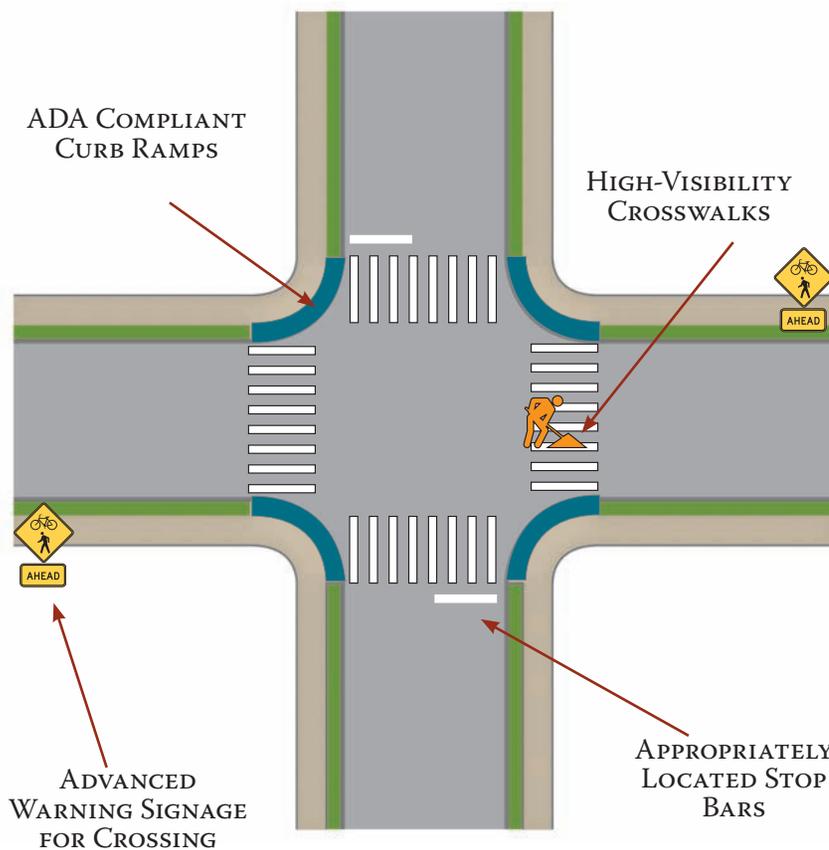
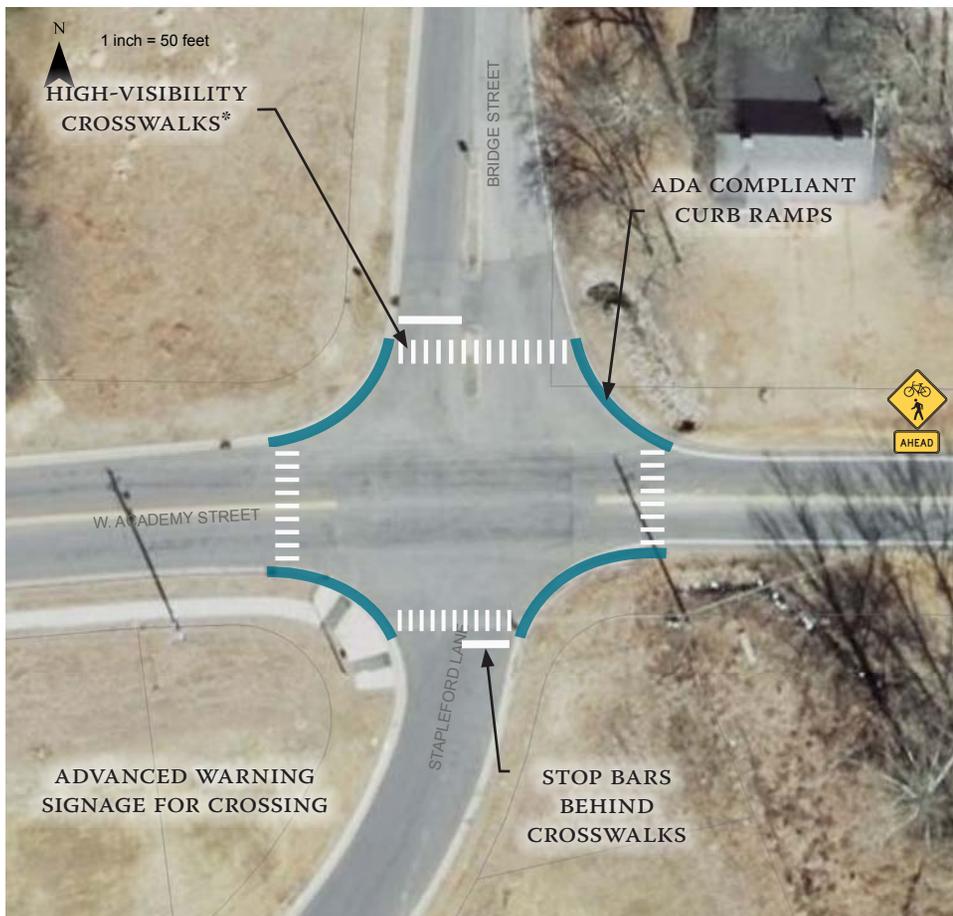
Pedestrian pushbuttons for pedestrian countdown signals with Leading Pedestrian Intervals may be installed at signalized intersections with high pedestrian traffic. Quick response to the pushbutton or feedback to the pedestrian (e.g.- indicator light comes on) should be programmed into the system. The countdown should begin at the beginning of the pedestrian change phase, the flashing “Don’t Walk.”

When used, pushbuttons should be well-signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. Audible signals that include tones or a verbal message could be considered. See Appendix A: Design Guidelines for more information and guidance on pedestrian crossing treatments.

Consider minimizing turning radii at corners to reduce vehicular turning speed and reduce pedestrian crossing distances.

Figure D.2 Non-Signalized Intersection Treatment Concept

Example: West Academy Street & Bridge Street Intersection



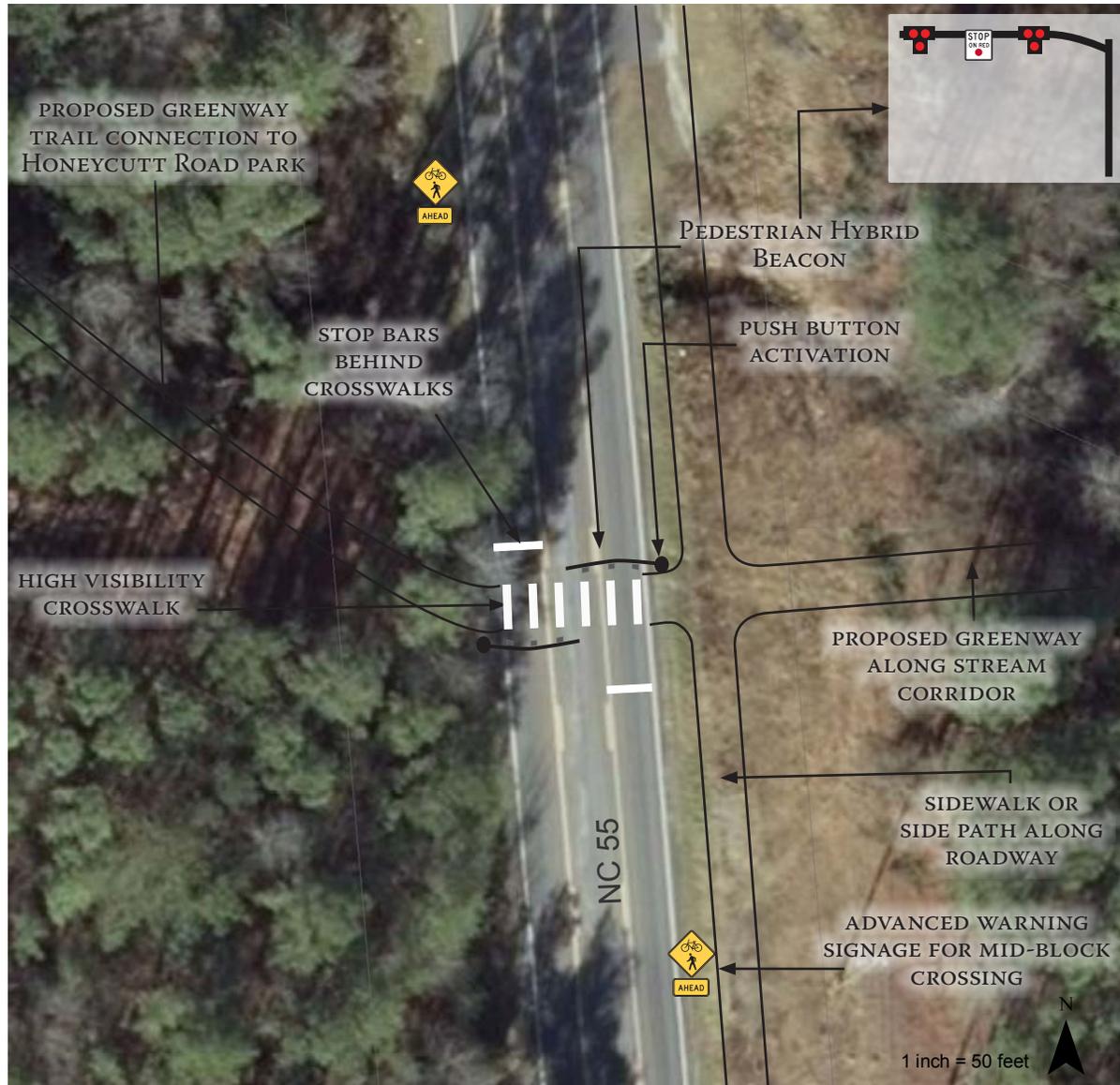
GENERAL NOTES:

NCDOT does not require high-visibility crosswalks at unsignalized intersections. Requests for high-visibility crosswalks at unsignalized intersections on NCDOT-owned roadways will be reviewed on a case-by-case basis.

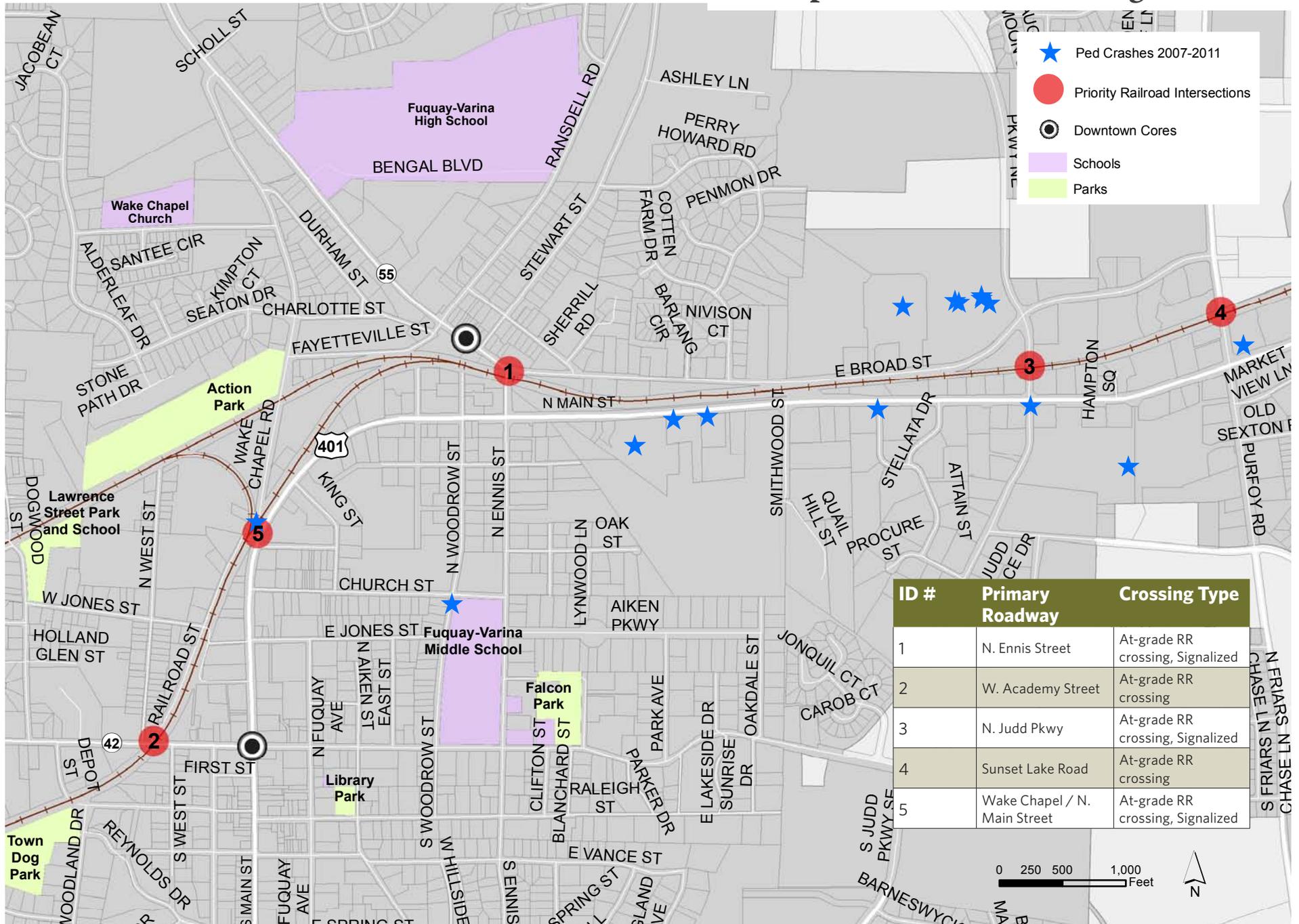
Consider minimizing turning radii at corners to reduce vehicular turning speed and reduce pedestrian crossing distances.

Figure D.3 Mid-block Crossing or Trail Crossing Treatment Concept

Example: NC 55 and Future Multi-use Trail Crossing (north of Jones Lake Road)



Map D.1 Railroad Crossing Locations





View of crossing at N. Ennis Street



*View of automobile approach on NC 55/
Broad Street*



*View of median islands on N. Ennis Street,
north of at-grade crossing*



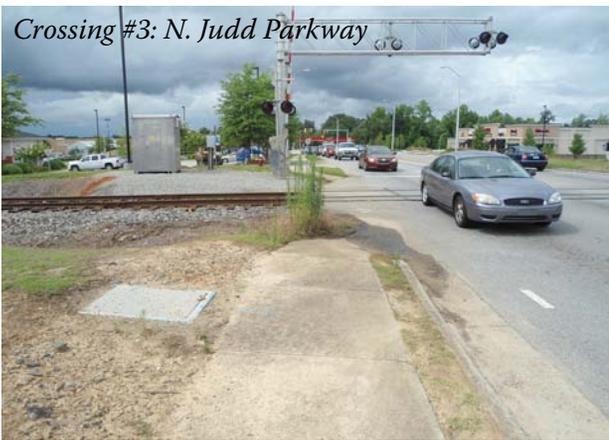
*View of crossing facing west, near intersection
of Railroad Street*



View of crossing facing west, sidewalk gap area



*View of crossing facing east, sidewalk gap
area on eastern side of railroad tracks*



View of crossing, facing north



View of crossing, facing south



View of crossing facing north, poor drainage area



Crossing #4: Sunset Lake Road



Crossing #4: Sunset Lake Road

Two Photos to left: #4 Sunset Lake Road At-Grade Crossing. Photos from Google Streetview



Crossing #5: Wake Chapel Road

View of N. Main Street approaching intersection



Crossing #5: Wake Chapel Road

View of intersection, facing north



Crossing #5: Wake Chapel Road

View of Wake Chapel Road, approaching intersection and crossing

Figure D.4 North Ennis Street Railroad Crossing

Existing Conditions Analysis

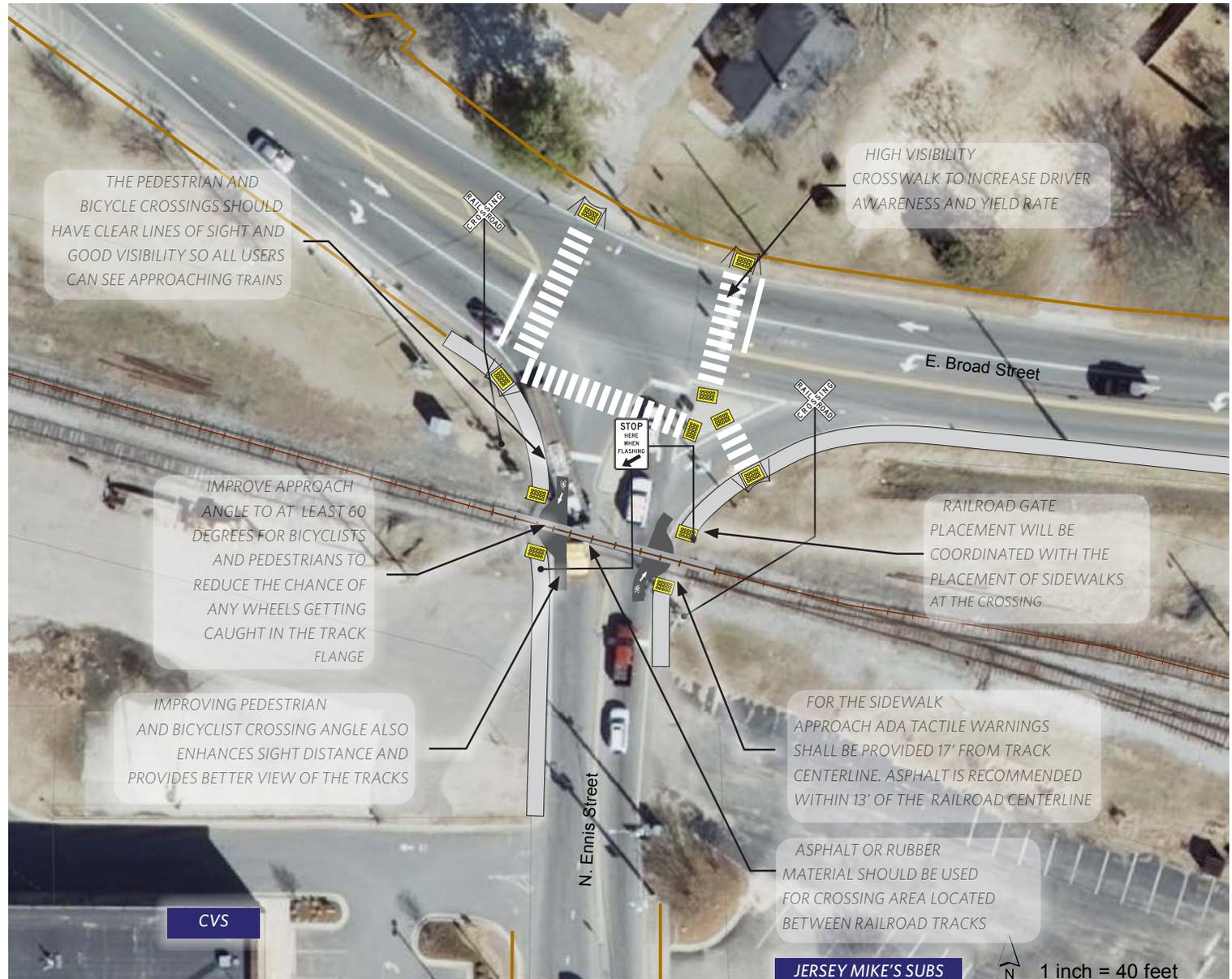


East Broad Street and North Ennis Street form a 3-way intersection with signal control. The railroad crosses Ennis St. approximately 55 ft from the intersection with Broad St. There are existing sidewalks on the south side of Broad St. that end at the intersection approach. In the existing condition, there are no marked pedestrian crossing provisions along any of the legs of this intersection nor are there sidewalks along most of the roads. For bicyclists, the track angles relative to the pavement increases the chance of losing control.

Several features could be added to increase safety for pedestrians crossing the intersection and tracks and to better guide bicyclists on the safest angle to cross the tracks.

Figure D.5 North Ennis Street Railroad Crossing

Suggested Improvements and Recommendations



GENERAL NOTES:

- USE HIGH VISIBILITY PAVEMENT MARKINGS AT ALL PEDESTRIAN CROSSINGS
- PROVIDE ADEQUATE GREEN TIME FOR CROSSING WHERE SIGNALIZED
- PROVIDE FOR APPROPRIATE SIGNS AND WAYFINDING FOR ALL USERS
- PROVIDE 50'X 100' SIGHT TRIANGLE FOR BICYCLISTS AND PEDESTRIANS CROSSING TRACKS
- NO PARKING IS ALLOWED IN THE RAILROAD RIGHT OF WAY

Figure D.6 NC 42/West Academy Street Railroad Crossing Existing Conditions Analysis

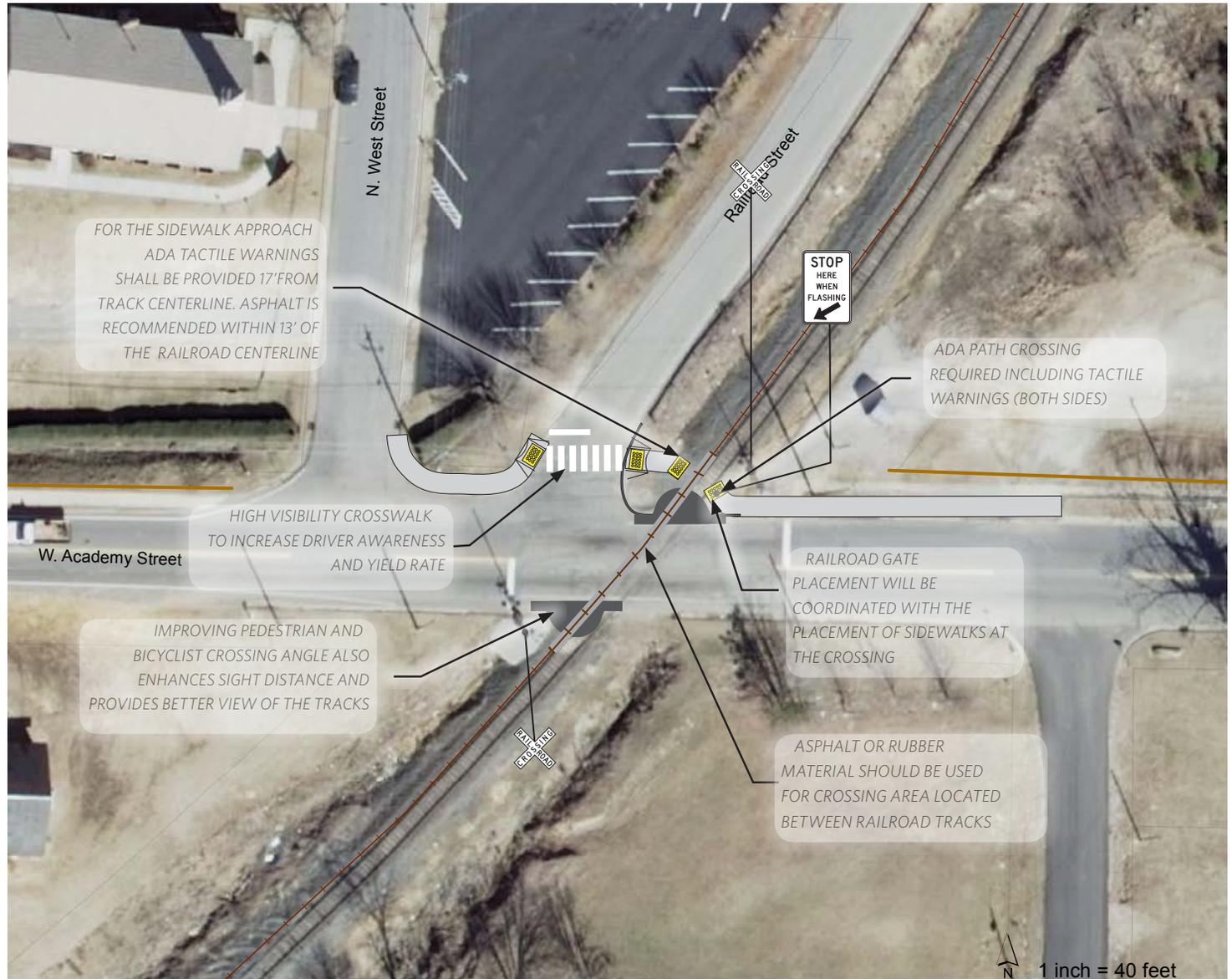


NC 42/West Academy Street is a two-way street with an angled rail line crossing controlled with flashing signals and crossing arms. There is an existing sidewalk on the north side of the street. The railroad right-of-way embankment slope makes provision of pedestrian facilities more challenging with additional grading. For bicyclists, the track angles relative to the pavement increases the chance of losing control.

Several features could be added to better guide pedestrians and bicyclists on the safest angle to cross the tracks.

Figure D.7 NC 42/West Academy Street Railroad Crossing

Suggested Improvements and Recommendations

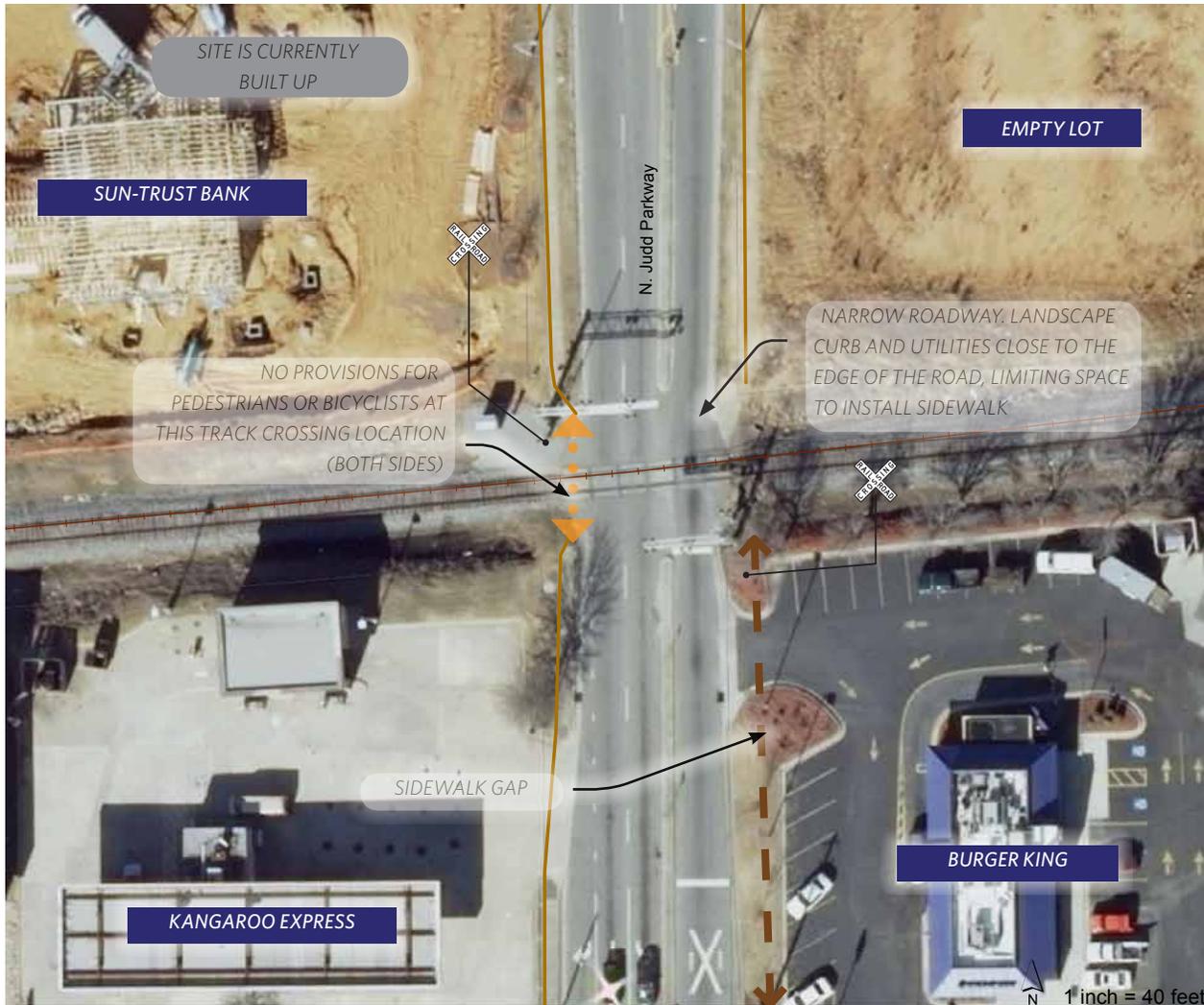


GENERAL NOTES:

- USE HIGH VISIBILITY PAVEMENT MARKINGS AT ALL PEDESTRIAN CROSSINGS
- PROVIDE ADEQUATE GREEN TIME FOR CROSSING WHERE SIGNALIZED
- PROVIDE FOR APPROPRIATE SIGNS AND WAYFINDING FOR ALL USERS
- PROVIDE 50'X 100' SIGHT TRIANGLE FOR BICYCLISTS AND PEDESTRIANS CROSSING TRACKS
- NO PARKING IS ALLOWED IN THE RAILROAD RIGHT OF WAY

Figure D.8 North Judd Parkway Railroad Crossing

Existing Conditions Analysis



North Judd Parkway is a two-way, four-lane road connecting East Broad Street and North Main Street. There are commercial uses of properties on both sides of the street. The rail road crosses North Judd Parkway at close to 90 degrees which improves safety for bicyclists and pedestrians as it reduces loss of control and provides for a better view of approaching trains.

There are existing sidewalks on the west side of Judd Parkway although they direct users into the roadway just prior to the track crossing on both sides. The south east corner lacks sidewalks and existing landscape curb and utilities are close to the roadway. There is a natural footpath on (currently an empty lot), indicating a demand for walking facilities on this side of the street.

Figure D.9 North Judd Parkway Railroad Crossing

Suggested Improvements and Recommendations

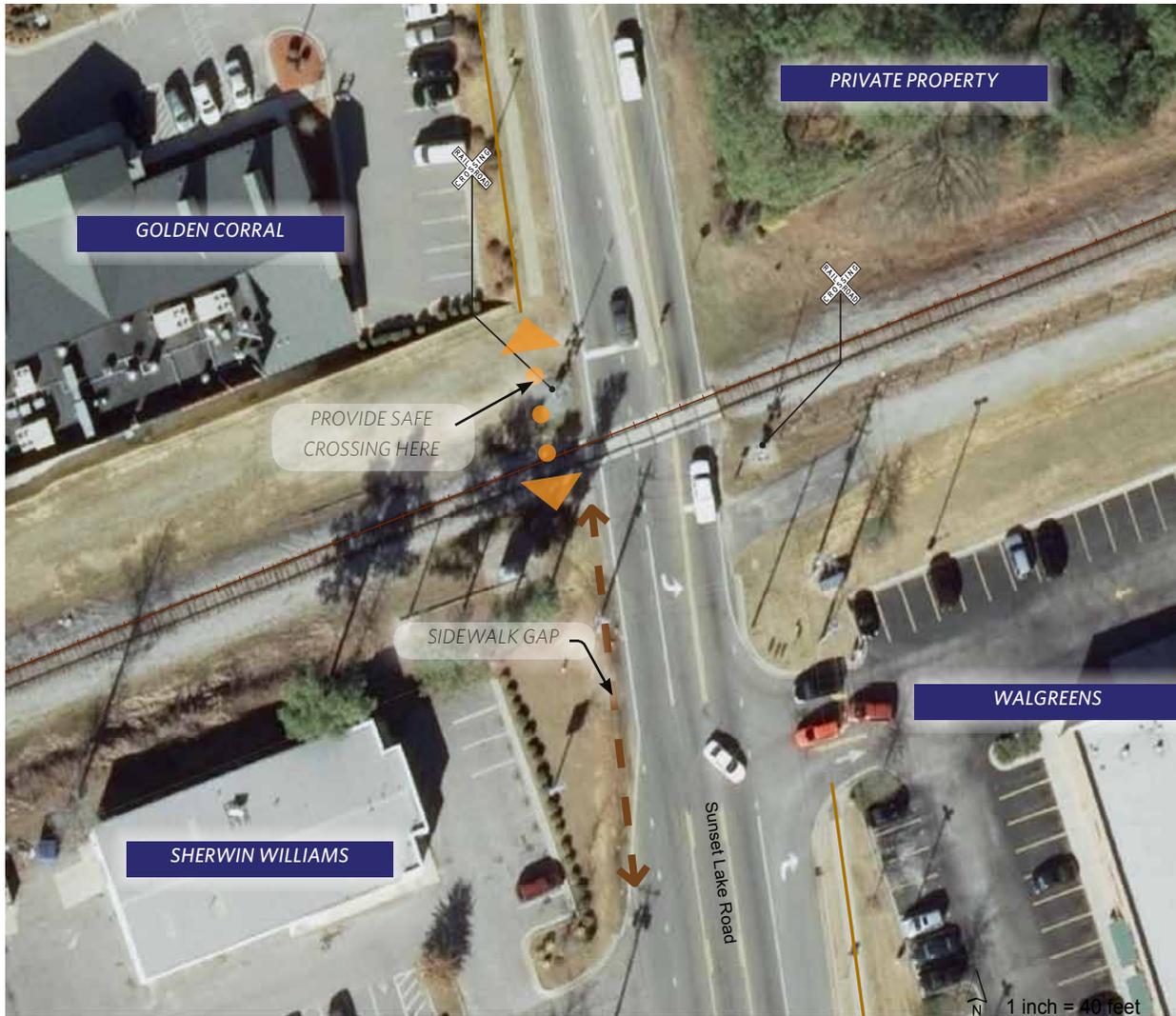


GENERAL NOTES:

- USE HIGH VISIBILITY PAVEMENT MARKINGS AT ALL PEDESTRIAN CROSSINGS
- PROVIDE ADEQUATE GREEN TIME FOR CROSSING WHERE SIGNALIZED
- PROVIDE FOR APPROPRIATE SIGNS AND WAYFINDING FOR ALL USERS
- PROVIDE 50'X 100' SIGHT TRIANGLE FOR BICYCLISTS AND PEDESTRIANS CROSSING TRACKS
- NO PARKING IS ALLOWED IN THE RAILROAD RIGHT OF WAY

Figure D.10 Sunset Lake Road Railroad Crossing

Existing Conditions Analysis



This section of Sunset Lake Road is between East Broad Street and North Main Street. There are commercial land uses on both sides of the road, with the exception of the northeast corner. The rail road crosses the Sunset Lake on the east-west direction. There is a sidewalk gap along the south-west lot of the intersection. There are no existing crosswalks at this location.

Figure D.11 Sunset Lake Road Railroad Crossing

Suggested Improvements and Recommendations

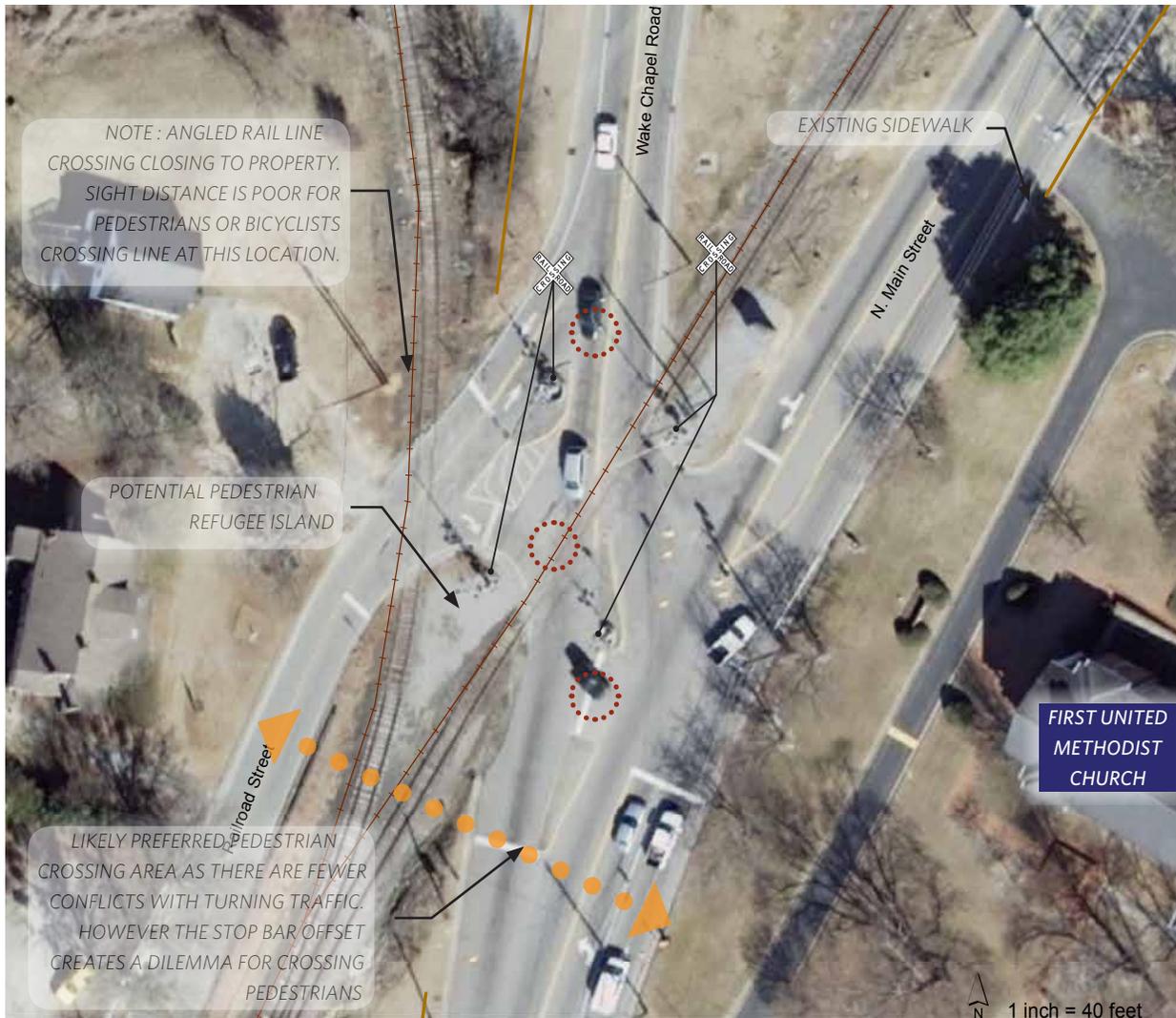


GENERAL NOTES:

- THE 2006 THOROUGHFARE PLAN RECOMMENDS IMPROVING THIS ROADWAY TO A FOUR-LANE CROSS-SECTION. ANY PEDESTRIAN IMPROVEMENTS SHOULD BE MADE WITH CONSIDERATION TO POTENTIAL FUTURE ROADWAY IMPROVEMENTS.
- USE HIGH VISIBILITY PAVEMENT MARKINGS AT ALL PEDESTRIAN CROSSINGS
- PROVIDE ADEQUATE GREEN TIME FOR CROSSING WHERE SIGNALIZED
- PROVIDE FOR APPROPRIATE SIGNS AND WAYFINDING FOR ALL USERS
- PROVIDE 50'X 100' SIGHT TRIANGLE FOR BICYCLISTS AND PEDESTRIANS CROSSING TRACKS
- NO PARKING IS ALLOWED IN THE RAILROAD RIGHT OF WAY

Figure D.12 Wake Chapel Road Railroad Crossing

Existing Conditions Analysis



 Conflicting turning movement

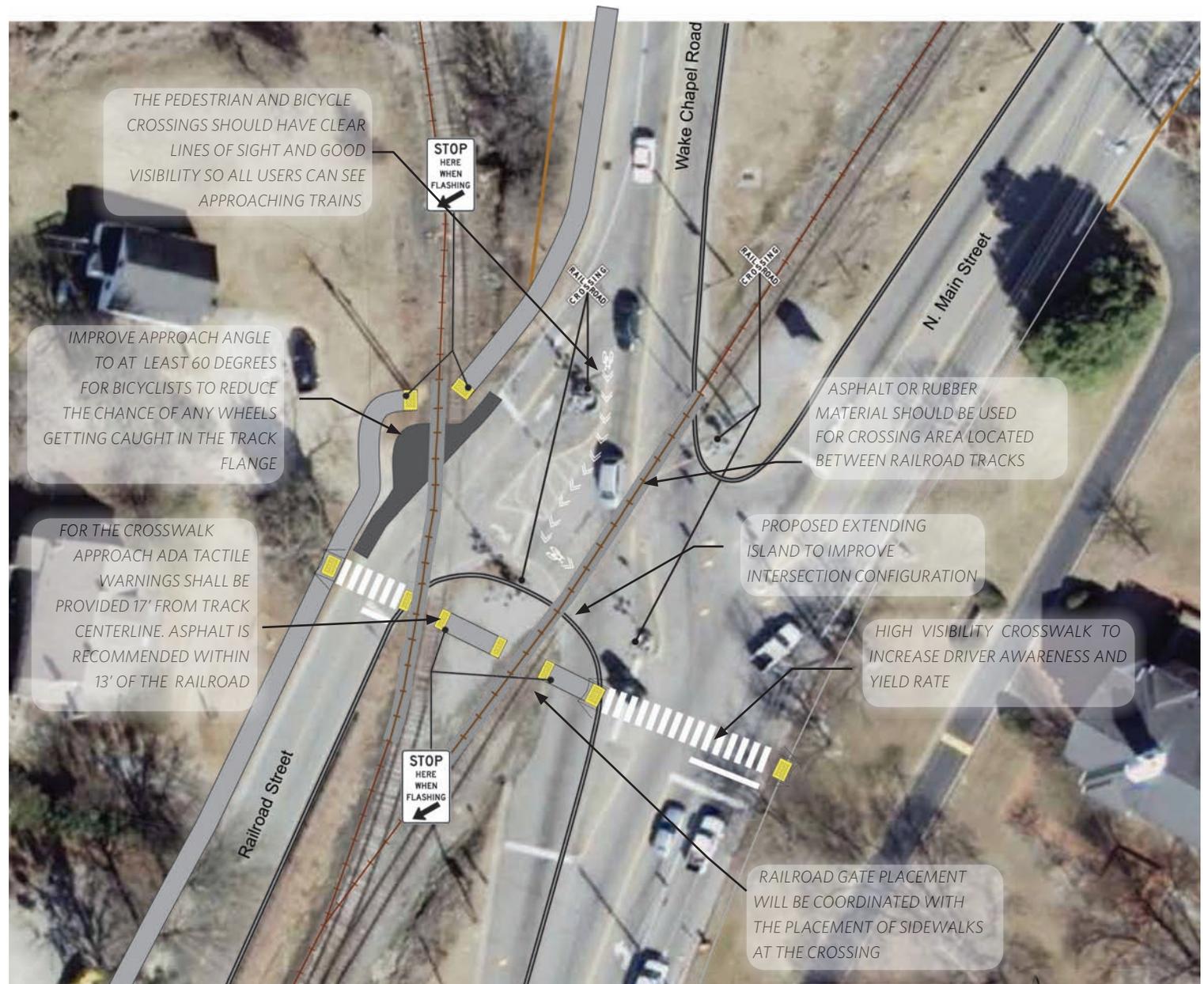
The safe operation of this asymmetric four-legged intersection is complicated by the two railroad lines crossing also. There are numerous turning movements and potential conflict points.

In the existing condition there are no provisions for safe crossing of pedestrians, nor are there sidewalks along most of the roads. For bicyclists, the crossings to and from Wake Chapel Road and Railroad Street are hazardous because of the track angles relative to the pavement and the lack of general guidance on how to negotiate the intersection safely.

Several features of the intersection could be reconfigured to provide safe refuge for pedestrians as they cross and to better guide bicyclists on the safest routes through the paved area.

Figure D.13 Wake Chapel Road Railroad Crossing

Preferred Option: Suggested Improvements and Recommendations



GENERAL NOTES:

- USE HIGH VISIBILITY PAVEMENT MARKINGS AT ALL PEDESTRIAN CROSSINGS
- PROVIDE ADEQUATE GREEN TIME FOR CROSSING WHERE SIGNALIZED
- PROVIDE FOR APPROPRIATE SIGNS AND WAYFINDING FOR ALL USERS
- PROVIDE 50'X 100' SIGHT TRIANGLE FOR BICYCLISTS AND PEDESTRIANS CROSSING TRACKS
- NO PARKING IS ALLOWED IN THE RAILROAD RIGHT OF WAY

Table D.2 Action Steps for Railroad Crossing Projects

Action Step	Lead Personnel/ Agency	Support/Partnerships	Details/Notes
1. Adopt Community Pedestrian Master Plan	Consultant Team	Town of Fuquay-Varina Staff	Present Community Pedestrian Plan to Town Board
2. Review “Public Project Manual” from Norfolk Southern Corporation (NSC)	Town of Fuquay-Varina Staff	Planning Department, Engineering Department, Public Works Department Staff	
3. Schedule Field Review	Town of Fuquay-Varina Staff	District Engineer, NCDOT Division Office, Engineering Coordination & Safety Branch, NCDOT Rail Division; Administrator, Highway Grade Crossing Program, NSC; Public Project Contact, Bridges and Structures, NSC	Corridor review should occur with town staff, NSC local track supervisor, division superintendent, division manager, train master, and local operations personnel.
4. Develop Project Agreement with NCDOT for Entire Corridor	Town of Fuquay-Varina Planning Department Staff	Engineering Coordination & Safety Branch, NCDOT Rail Division; Project Engineer, Design & Construction Branch, NCDOT Rail Division	Agreement should be written for comprehensive corridor review, indicating prioritized list of projects and including any abandonments, sidewalk construction and bicycle facility requests, and other specific project details.
5. Town commits funding to engineering and design phase for priority project	Town of Fuquay-Varina	Planning Department, Engineering Department, Public Works Department Staff	Local funding for project is programmed into Capital Improvement Budget.
6. Town develops preliminary design for priority project	Town of Fuquay-Varina	Planning Department, Engineering Department, Public Works Department Staff	May be accomplished through the procurement of consulting services.
7. Town submits preliminary design for priority project to NSC for review	Town of Fuquay-Varina Planning Department Staff	Town of Fuquay-Varina Engineering Department Staff, District Engineer, NCDOT Division Office, Engineering Coordination & Safety Branch, NCDOT Rail Division; Project Engineer, Design & Construction Branch, NCDOT Rail Division	Will include the submittal and review of 30% construction documents.
8. Town applies for, or programs additional funding for final design and construction of priority project	Town of Fuquay-Varina	Wake County, CAMPO, NCDOT, Town Planning Department, Engineering Department, Public Works Department Staff	
9. Town completes design for priority project	Town of Fuquay-Varina Planning Department Staff	Town of Fuquay-Varina Engineering Department Staff	Will include the submittal and review of 60% and 100% construction documents.
10. Town procures bids for construction	Town of Fuquay-Varina	Planning Department, Engineering Department, Public Works Department Staff	
11. Contractor/builder selection	Town of Fuquay-Varina	Planning Department, Engineering Department, Public Works Department Staff	
12. Project goes to construction	Town of Fuquay-Varina	Planning Department, Engineering Department, Public Works Department Staff	Will require Town Staff project management

Example Railroad Crossings from Other North Carolina Communities



Southern Pines, NC



Harrison Avenue, Cary, NC



Mangum Street, Durham, NC



Academy Road, Cary, NC



Bland Street, Charlotte, NC

**All images on this page were obtained from Google Streetview*

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