FUQUAY-VARINA PEDESTRIAN PLAN

Prepared for the Town of Fuquay-Varina, North Carolina
Prepared by Alta Planning + Design

2022

Acknowledgments

Thank you to the local residents, community leaders, and Town staff that engaged in the development of this plan through meetings, mapping, public outreach, comment forms, and plan review. Special thanks to those who provided invaluable direction as Steering Committee members, listed below.

Steering Committee

Blake Massengill, Mayor

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Captain Tim Smith, Police Department

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Dani Almeyda, Downtown Association

Kate Davis, Chamber of Commerce

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FUQUAY-VARINA north carolina

alta

Integrated Mobility Division

N.C. DEPARTMENT OF TRANSPORTATION

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2022 FUQUAY-VARINA PEDESTRIAN PLAN: EXECUTIVE SUMMARY

This pedestrian plan builds on progress made since the approval of the 2013 Fuquay-Varina Community Pedestrian Plan. Since 2013, progress has been made through strategic Town investments, NCDOT roadway expansion projects, and private development that has incorporated pedestrian facilities such as sidewalks, crosswalks, sidepaths, and greenways. This document provides an updated framework for the Town of Fuquay-Varina to continue strategically building better connections for walking throughout the community.

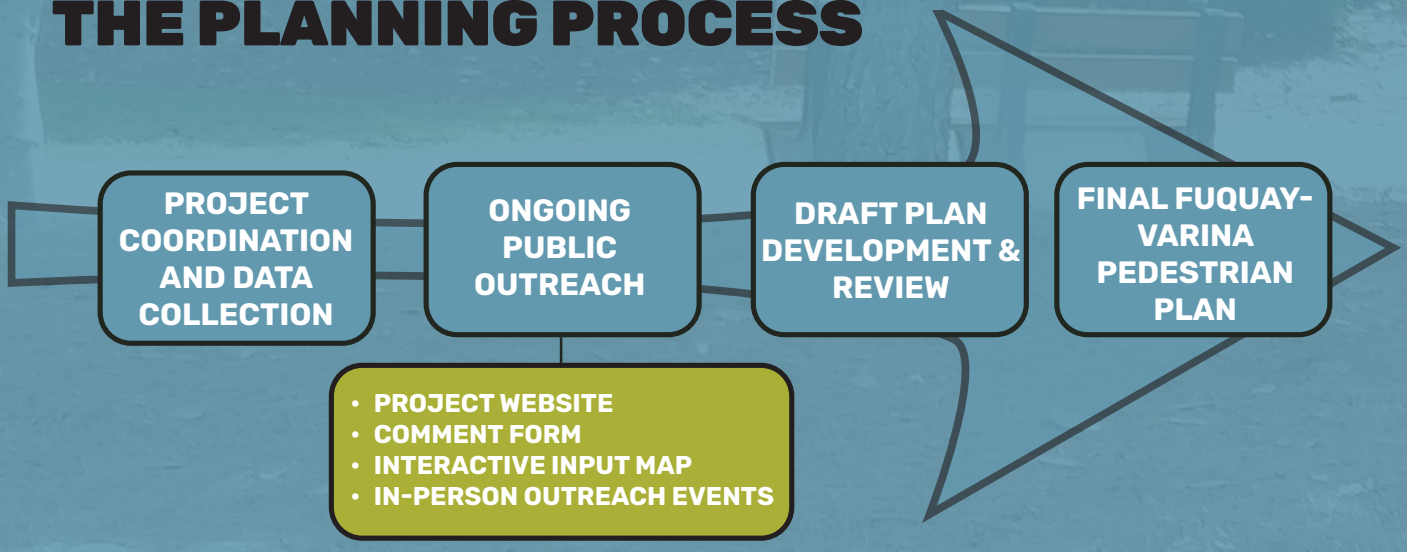
PROJECT VISION

Fuquay-Varina will have a pedestrian network for all ages and abilities that enhances connectivity to the downtowns, parks, schools, jobs, and neighborhoods on safe and accessible sidewalks and greenways. This well-designed, interconnected network will showcase the unique downtowns and suburban landscape of Fuquay-Varina.

PROJECT GOALS

- Enhance Connectivity
- Improve Health
- Increase Livability through Active Transportation
- Provide Access to Natural Areas
- Improve Safety
- Promote Equity
- Generate a Positive Economic Impact

THE PLANNING PROCESS

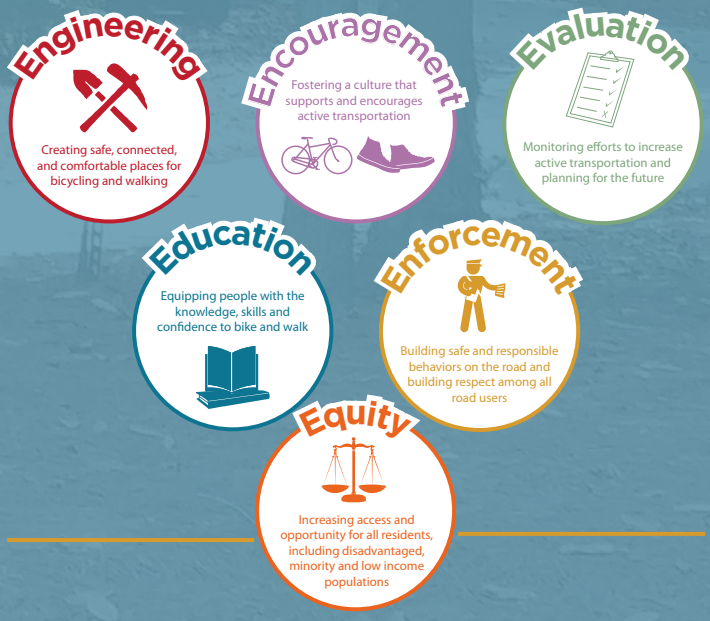


INFRASTRUCTURE RECOMMENDATIONS

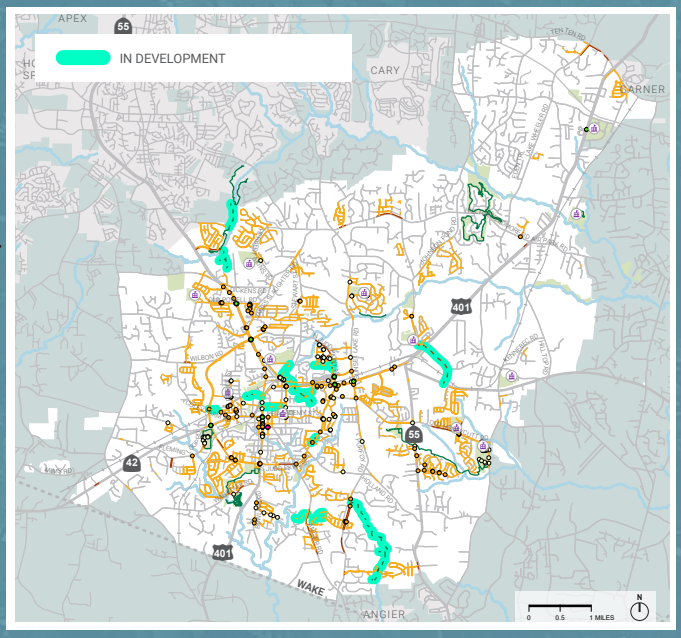
With the fast pace of development continuing in Fuquay-Varina, multiple sidewalk and shared use path projects are currently in development (see map to the right/top). Building on this, priority projects are identified to continue filling in gaps in the pedestrian network (see map to the right/middle). Additional gaps in the network were highlighted to connect schools and parks (see map to the right/bottom). See Chapter 3 and Appendix D of this document for comprehensive pedestrian network recommendations.

PROGRAM/POLICY RECOMMENDATIONS

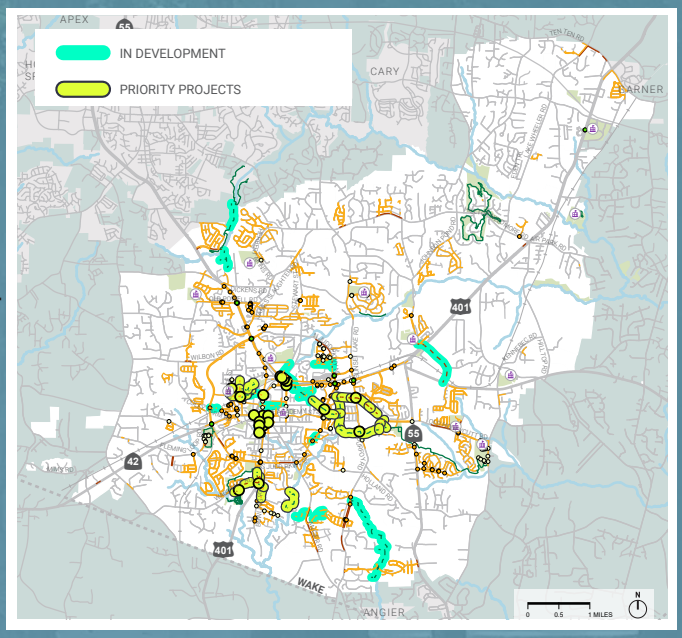
The Six E's are the general categories of programming that provide a balance of active transportation efforts. See Chapter 4 for further detail.



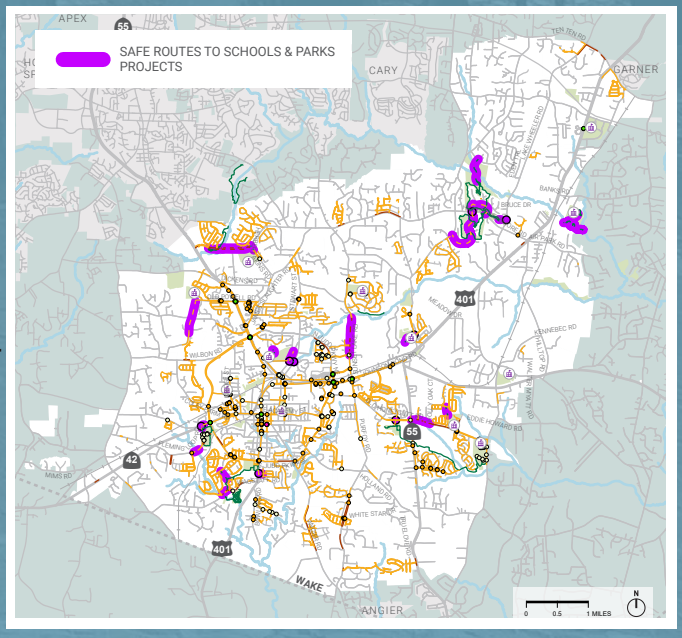
PROJECTS CURRENTLY IN DEVELOPMENT



PRIORITY PROJECTS



PROJECTS CONNECTING TO SCHOOLS & PARKS



01.

Introduction

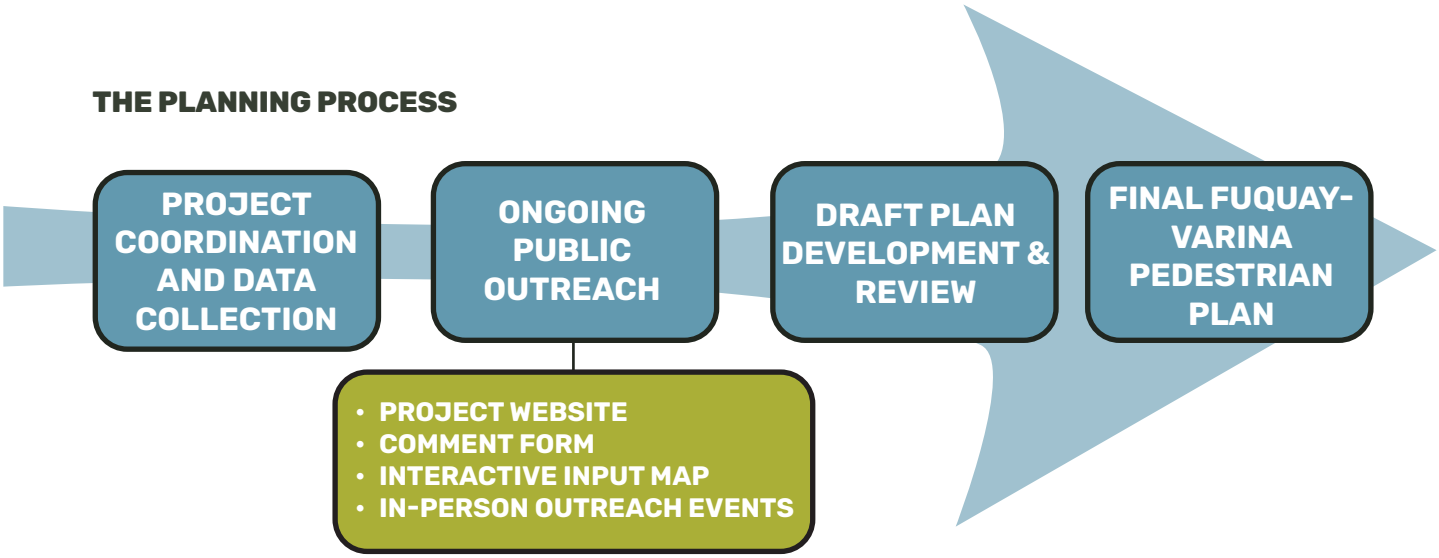
Introduction

This pedestrian plan builds on progress made since the approval of the 2013 Fuquay-Varina Community Pedestrian Plan. Since 2013, progress has been made through strategic Town investments, NCDOT roadway expansion projects, and private development that has incorporated pedestrian facilities such as sidewalks, crosswalks, sidepaths, and greenways. This document provides an updated framework for the Town of Fuquay-Varina to continue strategically building better connections for walking throughout the community.

While the 2035 Community Transportation Plan provides a broader examination of the pedestrian environment as part of the overall transportation system, it emphasizes multimodal transportation options and includes an updated pedestrian (and bicycle) network. This planning process builds upon these recommendations and helps focus pedestrian investments.

Exactly like the original 2013 plan, this plan was made possible through a successful NCDOT Planning Grant application by the Town of Fuquay-Varina. With this plan, Fuquay-Varina established a guide for infrastructure and policy improvements that will lead to a robust network for pedestrians.

The planning process began with a Kickoff Meeting in June 2021, which was the first of three project Steering Committee meetings. The Steering Committee was comprised of local residents, municipal staff, business groups, school officials, developers, NCDOT engineers and regional transportation planners. This Steering Committee guided the plan's development throughout the planning process. Key steps included communicating their overall vision for the plan, identifying opportunities and challenges for walking, and providing feedback on plan recommendations.



The planning process began during the Summer of 2021 and was completed in the Spring of 2022.

PROJECT VISION

Fuquay-Varina will have a pedestrian network for all ages and abilities that enhances connectivity to the downtowns, parks, schools, jobs, and neighborhoods on safe and accessible sidewalks and greenways. This well-designed, interconnected network will showcase the unique downtowns and suburban landscape of Fuquay-Varina.

PROJECT GOALS

Enhance Connectivity

Improve Safety

Improve Health

Promote Equity

Increase Livability through Active Transportation

Generate a Positive Economic Impact

Provide Access to Natural Areas

The Value of Walkable Communities

SAFETY BENEFITS

Pedestrian treatments and traffic calming help to save lives, as illustrated in the graphics below. Additionally, increasing the number of users on trails and greenways creates an environment where behavior on the trail is monitored by trail users themselves, and provides for an increased sense of safety for those who feel uncomfortable walking alone due to a fear of crime.

A pedestrian hit by a vehicle traveling at **25 MPH**

has a **89%** chance of survival

A pedestrian hit by a vehicle traveling at **35 MPH**

has a **68%** chance of survival

A pedestrian hit by a vehicle traveling at **45 MPH**

has a **35%** chance of survival

Rosén, E., & Sander, U. (2009). Pedestrian fatality risk as a function of car impact speed. Accident Analysis & Prevention, 41(3), 536-542.

"Communities designed to be walkable can **improve safety** not only for people who walk but for **all community members."**

- Surgeon General, 2015

	% DECREASE IN CRASHES
Install sidewalk to avoid walking along roadway	**65-89**
Increase enforcement to reduce speed	**70**
Install pedestrian refuge island	**56**
Add exclusive pedestrian phasing to signalized intersection	**34**

Federal Highway Administration. "Proven Safety Countermeasures" and "Toolbox of Countermeasures and Their Potential Effectiveness" (compilation of studies 2005-2020).

THE VALUE OF WALKABLE COMMUNITIES

HEALTH BENEFITS

Sidewalks and greenways offer safe and accessible opportunities for physical activity, and can result in health benefits.

People who are physically active (ie; brisk walking) for at least 2.5 hours/ week have a **33%** Lower Risk of All-Cause mortality

Physical Activity Guidelines for Americans, 2nd Edition (2018)

Those who are physically active generally live longer and have a lower risk for heart disease, stroke, Type 2 diabetes, depression, some cancers, and obesity.

CDC, 2015

20 MINUTES WALKING OR BIKING each day is associated with a

21% LOWER RISK OF HEART FAILURE FOR MEN

and

29% LOWER RISK FOR WOMEN

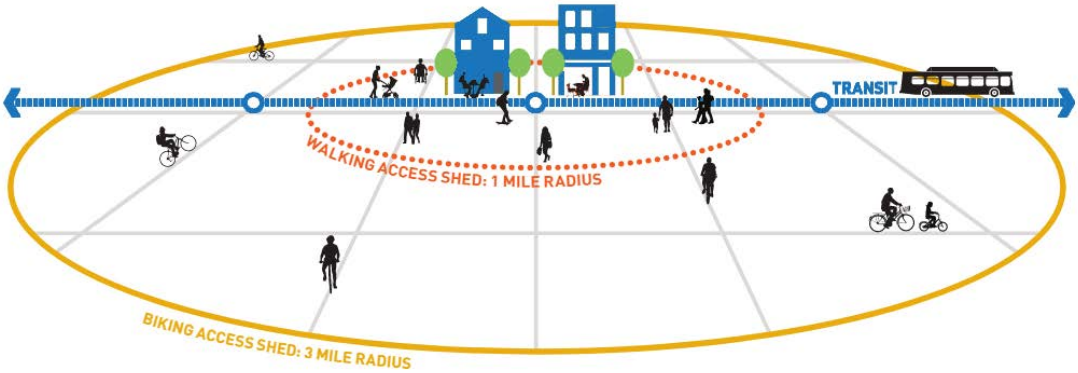
Rahman, 2014 and 2015

THE VALUE OF WALKABLE COMMUNITIES

Accessibility and Mobility Benefits

Sidewalks and greenways, when applied comprehensively, provide a critical element of freedom to those who may not have access to, or the ability to drive a motor vehicle.

Continuing to improve the walking environment in Fuquay-Varina can enable more walking trips and degrees of freedom of the transportation network, especially for those trips that are 1-mile or less.



21%

OF ALL TRIPS BY A SINGLE PRIVATELY-OPERATED VEHICLE (IN THE US) ARE 1 MILE (OR LESS), A DISTANCE THAT CAN EASILY BE COVERED BY A 15 MINUTE WALK

NHTS, 2017

DRIVING 4 MILES/DAY COSTS*

$905 / year

in fuel and vehicle wear and tear *AAA, 2019*

**Costs are ~ $9,300/year for the 44 miles/day driven by the average driver in North Carolina*

WALKING is **FREE**

THE VALUE OF WALKABLE COMMUNITIES

ENVIRONMENTAL BENEFITS

Decreasing reliance on automobiles and reducing congestion by utilizing sidewalks and greenways can lead to improved air quality. Walking paths serve as a tool for conserving open space and preserving wetlands.

Less Driving Means Cleaner Air

Cars emit CO_2, nitrous oxide, sulfur oxide, and other gases that are associated with asthma attacks and cardiovascular disease. Pregnant people, newborns, children, and people with chronic illnesses are especially vulnerable to air pollution.

U.S. Department of Health and Human Services, 2018

If 8% more children living within 2 miles of a school were to walk or bike to school, the air pollution reduced from not taking a car would be **equivalent to removing 60,000 cars from the road** for one year, nationally.*

Pedroso, 2008, SRTS

Environmental Services of Greenways

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.

*In accordance with North Carolina law, Wake County Public School System "does not automatically provide school bus transportation to families that reside within 1.5 mile of the school their student is attending." The Transportation Department can decide whether to provide transportation within this 1.5-mile range based on area walkability and cost factors. This assessment is used to establish "no transport"/walk zone boundaries (though these do not exist for every school in the WCPSS district). These boundaries can be changed based on infrastructure improvements or other measures that make walking to school safer for students. The recommendations in this plan have the potential to significantly improve pedestrian safety around schools, allowing many more Fuquay-Varina students to walk to school safely!

THE VALUE OF WALKABLE COMMUNITIES

ECONOMIC BENEFITS

Connected greenways often yield high returns on investment through economic diversification, recreational tourism, and small business opportunities.

A 2018 study looking at the economic impact of four greenways in North Carolina (Brevard Greenway, Little Sugar Creek Greenway, American Tobacco Trail, and Duck Trail) found that **every $1.00** spent on trail construction **supports $1.72 annually** from local business revenue, sales tax revenue, and benefits related to health and transportation.

Combined Study Results: A one-time $26.7M capital investment in the four greenways supports:

$19.4M
Estimated annual **sales revenue** at local businesses along the four greenways

$684K
Estimated annual local and state sales tax revenue from businesses along the greenways

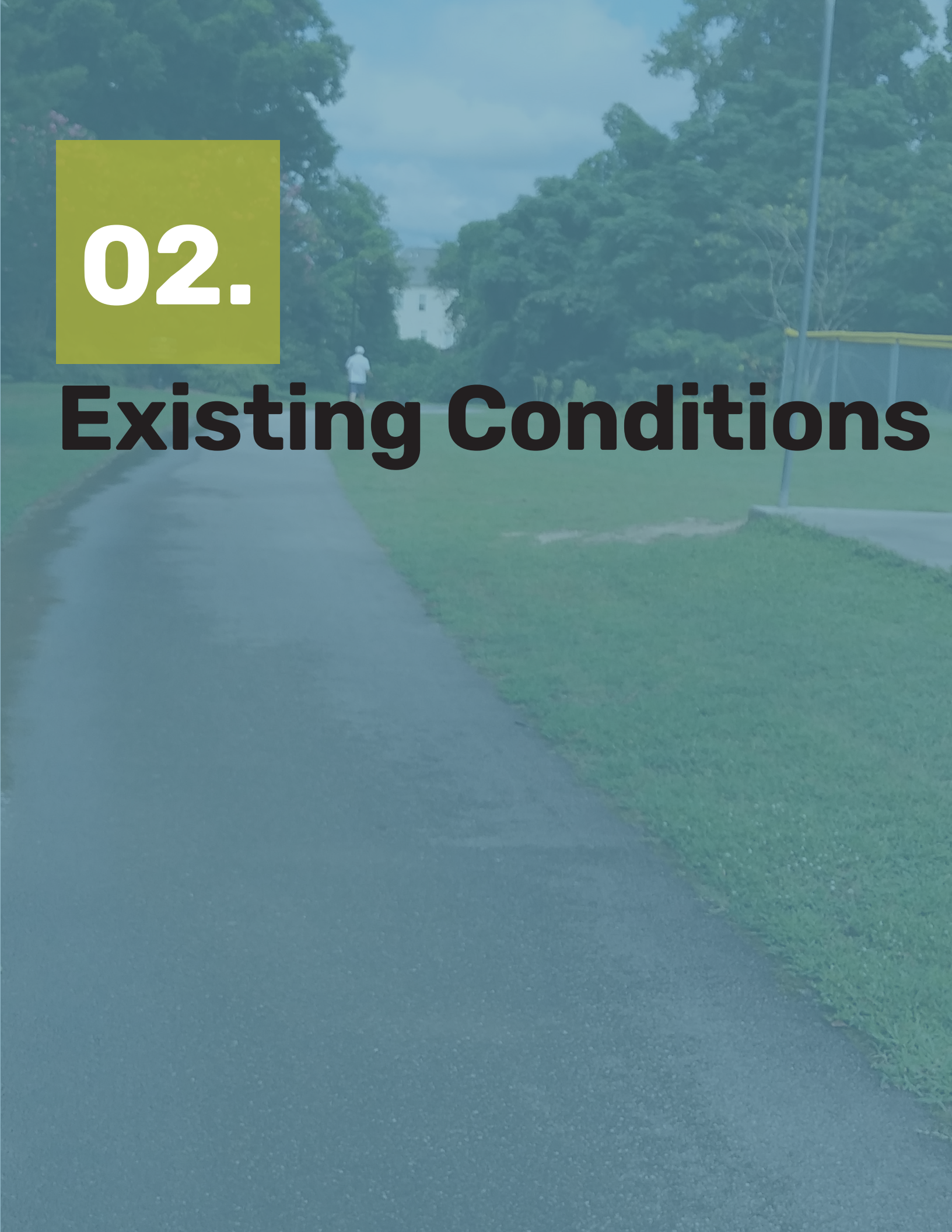
$25.7M
Estimated annual savings due to more physical activity, less pollution and congestion, and fewer traffic injuries from use of the greenways

$48.7M
Estimated business revenue from greenway construction

790 JOBS
Are supported annually through greenway construction

Source: Institute of Transportation Research and Education. (2017). Evaluating the Economic Impact of Shared Use Paths in North Carolina. https://itre.ncsu.edu/focus/bike-ped/sup-economic-impacts/

The study included extensive trail user surveys for each of the four greenways over a period of three years.



02.

Existing Conditions

Local Context

The infrastructure we see today has roots from when French Revolutionary War veteran William Fuquay purchased 1000 acres from the Jones family in 1805. Almost fifty years later, the discovery of a mineral spring by WIlliam's son or grandson led to a burgeoning antebellum tourism industry, as hotels grew up around the springs to accommodate those who came to "take the waters." The spring also attracted an early railroad connection to the Fuquay area.

Following the Civil War, a young veteran who had been born near the spring brought his wife Varina home to his birthplace and named his post office and store after her, near a railway crossing that would come to be known as "Varina Station." In the early 20th century, two downtowns grew up around the springs and the railway station, as the area became a hot-spot for the southern Wake County tobacco market.

Fuquay Springs was incorporated in 1909, and in 1963 merged with Varina to form a single municipality. Since then, Fuquay-Varina has continued to grow, becoming one of the fastest-growing towns in North Carolina. New residents are attracted by its distinct small-town feel, which is present in each of the historic downtown districts, despite the town's proximity to the bustling Research Triangle region.

Fuquay-Varina currently has a population of 34,152 (2020 Census, see Table 1 below). Fuquay-Varina's population, similar to that of other outlying suburbs in the Triangle region, has grown substantially over the past few decades as housing prices have risen in Durham and Wake counties. Future development is expected to continue at a similar pace as in the past few decades.

Table 1: Demographic Comparison

	Fuquay-Varina	Raleigh-Cary Metro Area	North Carolina
Population[1]	34,152	1,129,410	10,439,388
Median Age[2]	35.8	37.3	38.7
Median Household Income[2]	$79,000	$75,851	$54,602
% Households without a Vehicle[2]	3.5%	4.2%	5.8%
% Walk to Work[2]	0.6%	1.1%	1.8%
% School-Age Children (Ages 5-19)[2]	21.5%	20.8%	19.3%

[1] US Census Bureau, 2020 Census
[2] US Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

Existing Conditions

The downtowns of both Fuquay and Varina boast shopping, dining, and entertainment amenities catering to both residents and visitors from around the Triangle and beyond. Highway 401 becomes Main Street within the town limits, and the recently completed Judd Parkway forms a ring road around the downtown area, separating the town's more naturally walkable areas from the more suburban landscape outside of the parkway. Most of the schools serving the town lie outside of the downtown core and are not as easily accessible via walking. Furthermore, a multitude of residential subdivisions lie outside of Judd Parkway, and are disconnected from the overall pedestrian network.

Left: Artistic crosswalk recently completed near the fire station.

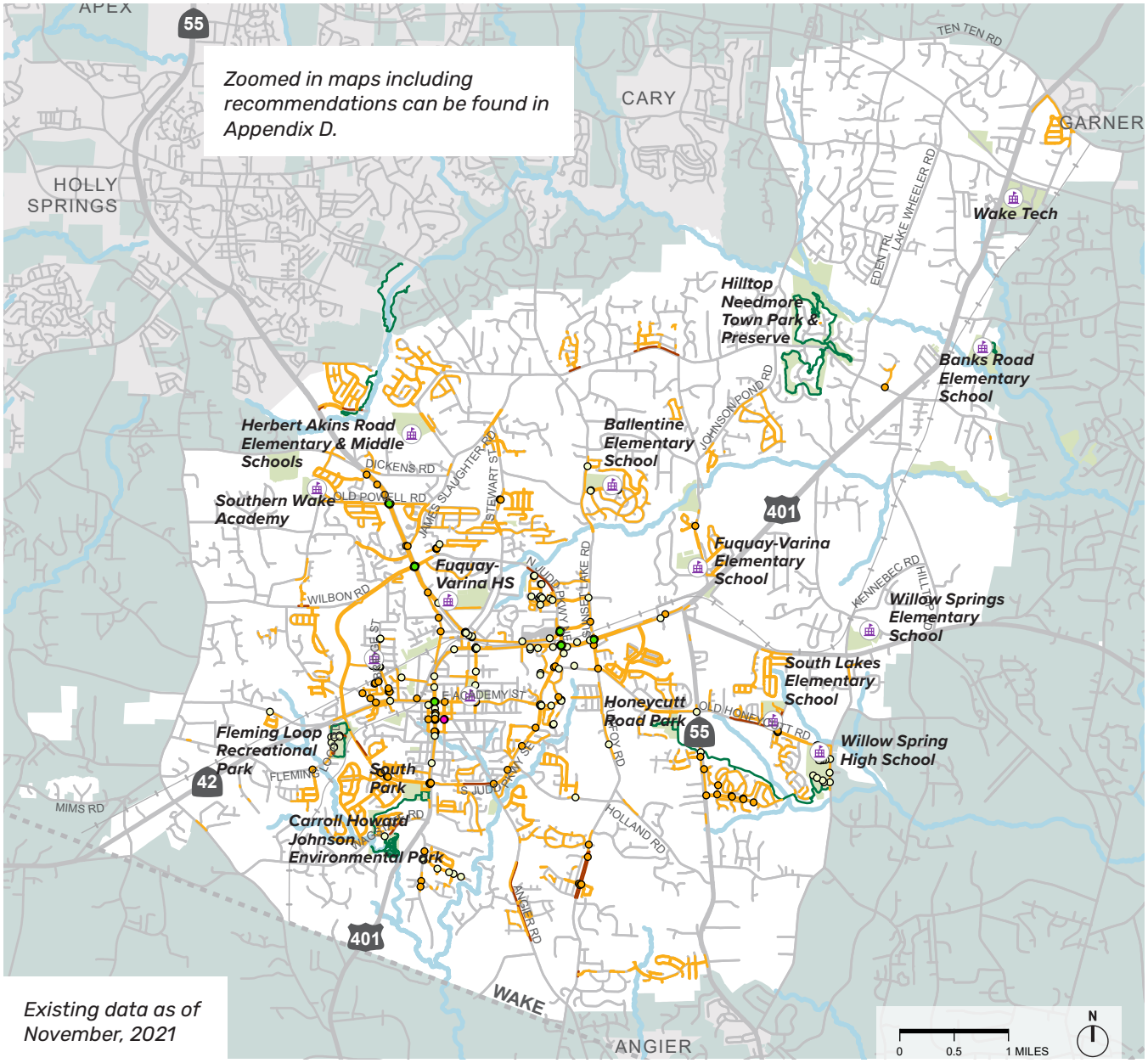
Table 2 highlights Fuquay-Varina's 0.6% walk to work rate (ACS 2015-2019). The margin of error is typically +/- 0.5-1.0%. Therefore, it can be helpful to also look at the walk rates for Fuquay-Varina from the past five ACS data periods below.

Table 2: Recent Walk to Work Rates in Fuquay-Varina

Recent 5-year ACS data collection periods	Fuquay-Varina walk to work rates
ACS 2015-2019	0.6%
ACS 2014-2018	0.2%
ACS 2013-2017	0.4%
ACS 2012-2016	1.0%
ACS 2011-2015	1.2%

In the ACS 2015-2019 data collection period, 25% of residents also worked in Fuquay-Varina, and 10% of residents worked from home. This leaves 15% of residents that travel within town for work - while a small percentage of these work trips are walked, the percentage could be much higher with continued improvements to the pedestrian environment.

Map 1: Existing Pedestrian Facilities



Existing data as of November, 2021

EXISTING FACILITIES

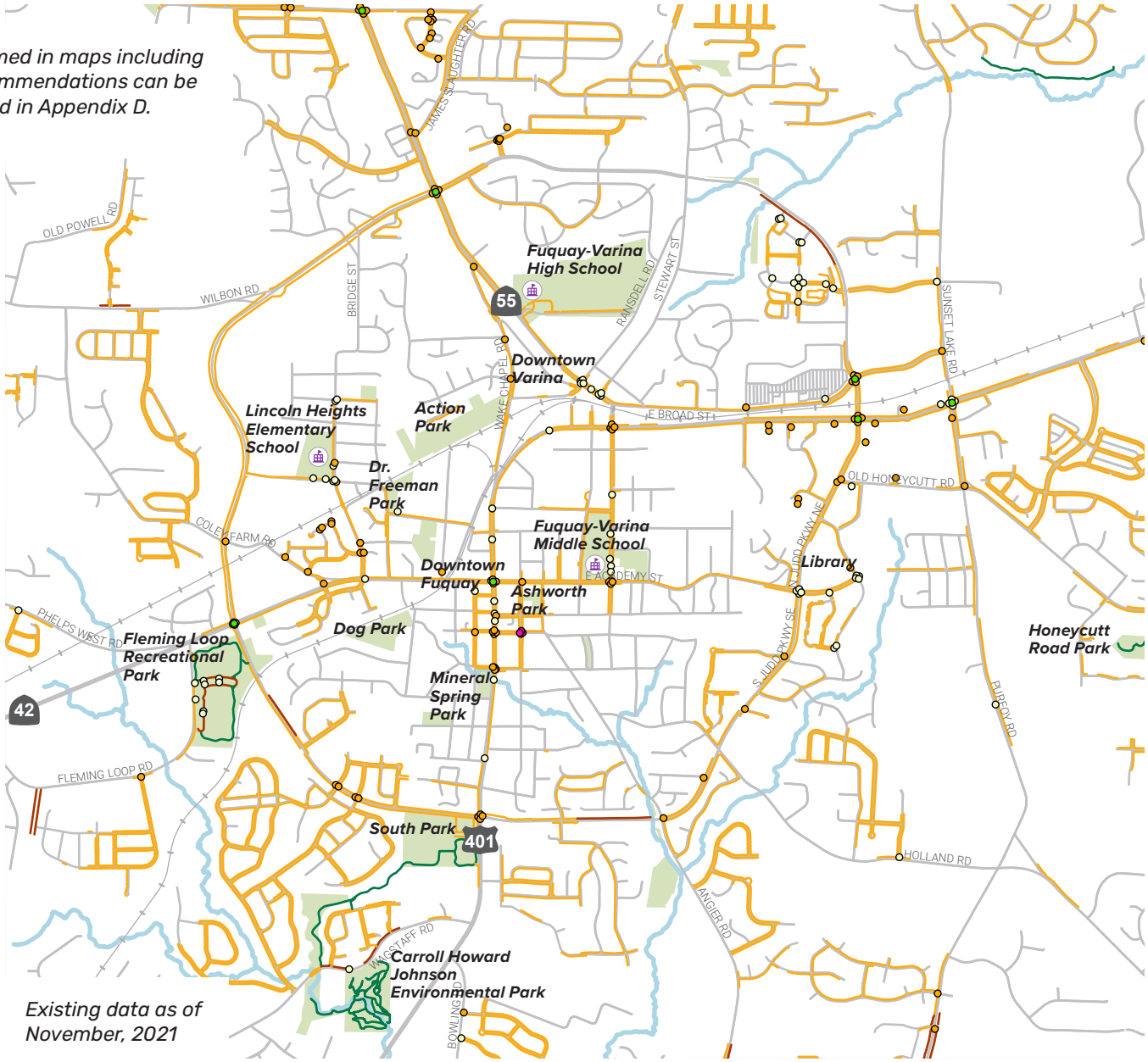
- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

Map 2: Existing Pedestrian Facilities (Zoom)

Zoomed in maps including recommendations can be found in Appendix D.



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FEATURES AND BOUNDARIES

- SCHOOL
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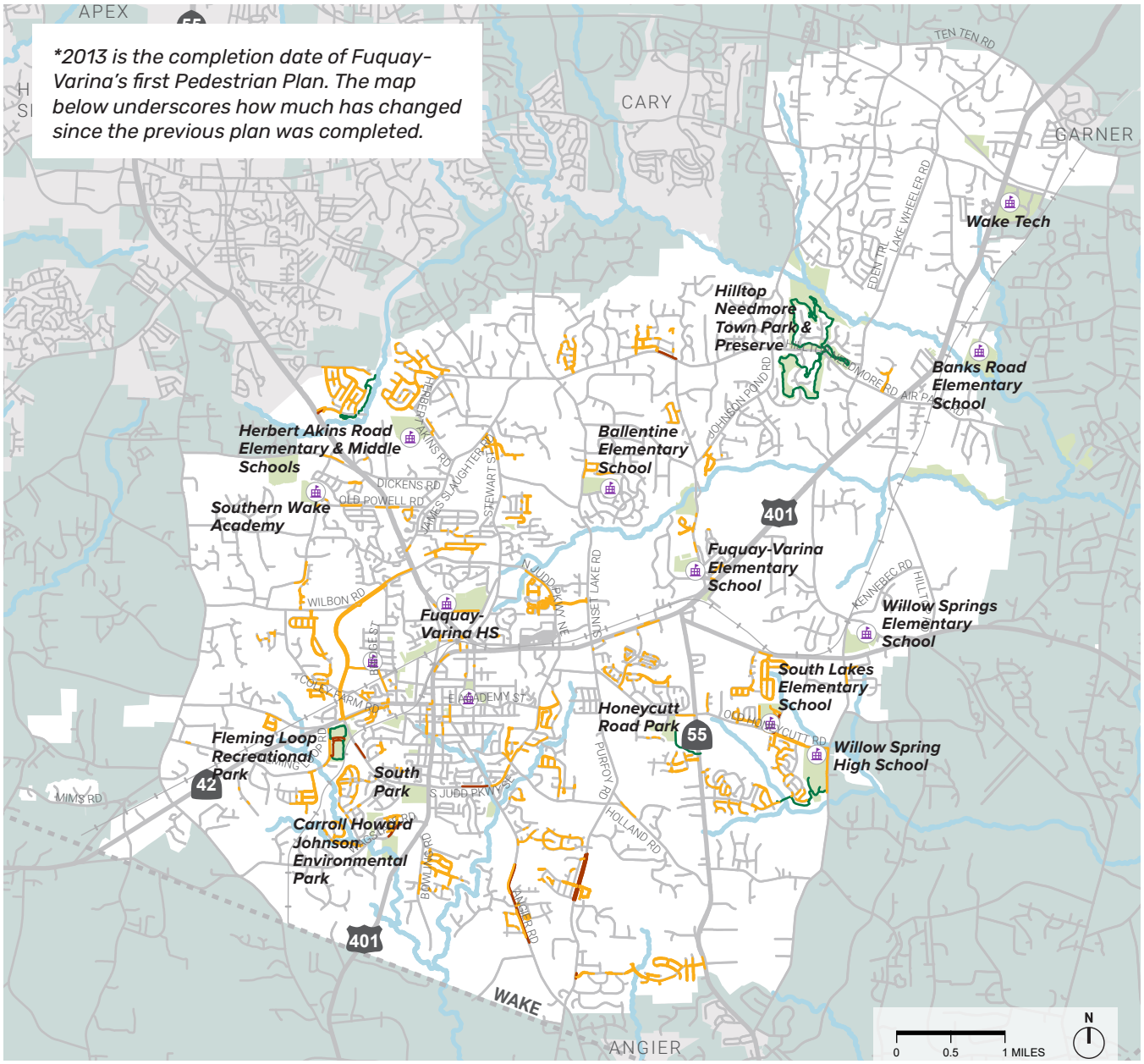
- RAILROAD

N

0 0.25 0.5 MILES

Map 3: Pedestrian Facilities Completed Since 2013*



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91 MILES OF NEW PEDESTRIAN FACILITIES

An incredible 78 miles of sidewalks, 5 miles of sidepaths, and 8 miles of greenways have been constructed since 2013. Many of these miles are found in the numerous new subdivisions.

Walking in Fuquay-Varina Today...

OPPORTUNITIES

There are many opportunities for new or improved pedestrian facilities. The sidewalk network in and around the dual-downtowns, the developing shared use path system, and continued improvements in roadway crossings are key elements of the existing network. Recent residential development across Fuquay-Varina has included pedestrian facilities, significantly expanding the sidewalk and sidepath network. As Fuquay-Varina continues to rapidly grow, residential and commercial projects are an opportunity to continue incorporating pedestrian facilities and close gaps in the current network.

Angier Rd between Vance St and Spring St is wide, and runs through a residential area near downtown Fuquay, providing an opportunity for creating pedestrian facilities within the existing curbs.

A pedestrian crossing of S. Main St at Hillcrest Dr.

This Wagstaff Rd pedestrian crossing connects Carroll Howard Johnson Education Park to nearby neighborhoods and the Jeff Wells Greenway trail.

A new sidepath along Angier Rd at the Atlantis St intersection.

Right: Pleasant pedestrian environment with wide sidewalks and street trees in downtown Varina.

CHALLENGES

While the pedestrian network has grown and improved over the past decade, overall, there remain many gaps in the system. Key challenges in the current pedestrian system include railroad crossings and suburban, automobile-oriented development patterns leaving significant pedestrian gaps between residential subdivisions and other destinations (although pedestrian circulation within new subdivisions is typically sound). As the Town continues to make strides in ADA accessibility, there remain many locations that need updating in and around the downtown cores, especially at several railroad intersections.

Wake Chapel Rd, Main St, and Railroad St need crossing improvements for pedestrians, but these are challenging to implement due to the roadway and railroad approaches.

The W. Academy St railroad crossing needs improvement.

Shared use paths are being constructed with development, which is key for the overall network - however, gaps between new development and external pedestrian connections are common.

Crosswalk markings needed in many places such as above, at Academy St/Aiken St.

Left: Recently closed railroad/roadway crossing at Lawrence St/Dogwood St does not encourage pedestrian connectivity.

Map 4: Opportunities and Challenges

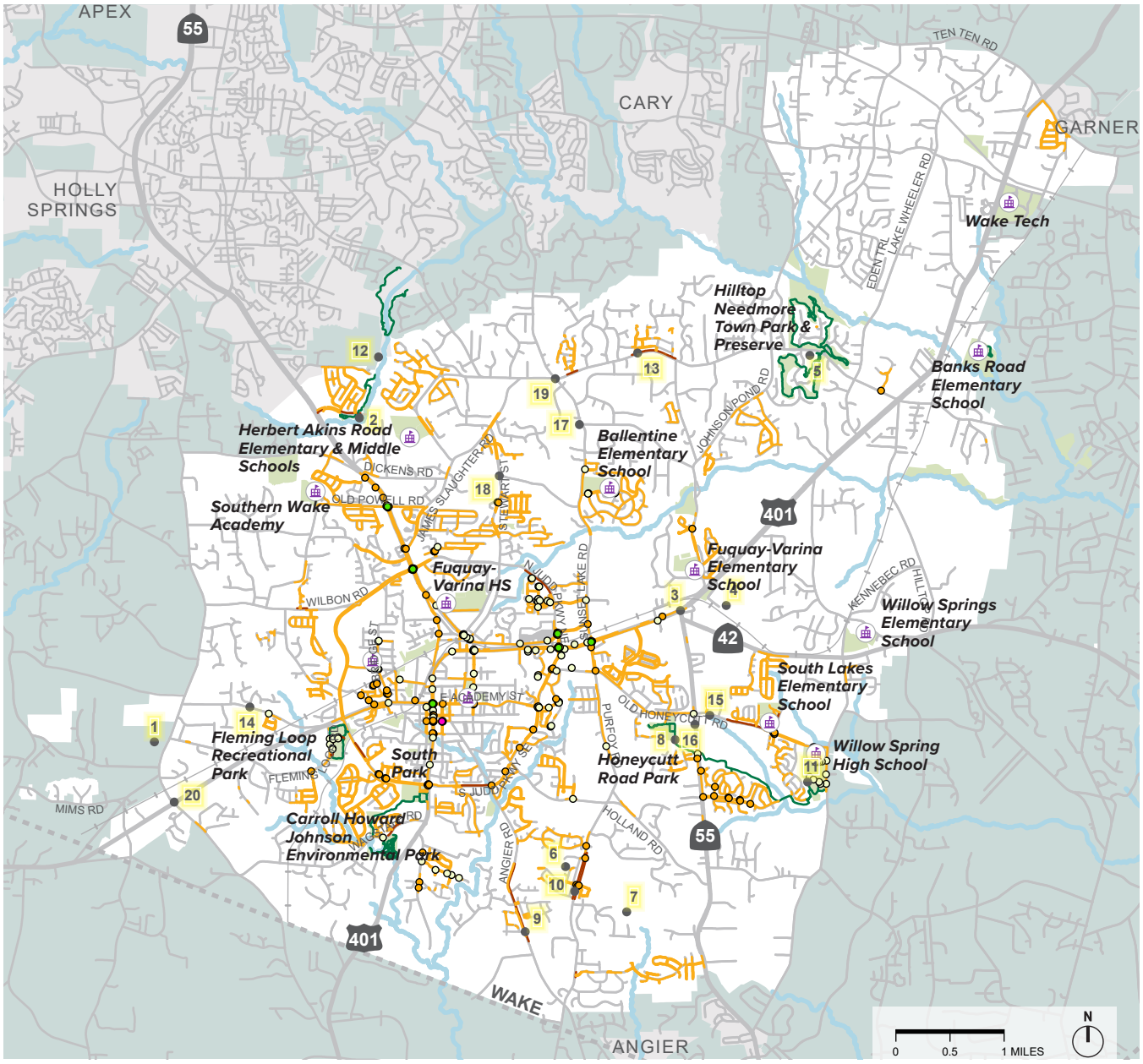

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Table 3: Opportunities & Challenges

Map Id	*These notes on opportunities and challenges (many of which are both opportunities and challenges) are a combination of steering committee feedback, public feedback (survey and online map), and consultant notes.*
1	NC 751 extension - longer-term future roadway project - connect to southern terminus of the American Tobacco Trail to the northwest, and Raven Rock State Park to the south.
2	Future shared use path extension toward new development/Broad St/NC 55.
3	Intersection improvement needed - tricky to get across, many people try (many goat paths); NC 55 will be realigned here (NCDOT project U-5751).
4	Future large retail development - will include new 4-6 lane road connection between US 401 and NC 42 - street will include a sidepath and an at-grade crossing of the railroad.
5	Existing Greenway at Hilltop Needmore Town Park & Preserve - connectivity needed to adjacent neighborhoods and future school.
6	Under construction residential development that will include a greenway.
7	Future development in this area along Neills Creek - will include a greenway trail.
8	Park Depot Trail to the Fuquay-Varina Town Hall was highlighted as a gap project in the Wake County Greenway System Plan.
9	Recently completed sidepath segment along Angier Rd as part of ongoing development.
10	Recently completed sidepath along Purfoy Rd as part of ongoing development.
11	Good greenway and sidewalk connectivity to Willow Spring High School.
12	Key connection opportunity between Holly Springs and Fuquay-Varina (Bass Lake and the Basal Creek Trail).
13	Sidepaths in development along Hilltop Needmore Rd.
14	Gap in network, connectivity needed along Phelps West Rd to connect multiple neighborhoods.
15	Gap in network, connectivity needed along Old Honeycutt Rd toward elementary school and high school.
16	Gap in network along NC 55, link needed to enhance Park Depot Trail connectivity.
17	Connectivity needed up Sunset Lake Rd.
18	Multiple gaps in network connectivity up Stewart St - neighborhood connectivity needed.
19	Sidewalks/sidepaths needed along Needmore Ruritan Club, Hilltop Needmore Rd, and Sunset Lake Rd to connect neighborhoods, end eventually, another way to connect Holly Springs and Fuquay-Varina.
20	Pedestrian facilities lacking in southwest Fuquay-Varina, connectivity needed.

Map 5: Opportunities and Challenges (Zoom)

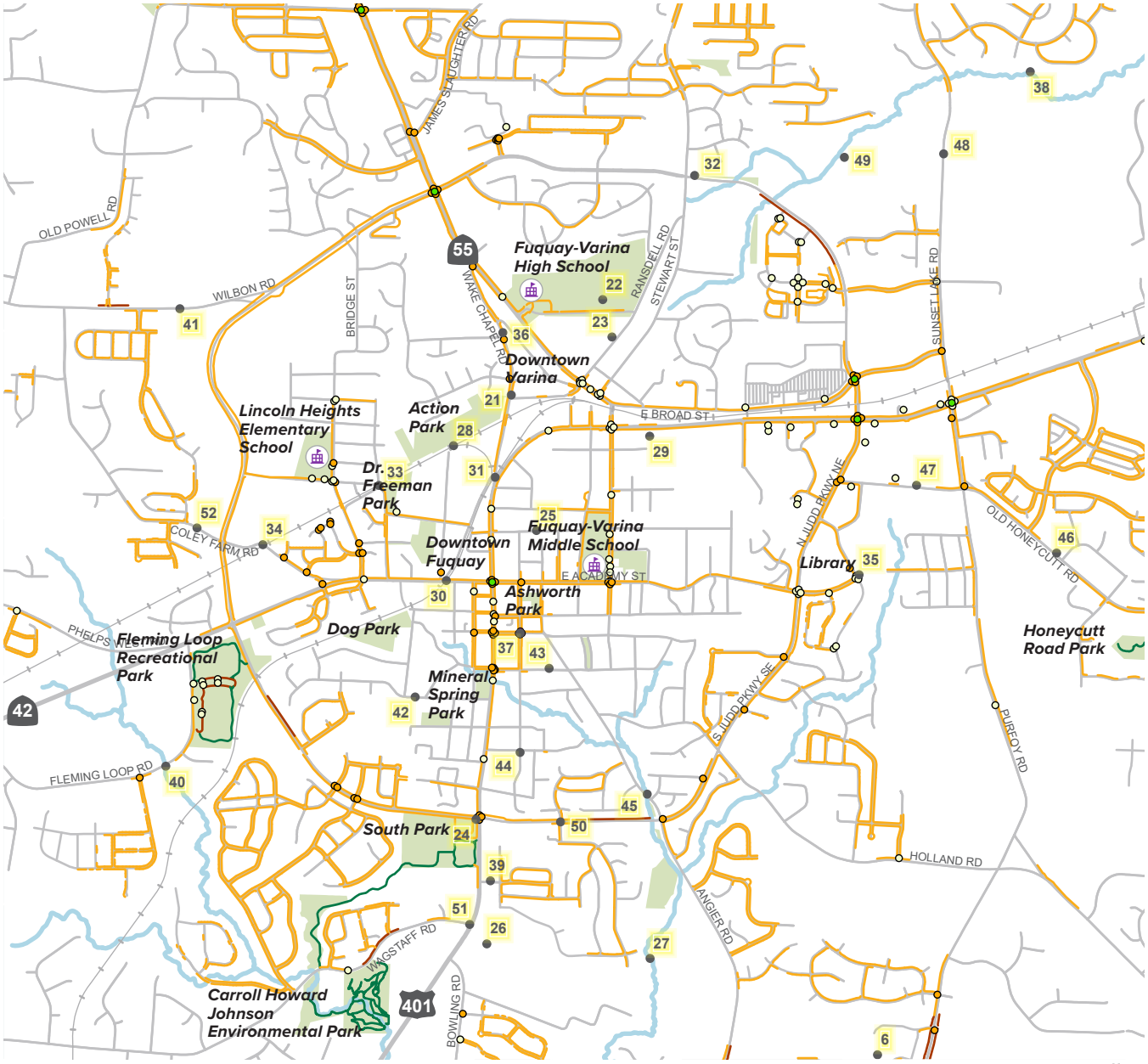
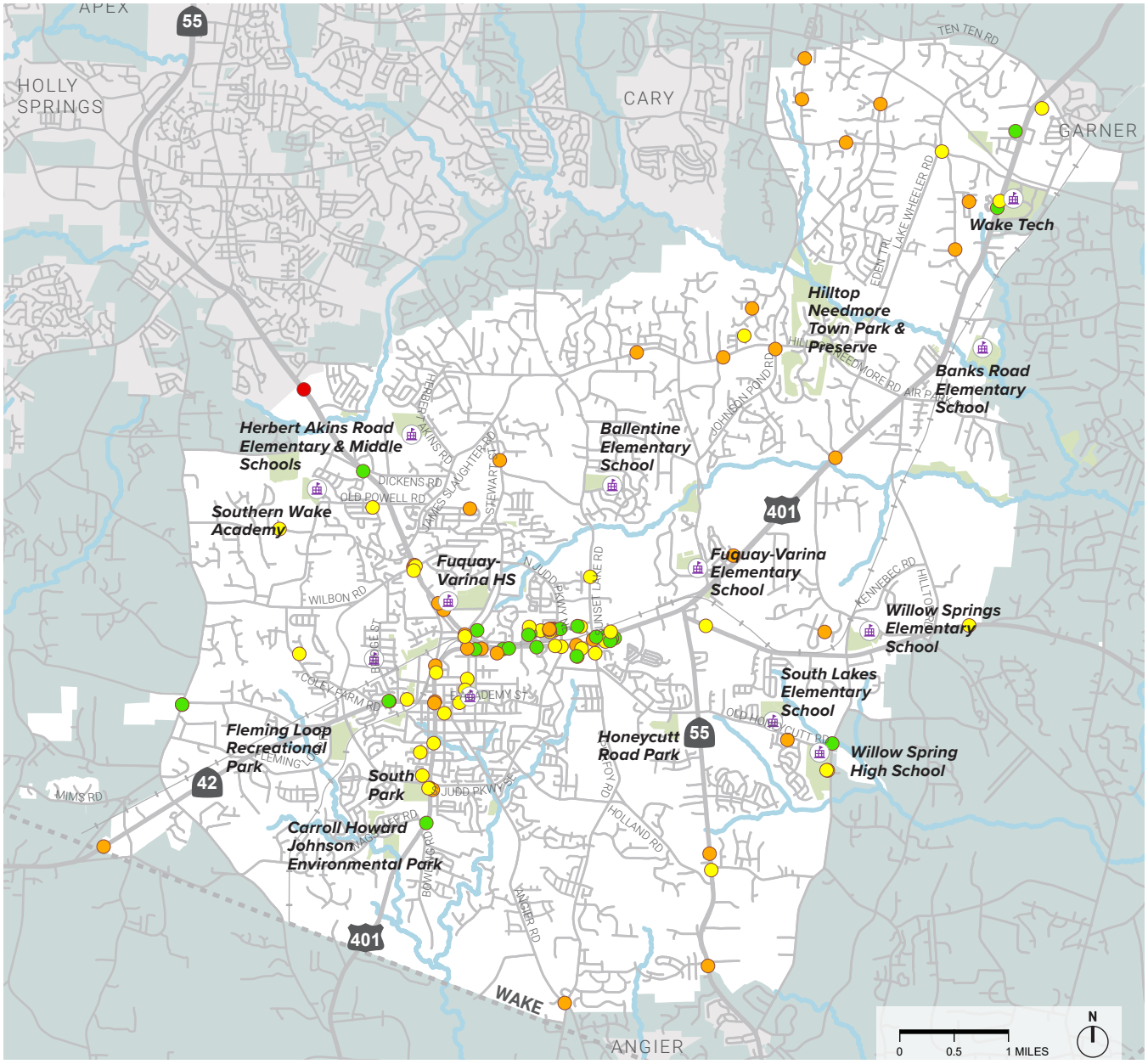


Table 4: Opportunities & Challenges (Continued)

Map ID	*These notes on opportunities and challenges (many of which are both opportunities and challenges) are a combination of steering committee feedback, public feedback (survey and online map), and consultant field notes.*
21	Wake Chapel Rd has sidewalks on one side, but not a great pedestrian experience due to lack of buffer and traffic speed/volumes.
22	Need better connectivity to High School.
23	Funded sidewalk (likely 2 years until construction) - LAPP funded.
24	Sidewalk project to connect to this intersection is in development, will likely be constructed in near term.
25	E. Jones St sidewalks (Town Hall to Middle School) are in the development process (funding awarded through LAPP).
26	Location of new elementary and middle school - connectivity needed to adjacent neighborhoods.
27	Potential greenway opportunity along Kenneth Creek.
28	Railroad corridor that is currently inactive - would be great connection from center of FV to southwest side of FV if possible.
29	Development in this area will include a greenway segment along the former railroad corridor.
30	Need ADA pedestrian accommodation across railroad tracks.
31	Intersection needs improvement - difficult intersection to improve due to confluence of railroad tracks and multiple roads - has been previously studied, multiple options under consideration including grade separation.
32	Gaps in the pedestrian network here along Judd Pkwy and Stewart St - possible future development in this area as well.
33	Roadway crossing of railroad tracks recently closed.
34	Roadway crossing of railroad tracks recently closed.
35	Academy Street will connect here - future development (new library here as well).
36	Crosswalk at Wake Chapel Rd & Pittsboro St needs better visibility.
37	Recently completed artistic sidewalks at the Vance St/Fuquay Ave intersection.
38	Existing unpaved neighborhood trail.
39	Pedestrian crossing needed to connect the Village of Charleston neighborhood to South Park.
40	Gap in sidewalk network - connect Bent Tree subdivision to Fleming Loop Recreational Park.
41	Gap in network, connectivity needed to neighborhoods along Wilbon Rd.
42	Gap in network, connectivity needed to downtown sidewalk grid and adjacent neighborhoods.
43	Gap in network, connectivity needed along both Spring St and Angier Rd between downtown and adjacent neighborhoods.
44	Gap in network southeast of downtown.
45	Gap in network, connectivity needed along Angier Rd to connect multiple neighborhoods.
46	Gap in network along Old Honeycutt Rd, would connect multiple neighborhoods and enhance connectivity to Honeycutt Road Park.
47	Gaps in network along Old Honeycutt Rd toward downtown.
48	Gap in network along Sunset Lake Rd - connect Ballentine subdivision to Harris Teeter.
49	The Terrible Creek corridor is mostly undeveloped, and remains a good greenway opportunity to northeast Fuquay-Varina (is included in local, county, and regional greenway plans).
50	Crosswalk needed to connect neighborhoods across Judd Pkwy.
51	Pedestrian facilities needed extended down Wagstaff Rd and S. Main St to connect multiple subdivisions.
52	Fill gaps to connect western subdivisions toward downtown.

Map 6: Pedestrian Collisions



PEDESTRIAN INJURY SEVERITY

- FATALITY
- MINOR OR SERIOUS INJURY
- POSSIBLE OR UNKNOWN INJURY
- NO INJURY

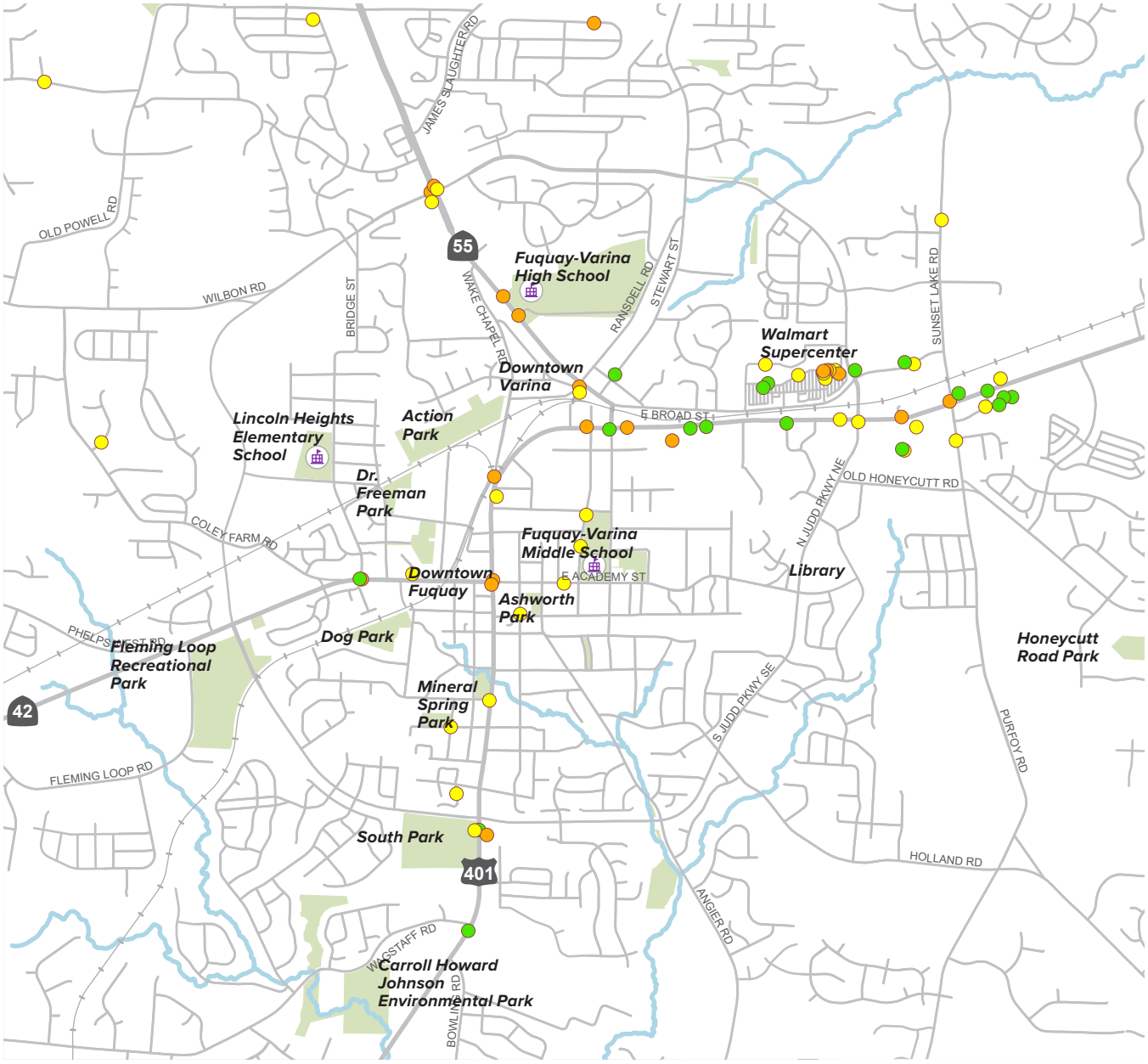
FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

PEDESTRIAN COLLISIONS

This map illustrates collisions involving a pedestrian between 2009 and 2019. Within this 10-year time frame, there were a total of 89 pedestrian collisions within the Fuquay-Varina jurisdiction. Of these, 33 collisions occurred along the roadway, 20 occurred at intersections, and 36 occurred off-road (typically in parking lots). One of the 89 collisions resulted in a pedestrian fatality.

Map 7: Pedestrian Collisions (Zoom)



PEDESTRIAN INJURY SEVERITY

- FATALITY
- MINOR OR SERIOUS INJURY
- POSSIBLE OR UNKNOWN INJURY
- NO INJURY

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD

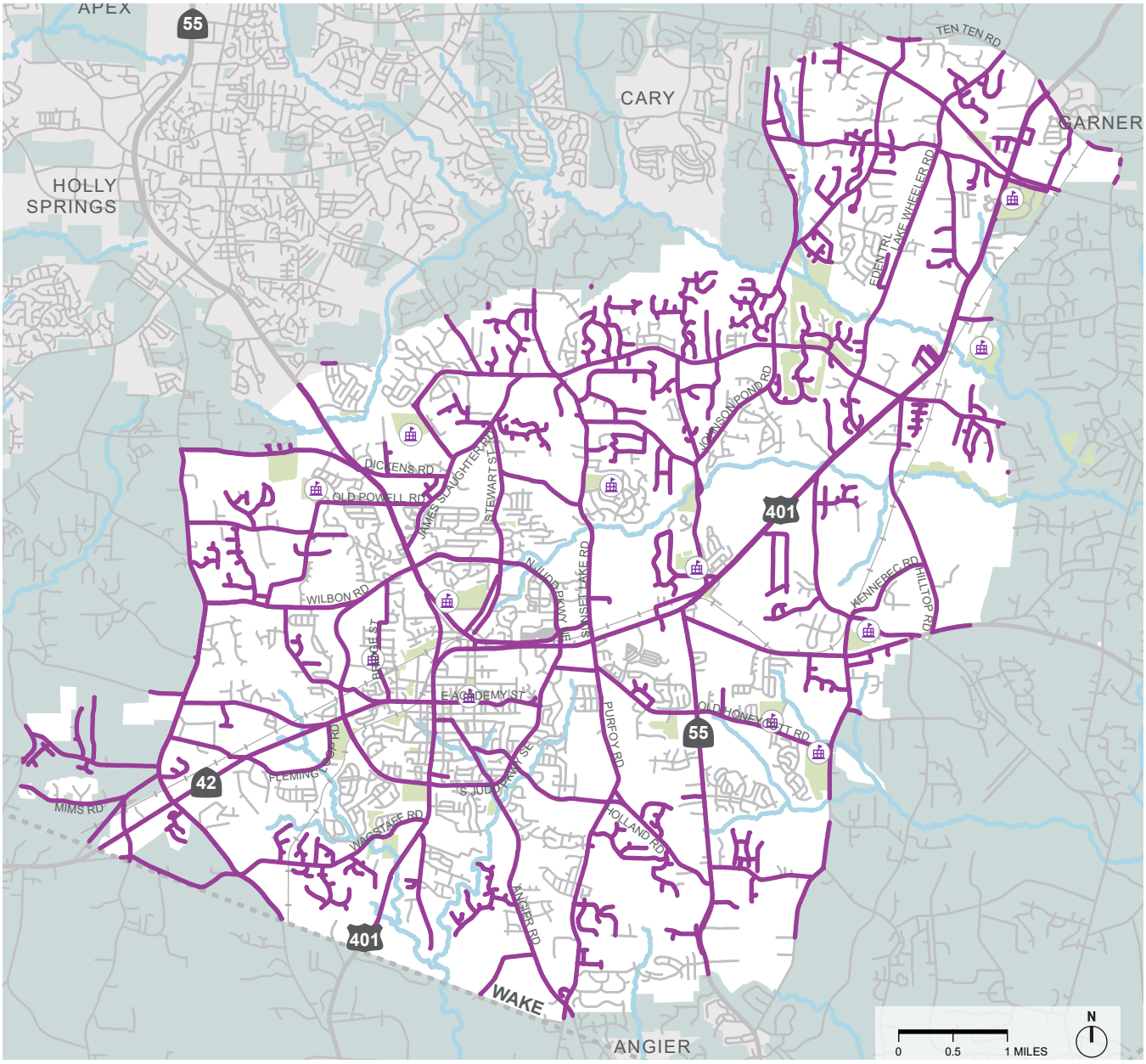
0 0.25 0.5 MILES

N

PEDESTRIAN COLLISIONS

In the central area of Fuquay-Varina, clusters of pedestrian collisions are observed, notably along US 401/N. Main St from Woodrow St to Purfoy Rd (11 collisions) and the Walmart Supercenter parking lot (16 collisions).

Map 8: NCDOT-Owned Roads



ROADWAY OWNERSHIP

- NCDOT OWNED ROADS

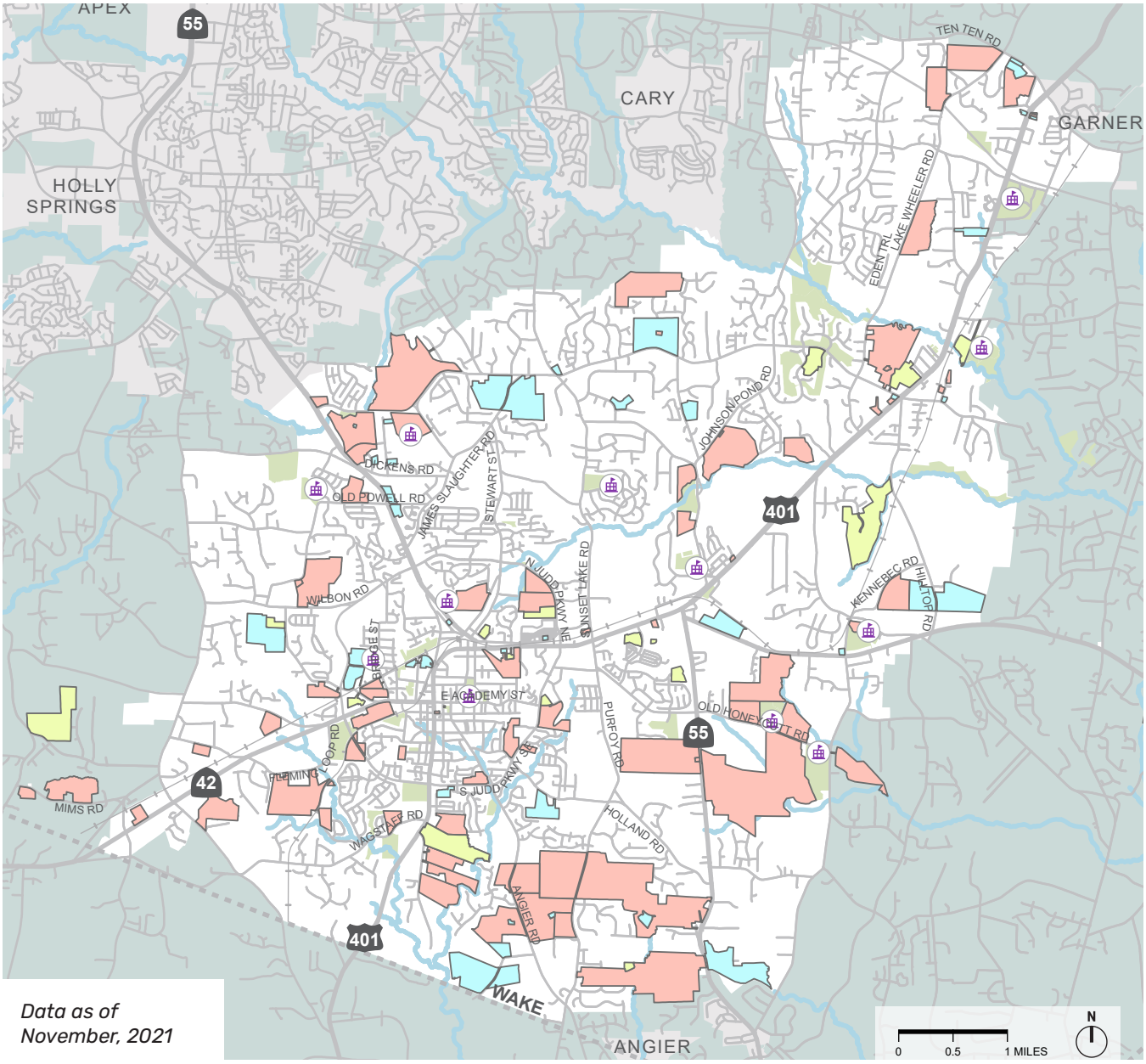
FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

NCDOT-OWNED ROADS

This map shows which roadways in Fuquay-Varina are state-versus-locally-owned. The Town of Fuquay-Varina will need to coordinate with NCDOT Division 5 and the Integrated Mobility Division to implement this plan's recommended improvements along NCDOT roadways.

Map 9: Current & Future Development



Data as of November, 2021

DEVELOPMENT

- PROPOSED
- APPROVED
- UNDER CONSTRUCTION

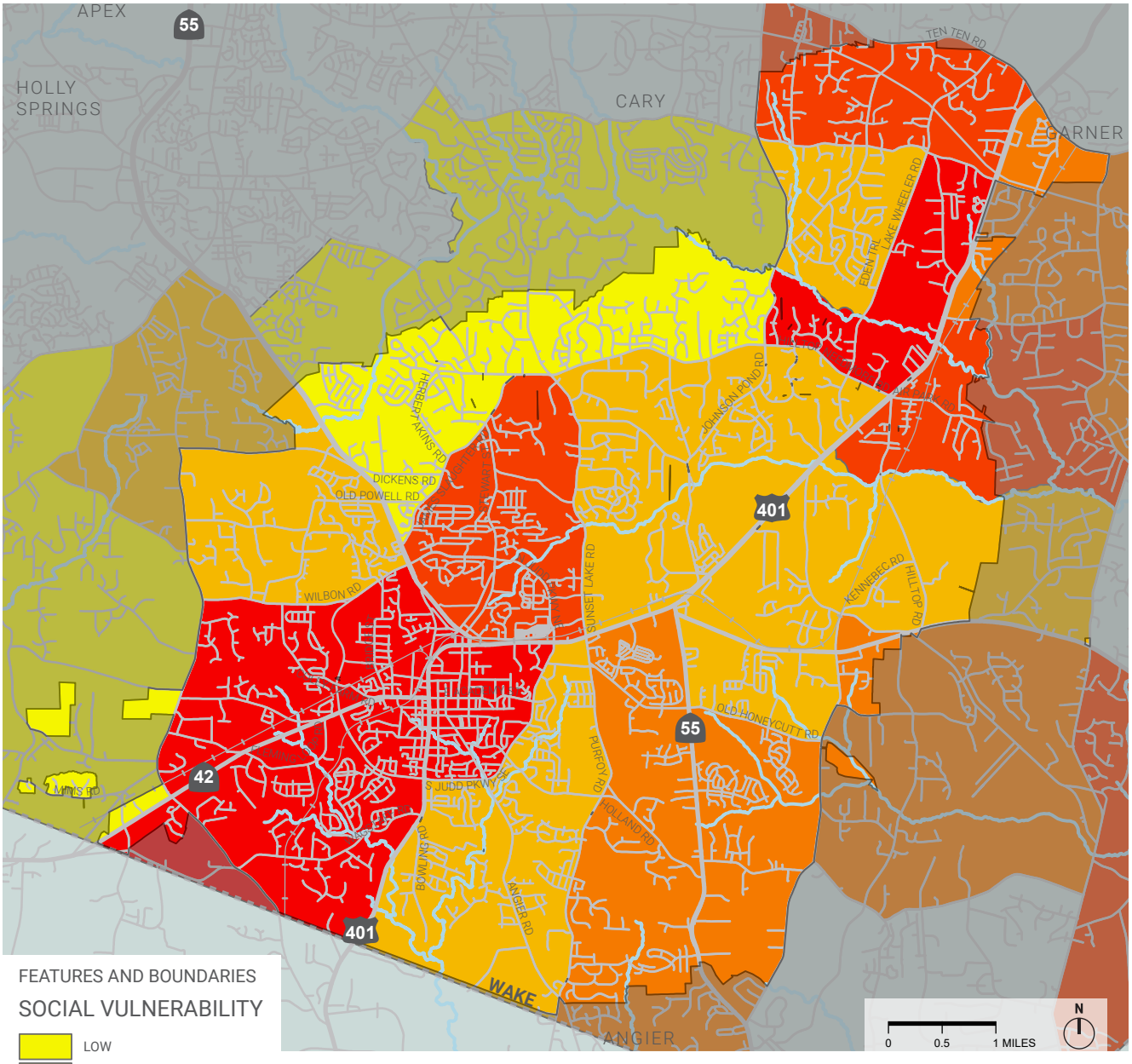
FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

CURRENT & FUTURE DEVELOPMENT

As Fuquay-Varina continues to grow at a staggering pace, numerous developments are underway during this plan's development. Many of these are subdivisions scattered away from the downtown cores. While an internal pedestrian friendly environment will be incorporated into these developments, they key challenge will be ensuring external connectivity.

Map 10: Equity Analysis Composite



EQUITY ANALYSIS

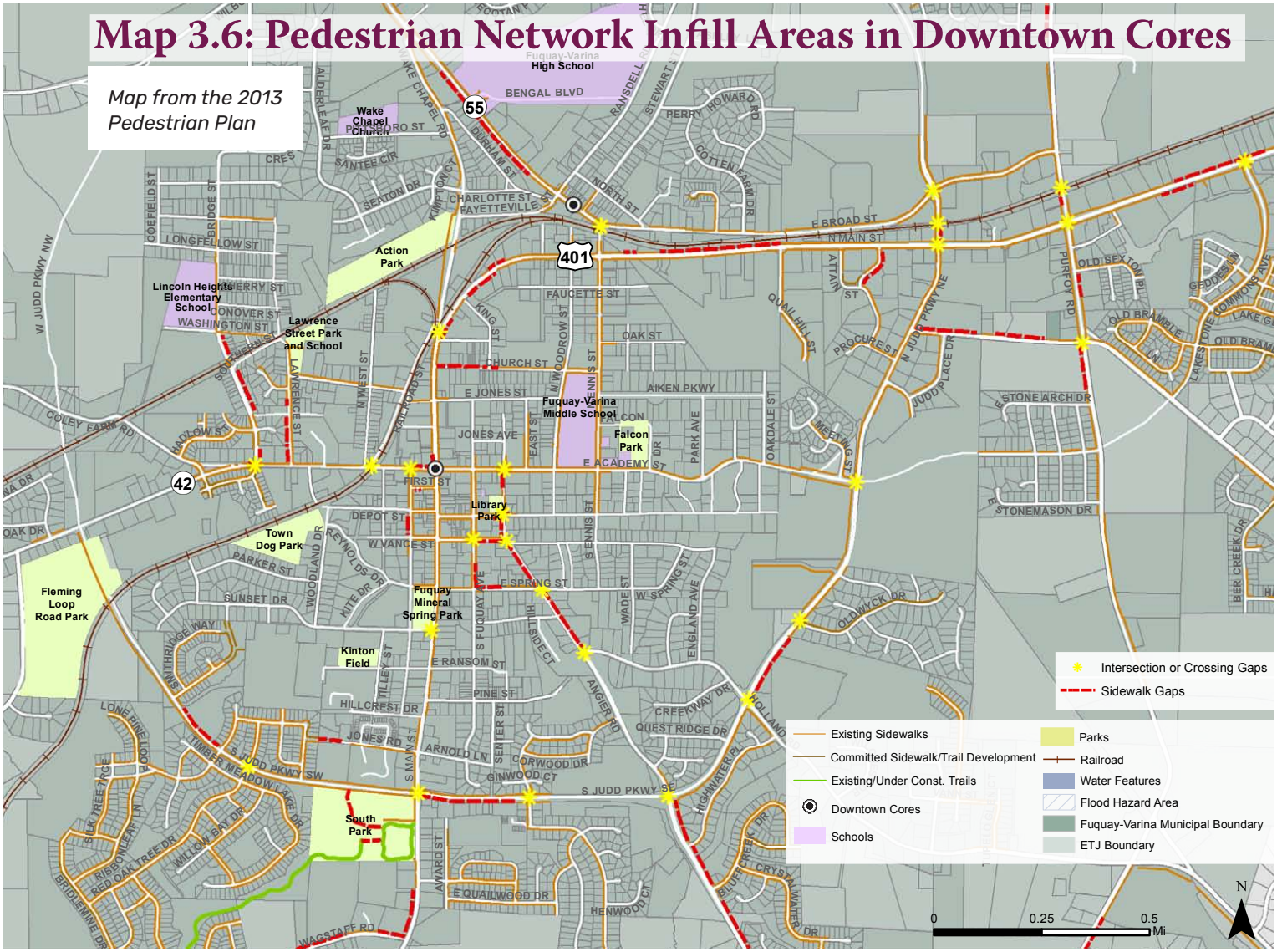
This map is a composite of six variables, including; Zero vehicle households, Educational attainment, Race, Income Level, Language, and Age. Areas shaded in the darkest red (high social vulnerability) have the highest concentrations of these demographic variables. Downtown Fuquay, the southwest section of Fuquay-Varina, and a section in northeast Fuquay-Varina are found in the high social vulnerability category. These are important locations to consider during project prioritization, and the project team utilized this map during the prioritization process to identify whether a potential project connected to these particular areas of Fuquay-Varina. While other prioritization factors are also considered during project selection, each of the priority projects identified in Chapter 3 are wholly within, or provide a connection to a location identified as 'High' in the social vulnerability index in Fuquay-Varina.

Plan Review

TOWN OF FUQUAY-VARINA COMMUNITY PEDESTRIAN MASTER PLAN (2013)

This is Fuquay-Varina's existing pedestrian plan document, created in 2013. The 2013 recommendations included infrastructure, programming, and policy recommendations. Map 3.6 from the 2013 plan (see below) highlights gap areas in the pedestrian network, many of which have been completed or partially completed since 2013 (see page 19 & 17 for projects completed since 2013).

Policy recommendations from the 2013 plan included a detailed analysis of Fuquay-Varina's Code of Ordinances, most of which have been incorporated into the current Code of Ordinances.

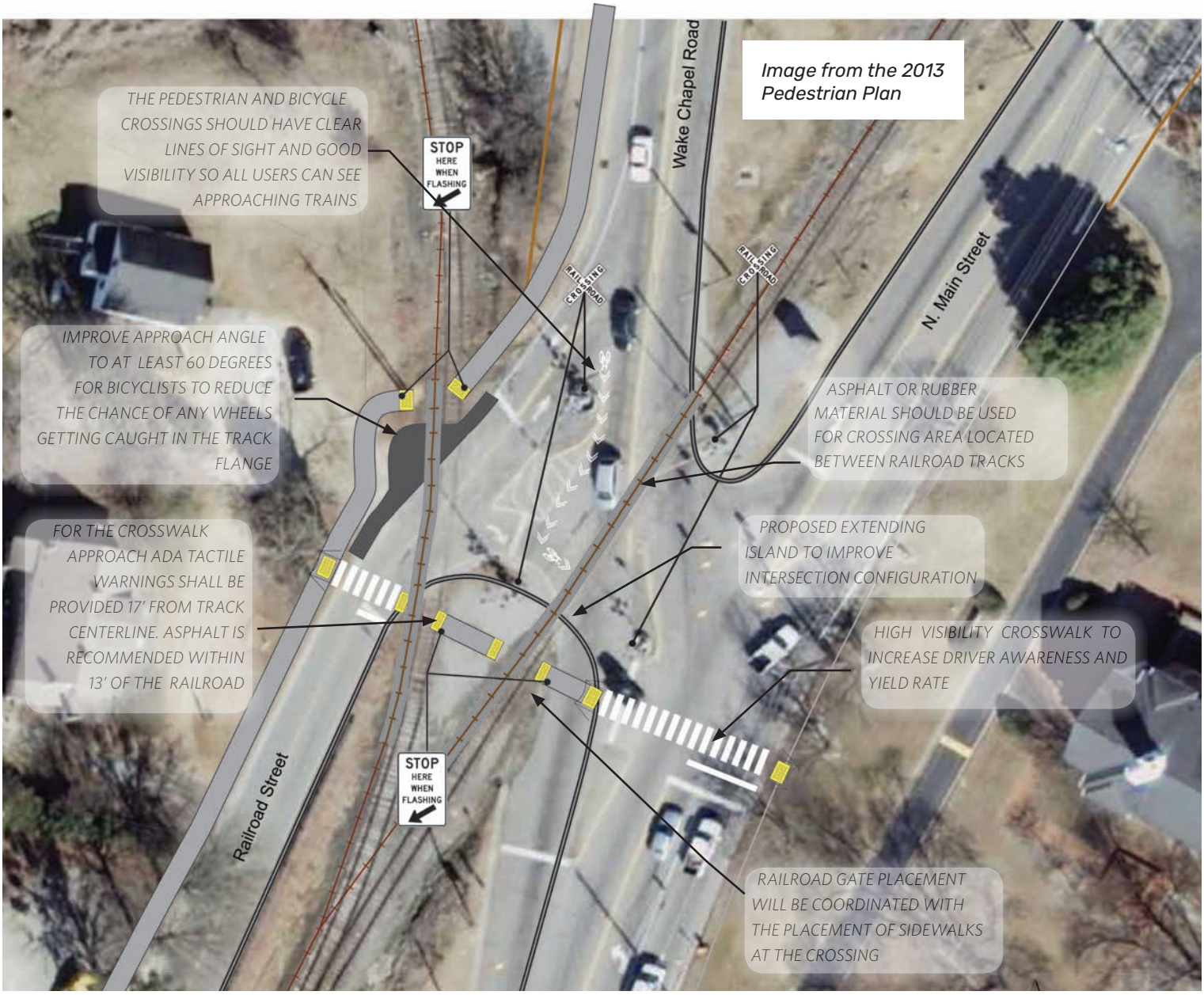


TOWN OF FUQUAY-VARINA COMMUNITY PEDESTRIAN MASTER PLAN (2013) (CONTINUTED)

Several key intersections were analyzed in more detail in the 2013 Fuquay-Varina Pedestrian Plan, including the challenging Wake Chapel Rd/S. Main St/Railroad St intersection (see graphic below from the 2013 plan). The configuration below, as well as other options (such as an above or below grade crossing) are all challenging to implement, and further study is needed.

Figure D.13 Wake Chapel Road Railroad Crossing

Preferred Option: Suggested Improvements and Recommendations



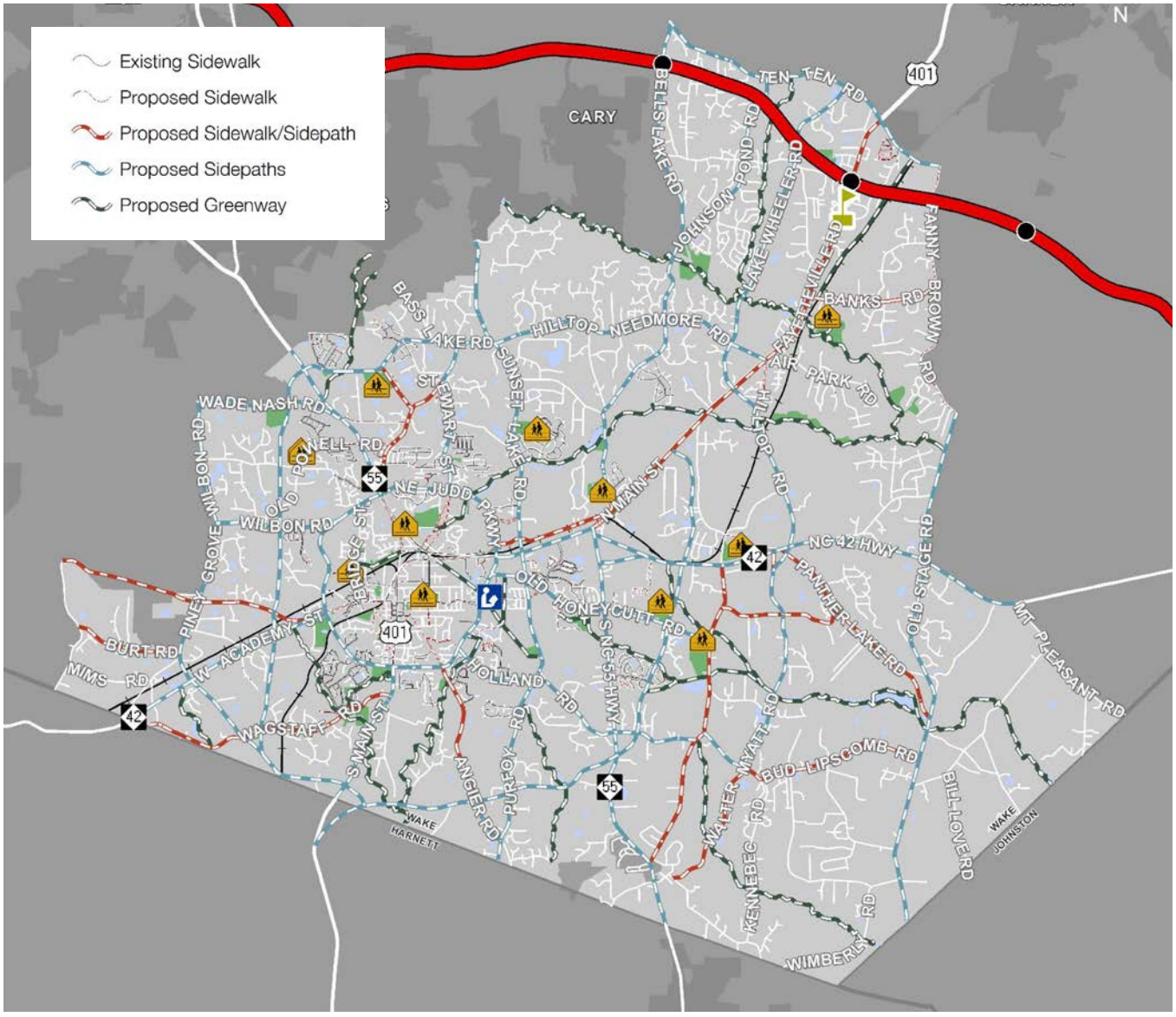
2035 COMMUNITY TRANSPORTATION PLAN (2017)

This plan, developed in conjunction with the Community Vision Land Use Plan, is a blueprint for future transportation choices in Fuquay-Varina. It articulates community goals for how people in Fuquay-Varina hope to move around in the future, and how development decisions will shape the future of transportation in the area.

Goals relevant to the pedestrian plan include:

- Coordinate transportation investments with land use and development decisions.
- Provide a balanced transportation system that makes it easier to bike, walk, or take transit.
- Make it easier to connect within and through the Town for all modes.
- Promote a safe and secure transportation system by reducing crashes and improving emergency response.

The overall bicycle and pedestrian recommendations map (below) serves as a key building block for the updated pedestrian network and has guided the construction of the pedestrian network with ongoing development.



WAKE COUNTY GREENWAY SYSTEM PLAN (2017)

Fuquay-Varina is included as a key area for the Wake County Greenway System Plan, featuring the following key corridors; Bass Lake (Holly Springs) to the Basal Creek Trail in Fuquay-Varina; the NC 55 corridor; Judd Pkwy (northeast); and Fuquay-Varina Town Hall to Honeycutt Park and existing Park Depot Trail (see overview map below).

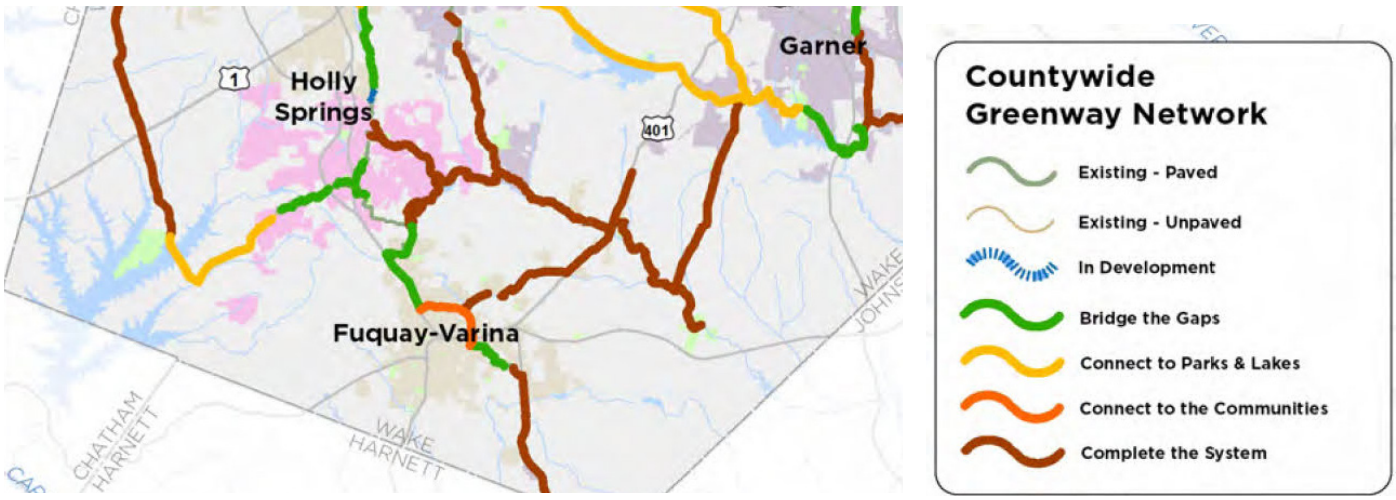


Table 5: Additional Plans Reviewed

Plan Name	Notes
Holly Springs Parks, Recreation, and Greenways Master Plan (2021)	Key recommended connections to Fuquay-Varina include: the Bass Lake to Basil Creek Trail link; NC 55 (sidepath), Dickens Rd (sidepath); and the future southern extensions of the American Tobacco Trail as part of the future NC 751 extension project.
Harnett County Bicycle, Pedestrian, & Greenway Plan (2021)	Key recommended connections to Fuquay-Varina include: the southern extension of the American Tobacco Trail to Raven Rock State Park as identified in the Southwest Area Study (see below); the inactive Norfolk Southern railroad corridor; multiple proposed sidepaths and greenway corridors (such as Hector Creek, Neills Creek, and Kenneth Creek).
Capital Area Metropolitan Planning Organization (CAMPO) Southwest Area Study Update (2019)	The southern extension of the American Tobacco Trail to Raven Rock State Park has been identified in the Southwest Area Study, as part of the southern extension of NC 751 roadway project - this would include a connection opportunity in southwestern Fuquay-Varina.
2035 Community Vision Land Use Plan (2017)	The 2035 Community Land Use Plan focuses on sustainable development and calls for greater coordination between land use and transportation planning. From the demand side, this includes consideration of a mix of land uses, development location, pattern, and intensity, and site design elements that will help reduce demand for long-distance, single-purpose vehicle trips.
Land Development Ordinance (2016)	This ordinance significantly improved the recognition and requirements for pedestrian facilities as part of development in Fuquay-Varina. A detailed policy review and recommendations can be found in the following Chapter (Chapter 3: Recommendations).
Lincoln Heights Safe Routes to School Action Plan (2016)	This study focused on bike/ped infrastructure connectivity to Lincoln Heights Elementary School (much of which has been implemented), as well as complementary program/policy recommendations/
Varina Streetscape Plan (2014)	Prior streetscape improvements in the East Broad St area took place in 1997, 2002, 2009, 2012, and 2013. These included sidewalk extensions as well as accessibility and utility improvements. The master plan divides the study area into eight sub-sections, recommending planting, lighting, sidewalk, bikeway, and utility improvements that will better conform to statewide Complete Streets requirements.

Public Outreach

OVERVIEW

Public outreach was solicited throughout the planning process through the following mediums:

- Project website
- Online and hard copy survey (see summary on following page)
- Information cards
- Two in-person public outreach events
- Online interactive map
- Three steering committee meetings
- Eight stakeholder interviews

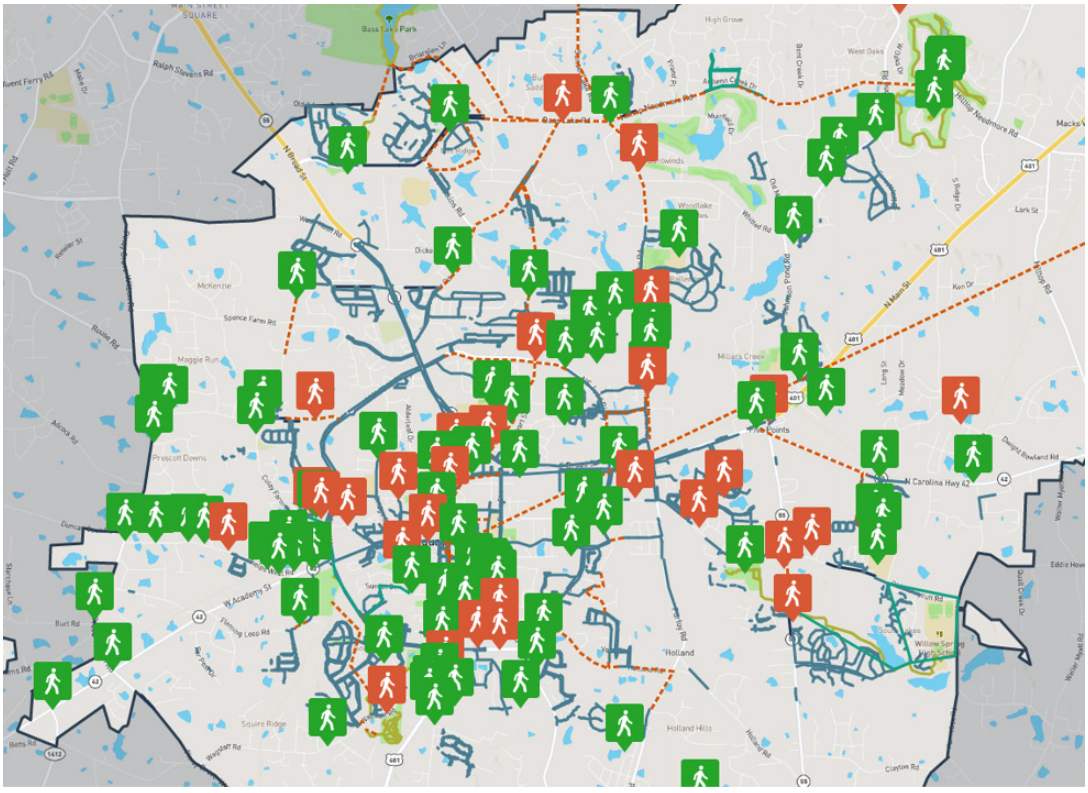
See the Public Outreach Appendix for a detailed record of comments received.

Public input table at the Celebrate Fuquay event on October 2nd, 2021; Town staff created fun games and trivia questions specific to the pedestrian plan to engage passersby.

INTERACTIVE MAP COMMENTS

Over 200 comments were received via the online interactive map. Key themes that emerged from the comments included:

- Connect downtowns
- Connect subdivisions
- Improve crossing high traffic volume/speed roadways
- Connect schools



Screenshot of feedback left on the online interactive map

Survey Responses

437 responses

How would you rate walking conditions in Fuquay-Varina?

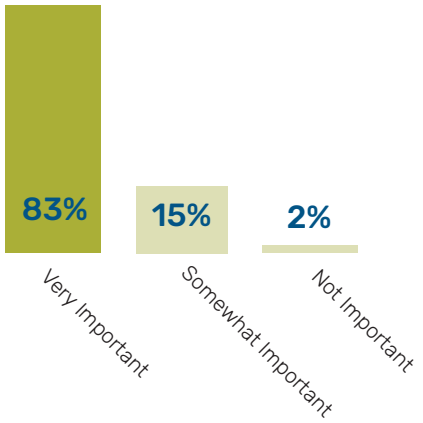
FAIR 51%

6% said Excellent

41% said Poor

437 responses

How important to you is improving walking conditions in Fuquay-Varina?



438 responses

When walking in Fuquay-Varina, what is (or would be) the primary purpose of your trip?

1 Exercise, Recreation, Socializing

2 Transportation

3 Other

437 responses

What do you think is the most important outcome of the Fuquay-Varina Pedestrian Plan?

1 Safer conditions for walking overall

2 More choices for recreation and exercise

3 Better connections for transportation

4 Other

438 responses

What destinations would you most desire to reach by walking?

Existing Trails & Greenways

Fuquay-Varina Parks

Broad St/Main St Businesses

K-12 Schools

Employment Centers

**Note: Respondents could choose more than one answer to the following questions where answers add up to over 100%.*

439 responses

Which of the following pedestrian improvements would you like to see in Fuquay-Varina?

85% More sidewalks/ improvements to existing sidewalks

60% More greenways

51% Additional crossing opportunities/improvements

39% Increased shade (e.g., street trees)

27% Slower vehicle speeds (traffic calming)

439 responses

What is your relationship to Fuquay-Varina?

94% I live here

41% I own property here

14% I work here

6% I visit here

432 responses

Roadway crossings: what do you think are the factors that most discourage pedestrians crossing roadways in Fuquay-Varina?

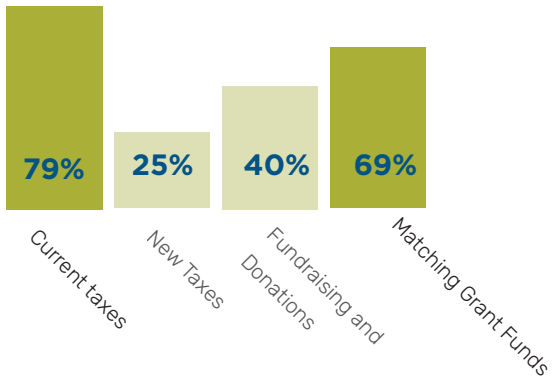
60% Heavy/fast motor vehicle traffic

58% Motorists failing to yield to pedestrians

48% Lack of striped crosswalks or traffic signals

434 responses

How should pedestrian facilities be funded within Fuquay-Varina?



302 responses

What roadways/intersections/general areas in Fuquay-Varina are most in need of pedestrian improvements?

CONNECTION BETWEEN DOWNTOWNS

HWY 55/OLD HONEYCUTT RD AREA

JUDD PARKWAY & ADJACENT NEIGHBORHOODS

03.

Infrastructure Recommendations

CHAPTER OVERVIEW

This chapter details the recommendations of this plan and is organized into the following sections:

Introduction

As briefly discussed in Chapter 2 of this document, the pedestrian network recommendations are built upon previous planning efforts. They were developed through a multi-step process involving ongoing dialogue with town staff, the steering committee, and the general public.

Pedestrian Facility Types

SIDEWALK

Sidewalks provide dedicated space intended for use by pedestrians that are safe, comfortable, and accessible to all. Sidewalks are physically separated from the roadway by a curb or unpaved buffer space.

INTERSECTION TREATMENT

For town streets to meet the needs and demands of everyone using them, intersections—both large and small—need to function as safely and efficiently as possible. They also make traffic movement more intuitive, seamless, and predictable for those passing through.

GREENWAY

A greenway (or shared use path) provides a travel area separate from motorized traffic for pedestrians, bicyclists, wheelchair users, skaters, joggers, and other users. Greenways can provide a low-stress experience for a variety of users using the network for transportation or recreation.

SIDEPATH

A sidepath is a bidirectional shared use path located immediately adjacent and parallel to a roadway. Sidepaths can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances, and maintain rural and small town community character.

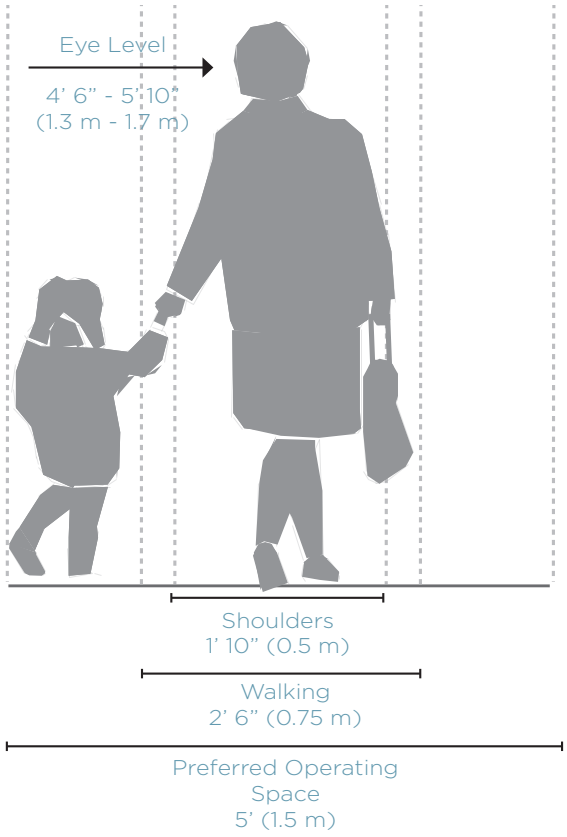
DESIGNING STREETS FOR ALL AGES AND ABILITIES

Types of Pedestrians

The transportation network should accommodate pedestrians with 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. Older adults walk more slowly and may require assistant devices to help with their walking stability, sight, and hearing. The table below summarizes common pedestrian characteristics for various age groups.

The Manual on Uniform Traffic Control Devices (MUTCD) recommends a normal walking speed of 3.5 feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to 3 feet per second for areas with older populations and persons with mobility impairments. The transportation system should accommodate these users to the greatest extent possible.

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 "darting out" in roadways
	Insufficient judgment
	Sense of invulnerability
14-18	Improved awareness of traffic environment
	Insufficient judgment
19-40	Active, aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street
	Vision loss
	Difficulty hearing vehicles approaching from behind



Design Needs of Wheelchair Users

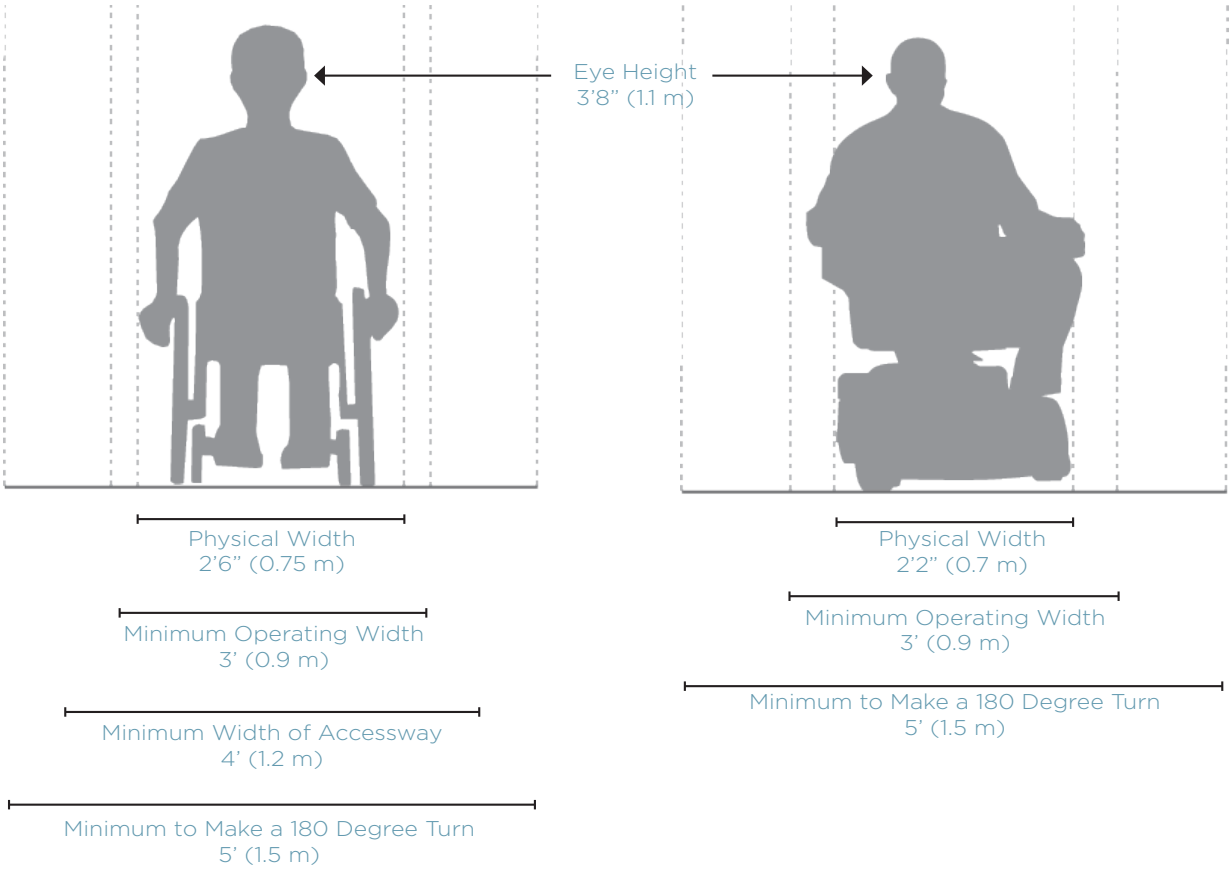
Manual wheelchairs are self-propelled devices. Users propel themselves using push rims attached to the rear wheels. Braking is done through resisting wheel movement with the hands or arm. Alternatively, a second individual can control the wheelchair using handles attached to the back of the chair.

Power wheelchairs use battery power to move the wheelchair. The size and weight of power wheelchairs limit their ability to negotiate obstacles without a ramp. Various control units are available that enable users to control the wheelchair movement, based on their ability (e.g., joystick control, breath controlled, etc).

Maneuvering around a turn requires additional space for wheelchair devices. Providing adequate space for 180 degree turns at appropriate locations is an important element of accessible design.

Wheelchair User Design Considerations

Effect on Mobility	Design Solution
Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes of less than two percent.
Require wider path of travel.	Sufficient width and maneuvering space.



Sidewalk Recommendations

SIDEWALK ZONES

Sidewalks are desirable to support pedestrian safety and comfort in areas with a mix of land uses and also in areas of the community where the roadway network connections have generally high traffic volumes or speeds.

Sidewalks serve multiple important functions and should be designed with distinct zones to accommodate these uses. The tables on the following page provide recommended and constrained minimum dimensions for sidewalk elements in lower density areas and the downtown context.

Frontage Zone

The frontage zone is a shy zone* adjacent to the property line and provides space for people to enter and exit buildings.

- Next to buildings with active ground floor uses, the frontage zone may be widened to 2–8 ft to provide room for door swing, café seating, product display, and window shopping.
- On most sidewalks, a frontage zone of 1–2 ft allows for shy distance* to fences and building walls. No frontage zone is necessary adjacent to parks or open space.

**Shy zone/distance refers to the space that pedestrians instinctively avoid along fixed objects or curb that is adjacent to a sidewalk.*

Pedestrian Through Zone

The pedestrian through zone is the clear width needed for pedestrian travel activity and should be wide enough for two people to walk side-by-side.

- The pedestrian through zone should be at least 5 ft wide. This permits side-by-side walking and meets accessibility guidelines for turning and maneuvering.

Furnishing Zone

The furnishing zone is closest to the street and provides space for mailboxes, signs, street lighting, and other utilities. This area serves as snow storage areas in winter climates and protects pedestrians from splash during rain events.

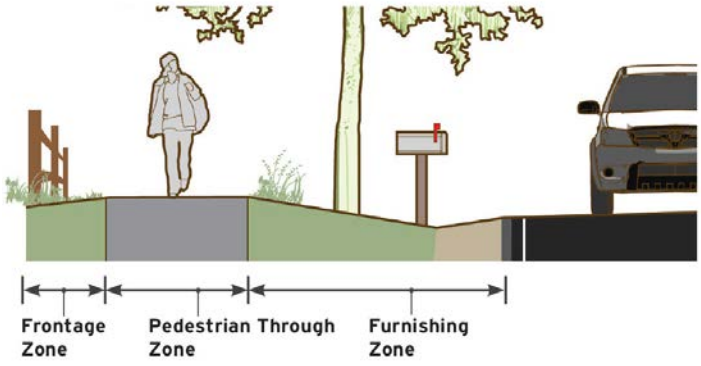
- A furnishing zone of 4–8 ft is preferred for comfort and aesthetics. This width allows for trees, benches, and other large furnishing items.

Parking Lane/Enhancement Zone

In a downtown context, the enhancement zone may add additional space to the pedestrian realm in the form of curb extensions, parklets, bicycle corrals or other features. The enhancement zone may occupy a parking lane or shoulder.

SIDEWALK ZONES (CONTINUED)

In lower density areas, there are less competing uses (generally) and may have smaller dimensions than a downtown context. Sidewalks should be physically separated from the roadway by an unpaved buffer separation, barrier or curb edge.



Minimum recommended dimensions for sidewalks in lower density areas from the Small Town and Rural Multimodal Network Design Guide)

Volume And User Mix	Frontage Zone	Pedestrian Through Zone	Furnishing Zone	Total Width
Constrained Minimum	1 ft (0.3 m)	5 ft (1.2 m)	2 ft (0.6 m)	8 ft (2.4 m)
Recommended Minimum	2 ft (0.6 m)	6 ft (1.5 m)	4 ft (1.2 m)	12 ft (3.6 m)

In commercial areas or a denser environment such as downtown Fuquay and downtown Varina, sidewalk zones can also vary. The graphic/table below and to the right highlight general parameters.

Street Classification	Parking Lane/ Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone
Downtown commercial areas	7-10 feet	6-8 feet	6-12 ft	2 - 8 ft

Crossing Improvements

Intersections are an important part of the pedestrian network. Intersections have high potential conflict between pedestrians, bicyclists, and vehicles. However, intersections can be designed to help reduce these conflicts, making them safer for all users. Based on input from the public and the existing conditions analyses, several proposed intersection improvement projects have been identified. These locations are shown on the map on page 80.

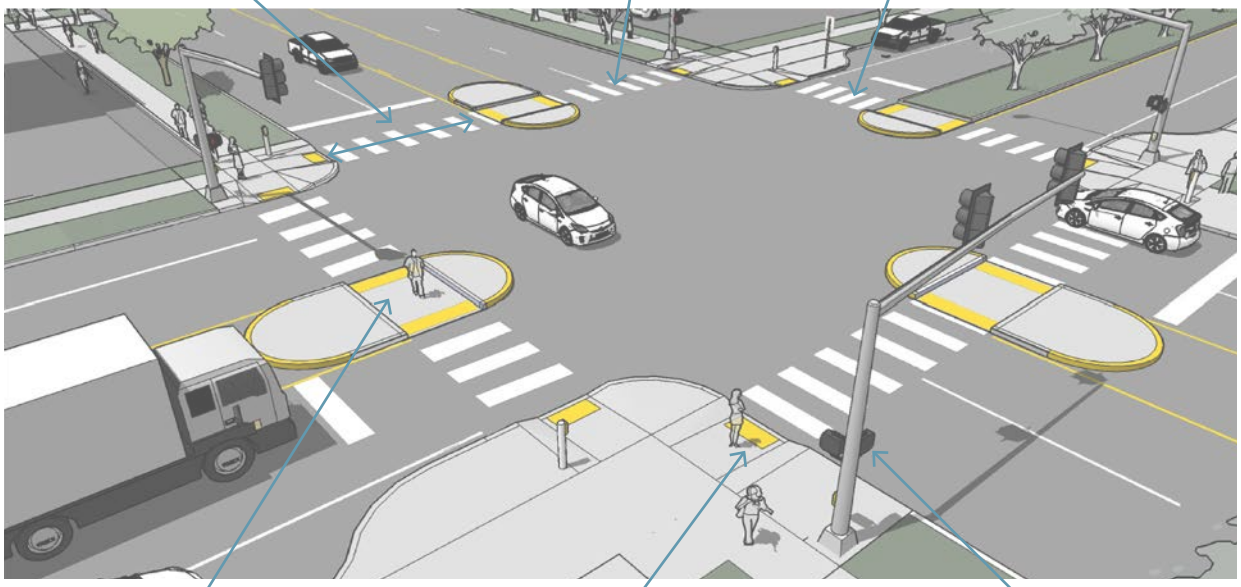
The following guidelines should be considered when designing intersection improvements for pedestrians:

PEDESTRIAN INTERSECTION GUIDANCE

The diagram below highlights best practices for pedestrian facility design at intersections.

The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.

High visibility markings provide additional visibility and are recommended for all crosswalk markings.



Median refuge islands increase visibility and allow pedestrians to cross one direction of traffic at a time.

ADA compliant curb ramps allow all users to transition from the street to a sidewalk. Perpendicular curb ramps are preferred to diagonal curb ramps.

The use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians should be considered.

Pedestrians at Signalized Intersections

TYPICAL APPLICATION

Pedestrian Signal Heads

Pedestrian signal heads indicate to pedestrians when to cross at a signalized crosswalk. Pedestrian signal indications are recommended at all traffic signals except where pedestrian crossing is prohibited by signage.

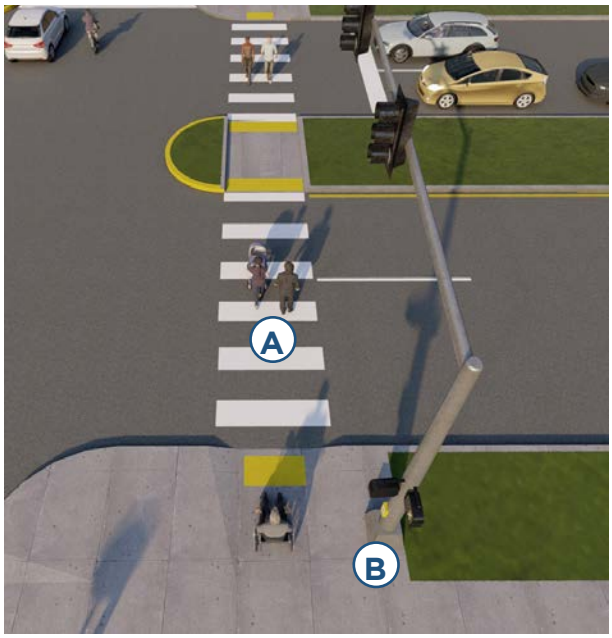
Countdown pedestrian signals should be retrofitted at existing signals with older style pedestrian signals and on any new installation. Countdown signals have a crash reduction factor of between 25 and 52% in varied studies[1].

Signal Timing and the Pedestrian Phase

Adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street. The MUTCD recommends a walking speed of 3.5 ft per second.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3 ft per second should be assumed. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections *(see previous page for further detail)*.

Large pedestrian crossing distances can be broken up with median refuge islands. A pedestrian pushbutton can be provided on the median to create a two-stage pedestrian crossing if the pedestrian phase is actuated. This ensures that pedestrians are not stranded on the median, and is especially applicable on large, multi-lane roadways with high vehicle volumes, where providing sufficient pedestrian crossing time for a single stage crossing may be an issue.



A Consider the use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians.

B Accessible Pedestrian Signals (APS) provide crossing assistance to pedestrians with vision impairment at signalized intersections.

FURTHER CONSIDERATIONS

Pushbuttons 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. Pushbuttons should be 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. This may provide operational benefits as turning movements are then unimpeded.

[1] *http://www.cmfclearinghouse.org/index.cfm*

Pedestrian Traffic Signal Enhancements

Pedestrian-vehicle conflicts can occur when drivers performing turning movements across the crosswalk do not see or yield to pedestrians who have the right-of-way. Pedestrians may also arrive at an intersection late, or may not have any indication of how much time they have to safely cross the intersection. Pedestrian traffic signal enhancements can be made to provide pedestrians with a head start, called a Leading Pedestrian Interval, or extend the walk time to allow them to safely and comfortably cross the street.

TYPICAL APPLICATION

- Leading Pedestrian Intervals (LPI) are used to reduce right turn and permissive left turn vehicle and pedestrian conflicts. The pedestrian interval is initiated 3-10 seconds, in advance of the concurrent green with the potential for permissive right and left turn conflicts. The LPI gives pedestrians a head start making them more visible, and reducing crossing exposure time. Accessible Pedestrian Signals (APS) should be implemented with an LPI.
- Push buttons can be configured to provide additional crossing time. The MUTCD requires signage indicating the walk time extension at or adjacent to the push button (MUTCD sign R10-32P).
- Passive pedestrian detection devices save pedestrians the trouble of having to locate a push button. They are also capable of tracking pedestrians as they cross the intersection, and can be configured to extend the walk/flashing don't walk interval when pedestrians are still in the intersection, and/or not dedicate walk time in the absence of pedestrians.
- The US Access Board's Public Rights-of-Way Accessibility Guidelines (PROWAG) guidance requires APS installation with any new or altered signal.

Leading Pedestrian Interval

Pushbuttons require regular inspection

FURTHER CONSIDERATIONS

When pedestrians have to wait an entire cycle for the next walk phase, a higher incidence of non-compliance, in the form of jay-walking, or unpredictable behavior may occur. These signal enhancements facilitate safer, more predictable, and conspicuous crossing conditions. The Leading Pedestrian Interval and walk time extensions provide additional time for pedestrians who may need more time to cross the street such as wheel-chair users, people with disabilities, the elderly, and children.

MIDBLOCK CROSSINGS

Midblock crossings can provide legal crossings at locations where pedestrians want to travel, and can be safer than crossings at intersections because traffic is only moving in two directions.

Rectangular rapid flashing beacons (RRFB), above left, alert drivers at unsignalized intersections of people biking or walking.

Pedestrian Hybrid Beacons stop automobile traffic for bicyclists and pedestrians wishing to cross a high traffic volume/high speed roadway.

The chart to the right from the NCDOT Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations outlines parameters for choosing an appropriate crossing treatment.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	● 2 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6 7 9	○ 5 6 7 9	○ 5 6 9
3 lanes with raised median (1 lane in each direction)	● 2 3 4 5	● ● 5 7 9	○ ● 5 ● 9	○ 3 4 5 7 9	○ ● 5 ● 9	○ ● 5 ● 9	○ ● 4 5 7 9	○ ● 5 ● 9	○ ● 5 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	● 2 3 4 5 6 7 9	● ● 5 6 7 9	○ ● 5 6 9	○ 3 4 5 6 7 9	○ ● 5 6 ● 9	○ ● 5 6 9	○ ● 4 5 6 7 9	○ ● 5 6 9	○ ● 5 6 9
4+ lanes with raised median (2 or more lanes in each direction)	● ● 5 7 8 9	● ● 5 7 8 9	○ ● 5 8 ●	○ ● 5 7 8 9	○ ● 5 ● 8 9	○ ● 5 8 9	○ ● 5 ● 8 9	○ ● 5 8 9	○ ● 5 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	● ● 5 6 7 8 9	○ ● 5 ● 6 7 8 9	○ ● 5 ● 6 8 9	○ ● 5 ● 6 7 8 9	○ ● 5 ● 6 ● 8 9	○ ● 5 ● 6 8 9	○ ● 5 ● 6 ● 8 9	○ ● 5 ● 6 8 9	○ ● 5 ● 6 8 9

Given the set of conditions in a cell,

\# Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.

● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.

○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs

2 Raised crosswalk

3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line

4 In-Street Pedestrian Crossing sign

5 Curb extension

6 Pedestrian refuge island

7 Rectangular Rapid-Flashing Beacon (RRFB)**

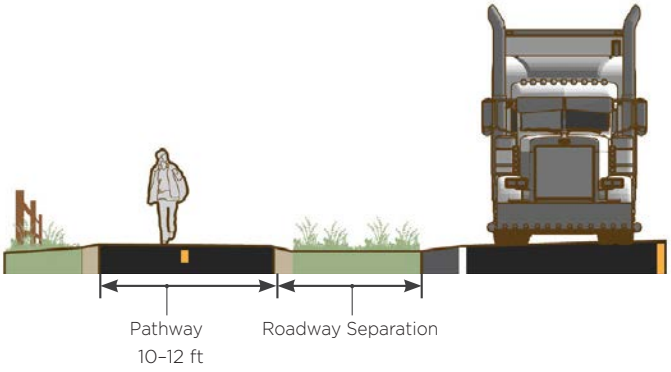
8 Road Diet

9 Pedestrian Hybrid Beacon (PHB)**

Shared Use Path Recommendations

SIDEPATH

A sidepath along the roadway is a bi-directional path located immediately adjacent and parallel to a roadway. Sidepaths can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances, and maintain small town community character. A sidepath along the roadway can encourage walking and bicycling in areas where high-volume and high-speed motor vehicle traffic would otherwise discourage it.



Note - 10-12 ft is the national standard for shared use paths (sidepath and greenway) width. 8' is acceptable in constrained conditions. See page 4-5 of FHWA's Small Town and Rural Multimodal Network Design Guide for more information on shared use path widths, volumes, and user mix.

ROADWAY SEPARATION

Separation from the roadway should be informed by the speed and configuration of the adjacent roadway and available right-of-way and engineering judgment.

- Preferred minimum separation width is 6.5ft. Minimum separation is 5ft.
- Separation narrower than 5ft is not recommended without the use of a physical barrier.
- Special consideration at intersections and driveways.
- Trail width and roadway separation can be reduced when located in residential neighborhoods to reduce impact.

Application

Speed and Volume

For use on roads with high volumes, and moderate-to high-speed motor vehicle traffic. Roads with few driveways are preferred to reduce potential conflict points.

Network

For use on arterial links on the regional or local walking and biking network.

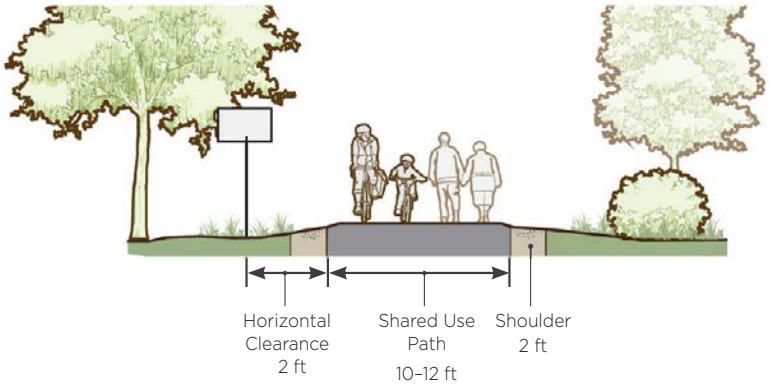
Land Use

For use inside of built-up areas to provide a dedicated space for pedestrians and bicyclists.

GREENWAY

A greenway is a shared use path that is off-road. It provides a travel area separate from motorized traffic for pedestrians, bicyclists, wheelchair users, skaters, joggers, and other users. Greenways can provide a low-stress experience for a variety of users using the network for transportation or recreation.

Greenways follow utility corridors, railroad alignments (both active and abandoned), and greenway/stream corridors.



Note - 10-12 ft is the national standard for shared use paths (sidepath and greenway) width. 8' is acceptable in constrained conditions. See page 4-5 of FHWA's Small Town and Rural Multimodal Network Design Guide for more information on shared use path widths, volumes, and user mix.

WIDTH

The geometric design of greenways should support the speed and volume of expected user types.

- 10 ft -12ft width is recommended in most situations and will be adequate for moderate to heavy use.
- A 2 ft shoulder should be provided on each side of the path, kept clear of vertical elements or obstructions.

Application

Speed and Volume

Greenways operate in independent corridors that are fully separated from traffic. Facility provision is based on opportunity and connectivity rather than roadway context. In some cases, an independent corridor may offer similar connectivity and access to destinations as a nearby roadway.

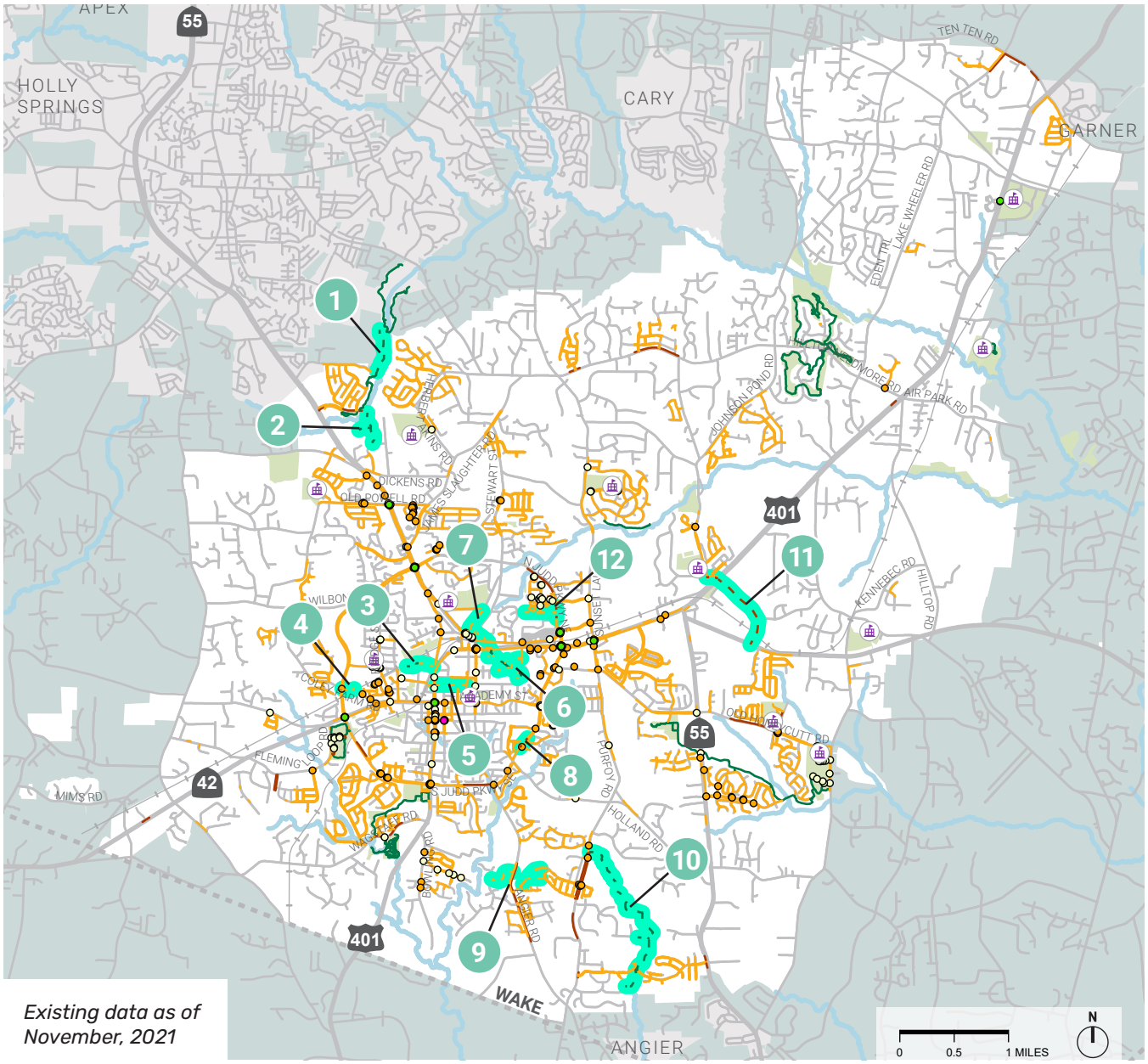
Network

Serves connections independently of the street network. May function as a network alternative to a road.

Land Use

Generally appropriate outside of built-up areas, and also as a corridor connection within urban areas.

Map 11: Projects In Development



Existing data as of November, 2021

EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- IN DEVELOPMENT

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

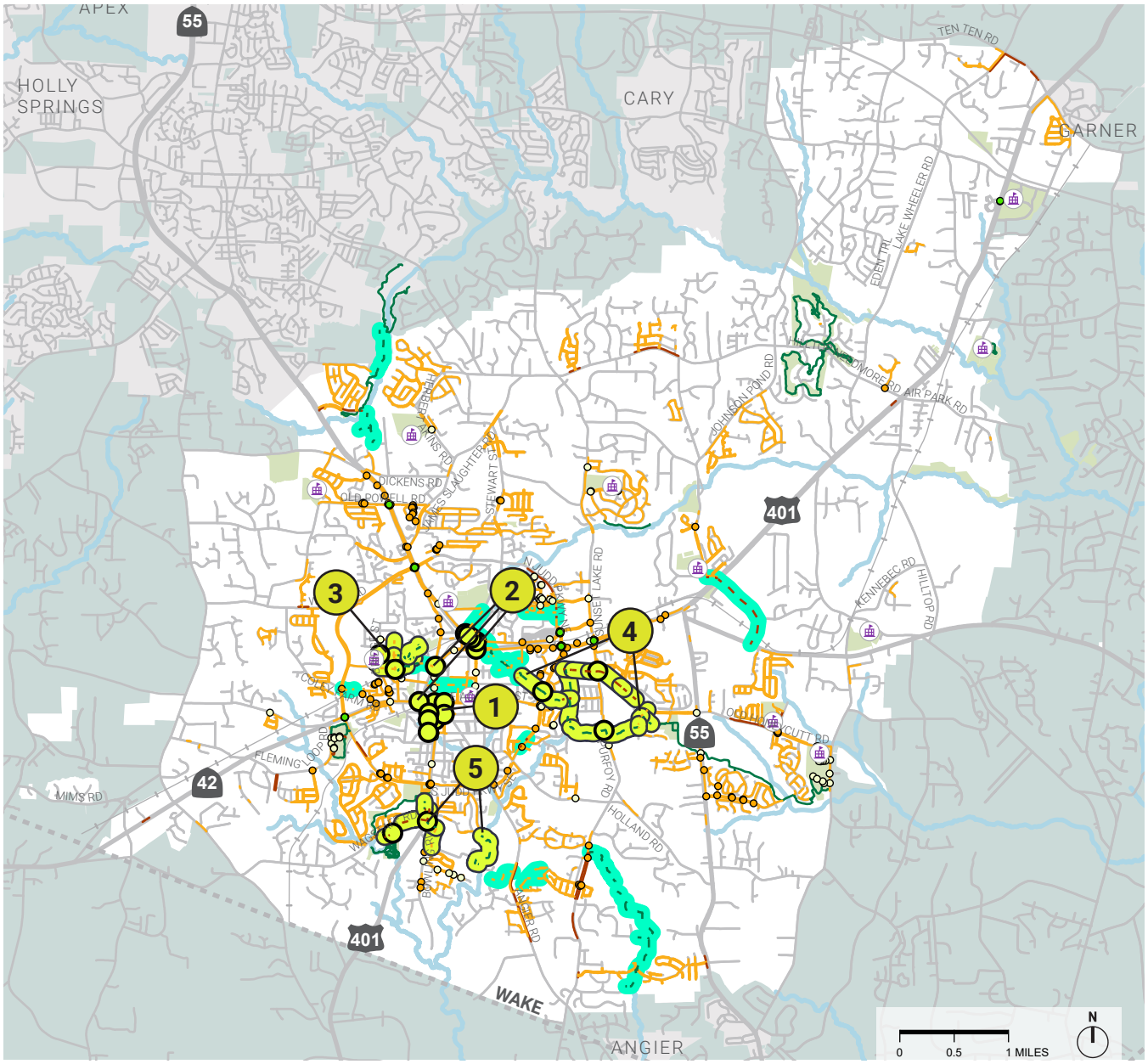
NOTE: This figure is intended only for reference, conceptual planning, and informational purposes. This figure should not be used to establish boundaries, property lines, location of objects, or to provide any other information typically needed for final design, construction or any other purpose when engineered plans are required.

PROJECTS IN DEVELOPMENT

Building on the existing pedestrian network, the Town of Fuquay-Varina is already in the process of implementing several facilities that are funded and will be constructed in the near term, or will be constructed as part of an upcoming development. An overview of each of these projects is provided in the table below and in Map 11. These are key building blocks for pedestrian network planning.

Map ID	*Projects In Development*
1	Alston Ridge/Bass Lake Greenway - This greenway project will be constructed in the near term, and will connect Alston Ridge Park (and surrounding neighborhood) to Bass Lake in Holly Springs.
2	The Varina Gateway Townes development will include a greenway connection to Alston Ridge Park and the existing greenway that will eventually link to Bass Lake in Holly Springs.
3	The Midtown Subdivision will include a short greenway link to Dr. William Freeman Park with sidewalk connectivity also to the Wake Chapel Rd/Railroad St/Main St intersection.
4	The Currin Property development will include a sidewalk segment along Coley Farm Rd (in addition to an internal trail section as well with sidewalk connectivity to Washington St).
5	The Jones St sidewalk project will connect Main St directly to Fuquay-Varina Middle School.
6	The Parker Station development will include a greenway spine along the old railroad bed, with sidewalk connectivity to the adjacent neighborhood streets and businesses.
7	The North St and Ransdell Rd sidewalk project will connect Fuquay-Varina High School with downtown Varina.
8	A short sidewalk gap on the southeastern section of Judd Pkwy will be completed in the near term.
9	Multiple internal sidewalk networks and sidepaths along Angier Rd and Purfoy Rd are being constructed in this areas as part of multiple ongoing subdivision developments.
10	The Hidden Valley Greenway is being constructed as part of multiple ongoing subdivision developments, serving as a spine for adjacent residential sidewalk networks.
11	Sidepaths will be constructed as part of the new roadway that will connect NC 42 across US 401 and Mill Creek Dr.
12	As part of the Crossings Apartments Development, sidepath connectivity will be extended along Judd Pkwy and sidewalk connectivity will be extended between Judd Pkwy and Penmon Dr.

Map 12: Priority Projects



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- IN DEVELOPMENT
- PRIORITY PROJECTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

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PRIORITY PROJECT CHECKLIST

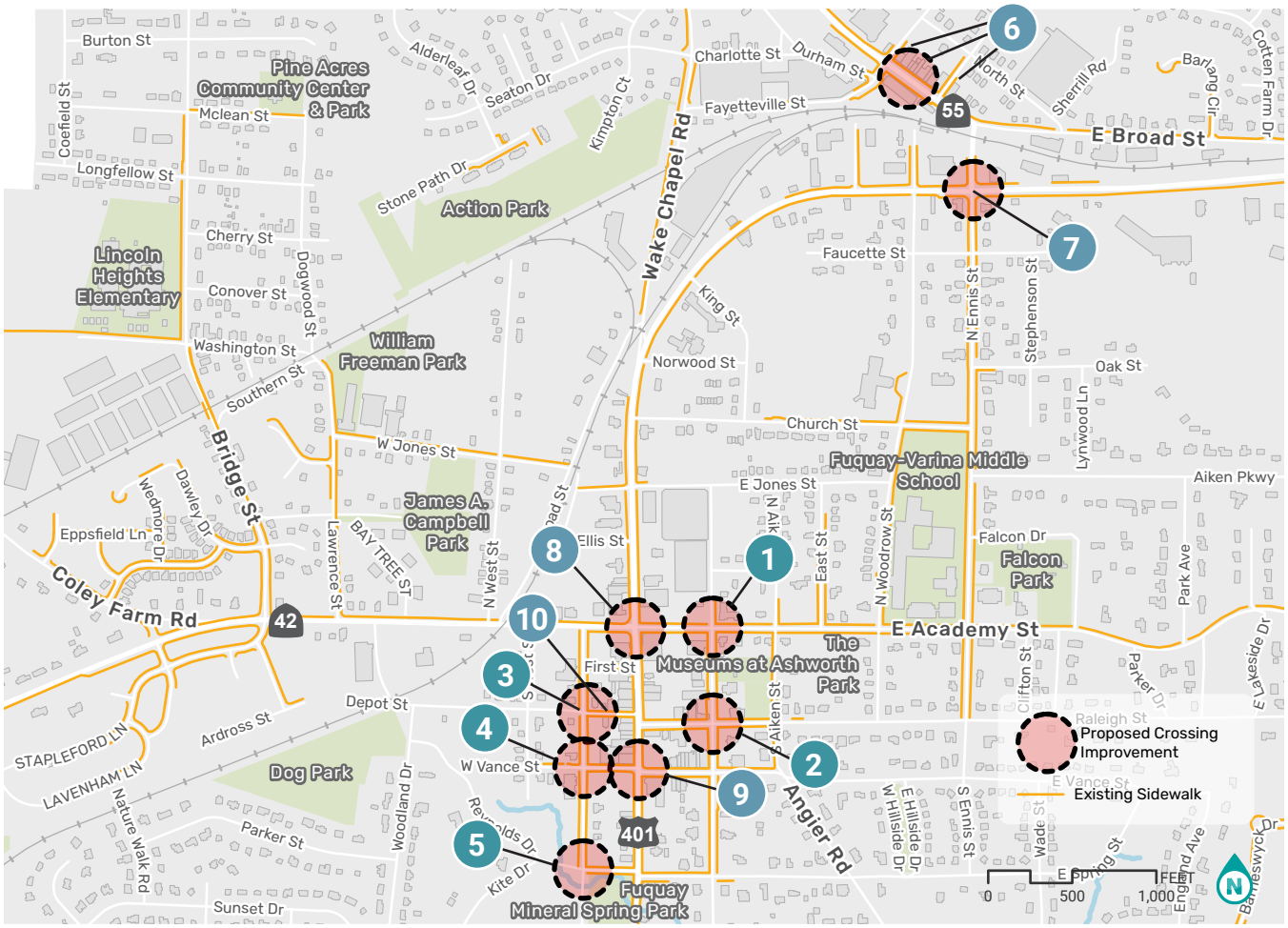
The five project sheets below fill key gaps in the pedestrian network, and have been identified as the highest priority projects. The prioritization criteria in the table below are commonly utilized during pedestrian infrastructure project development processes. They generally align with CAMPO's LAPP prioritization criteria.

Map ID	Priority Project	*Missing Link*	*Near Ped Crash*	*Supported in Public Feedback*	*Within 1/4 mile of a park or recreation center*	*Within 1/4mile of a school*	*Access to downtown cores/ business areas*	*Connects Equity Analysis (High Social Vulnerability Area)*	*In an adopted plan*
1	Downtown(s) Crossing Improvements	√	√	√	√	√	√	√	√
2	Downtown Railroad Crossings	√	√	√	√	√	√	√	√
3	Lincoln Heights Connectors	√		√	√	√	√	√	√
4	Depot Greenway Extension/Gap	√		√	√	√	√	√	√
5	Fuquay-Varina Middle School Connectors	√	√	√	√	√	√	√	√

PRIORITY PROJECT SHEETS

The following series of project summaries can be used when applying for future funding, or when communicating the priority project details to potential partners during implementation. The project sheets that follow show an analysis of the priority segments, including factors of feasibility identified by the project team. It serves as an inventory of the alignment factors at play, providing guidance for the next steps in implementation.

PRIORITY PROJECT #1: DOWNTOWN INTERSECTION IMPROVEMENTS



MAP NOTES

Estimated Construction Costs: $739,000

1. Fuquay Ave and E Academy St: Upgrade crosswalk striping with high visibility crosswalks; replace sidewalk/curb corners; add pedestrian crossing signals (with audible function).

2. S Fuquay Ave and Raleigh St; Upgrade crosswalk striping with high visibility crosswalks; replace sidewalk/curb corners; add stop signs to create an all-way stop.

3. S Spring Ave and Depot St: Upgrade crosswalk striping with high visibility crosswalks; replace sidewalk/curb corners; add stop signs to create an all-way stop.

4. S Spring Ave and W Vance St: Upgrade crosswalk striping with high visibility crosswalks; replace sidewalk/curb corners; add in-street yield to pedestrian signage.

5. S Spring Ave and W Spring St: Upgrade crosswalk striping with high visibility crosswalks; replace sidewalk/curb corners; add in-street yield to pedestrian signage.

6. Broad St: At middle of block replace crosswalk striping.

7 N Main St and N Ennis St: Upgrade crosswalk striping with high visibility crosswalks; add lead pedestrian interval phasing; add audible function to pedestrian signal.

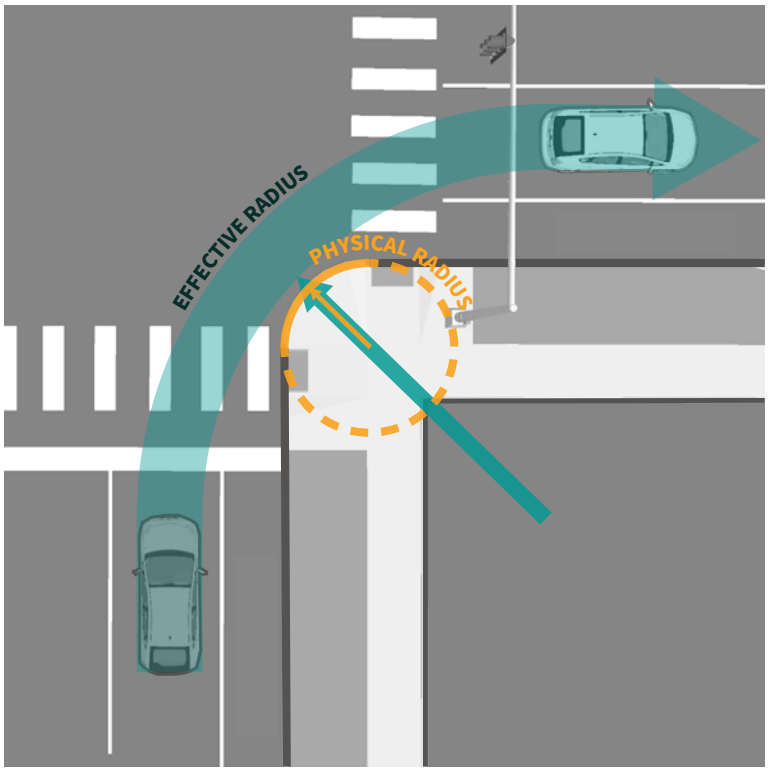
8 Main St and Academy St: Upgrade crosswalk striping with high visibility crosswalks; add lead pedestrian interval phasing; add pedestrian crossing signals (with audible function).

9 S Main St and Vance St: Upgrade crosswalk striping with high visibility crosswalks; add lead pedestrian interval phasing; add audible function to pedestrian signal.

10 Depot St between S Spring Ave and S Main St: Create a festival street by closing this section of Depot St to automobile traffic. This creates space for prioritized pedestrian travel and for adjacent businesses to utilize this space.

CORNER DESIGN CONSIDERTAIONS

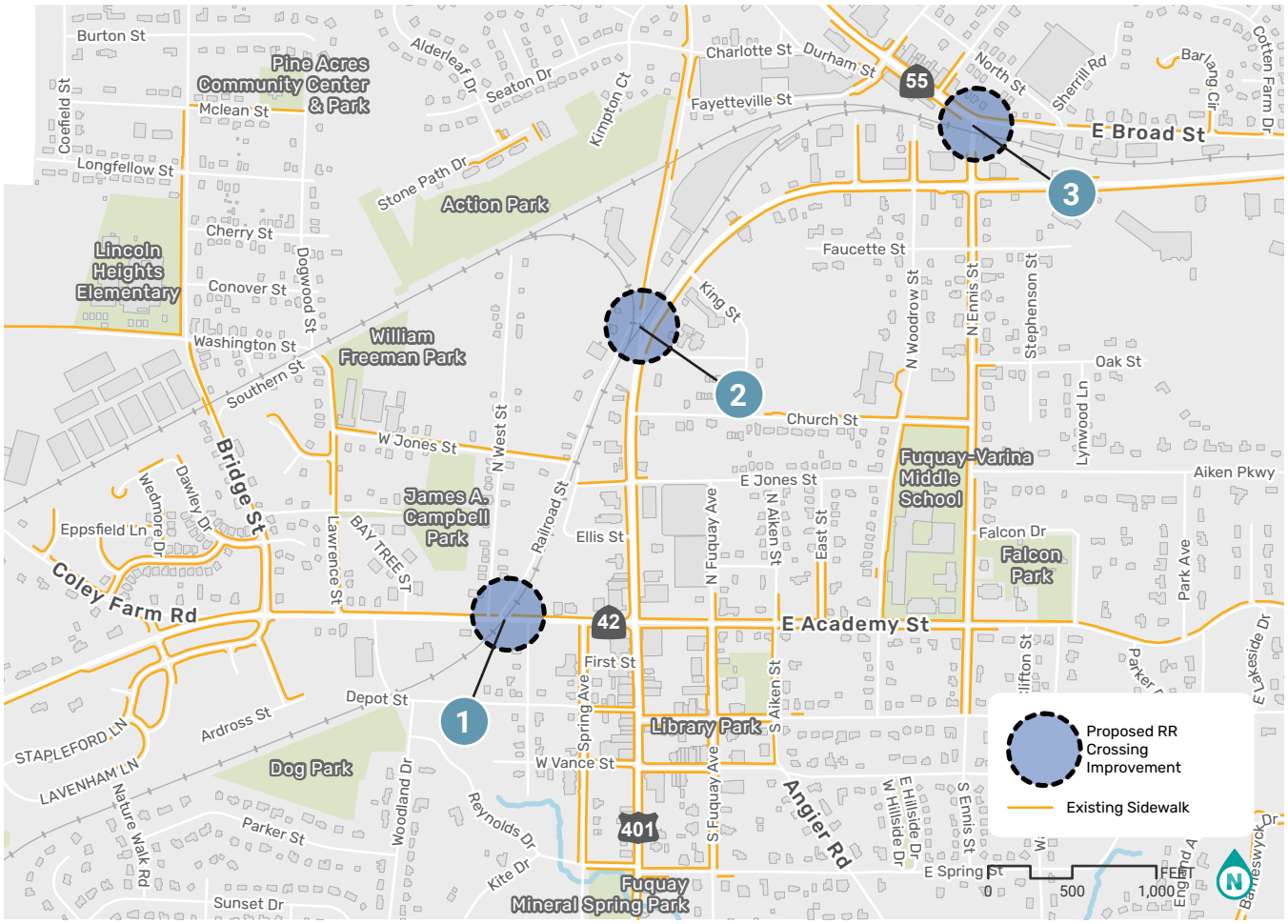
The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances and consider the effective radius in any design vehicle turning modeling. For further information, see Alta Planning + Design's 'Corner Design for All Users' white paper - https://altago.com/resources/corner-design-for-all-users/



ACCESSIBLE CURB RAMPS

- Curb ramps shall slope no more than 1:10, with a maximum cross slope of 2.0%. A slope of no more than 1:12 is desirable.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- The level landing at the top of a ramp shall be a minimum of 5'-0" long (in the direction of the ramp run) and at least as wide as the ramp. If there is a change in direction between ramps and landings, the landing should be a minimum of 5'-0" wide.
- Curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Three configurations are illustrated above.
- Diagonal curb ramps are not recommended. If used, diagonal ramps shall include a clear space of at least 48" within the crosswalk for user maneuverability.

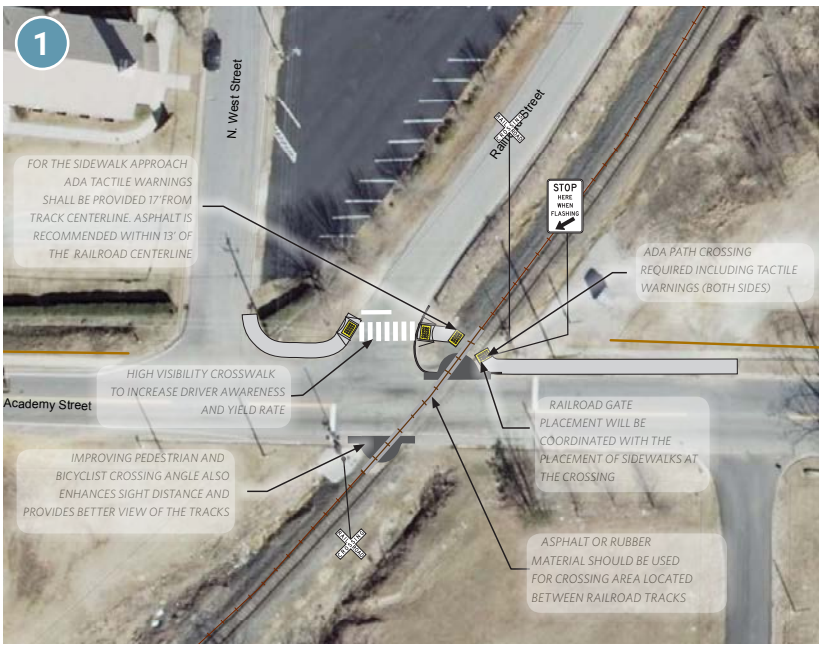
PRIORITY PROJECT #2: DOWNTOWN (ACADEMY ST, ENNIS ST) RAILROAD CROSSINGS



MAP NOTES

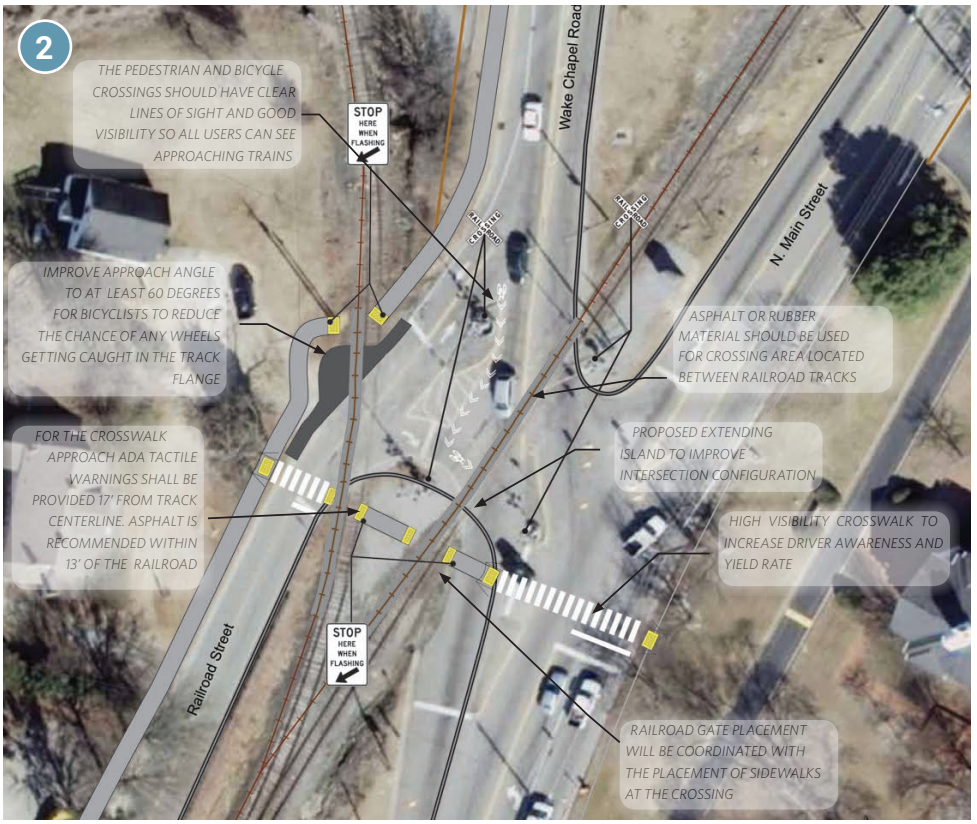
1 W. Academy St railroad crossing: Currently, the existing sidewalk along the north side of W. Academy St is incomplete across the railroad tracks, serving as a barrier to the west side of Fuquay-Varina. This is an approximately 50' gap between the sidewalk terminus to Railroad St. Construct an ADA compliant sidewalk connection across the railroad tracks here.

Estimated Construction Costs: *$955,000 (estimate excludes #2 which needs further feasibility analyses)*



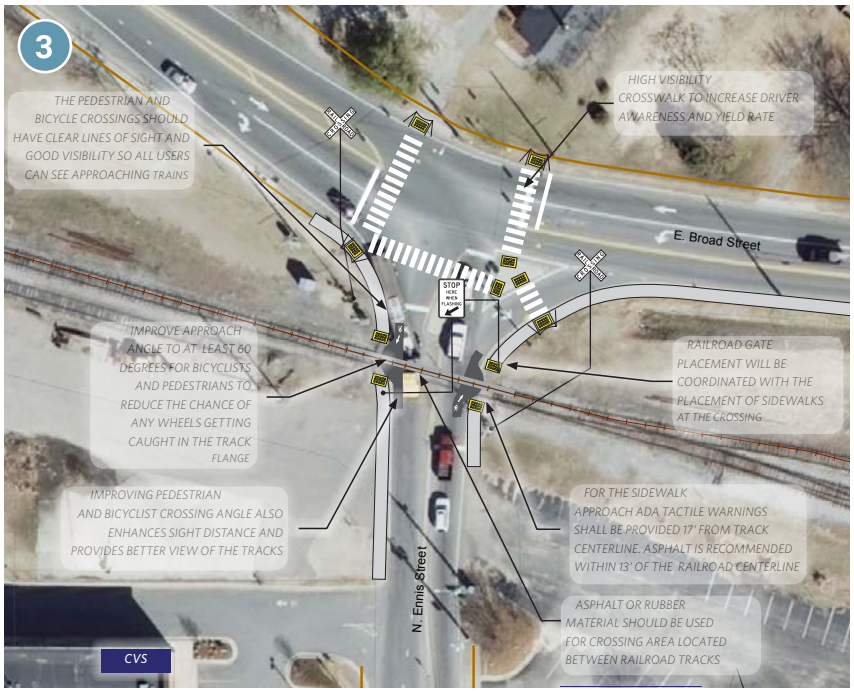
Right: Pedestrian crossing improvements were recommended in the 2013 Fuquay-Varina Pedestrian Plan at the W. Academy St railroad crossing.

2 Wake Chapel/S. Main St/ Railroad St crossing: Further study needed - several configurations have been propopsed in past planning processes for this intersection (see concept on the following page from the 2013 Pedestrian Plan), but no concensus has been reached on how to improve this intersection. A feasibility study should be conducted to detail alternatives and identify a preferred alternative.



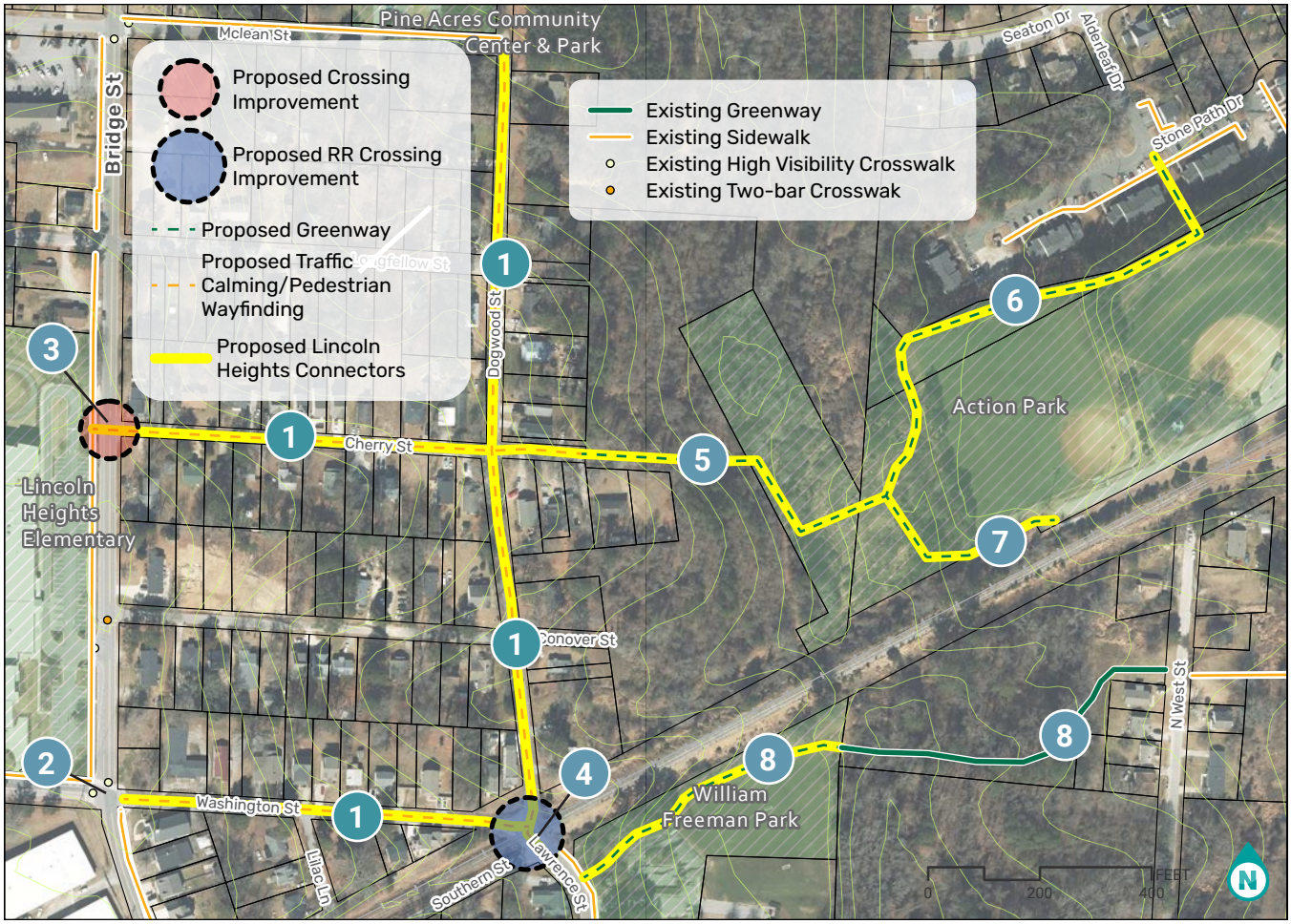
Right: Pedestrian crossing improvements were recommended in the 2013 Fuquay-Varina Pedestrian Plan at the Wake Chapel/S. Main St/Railroad St crossingrailroad crossing.

3 N. Ennis St railroad crossing: The existing sidewalk along the south side of Broad St from downtown Varina ends just short of the N. Ennis St intersection. Across the railroad tracks along the west side of N. Ennis St is an approximately 215' sidewalk gap. Construct an ADA compliant sidewalk across the railroad tracks here.



Right: Pedestrian crossing improvements were recommended in the 2013 Fuquay-Varina Pedestrian Plan at the N. Ennis St railroad crossing.

PRIORITY PROJECT #3: LINCOLN HEIGHTS CONNECTORS



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MAP NOTES

1. Cherry St, Washington St, and Dogwood St are narrow neighborhood streets with 16'-18' pavement width, adjacent drainage, and narrow ROW. Because these streets connect to Lincoln Heights Elementary School, the Lawrence St railroad crossing, the proposed greenway to Action Park, and Pine Acres Community Center & Park, consider implementing traffic calming features. Furthermore, implement pedestrian on roadway signage as well as customized wayfinding signage to each destination.

2. Replace the existing two-bar crosswalk along the eastern leg of the Washington St/Bridge St intersection with a high visibility crosswalk. Make this intersection an all-way stop.

3. Create a corner curb at the southeast corner of the Cherry St and Bridge St intersection, and create a high visibility crosswalk with an accessible ramp to the sidewalk along the west side of Bridge St. Construct a 50' sidewalk section east from the southeast corner of the Bridge St/Cherry St intersection (along the south side of Cherry St). and a crosswalk with an RRFB connecting to the school sidewalk on the west side of the road.

4. Create an accessible bike/ped crossing of the closed roadway/railroad crossing, connecting Dogwood St and Lawrence St.

5 Construct a greenway from the eastern terminus of Cherry St to the Action Park ballfields utilizing the existing public ROW. These will require an agreement with one landowner. A small bike/ped bridge will be needed for the short creek crossing.

6 Construct one greenway segment to make a direct connection to the Cobblestone Apartments and surrounding neighborhood, routing north of the Action Park ballfields.

7 Construct one greenway segment to tie into the southern end of the Action Park ballfields, connecting to the driveway terminus.

8 From the existing Lawrence St sidewalk, construct a greenway segment along the northern edge of William Freeman Park, connecting to the greenway segment and sidewalks that will be constructed as part of the Midtown Subdivision, and ultimately, connecting this project to the Railroad St/Wake Chapel Rd intersection.

Facility: *Greenway; Traffic Calming*

Trip Generators: *Lincoln Heights Elementary; Pine Acres Community Center & Park; Action Park; William Freeman Park; multiple neighborhoods*

Potential ROW Needs: *One landowner (270' greenway segment); Norfolk Southern (RR crossing)*

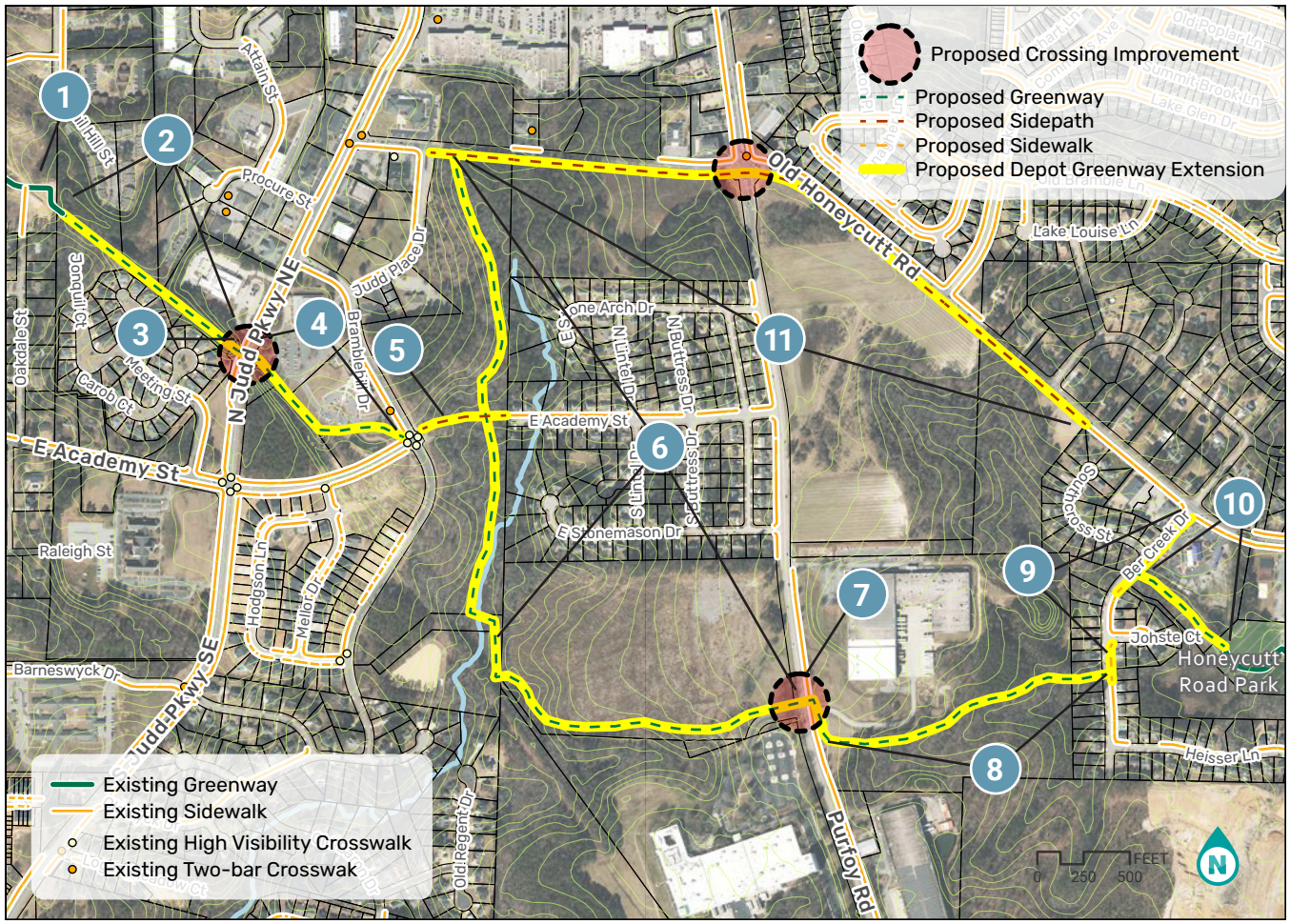
Potential Partnerships: *Norfolk Southern; NCDOT; adjacent landowners; Midtown Subdivision developer; Cobblestone Apts; Wake County Public School System;*

Supported in Past Planning: *2035 Community Transportation Plan; 2013 Fuquay-Varina Community Pedestrian Plan; 2016 Lincoln Heights Safe Routes to School Action Plan*

Estimated Construction Costs: *$1,226,000*

Above: Photo of the closed railroad/roadway crossing at the Dogwood St/Lawrence St/Washington St intersection.

PRIORITY PROJECT #4: DEPOT GREENWAY EXTENSION



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MAP NOTES

1. This greenway segment is under construction at the time of this writing as part of the Parker Station development. This greenway will connect to N. Main St and will have sidewalk connections to each of the adjacent streets (including Faucette St, Oak St, Oakdale St, and Smithwood St).

2. Construct a greenway from the southeastern terminus of the Parker Station segment, working with adjacent homeowner association landowners and/or the USPS to continue the greenway along the former railbed to Judd Pkwy.

3. At the Judd Pkwy intersection, construct a Pedestrian Hybrid Beacon (PHB) pedestrian crossing. As the road tapers between two lanes and two lanes with a center turn lane, potential opportunity (pending exact crossing location) to create curb extensions.

4. Construct a greenway segment from Judd Pkwy to the E. Academy St/Bramblehill Dr intersection. This section of greenway will need to utilize Wake County property (library), and should include a greenway spur to the library entrance.

5. Construct a sidepath along the north side of the future E. Academy segment.

6. Construct a greenway from Old Honeycutt Rd near Judd Pl Dr to Purfoy Rd, also connecting with the future E. Academy St segment. This will require coordination with future development and also utilizes some town-owned land. A short bike/ped bridge will be needed for a small creek crossing in this section.

7. At the Purfoy Rd crossing, construct either a Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB) pedestrian crossing (further engineering analysis needed). When examining this area to identify the exact crossing location, consider a location that can utilize the center turn lane for a median refuge island (consider crossing 100' south of the Bob Barker/TE Connectivity driveways). Coordination and agreements with adjacent landowners will be needed.

8. Construct a greenway from Purfoy Rd to Ber Creek Dr. This will require an agreement with BBC properties as well as Willow Creek Homeowners Association. A creek/drainage crossing may be needed upon the approach to Ber Creek Dr.

Parker Station site where the former railroad bed (left side of picture) connects near N Main St.

9. Fill the sidewalk gaps along Ber Creek Dr to connect this neighborhood with the greenway segments. Wayfinding signage will be needed.

10. Construct a greenway segment from Ber Creek Dr to the Honeycutt Road Park greenway terminus. This will require an agreement with the Garden Hut Center - otherwise, an agreement with the Willow Creek Homeowners Association will be needed and a boardwalk would need to be constructed.

11. Construct a sidepath along the south side of Old Honeycutt Rd from Judd Pl Dr to the existing sidewalk just west of Ber Creek Dr. With construction of this segment, the Old Honeycutt Rd/Purfoy Rd intersection should include high visibiltity crosswalks with pedestrian signals on all four sides of the intersection.

Facility: *Greenway; Sidewalk*

Trip Generators: *Downtown cores; multiple neighborhoods and businesses; Library; Post Office; Honeycutt Road Park; Willow Spring High School*

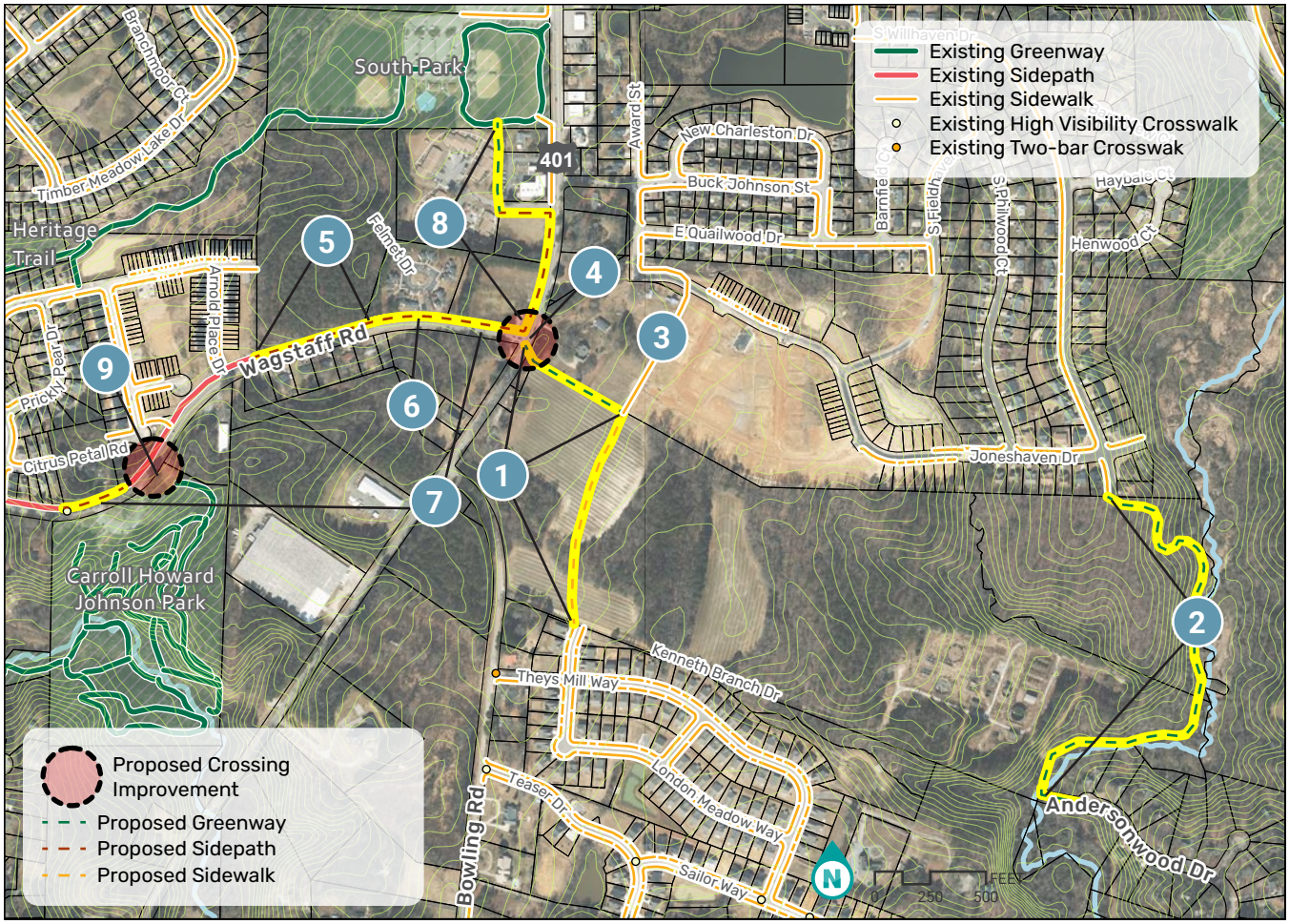
Potential ROW Needs: *Multiple ROW needs are identified in notes below*

Potential Partnerships: *Parker Station developer; Charleston Commons HOA; USPS; Wake County; Carillion Assisted Living; Adalyn Pl developer; BBC Properties; TE Connectivity; NCDOT; Willow Creek HOA; Garden Hut*

Supported in Past Planning: *2035 Community Transportation Plan; 2013 Fuquay-Varina Community Pedestrian Plan*

Estimated Construction Costs: *$5,733,000*

PRIORITY PROJECT #5: FUQUAY-VARINA MIDDLE SCHOOL CONNECTIVITY



MAP NOTES

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1. As part of the new Fuquay-Varina Middle School site, sidewalks are planned that will connect the South & Main Subdivision development and London Meadow Way to the south. A short greenway link should also be constructed to make a connection to the Wagstaff Rd/S. Main St intersection.

2. The eastern edge of the school site lies adjacent to Kenneth Creek - a creek side trail could serve as a connector greenway between S. Willhaven Dr and Anderson Wood Dr, and could also serve as the beginning of a future greenway connection up the creek to the north and to the east. The Andersonwood Dr connection is of particular importance - combined with the subdivision development happening to the east and southeast, this link provides a connection to Purfoy Rd and the future Hidden Valley Greenway.

3. This sidewalk connection is part of the South & Main Subdivision development, connecting the school to this new neighborhood development.

4. Connect the school site greenway to the Wagstaff Rd/South Main St intersection and construct a pedestrian crossing (likely as part of a future traffic light here). This is where the school connection to Carroll Howard Johnson Park & South Park split.

5. This section of proposed sidepath along the north side of Wagstaff Rd will be constructed as part of the future Redeemer Community Church site development.

6 This existing 300’ section of sidewalk in front of the Southgate Apartments is approximately 30+ years old and needs accessible curb ramps. This section should be replaced with a 10’ sidepath.

7 Complete the gaps in the sidepath along Wagstaff Rd in connecting to Carroll Howard Johnson Park and the Jeff Wells Trail.

8 Construct a sidepath north to South Park. Consider making the connection through the Fuquay-Varina Homes for the Elderly property due to limited space between the Fresenius Medical Care building and S. Main St.

9 Construct an additional high visibility midblock crosswalk to the northeastern most trail entrance in Carroll Howard Johnson Park.

Facility: *Greenway; Sidepath*

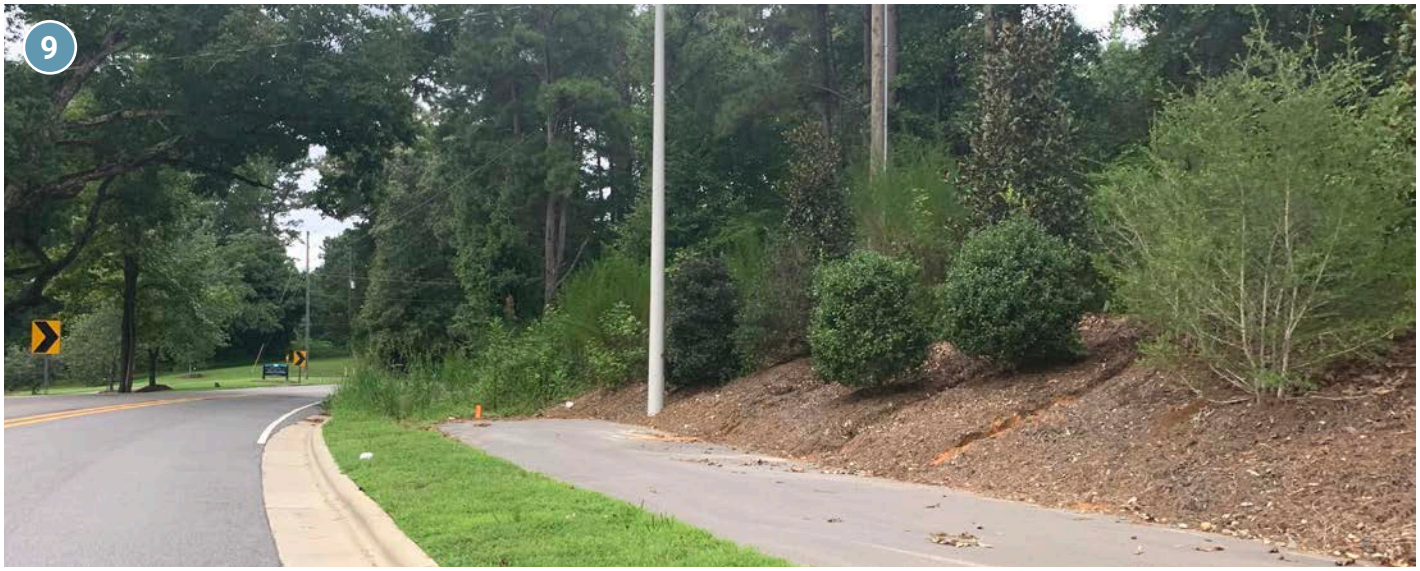
Trip Generators: *Fuquay-Varina Middle School (construction in 2024); South Park; Carroll Howard Johnson Park; Jeff Wells Trail; multiple neighborhoods*

Potential ROW Needs: *For potential greenway section connecting through the Fuquay-Varina Homes for the Elderly property*

Potential Partnerships: *Fuquay-Varina Homes for the Elderly; NCDOT; adjacent landowners; South & Main Subdivision and Theys Mill developers; Wake County Public School System*

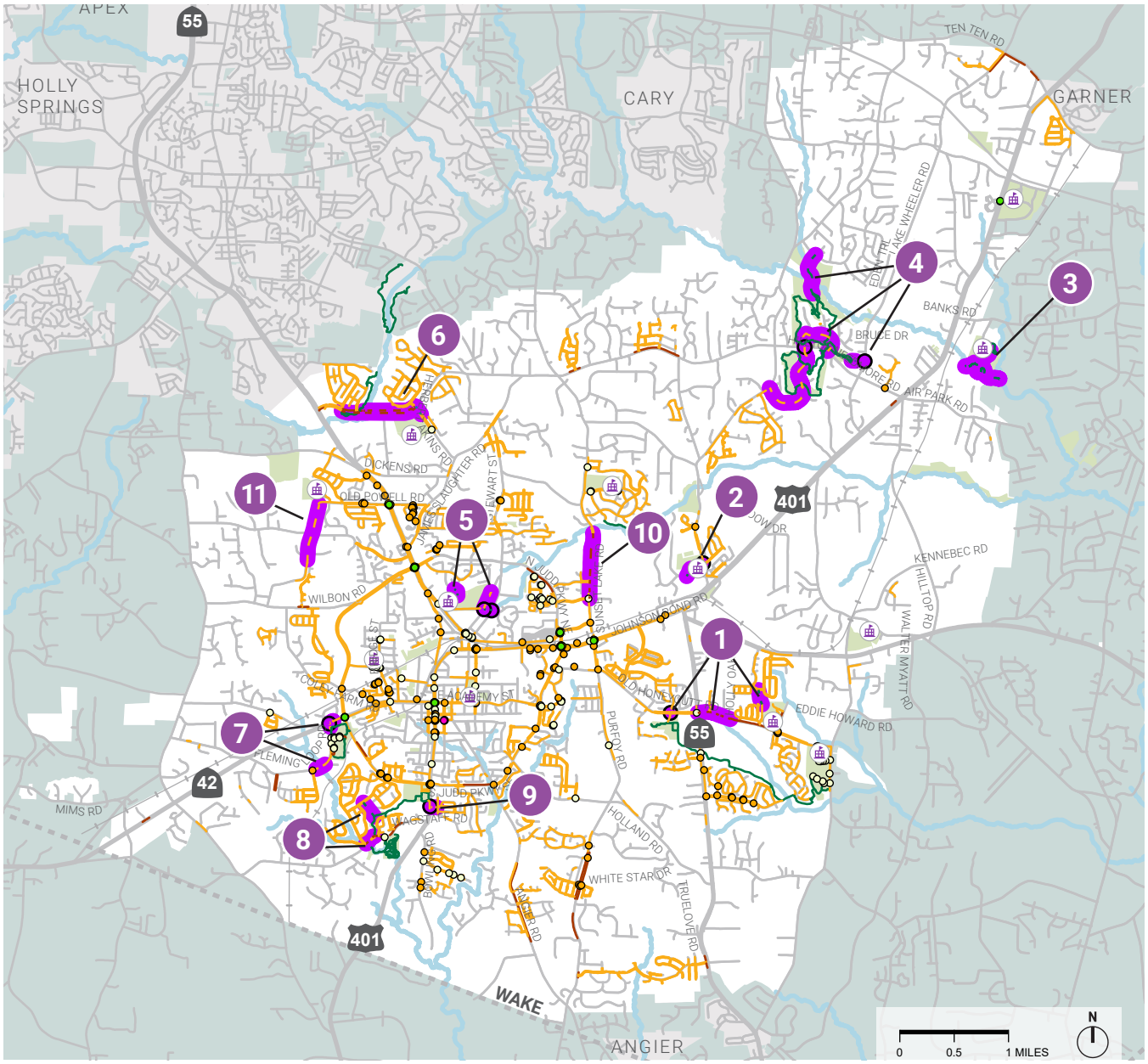
Supported in Past Planning: *2035 Community Transportation Plan; 2013 Fuquay-Varina Community Pedestrian Plan*

Estimated Construction Costs: *$3,210,000*



Sidepath terminus on the north side of Wagstaff Rd just opposite of the beginning of Carroll Howard Johnson Park.

Map 13: Safe Routes to Schools and Parks Projects



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- SAFE ROUTES TO SCHOOLS & PARKS PROJECTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

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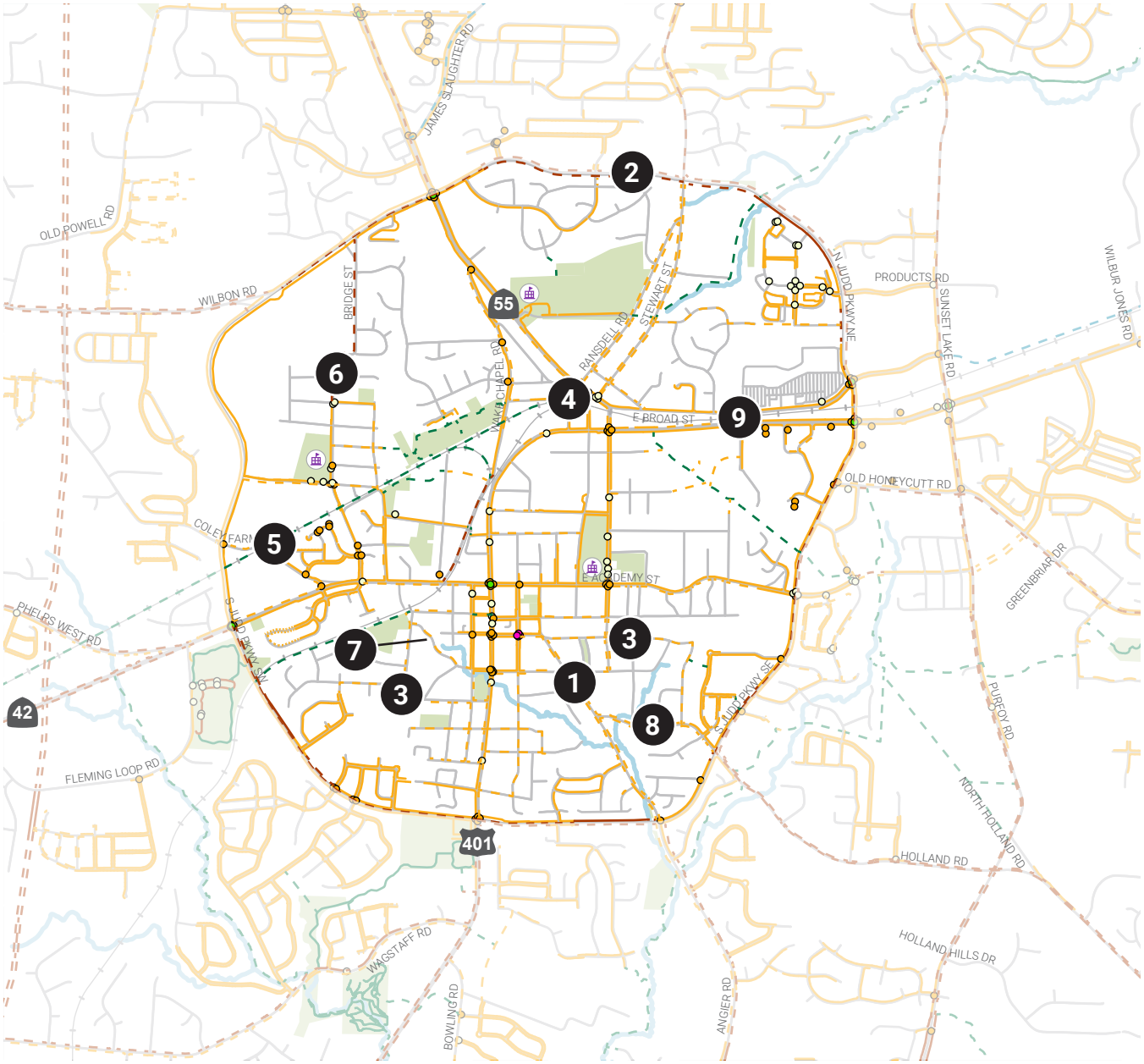
SAFE ROUTES TO SCHOOLS AND PARKS

Numerous, relatively short links or intersection projects can enhance connectivity to parks and schools throughout Fuquay-Varina. Parks and schools are key activity centers that, in many instances in Fuquay-Varina, are located near multiple neighborhoods that are within a walkable distance. Implementing these short connections should be considered priorities.

Map ID	School/ Park	*Recommendation Notes (*signifies a recommendation from the CTP)*
1	South Lakes Elementary; Honeycutt Rd Park	Three short links would improve connectivity in this area, including: 1) A short greenway link from either Willow Ranch Dr or Summer Ranch Dr to the northern sidewalk of Southern Lakes Elementary (650'); *2) A short sidepath segment along the north side of Old Honeycutt Rd between NC 55 and the new sidepath leading to South Lakes Elementary (1,600') - (the western segment would likely need to be partially or fully constructed as boardwalk); and 3) A crosswalk across Old Honeycutt Rd at the Honeycutt Road Park entrance. Construct either a Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB) pedestrian crossing (further engineering analysis needed).
2	Fuquay-Varina Elementary	Fuquay-Varina Elementary is immediately adjacent to two neighborhoods - two small improvements could enable children to walk to school; 1) A short greenway link from the southwestern side of the school property to Mill Creek Dr via the vacant wooded property (would require agreement with one landowner); and 2) A crosswalk across Johnson Pond Rd from Sterling Dr - construct either a Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB) pedestrian crossing (further engineering analysis needed).
3	Banks Road Elementary	*The south side of the Banks Rd Elementary School property abuts a 0.5 mile section of Middle Creek. A greenway trail should be constructed to connect the school to Middle Creek, along with a creek side trail along the school property. Eventually, connect this trail upstream to Hilltop Needmore Park.
4	Hilltop Needmore Park	Connectivity to the Hilltop Needmore Park trails and park could be improved by adding additional connections and crosswalks to the adjacent neighborhoods. The Town of Fuquay-Varina Parks, Recreation, and Cultural Resources Department is currently conducting a master plan for Hilltop Needmore Park. Pedestrian improvements for Hilltop Needmore Park should follow the recommendations of the future park master plan.
5	Fuquay-Varina High School	Three short links could improve connectivity to the high school, building upon the new Ransdell Rd sidewalks that will connect the school to Varina. 1) Construct a short greenway link (300') from the northern edge of the school property to the end of Hawkweed Dr (would require agreement with one landowner); 2) Construct a short greenway link (30'-100') from the northeast corner of the school property to Occoneechee Dr (would require agreement with one landowner); and *3) Construct a short greenway link (400') from Bengal Blvd, directly to the east to Perry Howard Rd (would require agreement with one landowner).
6	Herbert Aikens Road Elementary	*The Hilltop Needmore Rd extension, completing the gap west of Herbert Aikens Rd and the school, will be constructed in the 2030's. As part of this project, sidepaths on both sides of the road should be constructed, including a direct link to Herbert Aikens Road Elementary.
7	Fleming Loop Park	Two short links separate multiple residential areas to Fleming Loop Park; 1) Construct a short sidewalk link (850') along the south side of Fleming Loop Rd from the Valley Dale Dr sidewalk to the existing Fleming Loop Rd sidewalk - a short bridge will be needed over a creek/drainage feature; and 2) Construct a sidewalk link (450') from the northwest corner of the park sidewalk to the NC 42 intersection (construct either a Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB) pedestrian crossing (further engineering analysis needed)) at this intersection. *Connect to the existing sidewalk on the north side of NC 42 just to the east.
8	Carroll Howard Johnson Park	Two short greenway/sidepath links would improve residential connectivity directly to the Jeff Wells Trail, and thus, South Park and Carroll Howard Johnson Park. *1) A short sidepath link along the north side of Wagstaff Rd between Bridle Dr and the Jeff Wells Trail (550'); and 2) A short greenway link from Red Oak Tree Dr via Southern Oaks Homeowner Association property to the Jeff Wells Trail (900') - a short bike/ped bridge would be needed for a creek crossing.
9	South Park	Construct a pedestrian hybrid beacon (PHB) or a traffic signal to create a pedestrian crossing at the S. Main St/ Buck Johnson St intersection. Fill the 300' sidewalk gap along the south side of Buck Johnson St between S. Main St and Awards St, linking this neighborhood to South Park.
10	Ballentine Elementary	*Construct a sidepath along Sunset Lake Rd to connect the Ballentine Elementary neighborhood toward Judd Pkwy and the center of Fuquay-Varina.
11	South Wake Academy	Construct a sidewalk along Old Powell Rd south from South Wake Academy to the existing sidewalks at Garrow Dr.

Map 14: Comprehensive Network: Additional Gaps Inside the 'Loop' (Judd Parkway)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD

N

0 0.25 0.5 MILES

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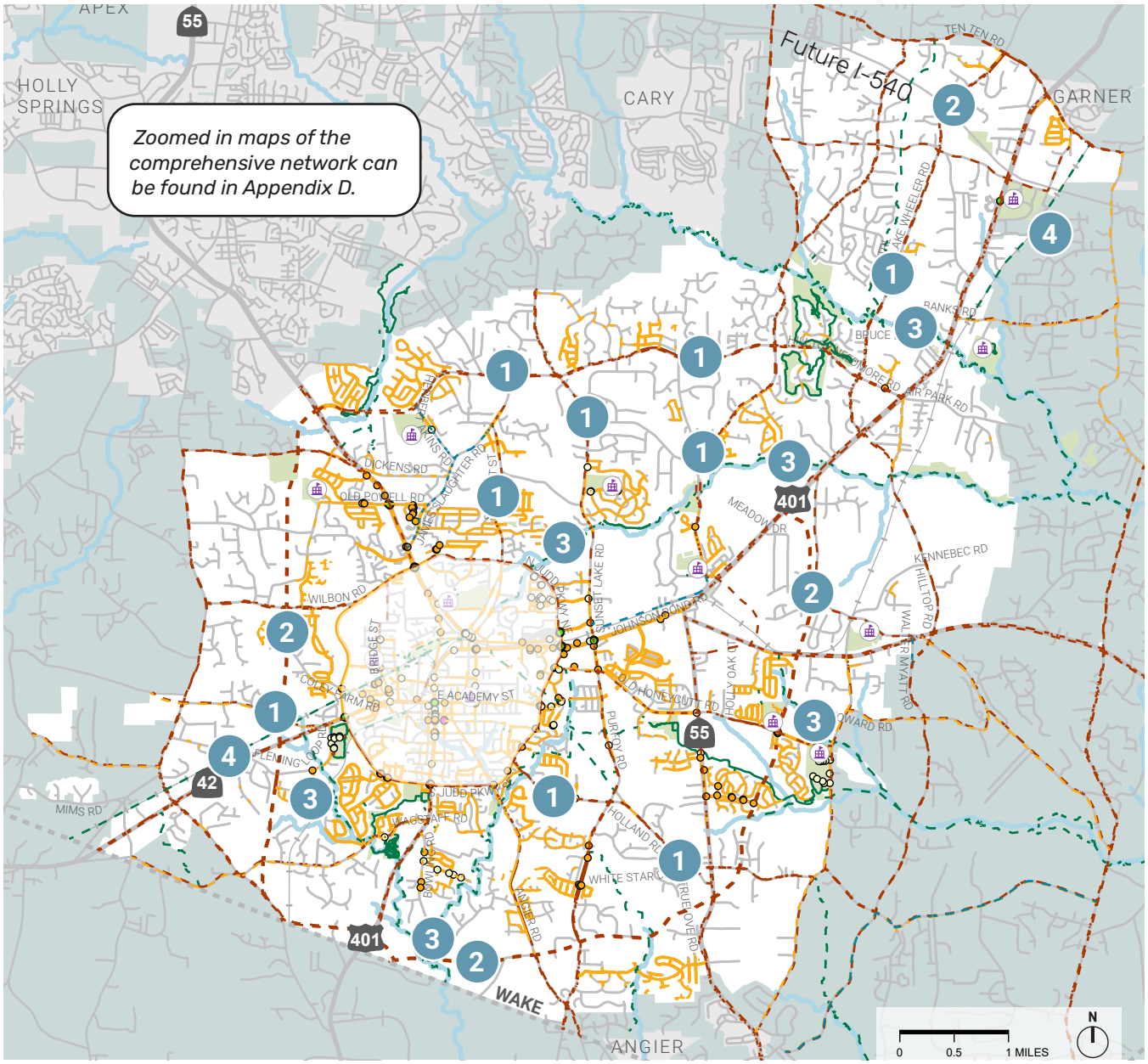
COMPREHENSIVE NETWORK: ADDITIONAL GAPS INSIDE THE 'LOOP' (JUDD PARKWAY)

In addition to the projects previously mentioned, there are several other important gaps in the pedestrian network that should be completed with pedestrian facilities when development or funding opportunities arise.

Map ID	Gap	*Recommendation Notes (*signifies a recommendation from the CTP)*
1	Angier Rd	*Angier Rd is a key missing link in the downtown area. Between Vance St and Spring St, Angier Rd is 32'-33', and a sidepath could be created along the east side of the street by narrowing the travel lanes to 10' each and creating a 3' buffer and 9'-10' sidepath within the existing pavement. Between Spring St and Holland Rd, the sidepath could be continued along the east side, although space between the roadway and houses becomes more constrained closer to Holland Rd. Southeast of Holland Rd, a sidepath along the east side of Angier Rd could be constructed in the vacant wooded space, with some boardwalk needed (and agreements with landowner needed).
2	NE Judd Pkwy	*This section of NE Judd Pkwy is the last section of the loop where pedestrian facilities are not found on either side. Development will likely occur along this section including roadway modifications, and sidepaths are required as part of any future project. A pedestrian crossing is recommended at the Powhatan Dr/Heatherly Ln intersection (signal or pedestrian hybrid beacon) with pedestrian facilities connecting the subdivisions to the north and south.
3	E. Vance St, S, Ennis St, Raleigh St, Sunset Dr, Woodland Dr, and other neighborhood connections	*A series of neighborhood streets are recommended to have sidewalks, but there are constraints such as narrow ROW, adjacent drainage, and narrow roadway pavement that make these streets challenging to retrofit. While sidewalks would be the ideal facility, traffic calming measures (especially to slow cut-through traffic on streets such as E Vance St and Sunset Dr), pedestrian in roadway signage, and advisory shoulders (for sections that have 20' width or more) should be considered in the short term.
4	Downtown Core connection undercrossing at Johnson St	*To connect the two downtown cores, an undercrossing (or overcrossing) of the railroad tracks connecting Fayetteville St and Johnson St would provide a safer and more direct crossing of the railroad tracks for pedestrians. Ideally, this project would be coupled with development opportunities on both sides of the tracks. A pedestrian hybrid beacon (or perhaps one continuous bridge) would need to be installed to cross N. Main St, upgrading the current midblock crosswalk 350' west of Johnson St. This project would need to be coupled with streetscape improvements along N. Main St to create more buffer space between the existing sidewalk and roadway.
5	Coley Farm Rd	The Currin Property development will construct sidewalk along the north side of Coley Farm Rd between Judd Pkwy and the closed crossing of the inactive railroad tracks. A sidewalk link and accessible ped/bike crossing of the railroad tracks should be constructed to connect to the existing sidewalks on Coley Farm Rd east of the railroad tracks. Construct a pedestrian crossing of Judd Pkwy and continued sidewalk connectivity west along Coley Farm Rd.
6	Bridge St	*Construct a sidepath along Bridge St to provide north/south connectivity between Judd Pkwy and the Lincoln Heights neighborhood, connecting to the newly completed sidewalks along Judd Pkwy.
7	Reynolds Dr	*Reynolds Dr is an unpaved, narrow, wooded, public road that makes a direct connection between the Dog Park and Mineral Spring Park. Wayfinding signage including pedestrian in roadway signage should be implemented to highlight this quiet street connection.
8	Holland Dr	*Holland Dr between Angier Rd and the existing sidewalks at Creekway Dr has constraints such as narrow ROW, adjacent drainage, and narrow roadway pavement that make these streets challenging to retrofit. Sidewalk construction is recommended and would require curb and gutter.
9	US 401/N. Main St	US 401/N. Main St between N. Ennis St and Judd Pkwy is currently complete with sidewalks along the south side of the corridor (north side is constrained by RR tracks). Because traffic volumes along this corridor drop along this section of US 401/N. Main St west of Judd Pkwy, and the five lane cross section drops to three lanes west of N. Ennis St, further study of this corridor should examine reconfiguring this corridor from five lanes to three, creating buffered bike lanes and consolidating driveways where possible along the corridor. This wouuld significantly improve pedestrian safety and comfort.

Map 15: Comprehensive Network: Additional Gaps Outside the 'Loop' (Judd Parkway)



EXISTING FACILITIES

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- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
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COMPREHENSIVE NETWORK: ADDITIONAL GAPS OUTSIDE THE 'LOOP' (JUDD PARKWAY)

In addition to the projects previously mentioned, there are several other important gaps in the pedestrian network that should be completed with pedestrian facilities when development or funding opportunities arise. The comprehensive network is the long-term vision for Fuquay-Varina's pedestrian network, and below are several key components. Zoom-in maps of the comprehensive network can be found in Appendix D.

1 Projects With Development

Several subdivisions outside of the Judd Pkwy loop are disconnected from the overall pedestrian network. As development continues at a rapid pace in Fuquay-Varina, these segments should be connected as development fills in the gaps. In locations where future development may not be slated to fill a gap, the Town should work to fill any remaining missing links.

2 Projects With New Roadway Construction

As Fuquay-Varina continues to grow, several roads are funded or proposed to be widened (or new construction). These are opportunities to incorporate sidepaths early into the roadway development process. This is typically significantly cheaper than retrofitting roads with complete streets infrastructure. Many new sidepath segments in Fuquay-Varina have been constructed in this manner.

As I-540 is constructed through the northeastern corner of Fuquay-Varina, space for pedestrian facilities should be incorporated into the design per this plan. Sidepaths are recommended on Bells Lake Rd, Johnson Pond Rd, Lake Wheeler Rd, and US 401 (where an interchange is planned).

3 Watershed Trails

Continue to work with developers, home owners associations, individual landowners, and others on incorporating greenways into site planning and development that occurs along riparian corridors (or former railroad corridors like Parker Station). These corridors tend to be areas with the most intact habitat cores, and should be preserved for not only transportation and recreation, but for the critical foundation of the environmental economy they serve. These can be paved or unpaved trails depending on the specific project and context.

4 Rail Trail or Rail-with-Trail

The Norfolk Southern railroad line that runs from downtown Varina and through the southwest side of Fuquay-Varina, is currently inactive. In this section of southwest Fuquay-Varina where pedestrian connectivity is hampered by this railroad corridor, utilizing this corridor for a walking/biking trail would provide immense value to the pedestrian network by separating trail users from roadway traffic and utilizing the relatively flat grade of the rail corridor to make a direct connection into downtown Varina (and improve connectivity to downtown Fuquay). See the following page for further detail on considerations for trails along railroad corridors.

RAIL TRAIL OR RAIL WITH TRAIL

The inactive Norfolk Southern railroad line could connect multiple neighborhoods, Action Park, the Dog Park, and Dr. William Freeman Park, along with connection opportunities near Lincoln Heights Elementary School as well as near Fleming Loop Park further to the southwest. Regionally, this can be a key connection opportunity between the heart of Fuquay-Varina and the proposed regional connection between the American Tobacco Trail and Raven Rock State Park. If implemented, this trail would become a key component of the local transportation network while also potentially serving as a local and regional destination trail.

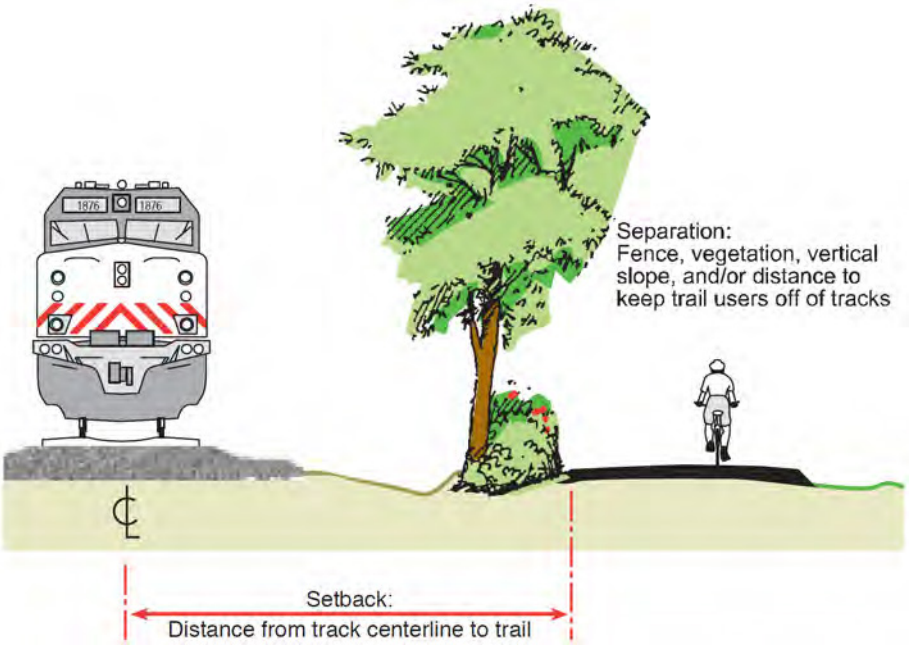
When examining trail development along this corridor, two options should be considered and would require an agreement with Norfolk Southern, the owner of the rail line.

Rail Trail

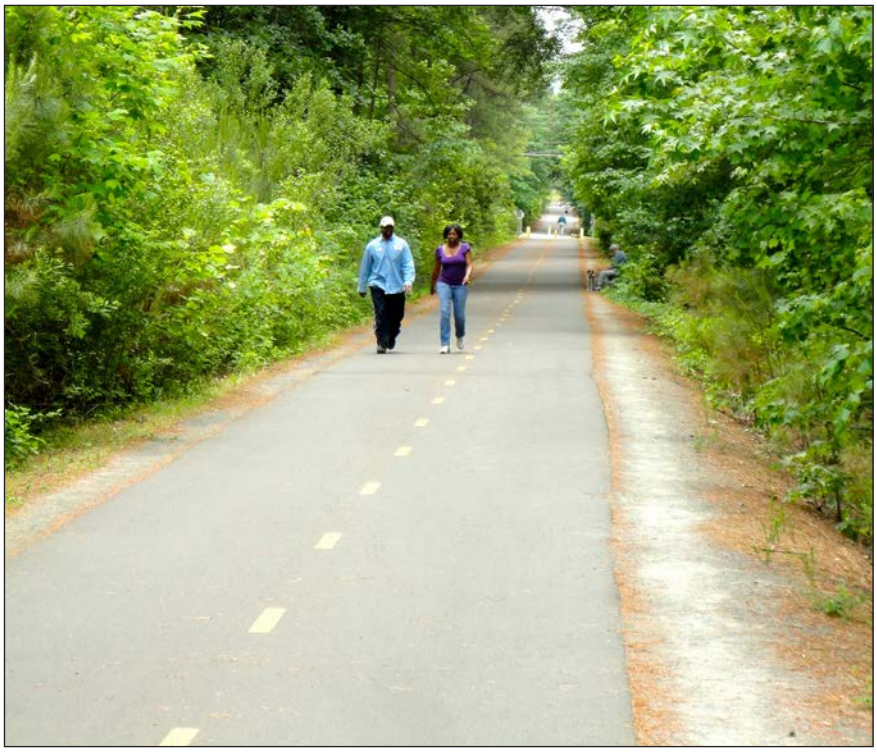
If rail service is not reactivated, a rail trail conversion would involve the removal of the existing railroad tracks and constructing a greenway on the center of the existing rail bed, similar to the nearby American Tobacco Trail or the Dunn-Erwin Rail Trail. The Federal Railbanking process can allow for this type of conversion if Norfolk Southern wanted to preserve the possibility of reinstating rail service in the future and maintain ownership of the line.

Rail with Trail

If rail service were to be reactivated, this option would entail developing a trail within the railroad ROW but separated and parallel to the existing railroad tracks. This could be accomplished whether or not rail service is activated in the future.



Left: From page 47 of the USDOT "Rails with Trails: Best Practices and Lessons Learned" (2021) report. Setback is the distance between the edge of a rail-with-trail and the centerline of the closest active railroad track. The range of setback on existing rails-with-trails varies considerably, from seven to 200 feet, with an average of approximately 32 feet (based on a sample size of 78). A comparison of rail-with-trail setback with both train speed and frequency reveals little correlation, with some trails reporting a narrow setback existing along high speed and frequently traveled rail lines.



Right: American Tobacco Trail (Rail Trail example)

Below: Rail with trail example from the USDOT "Rails with Trails: Best Practices and Lessons Learned" (2021) report.

Pine Creek Connector Trail alongside SEDA-COG Joint Rail Authority Tracks, Pennsylvania. (Photo courtesy of Simone Collins Landscape Architecture and American Engineers Group, LLC)

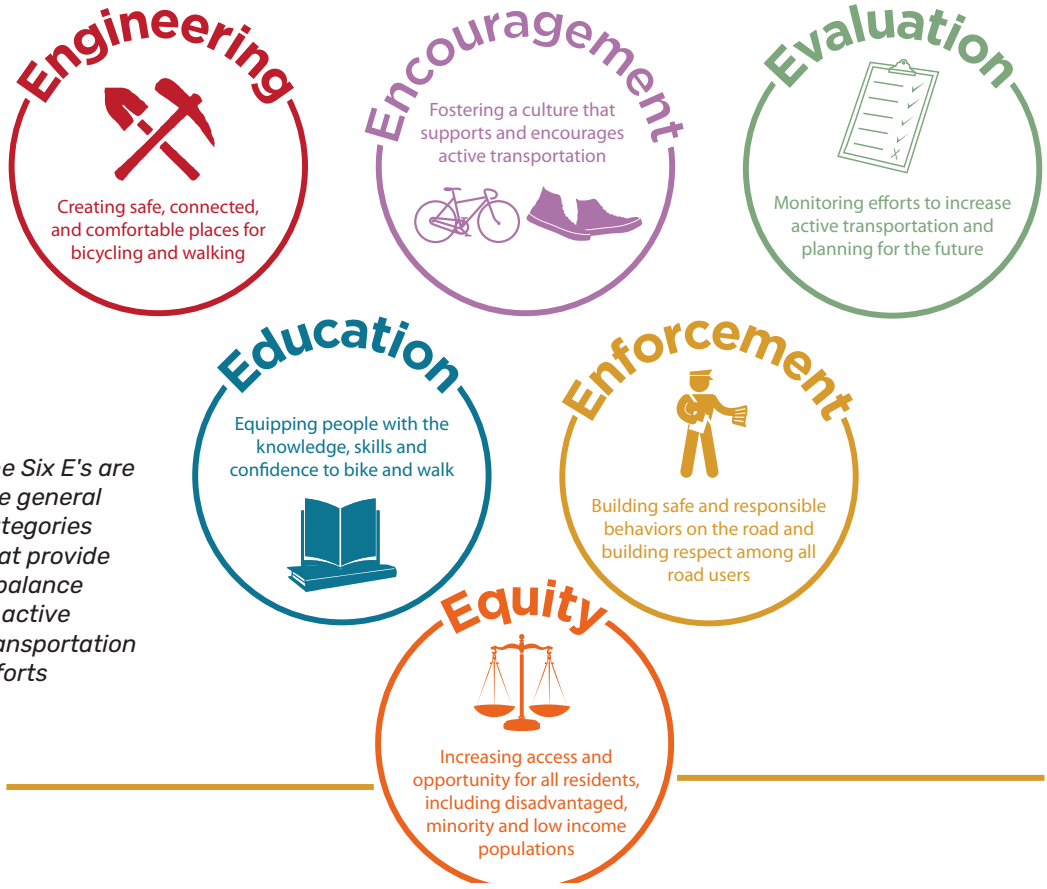
04.

Program & Policy Recommendations

Introduction

Program and policy recommendations are essential and complementary to the pedestrian infrastructure recommendations presented in the previous chapter. Throughout the planning process, several ideas for program and policy improvements were collected during public, stakeholder, and committee feedback. Program and Policy recommendations in this chapter include:

- Become Designated as a Walk Friendly Community
- Create and Adopt a Vision Zero Policy and Action Plan
- Safe Routes To Schools & Parks Action Plans
- Pedestrian & Bicycle Count Program
- Wayfinding
- Speed Management



The Six E's are the general categories that provide a balance of active transportation efforts

Become Designated as a Walk Friendly Community

Recommendation:

Apply to become designated as a Walk Friendly Community. The WFC program is a national recognition program developed to encourage communities to support safer walking environments as a local priority.

BACKGROUND

The program recognizes communities which have achieved high levels of walking and low rates of pedestrian crashes while also recognizing communities that are making progress in achieving these two goals through policies, projects and programs. The thorough and detailed application process is a key part of becoming more walk-friendly by:

- Building new local partnerships
- Collecting data for future planning efforts
- Documenting all local walking-related programs, projects, and policies
- Identifying areas of needed improvement
- Providing tools to develop specific solutions before the application is submitted
- Offering feedback and further suggestions to the community after application review
- Creating momentum for future projects

Preparing a WFC application requires a multi-faceted approach to collecting and presenting information about a community. The core of the application effort is completion of the WFC Assessment Tool which assesses the community in Engineering, Education, Encouragement, Enforcement, Evaluation, and Equity as well as other elements such as planning. These are the combination of criteria that best assist communities to become more walkable and to set clear goals and plans for achieving those goals. The tool is also designed to recognize that there are many different ways that communities achieve walkability and that every location is unique.

With this plan and its top recommendations completed, Fuquay-Varina should be in a position to apply for and receive recognition as a Walk Friendly Community.

Create and Adopt a Vision Zero Policy and Action Plan

Recommendation:

Create and adopt a Vision Zero policy and action plan in creating a formal program to eliminate all traffic deaths. Develop clear objectives and action items to achieve the goal. Prioritize safe street design to minimize the impact of human error on our roadways. Use education and enforcement strategies to supplement safe street design.

BACKGROUND

The Vision Zero philosophy rejects the notion that traffic fatalities are inevitable and proactively tries to keep people safe. Key tenets of the Vision Zero safe system approach are that design should seek to prevent crashes, and that we can always afford to take steps that save lives.

By incorporating pedestrian friendly polices into the Town Code and adhering to NCDOT's Complete Streets Policy, Fuquay-Varina has been taking important steps to making its streets safer for residents, and a Vision Zero policy and action plan will build on these efforts.

A Vision Zero policy and action plan would provide a framework for Town departments and community stakeholders to work together to eliminate traffic deaths.

A Vision Zero policy would be a long-term promise that this commitment would be at the forefront of all decisions made regarding transportation policy and projects going forward. The goal of zero deaths on the Town's roads is not one that will be accomplished in a few years. It will take a continuing effort by many stakeholders, including residents, to change the nature of the roadways and the culture of mobility in Fuquay-Varina. This ongoing effort will occur over decades, and the Town will need to become dedicated to making the changes necessary to achieve zero traffic deaths.

Traditional Road Safety Practices vs. Vision Zero Safe System Approach

Safe Routes To Schools & Parks Action Plans

Recommendation:

Develop action plans for active transportation connections to both schools and parks around Fuquay-Varina building off efforts such as the Lincoln Heights Safe Routes to School Action Plan as well as the priority recommendations in this pedestrian plan update.

BACKGROUND

Safe Routes to Schools and Parks enables and encourages children to walk and bike to schools and parks. These 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 and parks.

Both schools and parks are key local destinations with significant amounts of local travel (ie; shorter, walkable distances). If connected by all ages and abilities pedestrian infrastructure, they have the potential to influence a shift to more active modes of transportation.

Serving as 'mini' pedestrian/bicycle plans for each school/park, these planning processes could begin by incorporating the recommendations for the network updates from this plan, and further explore opportunities and challenges for infrastructure, programming, and policy. See the Safe Routes to Schools and Parks Projects in Chapter 3 as well as Priority Project #'s 1 and 3 in Chapter 3 of this plan for an example of potential connectivity improvements to multiple schools and parks in Fuquay-Varina.

Encouraging children to walk or bike to and from schools and parks is an easy and inexpensive solution. Following are suggestions on programmatic approaches to active transportation for students to schools/parks:

- If children live close enough and have a safe route, they can walk to school—walking with parents, friends or others in their neighborhood.
- Another option is a walking school bus, led by parents or school staff. Students can gather at a designated location and walk in a "bus" with a parent or other trusted adult leading the group to school in the morning and home again in the afternoon.
- For students who live too far away, a drop-off location within walking distance of the school can be used as the meeting location. Churches are often willing to host these meet-ups. The students would then walk together, preferably with an adult, to and from the school.
- National Walk to School Day: In partnerships with the National Center for Safe Routes to School organizes an annual Walk to School Day during the first week of Walk Month. Encourage parents and school officials to organize a walking school bus for parents at local schools and engage the next generation of bicyclists. Learn more and get tips at www.walkbiketoschool.org.

Many of these ideas and resources are both applicable to schools and parks connectivity as key destinations in Fuquay Varina.

Below are examples of recommendations from the Lincoln Heights Safe Routes to School Action Plan that could serve as a template for Safe Routes to Schools & Parks Plans in other locations of Fuquay-Varina.

WALKING SCHOOL BUS / BIKE TRAINS

Walking School Buses and Bike Trains let students walk or bicycle to school as a group, often with an adult volunteer. They may be daily, weekly, or monthly events.

Best Practice Programs:

- Pinehurst Elementary School in Pinehurst, NC, created a **Walking School Bus** that resulted in a 22% reduction in traffic.
- **Michigan's SRTS** program developed Walking School Bus volunteer resources, sample parent letters, and resources to help develop a route.
- Santa Clarita, CA, SRTS developed a **Walking School Bus Training Guidebook** to help parents form walking school buses.
- Tampa Bay, FL, Washington, DC, Denver, CO, and Portland, OR, participated in a **Bike Train Webinar**.

Suggested Lead Agency:

- Lincoln Heights SRTS Task Force

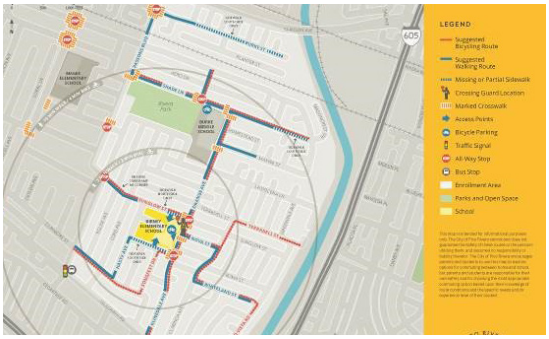
Cost: $-$$

SUGGESTED ROUTE TO SCHOOL MAPS

Suggested route maps show existing sidewalks, trails, bikeways, crossing guards, and traffic control to help parents find the best walking and biking routes to school. An example and template for Lincoln Heights can be found on page 4-16. Involving students in the development of personal maps is recommended.

Best Practice Programs:

- The **Institute of Transportation Engineers (ITE)** has a white paper on School Route Maps.
- Washington State **requires school districts** to develop suggested route maps for all elementary schools.
- Davis, CA, developed user-friendly **Suggested Route Maps** that include walking times and bicycle parking.



Suggested Lead Agency:

- Lincoln Heights SRTS Task Force

Cost: $-$$

Pedestrian & Bicycle Count Program

Recommendation:

Fuquay-Varina should begin the collection of bike/ped count data utilizing permanent counters and/or various technologies available that can enable the Town to evaluate trends, such as increase/decrease in usage, peak travel periods, and high activity locations. Better data on pedestrian and bicycle travel can help to determine where investments are most needed. It also helps in quantifying the benefits of walking and biking. Ultimately, better data will make active transportation projects more competitive for funding opportunities.

BACKGROUND

Determine the appropriate counter technology for Fuquay-Varina based on feasibility and available funding. The following study, completed by NCDOT in 2021, provides in-depth information on current technologies available. *NCDOT's State-of-the-Art Approaches to Bicycle and Pedestrian Counters* provides great detail on different counting technology. Fuquay-Varina should review this report and consult Town Information Technology staff on potential options.

Table 43. Qualitative Cost-Benefit Analysis of the Technologies Tested

Product	Technology	Mode	Benefits		Costs		Benefit-Cost Ratio (BCR)
			Accuracy	Quality of Software Tools	Installation Difficulty	Equipment or Service Cost	
Eco-Counter MULTI System	Passive Infrared	Pedestrian	High	High	Acceptable	High	Acceptable
Eco-Counter MULTI System	Inductive Loop	Bicycle	High	High	Acceptable	High	Acceptable
TRAFx Trail Counter	Passive Infrared	All Modes Combined	Acceptable	High	Very Low	Low	High
MetroCount RidePod BP	Piezoelectric	Pedestrian	Very High	Low	Very High	Low	Acceptable
MetroCount RidePod BP	Piezoelectric	Bicycle	Very High	Low	Very High	Low	Acceptable
MetroCount RidePod BT	Pneumatic Tube	Bicycle	Very High	Low	Low	Low	Very High
Miovision Scout	Standard Video with Algorithm Processing	Pedestrian	High	High	Low	Very High	Acceptable
Miovision Scout	Standard Video with Algorithm Processing	Bicycle	High	High	Low	Very High	Acceptable
Eco-Counter CITIX 3D	Depth Camera	Pedestrian	Very Low	Acceptable	Very High	Very High	Very Low
Eco-Counter CITIX 3D	Depth Camera	Bicycle	Very Low	Acceptable	Very High	Very High	Very Low

State-of-the-Art Approaches to Bicycle and Pedestrian Counters by NCDOT (2021) with NCSU Institute for Transportation Research and Education (ITRE) and Department of Parks, Recreation, and Tourism Management. The above summary chart is from page 65 of the report.

Wayfinding

Recommendation:

Create and implement a pedestrian wayfinding scheme that can be incorporated into the Town's current wayfinding signage.

BACKGROUND

The ability to navigate across a community is informed by landmarks, natural features, and other visual cues. Pedestrian signage throughout Fuquay-Varina should indicate the direction of travel, the locations and travel time distances to those destinations. A pedestrian wayfinding system is similar to a transit, vehicular, or bike facility wayfinding system, in that it consists of comprehensive signage and/or pavement markings to guide pedestrians to their destination along routes that are safe, comfortable and attractive.

TYPICAL APPLICATION

- Signage can serve both wayfinding and safety purposes including:
  - » Helping to familiarize users with the pedestrian network
  - » Helping users identify the best routes to destinations within walking distance or connections to other modes.
  - » Helping to address mis-perceptions about time and distance.
  - » Helping overcome a "barrier to entry" for people who are not frequent walkers.

DESIGN FEATURES

- Confirmation signs indicate to pedestrians that they are on the right path to their destinations. They include destinations and distance/time, but not arrows
- Turn signs indicate where a route turns from one street onto another street.
- Decision signs indicate the junction of two or more pedestrian routes to access key destinations. These include destinations, arrows, distances, and travel times.

Above: Existing interactive kiosk map in downtown Fuquay

Speed Management

Recommendation:

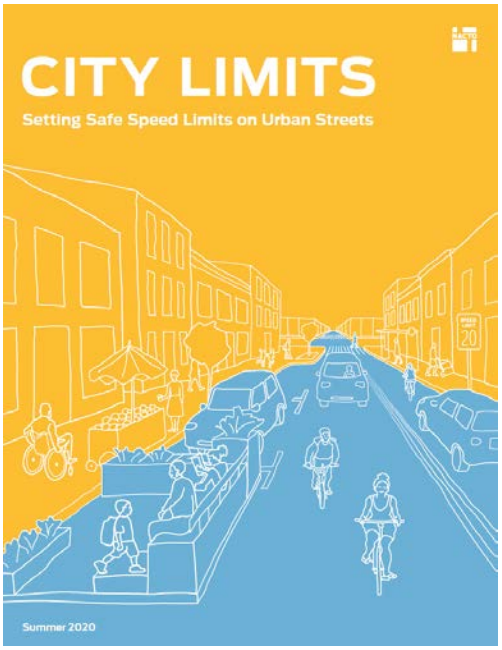
On major streets, where conditions vary widely, cities can conduct a Safe Speed Study to determine the safest maximum speed limit (see page 43 of the NACTO City Limits guide). In urban areas, a Safe Speed Study will most often result in a recommended maximum speed limit of 20 or 25 mph for major streets.

For streets that have well-protected places for people to walk and bike, and that are in low density areas with primarily manufacturing and residential uses, cities may find that a 30 or even 35 mph speed limit is appropriate. However, these higher speed limits should be used sparingly and only in cases where safe conditions can be met.

NACTO GUIDANCE FOR SPEED MANAGEMENT

The National Association of City Transportation Officials (NACTO) created a guide on speed limits. The document succinctly outlines why communities may want to revisit their speed limits, how to go about making changes, and what is recommended based on context and goals.

More on these tactics can be found in the NACTO City Limits guide pictured below.



TRAFFIC CALMING MEASURES

There are three general types of speed reduction measures:

- Physical measures such as vertical deflections, horizontal shifts, and roadway narrowing intended to reduce speed and enhance the street environment for non-motorists.
- Nonphysical measures using signs and markings are intended to raise awareness and reduce speed through visual indications.
- Diversion treatments reduce cut-through traffic by obstructing or otherwise preventing traffic movements in one or more directions.

Speed management can also enhance pedestrian safety in Fuquay-Varina's downtown cores. Refer to the *Transitions to Main Streets* section in *FHWA Achieving Multimodal Networks 2016* for more information on applying traffic calming in advance of built-up areas.

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05.

Implementation

Introduction

The infrastructure, policy, and program recommendations in previous chapters provide strategies for making Fuquay-Varina more pedestrian friendly. The purpose of this chapter is to provide guidance and action steps for implementing the recommendations.

The implementation of this plan will require leadership and dedication to pedestrian facility and program development on the part of a variety of town departments and partners. Equally critical, and perhaps more challenging, will be growing the annual budget for pedestrian projects, and pursing grants to the extent possible. Success will be realized through collaboration with regional and state agencies, the private sector, and non-profit organizations.

This chapter provides the necessary steps and guidance for delivering the recommendations of this plan. Additionally, further guidance on project delivery, maintenance, partnerships, funding, investment approach, and evaluation are provided.

This plan provides both near term and long term recommendations for improving conditions for walking in Fuquay-Varina. This plan will be implemented incrementally over the coming years.

Left: The western leg of Judd Pkwy was constructed during the past decade, and the project included Complete Street elements, including sidewalks and bike lanes.

KEY IMPLEMENTATION STEPS:

1 KEEP MOMENTUM ON PEDESTRIAN PROJECTS THAT ARE ALREADY IN-DEVELOPMENT.

Map 11 features existing facilities along with projects that have some level of funding, design, or construction in progress. These "in development" projects should be fully funded first (note - some of these projects are fully funded), as the lowest hanging fruit for new pedestrian infrastructure.

2 STRATEGICALLY AND PROACTIVELY FUND AND BUILD THE PRIORITY PROJECTS.

Map 12 features priority projects developed out of this planning process and previous planning processes. The priority projects are displayed in six project sheets (starting on page 56) that summarize elements, and what the key opportunities and challenges are to its development.

3 USE THE COMPREHENSIVE NETWORK OF RECOMMENDATIONS TO BUILD OTHER PROJECTS INCREMENTALLY OVER TIME.

As Fuquay-Varina continues to grow, new development and roadway projects should incorporate facilities recommended in the overall pedestrian network (Map 11 & Appendix D). As progress is made on the priority projects, new priorities should be selected from comprehensive recommendations.

4 IMPLEMENT NEW PROGRAMS AND POLICIES THAT SUPPORT AND ENCOURAGE WALKING.

As new facilities are built, the programmatic and policy recommendations provide parallel efforts in fostering a thoroughly walkable environment for all ages and abilities in Fuquay-Varina.

Together, these recommendations make up the core of this plan, as featured in Chapters 3 & 4. They are supplemented by implementation guidance in this chapter, design resources in Appendix A, and funding resources in Appendix B.

Photo of Mineral Spring Park

How to Use This Plan

At the heart of every successful pedestrian plan is a coordinated effort by town staff and other partners to support safe travel on foot. Everyone has a key role to play in implementing this plan. Town of Fuquay-Varina staff and elected/appointed officials should use this report to establish programs and policies that educate, encourage, and prioritize infrastructure investments proposed throughout the town.

Town of Fuquay-Varina

Town staff can use this report to document travel behaviors, existing roadway design deficiencies, and specific improvement opportunities. Continuing to coordinate with developers and NCDOT will be key to implementing pedestrian facilities. This plan provides documentation and recommendations to refer to in shaping development or NCDOT projects and activities.

NCDOT

NCDOT staff, specifically within Division 5, can use this plan to get familiar with proposed priority projects. NCDOT will play an integral role in the design, construction, and maintenance of pedestrian facilities throughout the NCDOT maintained roadways. During the project scoping process, the Town and CAMPO can communicate with NCDOT personnel to affect how STIP projects are formulated and designed.

Developers

As development continues at a rapid pace, walkability could and should be thoroughly incorporated into each site design. Much of the growth in pedestrian facilities over the past decade has been the result of Town policy and the development community incorporating walkability into site planning.

Local Stakeholders

Local stakeholders can use this plan to understand and confirm the conditions in their neighborhoods and near their organizations (if applicable) as well as become familiar with the ways in which they can support program goals. In many cases, education and encouragement programs require these dedicated volunteers. Local stakeholders can also provide input on NCDOT processes and projects.

IMPLEMENTATION ACTION STEPS

The following represent key, immediate action steps for Fuquay-Varina and its partners:

Adopt This Plan

Adoption does not obligate the Town financially, but signals an intent to support the vision, goals, and recommendations of this plan in the coming years and decades.

Amend CTP

Referencing facility recommendations from this plan will ensure projects that are implemented by NCDOT will not require a cost share from the Town, per the NCDOT Complete Streets Policy.

Develop a CIP and Allocate Funding

The Town Board of Commissioners should develop a CIP that includes a ranking of the priority projects identified in this plan and allocate resources for implementation.

Seek Multiple Funding Sources and begin the Design Stage

Priority project sheets contain cost estimates and potential additional funding opportunities are listed in Appendix B. Seek private partnerships with local businesses to aid in raising funds for grants that require a match. Completing or at least initiating the design phase for these projects will make them more competitive in grant applications such as CAMPO's LAPP process.

Continue Coordinating with Developers and NCDOT

Continue coordinating with developers on pedestrian infrastructure circulation within and to/from new developments. As roads are improved or newly constructed, continue coordinating with NCDOT on implementing Complete Streets. With the I-540 construction coming through the northeast corner of Fuquay-Varina, ensure pedestrian facilities that intersect with the I-540 corridor are accommodated during the construction of I-540.

Engage New Programs & Policies

Program and policy recommendations can be found in Chapter 4. Planning staff and partner departments should work together to move program and policy recommendations forward.

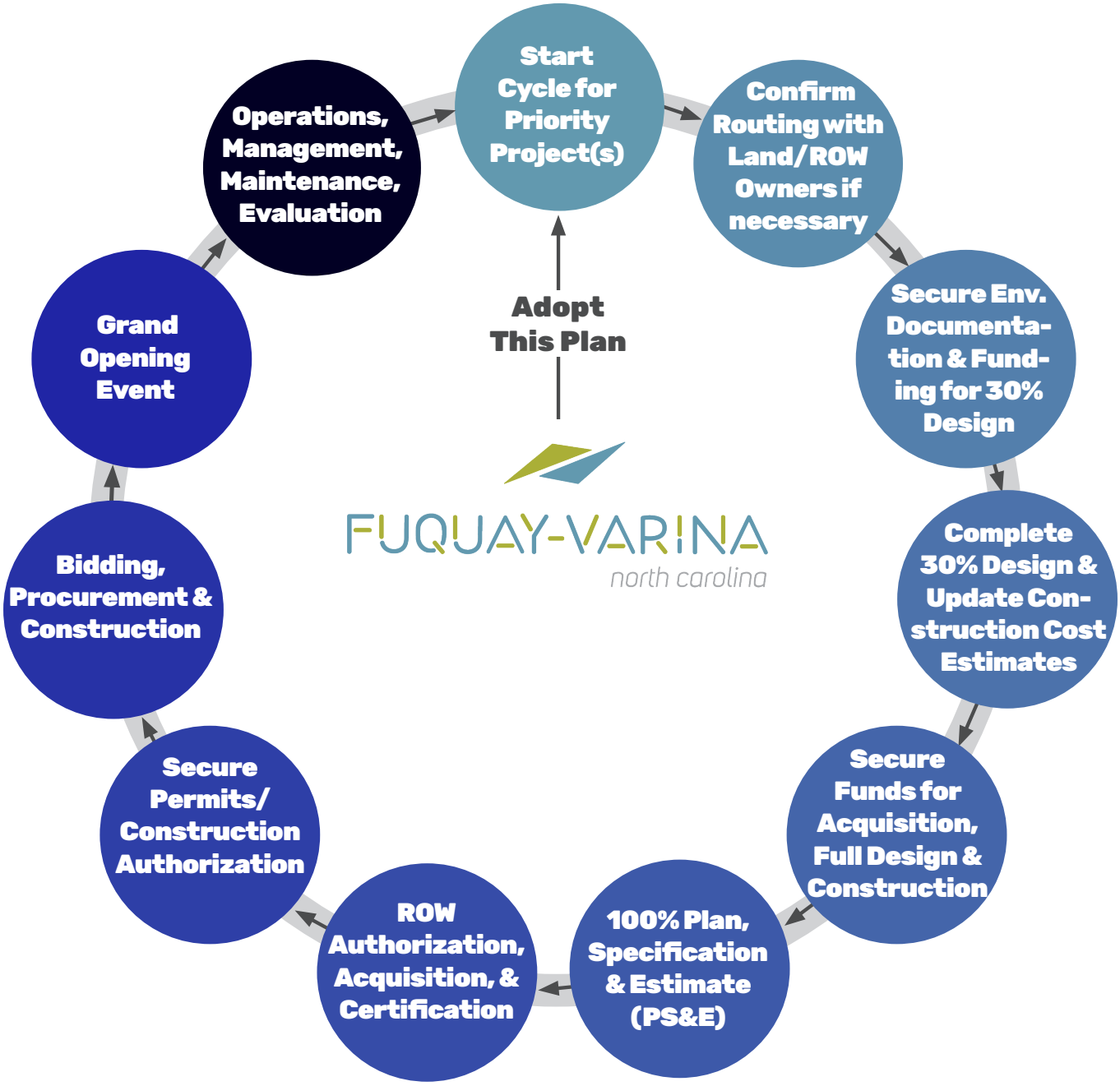
Begin Work on Infrastructure Projects

The implementation of pedestrian infrastructure projects will take time and will happen through multiple mechanisms including the NCDOT SPOT process, Fuquay-Varina's CIP, CAMPO's LAPP process, land and roadway development, and park and open space development. Because infrastructure is the high dollar item of this plan, Fuquay-Varina should consider expanding upon their current revenue stream for local match or standalone projects.

To be competitive in CAMPO's LAPP process, creating shovel ready projects (projects that have design completed) is very important. The graphic on the following page highlights some of the key steps in the project implementation process.

TYPICAL PROJECT DEVELOPMENT PROCESS

These are the steps typically involved in pedestrian facility development, when the project is being built independent of other major development or roadway projects. Certain funding sources may have additional requirements, and some steps may occur simultaneously or in a different order.



KEY PARTNERS IN IMPLEMENTATION

Role of the Board of Commissioners

The Board of Commissioners should be responsible for understanding and adopting this plan. The Board will ultimately determine the timing of action steps, and dedication of resources to implement this plan.

Role of the Planning Board

The Planning Board serves as an advisory board to the Board of Commissioners on matters of planning and zoning. The Planning Board should be prepared to:

- Become familiar with the recommendations of this plan, and support its implementation.
- During subdivision plan review, ensure required space for recommended infrastructure projects if applicable.
- Include pedestrian infrastructure needs when updating ordinances.
- Learn about bicycle- and pedestrian-related policies in North Carolina. (see: https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx)

Role of the Local NCDOT Division 5

Division 5 of the NCDOT is responsible for the construction and maintenance of pedestrian and bicycle facilities on NCDOT-owned and maintained roadways in Fuquay-Varina, or is expected to allow for the municipalities to do so with encroachment agreements. Fuquay-Varina should be proactive and take the lead in communicating with and working with Division 5, but Division 5 should also be prepared to do the following, as they are able:

- Recognize this plan as not only an adopted plan of Fuquay-Varina, but also as an approved plan of the NCDOT.
- 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 design guidance listed in Appendix A of this plan; construct and maintain recommended facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial basis).
- Notify Fuquay-Varina staff of all upcoming roadway reconstruction projects in Fuquay-Varina, no later than the design phase. Provide sufficient time for comments from Town staff.
- If needed, seek guidance and direction from the NCDOT Integrated Mobility Division on issues related to this plan and its implementation.

Role of The Police Department

The Fuquay-Varina Police Department should be prepared to:

- Become experts on pedestrian-and bicycle related laws in North Carolina (see: https://www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx).
- Continue to enforce not only pedestrian- and bicycle-related laws, but also motorist laws that affect walking and bicycling, such as speeding, running red lights, aggressive driving, etc.
- Participate in pedestrian- and bicycle-related education programs (excellent existing program example: the Police Department is currently involved in the Watch for Me NC education and encouragement program).
- Review safety considerations as projects are implemented.

Role of Developers

Developers in Fuquay-Varina are currently playing an important role in pedestrian facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of sidewalks, sidepaths, greenways, or crossing facilities. In general, 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.

- Be prepared to account for pedestrian and bicycle circulation and connectivity in developments.

Role of Local & Regional Stakeholders

Stakeholders for pedestrian facility development and related programs, such as Wake County, CAMPO, the Triangle Trails Initiative, members of this steering committee, and other local 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 Fuquay-Varina for implementation, specifically in relation to funding opportunities, such as grant writing and developing local matches for facility construction.
- CAMPO should continue to work with Fuquay-Varina on submitting pedestrian and bicycle infrastructure projects for evaluation within the State Transportation Improvement Program (STIP).
- Business owners and organizations should look for opportunities to partner on specific projects, such as trail connectivity, streetscape improvements, or comprehensive signage and wayfinding projects.

Role of Local Residents, Clubs and Advocacy Groups

Local residents, clubs, and advocacy groups also play a role in the success of this plan. Examples include:

- Providing input regarding pedestrian issues.
- Volunteering for pedestrian-related events and educational activities and/or to participate in such activities.
- Encouraging people to speak at Board of Commissioner meetings and advocate for local pedestrian and bicycle project and program funding.
- Fundraising for project implementation.

Role of Volunteers

Services from volunteers, students, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as adopt-a-trail/greenway or adopt-a-highway can be used to provide a regulated service agreement with volunteers.

Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride and personal connections to Fuquay-Varina's walking network.

The Triangle Trails Initiative is a key regional partner that will assist in establishing support for regional trail development.

PERFORMANCE MEASURES (EVALUATION AND MONITORING)

Fuquay-Varina should establish performance measures to benchmark progress towards fulfilling the recommendations of this plan. The Town should present these performance measures in an annual evaluation update. Performance measures could address the following aspects of pedestrian transportation and recreation in Fuquay-Varina:

- Safety. Measures of pedestrian-related crashes and injuries.
- Facilities. Measures of how many pedestrian facilities have been funded and constructed since the plan's adoption.
- Maintenance. Measures of existing sidewalk/crosswalk or trail deficiency or maintenance needs.
- Counts. Measures of pedestrian traffic at specific locations.
- Education, Encouragement and Enforcement. Measures of the number of people who have participated in part of a pedestrian-related program since the plan's adoption.

MAINTENANCE

The physical condition of walking facilities is a key aspect that will influence an individual's choice to walk.

Continuing a maintenance management plan will be useful in ensuring that responsibility is assigned appropriately and that regular maintenance is done. The following recommendations provide a menu of considerations that can help guide continued facility maintenance in Fuquay-Varina.

Pedestrian facilities should be viewed and maintained as a public resource, serving generations to come. The following guiding principles will help assure the preservation of a first class system:

- Good maintenance begins with sound planning and design.
- Promote and maintain a quality outdoor recreation and transportation experience.
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.
- Maintain quality control and conduct regular inspections.
- Include field crews, police and fire/rescue personnel in both the design review and on-going management process.
- Maintain an effective, responsive public feedback system and promote public participation.
- Be a good neighbor to adjacent properties.
- Operate a cost-effective program with sustainable funding sources.

Facility Repair or Replacement

All facilities will require repair or replacement at one time or another. The time between observation and repair/replacement will depend on whether the needed repair is deemed a hazard, to what degree the needed repair will affect the safety of the user, and whether the needed repair can be performed by an in-house maintenance crew or if it is so extensive that the needed repair must be done by outside entities or replaced completely.

Longevity of Facilities

- **Mulch** **2-3 years**
- **Granular Stone** **7-10 years**
- **Asphalt** **7-15 years**
- **Concrete** **20+ years**
- **Boardwalk** **7-10 years**
- **Bridge/Underpass** **100+ years**

Range of Trail Maintenance Costs

Reported annual maintenance costs from cities and regions for greenways range widely, from just $500/mile to over $15,000/mile. The Town of Cary, NC uses $6,000/mile for annual mowing and trash pick up, and minor repairs like replacing a fence rail; they budget asphalt and drainage repairs separately on case by case basis. Some key factors affecting these wide ranges include:

- Quality of materials used, and frequency of sealing and reconstruction of the path
- Amount of leaf drop affecting the trail that requires concentrated sweeping
- Amount of flooding of the trail that has to be cleaned up
- Amount of snow removal/grooming needed
- Whether or not mowing, irrigation, and other care of adjacent open space is calculated in the cost
- Presence of waste receptacles

The largest factor affecting the annual maintenance figures is whether or not the eventual trail reconstruction is accounted for in annual maintenance budgets, as opposed to being considered as separate capital item.

A.

Appendix A: Design Resources

General Guidance Resources

OVERVIEW

This toolbox presents guidance for local agency staff, transportation practitioners, elected officials and community advocates to improve the walkability of Fuquay-Varina and create more comfortable streets for pedestrians of all ages and abilities. Planners and project designers should refer to these guidelines in developing the infrastructure projects recommended by this plan, but they should not be used as the sole reference for any detailed engineering design.

As a starting point, the following list of resources are from the NCDOT website, for "Bicycle & Pedestrian Project Development & Design Guidance", located here (resources listed are linked through this page; Last retrieved in December 2021):

https://connect.ncdot.gov/projects/BikePed/Pages/Guidance.aspx

NORTH CAROLINA GUIDELINES

North Carolina Department of Transportation (NCDOT):

- WalkBikeNC: Statewide Pedestrian & Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Complete Streets
- Evaluating Temporary Accommodations for Pedestrians
- NC Local Programs Handbook
- Traditional Neighborhood Development Guidelines

Greenway Construction Standards:

- Greenway Standards Summary Memo
- Design Issues Summary
- Greenway Design Guidelines Value Engineering Report
- Summary of Recommendations
- Minimum Pavement Design Recommendations for Greenways
- Steps to Construct a Greenway or Shared-Use Trail

NATIONAL GUIDELINES

Rails-to-Trails Conservancy:

- General Design Guidance: *https://www.railstotrails.org/build-trails/trail-building-toolbox/*
- Rails-with-Trails: *https://www.railstotrails.org/resource-library/resources/americas-rails-with-trails/*

American Association of State Highway and Transportation Officials (AASHTO):

- Guide for the Development of Bicycle Facilities
- Guide for the Planning, Design, and Operation of Pedestrian Facilities

The Federal Highway Administration (FHWA):

- Accessibility Guidance
- Design Guidance
- Facility Design
- Facility Operations

Manual on Uniform Traffic Control Devices (MUTCD):

- Part 4E: Pedestrian Control Features
- Part 7: Traffic Controls for School Areas
- Part 9: Traffic Controls for Bicycle Facilities

National Association of City Transportation Officials (NACTO):

- Urban Bikeway Design Guide
- Urban Street Design Guide

Safe Routes to School (SRTS) Non-Infrastructure:

- National Center for Safe Routes to School
- National Partnership for Safe Routes to School

US Access board:

- ABA Accessibility Standards
- ADA Accessibility Guidelines
- ADA Accessibility Standards
- Public Rights-of-Way Accessibility Guidelines (PROWAG) (Streets & Sidewalks, and Shared Use Paths)

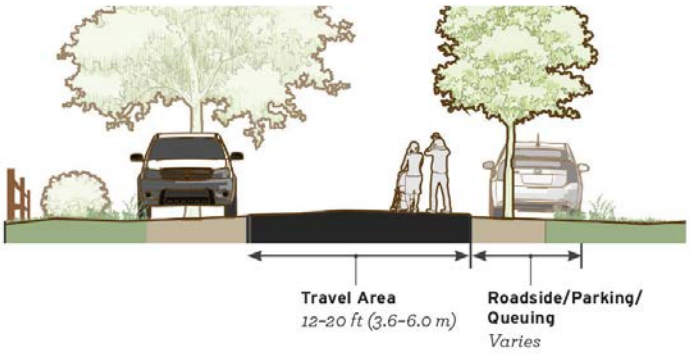
Additional FHWA resources not currently linked through the main NCDOT link above:

- Achieving Multimodal Networks (2016): *https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/*
- Small Town and Rural Multimodal Networks Design Guide (2017)
  - » Main Guide: *https://ruraldesignguide.com/*
- Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018): *https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf*

Yield Roadway Recommendations

Yield roadways can effectively serve local travel needs, maintain aesthetic preferences, and is a common form for low-volume local roads. When operating at very-low volumes and at low speeds, pedestrians are comfortable walking within the travel area of the roadway.

Yield roadways are designed with narrow roadway dimensions to prioritize local access and community livability.



No markings are necessary to implement a yield roadway.

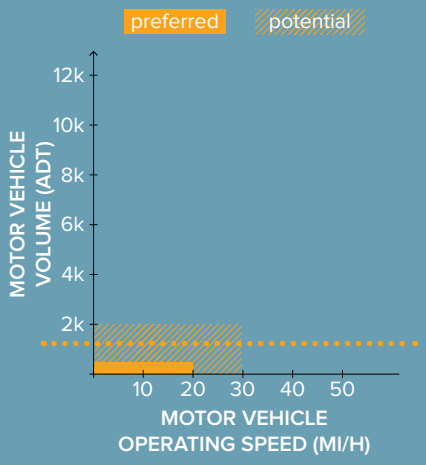
- Do not mark a center line within the travel area. The single two-way lane introduces helpful traffic friction and ambiguity, contributing to a slow speed operating environment.

Use signs to warn road users of the special characteristics of the street. Potential signs include:

- A PEDESTRIAN (W11-2) warning sign with ON ROADWAY legend plaque.
- Use a Two-Way Traffic warning sign (W6-3) to clarify two-way operation of the road if any confusion exists.

Application

Speed and Volume

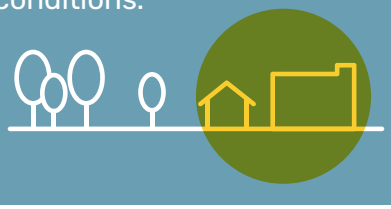


Network

Local Residential roadways. Not for through motor vehicle travel.

Land Use

Within built up areas, particularly near residential land uses where most traffic is familiar with prevailing road conditions.



Note - Yield roadways are not specifically identified in the comprehensive network recommendations. Both yield roadways and advisory shoulders can be helpful treatments in situations where there may be major constraints (physically or financially) in implementing a better facility (ie: sidewalk). Yield roadways and advisory shoulders, in the appropriate context, can be utilized as nearer-term treatments to tilt a particular roadway toward a more pedestrian friendly environment.

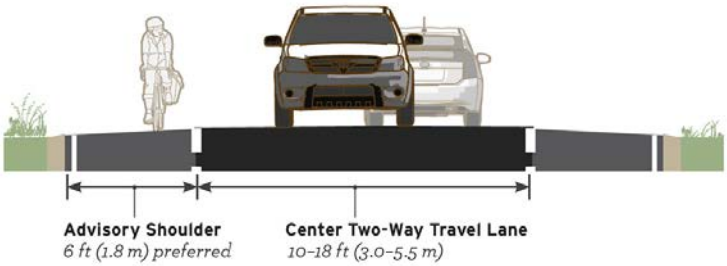
Diagram of a Yield Roadway from the FHWA Small Town and Rural Multimodal Networks document. Details about yield roadways and similar facilities can be found here: http://ruraldesignguide.com/

A PEDESTRIAN (MUTCD sign W11-2) warning sign with ON ROADWAY legend plaque.

Use a Two-Way Traffic warning sign (MUTCD sign W6-3) to clarify two-way operation of the road if any confusion exists.

Advisory Shoulder Recommendations

Advisory shoulders clarify positioning and yield priority on roads too narrow to provide exclusive travel space. When pedestrians or bicyclists are present, motorists may need to yield to users present in the advisory shoulder before passing.



ADVISORY SHOULDER

The advisory shoulder space is a visually distinct area on the edge of the roadway, offering a prioritized space for people to walk (and bike).

- The preferred width of the advisory shoulder space is 6 ft (2.0 m). Absolute minimum width is 4 ft (1.2 m) when no curb and gutter is present.
- Consider using contrasting paving materials between the advisory shoulder and center travel lane to differentiate the advisory shoulder from the center two-way travel lane in order to minimize unnecessary encroachment and reduce regular straddling of the advisory shoulder striping.

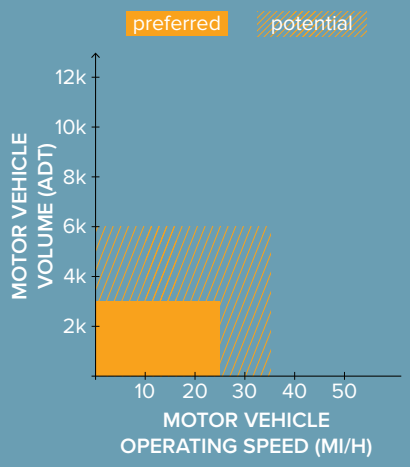
TWO-WAY CENTER TRAVEL LANE

The two-way center travel lane is created from the remaining paved roadway space after the advisory shoulder has been accounted for.

- Preferred two-way center travel lane width is 13.5–16 ft (4.1–4.9 m) although may function with widths of 10–18 ft (3.0–5.5 m). See the table on the following page that describes the impacts of various center lane widths on roadway operations.

Application

Speed and Volume



Network

Applies to constrained connections between built up areas.

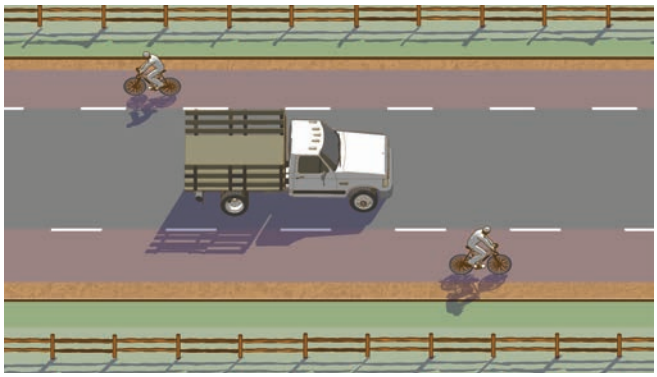
Land Use

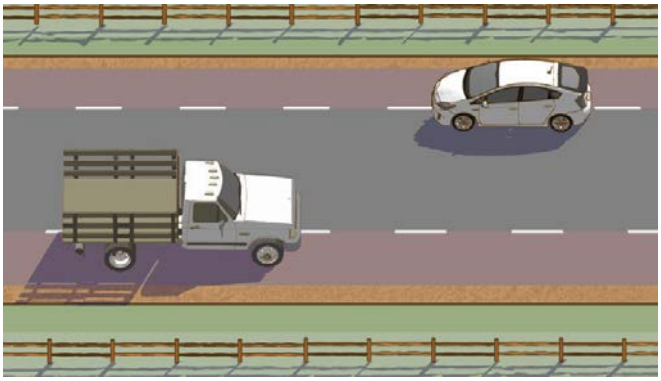
For use outside, between, and within built up areas with bicycle and pedestrian demand and limited available paved roadway surfaces.

Note - Advisory shoulders are not specifically identified in the comprehensive network recommendations. Both yield roadways and advisory shoulders can be helpful treatments in situations where there may be major constraints (physically or financially) in implementing a better facility (ie: sidewalk). Yield roadways and advisory shoulders, in the appropriate context, can be utilized as nearer-term treatments to tilt a particular roadway toward a more pedestrian friendly environment.

Advisory shoulder designs work best on road segments without frequent stop or signal controlled intersections that require vehicles to stop within the roadway. The designer should strive to maintain the visual definition of the advisory shoulder through all driveways and street crossings, and provide a conventional shoulder at controlled intersections.

An approved Request to Experiment is required to implement Advisory Shoulders, called "dashed bicycle lanes" in the FHWA experimentation process. For more information on the experimentation process, visit http://mutcd.fhwa.dot.gov/.

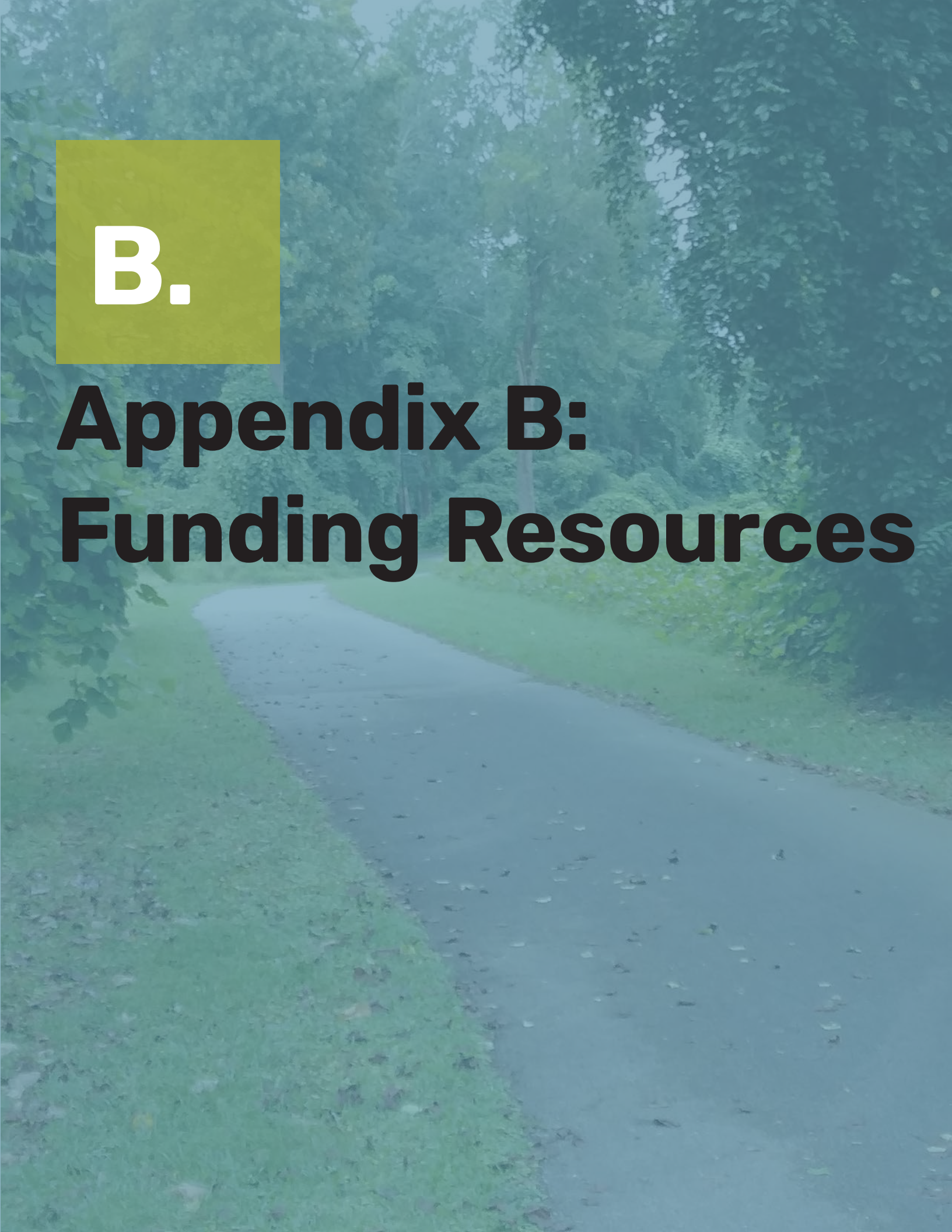




Interactions when vehicles traveling in opposite directions meet by two-way center turn lane width.

	Two-Way Center Travel Lane Width	Impact on Advisory Shoulder Encroachment When Vehicles Traveling in Opposite Directions Meet
Practical minimum width	10 ft (3.0 m)	Requires vehicle encroachment into the advisory shoulder space when vehicles traveling in opposite directions meet.
Preferred minimum width	13.5 ft (4.5 m)	Two passenger cars are physically able to meet each other within the center lane at very low speed. In practice, vehicles will encroach into the advisory shoulder.
Preferred maximum width	16 ft (4.9 m)	Permits two passenger cars to pass within the center lane at modest speeds without encroaching into the advisory shoulder.
Absolute maximum width	18 ft (5.5 m)	This width is equivalent to two 9 ft (2.7 m) travel lanes and regular encroachment into the advisory shoulder space may not be necessary.

Further information on Advisory Shoulders can be found in the FHWA Small Town and Rural Multimodal Networks guide: http://ruraldesignguide.com/



B.

Appendix B: Funding Resources

Funding Resources

Overview

When considering possible funding sources for trail 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 together 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 nonprofit sectors. Note that this reflects the funding available at the time of writing. Funding amounts, cycles, and the programs themselves may change over time.

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 five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support the construction of trail facilities.

FIXING AMERICA'S SURFACE TRANSPORTATION (FAST) ACT

In December 2015, President Obama signed the FAST Act into law, which replaces the previous Moving Ahead for Progress in the Twenty-First Century (MAP-21). The Act provides a long-term funding source of $305 billion for surface transportation and planning for FY 2016-2020. Overall, the FAST Act retains eligibility for big programs - Transportation Investments Generating Economic Recovery (TIGER - now called RAISE), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Highway Safety Improvement Program (HSIP).

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan/Rural Planning Organizations (MPOs/RPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing intermodal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

For more information: *https://www.transportation.gov/fastact*

TRANSPORTATION ALTERNATIVES (TA)

Transportation Alternatives (TA) is a funding source under the FAST Act that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). Funds are available through a competitive process. These funds may be used for a variety of pedestrian, bicycle, and streetscape projects. These include:

- SRTS programs - infrastructure and non-infrastructure programs.
- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation, including sidewalks, bikeways, pedestrian and bicycle signals, traffic calming techniques, and lighting and other safety-related infrastructure
- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, seniors, and individuals with disabilities
- Construction of rail-trails
- Recreational trails program

Eligible entities for TA funding include local governments, regional transportation authorities, transit agencies, natural resource or public land agencies, school districts or schools, tribal governments, and any other local or regional government entity with responsibility for oversight of transportation or recreational trails that the State determines to be eligible.

The FAST Act provides $84 million for the Recreational Trails Program. Funding is prorated among the 50 states and Washington D.C. in proportion to the relative amount of off-highway recreational fuel tax that its residents paid. To administer the funding, states hold a statewide competitive process. The legislation stipulates that funds must conform to the distribution formula of 30% for motorized projects, 30% for non-motorized projects, and 40% for mixed-use projects. Each state governor is given the opportunity to "opt out" of the RTP.

For more information: *https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.cfm*

In January 2020, NCDOT released the Transportation Alternatives Program (TAP) Bike/Ped Scoping Guide. This document provides detail and guidance on the Project Delivery Process and important elements to consider in bike/ped project development.

For more information: *https://connect.ncdot.gov/projects/BikePed/Documents/BikePed%20Project%20Scoping%20Guidance%20for%20Local%20Governments.pdf*

SURFACE TRANSPORTATION BLOCK GRANT (STBG) PROGRAM

The FAST Act converts the Surface Transportation Program into the Surface Transportation Block Grant (STBG) program. This program is among the most flexible eligibilities among all Federal-aid and highway programs. 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. Safe Routes to School programs, congestion pricing projects and strategies, and recreational trails projects are other eligible activities. Under the FAST Act, a State may use STBG funds to create and operate a State office to help design, implement, and oversee public-private partnerships eligible to receive Federal highway or transit funding. In general, projects cannot be located on local roads or rural minor collectors. However, there are exceptions. These exceptions include recreational trails, pedestrian and bicycle projects, and Safe Routes to School programs.

For more information: *https://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm*

LOCALLY ADMINISTERED PROJECTS PROGRAM (LAPP)

The Locally Administered Projects Program (LAPP) was first adopted by the NC Capital Area MPO on October 20, 2010. The program is used by the MPO to prioritize and program local transportation projects in the region that utilize federal funding and are the responsibility of the MPO (such as Surface Transportation Block Grant Program – Direct Allocation (STBGP-DA), Congestion Mitigation for Air Quality (CMAQ), etc.). LAPP is a competitive funding program managed by CAMPO that prioritizes locally administered projects in the Region. These projects are funded using the federal funding sources directly attributed to the region with a minimum 20% local match. Member jurisdictions of the CAMPO region are eligible to apply for these funds.

For more information: *https://www.campo-nc.us/funding/locally-administered-projects-program*

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

HSIP provides $2.4 billion for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways,

and walkways. 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.

For more information: *http://www.fhwa.dot.gov/fastact/factsheets/hsipfs.cfm*

SAFE ROUTES TO SCHOOL (SRTS) PROGRAM

SRTS enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates 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. Most of the types of eligible SRTS projects include sidewalks or shared use paths. However, intersection improvements (i.e. signalization, marking/upgrading crosswalks, etc.), on-street bicycle facilities (bike lanes, wide paved shoulders, etc.) or off-street shared use paths are also eligible for SRTS funds.

The North Carolina Department of Transportation's Safe Routes to School (SRTS) Program was established in 2005 through SAFETEA-LU as a federally funded program to provide an opportunity for communities to improve conditions for bicycling and walking to school. It is currently supported with Transportation Alternatives federal funding through the Surface Transportation Block Grant program established under the FAST Act. The SRTS Program has set aside $1,500,000 per year of Transportation Alternative Program (TAP) funds for non-infrastructure programs and activities over a three-year period. Funding requests may range from a yearly amount of $50,000 to $100,000 per project. Projects can be one to three years in length. Funding may be requested to support activities for community-wide, regional or statewide programs. The next funding cycle application will be available in January 2021.

For more information: *https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx*

CAMPO also serves as a partner in SRTS programming.

For more information: *https://www.campo-nc.us/programs-studies/bicycle-and-pedestrian*

OTHER FEDERAL FUNDING SOURCES

RAISE DISCRETIONARY GRANT PROGRAM

The Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program is expected to be funded at $1 billion in FY2022. RAISE grants are awarded on a competitive basis for projects that will have a significant local or regional impact.

The FY2021 RAISE program's selection criteria gave special consideration to projects that emphasize improved access to reliable, safe, and affordable transportation for communities in rural areas. This includes projects that improve infrastructure condition, address public health and safety, promote regional connectivity, facilitate economic growth or competitiveness, deploy broadband as part of an eligible transportation project, or promote energy independence. Selection criteria encompass safety, economic competitiveness, quality of life, state of good repair, innovation and partnerships with a broad range of stakeholders.

The current application identifies any area(s) in the application narrative that may be affected by the ongoing COVID-19 situation for the Department's consideration in the project's evaluation. Trails and their benefits for healthy outdoor physical activity could be especially competitive as projects fulfilling community needs during pandemic-related restrictions.

For more information: *https://www.transportation.gov/RAISEgrants*
https://www.transportation.gov/sites/dot.gov/files/2021-05/Budget-Highlights2022_052721_FINAL.PDF

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.

For more information: *https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310*

FEDERAL LANDS TRANSPORTATION PROGRAM (FLTP)

The FLTP funds projects that improve transportation infrastructure owned and maintained by the following Federal Lands Management Agencies: National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), USDA Forest Service, Bureau of Land Management (BLM), U.S. Army Corps of Engineers, Bureau of Reclamation, and independent Federal agencies with land and natural resource management responsibilities. FLTP funds are for available for program administration, transportation planning, research, engineering, rehabilitation, construction, and restoration of Federal Lands Transportation Facilities. Transportation projects that are on the public network that provide access to, adjacent to, or through Federal lands are also eligible for funding. Under the FAST Act, $335 - $375 million has been allocated to the program per fiscal year from 2016 - 2020.

For more information: *https://flh.fhwa.dot.gov/programs/fltp/documents/FAST%20FLTP%20fact%20sheet.pdf*

FEDERAL LAND AND WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the U.S. Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources.

Since 1965, the LWCF program has built a park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than $75 million in matching grants to protect land and support more than 875 state and local park projects. More than 38,500 acres have been acquired with LWCF assistance to establish a park legacy in our state. As of August 2020, the LWCF is now permanently funded by the federal government for $900 million every year. This is hundreds of millions more per year than the fund typically receives.

For more information: *https://www.ncparks.gov/more-about-us/grants/lwcf-grants*

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program that provides technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program only provides 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. Project applicants may be state and local agencies, tribes, nonprofit organizations, or citizen groups. National parks and other federal agencies may apply in partnership with other local organizations. This program may benefit trail development in North Carolina indirectly through technical assistance, particularly for community organizations, but is not a capital funding source.

For more information: *https://www.nps.gov/orgs/rtca/index.htm*

ENVIRONMENTAL CONTAMINATION CLEANUP FUNDING SOURCES

EPA's Brownfields Program provides direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training. EPA's Brownfields Program collaborates with other EPA programs, other federal partners, and state agencies to identify and leverage more resources for brownfields activities. The EPA provides assessment grants to recipients to characterize, assess, and conduct community involvement related to brownfields sites. They also provide area-wide planning grants (AWP) which provides communities with funds to research, plan, and develop implementation strategies for areas affected by one or more brownfields.

For more information: *https://www.epa.gov/brownfields/types-brownfields-grant-funding*

NATIONAL FISH AND WILDLIFE FOUNDATION: FIVE STAR & URBAN WATERS RESTORATION GRANT PROGRAM

The Five Star & Urban Waters Restoration Grant Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, riparian, forest and coastal habitat restoration, urban wildlife conservation, stormwater management as well as outreach, education and stewardship. Projects should focus on water quality, watersheds and the habitats they support. The program focuses on five priorities: on-the-ground restoration, community partnerships, environmental outreach, education, and training, measurable results, and sustainability. Eligible applicants include nonprofit organizations, state government agencies, local governments, municipal governments, tribes, and educational institutions. Projects are required to meet or exceed a 1:1 match to be competitive.

For more information: *http://www.nfwf.org/fivestar/Pages/home.aspx*

State and State-Administered Funding Sources

There are multiple sources for state funding of bicycle and pedestrian transportation projects. However, state transportation funds cannot be used to match federally funded transportation projects, according to a law passed by the North Carolina Legislature.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STRATEGIC TRANSPORTATION INVESTMENTS (STI)

Passed in 2013, the Strategic Transportation Investments law (STI) allows NCDOT to use its funding more efficiently and effectively to enhance the state's infrastructure, while supporting economic growth, job creation and a higher quality of life. This process encourages thinking from a statewide and regional perspective while also providing flexibility to address local needs. STI also establishes a way of allocating available revenues based on data-driven scoring and local input. It is used for the State Transportation Improvement Program (STIP), which identifies the transportation projects that will receive funding during a 10-year period. STIP is a state and federal requirement, which NCDOT updates every two years.

STI's Quantitative Scoring Process

All independent bicycle and pedestrian projects are ranked based on a quantitative scoring process, with the following main steps:

- Initial Project Review (NCDOT Strategic Prioritization Office (SPOT))
- Review Projects and Data (NCDOT Integrated Mobility Division (IMD))
- Review Data (MPOs, RPOs, Divisions)
- Review Updates and Calculate Measures (NCDOT IMD)
- Score Projects (NCDOT SPOT)

Bicycle and Pedestrian Project Eligibility Requirements

- Minimum total project cost = $100,000
- Eligible costs include right-of-way, preliminary engineering, and construction
- Bicycle and pedestrian and public transportation facilities that appear in a state, regional or locally adopted transportation plan will be included as part of the proposed roadway project. NCDOT will fully fund the cost of designing, acquiring right of way, and constructing the identified facilities.

Specific Improvement Types

- Grade-Separated Bicycle Facility (Bicycle)
- Off-Road/Separated Linear Bicycle Facility (Bicycle)
- On-Road; Designated Bicycle Facility (Bicycle)
- On-Road Bicycle Facility (Bicycle)
- Multi-Site Bicycle Facility (Bicycle)
- Grade-Separated Pedestrian Facility (Pedestrian)
- Protected Linear Pedestrian Facility (Pedestrian)
- Multi-Site Pedestrian Facility (Pedestrian)
- Improved Pedestrian Facility (Pedestrian)

Bundling Projects

- Allowed across geographies and across varying project types
- Bundling will be limited by project management requirements rather than geographic limitations
- Any bundled project must be expected to be under one project manager/administrative unit (must be a TAP-eligible entity)
- Makes projects more attractive for LIPs and easier to manage/let

More Info on Prioritization 6.0:

NCDOT's Prioritization Data page has training slides that explain the prioritization process: *https://connect.ncdot.gov/projects/planning/Prioritization%20Data/Forms/AllItems.aspx*

See the "Prioritization Training" folder and the following session information within:

- Session 3: Detailed information on overall scoring components, including local input points.
- Session 4: Features relevant project funding information, and
- Session 7: Detailed slides explaining the bicycle and pedestrian project scoring

High Impact/Low Cost Funds

Established by NCDOT in 2017 to provide funds to complete low-cost projects with high impacts to the transportation system including intersection improvement projects, minor widening projects, and operational improvement projects. Funds are allocated equally to each Division.

Project Selection Criteria

Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program. At a minimum, Divisions must consider all of the following in developing scoring formulas:

- The average daily traffic volume of a roadway and whether the proposed project will generate additional traffic.
- Any restrictions on a roadway.
- Any safety issues with a roadway.
- The condition of the lanes, shoulders, and pavement on a roadway.
- The site distance and radius of any intersection on a roadway.
    - » $1.5M max per project unless otherwise approved by the Secretary of Transportation
    - » Projects are expected to be under contract within 12 months of funding approval by BOT

NCDOT Technical Review & Approval

- Division Engineer completes project scoring and determines eligibility.
- Division Engineer determines projects to be funded and requests approval of funding from the Chief Engineer. Division Engineer shall supply all necessary project information including funding request forms, project designs and cost estimates.
- The Project Review Committee will make a recommendation for further investigation or to include on the Board Agenda for action by the Secretary, NCDOT.

INCIDENTAL PROJECTS

Bicycle and Pedestrian accommodations such as; bike lanes, wide paved shoulders, sidewalks, intersection improvements, bicycle and pedestrian safe bridge design, etc. are frequently included as "incidental" features of larger highway/roadway projects.

In addition, bicycle safe drainage grates and handicapped accessible sidewalk ramps are now a standard feature of all NCDOT 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.

"Incidental Projects" are often constructed as part of a larger transportation project, when they are justified by local plans that show these improvements as part of a larger, multi-modal transportation system. Having a local bicycle or pedestrian plan is important, because it allows NCDOT to identify where bike and pedestrian improvements are needed, and can be included as part of highway or street improvement projects. It also helps local government identify what their priorities are and how they might be able to pay for these projects. Under the updated NCDOT Complete Streets Policy, NCDOT pays the full cost for incidental projects if the project is proposed in a locally adopted plan (see link to updated NCDOT Complete Streets Policy below).

For more information: *https://connect.ncdot.gov/projects/BikePed/Documents/Complete%20Streets%20Implementation%20Guide.pdf*

NC HIGHWAY SAFETY IMPROVEMENT PROGRAM

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic process that identifies reviews and addresses specific traffic safety concerns throughout the state. The program is structured in several distinct phases:

- A system of safety warrants is developed to identify locations that are possibly deficient.
- Locations that meet warrant criteria are categorized as potentially hazardous (PH) locations.
- Detailed crash analyses are performed on the PH locations with the more severe and correctable crash patterns.
- The Regional Traffic Engineering staff performs engineering field investigations.
- The Regional Traffic Engineering staff utilizes Benefit: Cost studies and other tools to develop safety recommendations.
- Depending on the cost and nature of the counter-measures, the investigations may result in requesting Division maintenance forces to make adjustments or repairs, developing Spot Safety projects, developing Hazard Elimination projects, making adjustments to current TIP project plans or utilizing other funding sources to initiate countermeasures.
- Selected projects are evaluated to determine the effectiveness of countermeasures.

The ultimate goal of the HSIP is to reduce the number of traffic crashes, injuries and fatalities by reducing the potential for and the severity of these incidents on public roadways.

For more information: *https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-program-and-Projects.aspx*

HIGHWAY 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 percent federal

funds and 10 percent 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).

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. Permitted safety projects include checking station equipment, traffic safety equipment, and BikeSafe NC equipment. However, funding is not allowed for speed display signs. 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. Applications must include county level crash data. Local governments, including county governments and municipal governments, are eligible to apply.

For more information: *https://www.ncdot.gov/initiatives-policies/safety/ghsp/Pages/default.aspx*

THE NORTH CAROLINA DIVISION OF PARKS AND RECREATION - RECREATIONAL TRAILS PROGRAM GRANT

Funding from the federal Recreational Trails Program (RTP), which is used for renovating or constructing trails and greenways, is allocated to states. The North Carolina Division of Parks and Recreation and the State Trails Program manages these funds with a goal of helping citizens, organizations and agencies plan, develop 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. Grants are available to governmental agencies and nonprofit organizations. The maximum grant amount is $250,000 and requires a 25% match of RTP funds received. Permissible uses include:

- New trail or greenway construction
- Trail or greenway renovation
- Approved trail or greenway facilities
- Trail head/ trail markers
- Purchase of tools to construct and/or renovate trails/greenways
- Land acquisition for trail purposes
- Planning, legal, environmental, and permitting costs - up to 10% of grant amount
- Combination of the above

For more information: *http://www.ncparks.gov/more-about-us/grants/trail-grants/recreational-trails-program*

NC PARKS AND RECREATION TRUST FUND (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides 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. Property acquired with PARTF funds must be dedicated for public recreational use.

For more information: *https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund*

CLEAN WATER MANAGEMENT TRUST FUND

The Clean Water Management Trust Fund (CWMTF) is available to any state agency, local government, or non-profit organization whose primary purpose is the conservation, preservation, and restoration of North Carolina's environmental and natural resources. Grant assistance is provided to conservation projects that:

- enhance or restore degraded waters;
- protect unpolluted waters, and/or
- contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits;
- provide buffers around military bases to protect the military mission;
- acquire land that represents the ecological diversity of North Carolina; and
- acquire land that contributes to the development of a balanced State program of historic properties.

For more information: *http://www.cwmtf.net/#appmain.htm*

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 plan and establish 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 more effective and efficient management of urban and community forests.

For more information: *https://www.ncforestservice.gov/Urban/urban_grant_program.htm*

LOCAL FUNDING SOURCES

Local governments often plan for the funding of bicycle and pedestrian infrastructure or improvements through development of Capital Improvement Projects (CIP) or occasionally, through their annual Operating Budgets. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows decision-makers to balance all capital needs. Typical capital funding mechanisms include the capital reserve fund, taxes, fees, and bonds. However, many will require specific local action as a means of establishing a program if it is not already in place.

PRIVATE AND NONPROFIT FUNDING SOURCES

Many communities have solicited funding assistance from private foundations and other conservation-minded benefactors. Below are examples of private funding opportunities.

RAILS-TO-TRAILS CONSERVANCY

Under the Doppelt Family Trail Development Fund, RTC will award approximately $85,000 per year, distributed among several qualifying projects, through a competitive process. Eligible applicants include nonprofit organizations and state, regional, and local government agencies. Two types of grants are available - community support grants and project transformation grants. Around three to four community support grants are awarded each year, ranging from $5,000-$10,000 each. Community Support Grants support nonprofit organizations or "Friends of the Trail" groups that need funding to get trail development or trail improvement efforts off the ground. Each year, 1-2 Project Transformation Grants area awarded that range from $15,000-$50,000. The intention of these grants is to enable an organization to complete a significant trail development or improvement project. For both types of grants, applications for projects on rail-trails and rails-with-trails are given preference, but rail-trail designation is not a requirement. The trail must serve multiple user types, such as bicycling, walking, and hiking, and must be considered a trail, greenway, or shared use path.

For more information: *http://www.railstotrails.org/our-work/doppelt-family-trail-development-fund/*

THE TAR RIVER LAND CONSERVANCY (TRLC)

The Tar River Land Conservancy (TRLC) preserves and protects land in the Tar River watershed to maintain clean water, preserve wildlife habitats, and promote ecologically-friendly recreational opportunities. Currently, TRLC has preserved 6,451 acres in Franklin County. TRLC may be a partner for acquiring land for greenway development within the Tar River Watershed Basin. *http://www.tarriver.org/*

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 provides grants through more than 70 diverse conservation grant programs. One of the most relevant programs for bicycle and pedestrian projects is Acres for America. Funding priorities include conservation of bird, fish, plants and wildlife habitats, providing access for people to enjoy outdoors, and connecting existing protected lands. Federal, state, and local government agencies, educational institutions, Native American tribes, and non-profit organizations may apply twice annually for matching grants. Due to the competitive nature of grant funding for Acres for America, all awarded grants require a minimum 1:1 match.

For more information: *http://www.nfwf.org/whatwedo/grants/Pages/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 TPL is the only national non-profit working exclusively to protect land for human enjoyment and well-being. TPL helps acquire land and transfer it to public agencies, land trusts, or other groups that intend to conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

For more information: *http://www.tpl.org*

LAND FOR TOMORROW CAMPAIGN

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals, and community groups committed to securing support from the public and General Assembly for protecting land, water, and historic places. 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. For more information: *http://www.land4tomorrow.org/*

THE CONSERVATION ALLIANCE

The Conservation Alliance is a nonprofit 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. Funding criteria states that:

The project should seek to secure lasting and quantifiable protection of a specific wild land or waterway. We prioritize landscape-scale projects that have a clear benefit for habitat.

The campaign should engage grassroots citizen action in support of the conservation effort. We do not fund general education, restoration, stewardship, or scientific research projects.

All projects must have a clear recreational benefit.

For more information: *http://www.conservationalliance.com/grants//?yearly=2020*

BLUE CROSS BLUE SHIELD (BCBS) OF NORTH CAROLINA FOUNDATION

BCBS does not have a traditional grant cycle and announces grant opportunities on a periodic basis. Grants can range from small-dollar equipment grants to large, multi-year partnerships.

For more information: *http://www.bcbsncfoundation.org/grants-programs/grantmaking-overview/*

DUKE ENERGY FOUNDATION

Funded by Duke Energy shareholders, this foundation makes charitable grants to nonprofit organizations and government agencies. Grant applicants must serve communities that are also served by Duke Energy. The grant program has several investment priorities that could potentially fund bicycle and pedestrian projects. The Duke Energy Foundation is committed to making strategic investments to build powerful communities where nature and wildlife thrive, students can excel and a talented workforce drives economic prosperity for all.

For more information: *https://www.duke-energy.com/community/duke-energy-foundation*

Z. SMITH REYNOLDS FOUNDATION

This Winston-Salem-based Foundation is committed to improving the quality of life for all North Carolinians. The Z. Smith Reynolds Foundation is a statewide, private, family foundation that has been a catalyst for positive change in North Carolina for more than 80 years. A variety of grant programs are available.

For more information: *http://www.zsr.org/grants-programs*

BANK OF AMERICA CHARITABLE FOUNDATION

The Bank of America Charitable Foundation supports a wide range of activities, including a focus on community greening efforts that create healthy neighborhoods and environmental sustainability through the preservation, creation or restoration of open space, parks and community gardens.

For more information: *https://about.bankofamerica.com/en-us/global-impact/charitable-foundation-funding.html*

LOCAL TRAIL SPONSORS

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

CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Local governments typically create funds to facilitate and simplify a transaction from a corporation's donation to the given locality. Donations are mainly received when a widely supported capital improvement program is implemented.

PRIVATE INDIVIDUAL DONATIONS

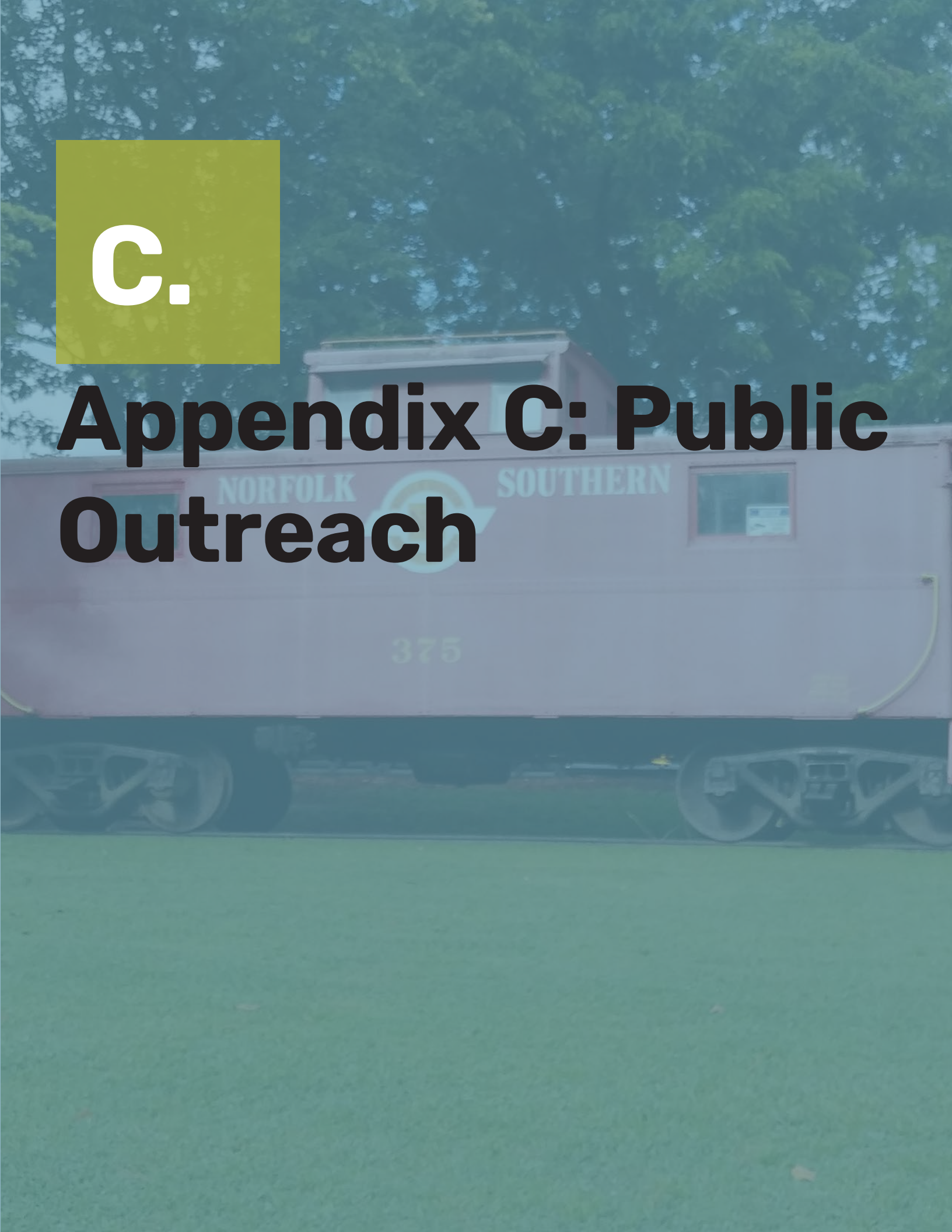
Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Local governments typically create funds to facilitate and simplify a transaction from an individual's donation to the given locality. Donations are mainly received when a widely supported capital 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 form church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fundraising, maintenance, and programming needs.



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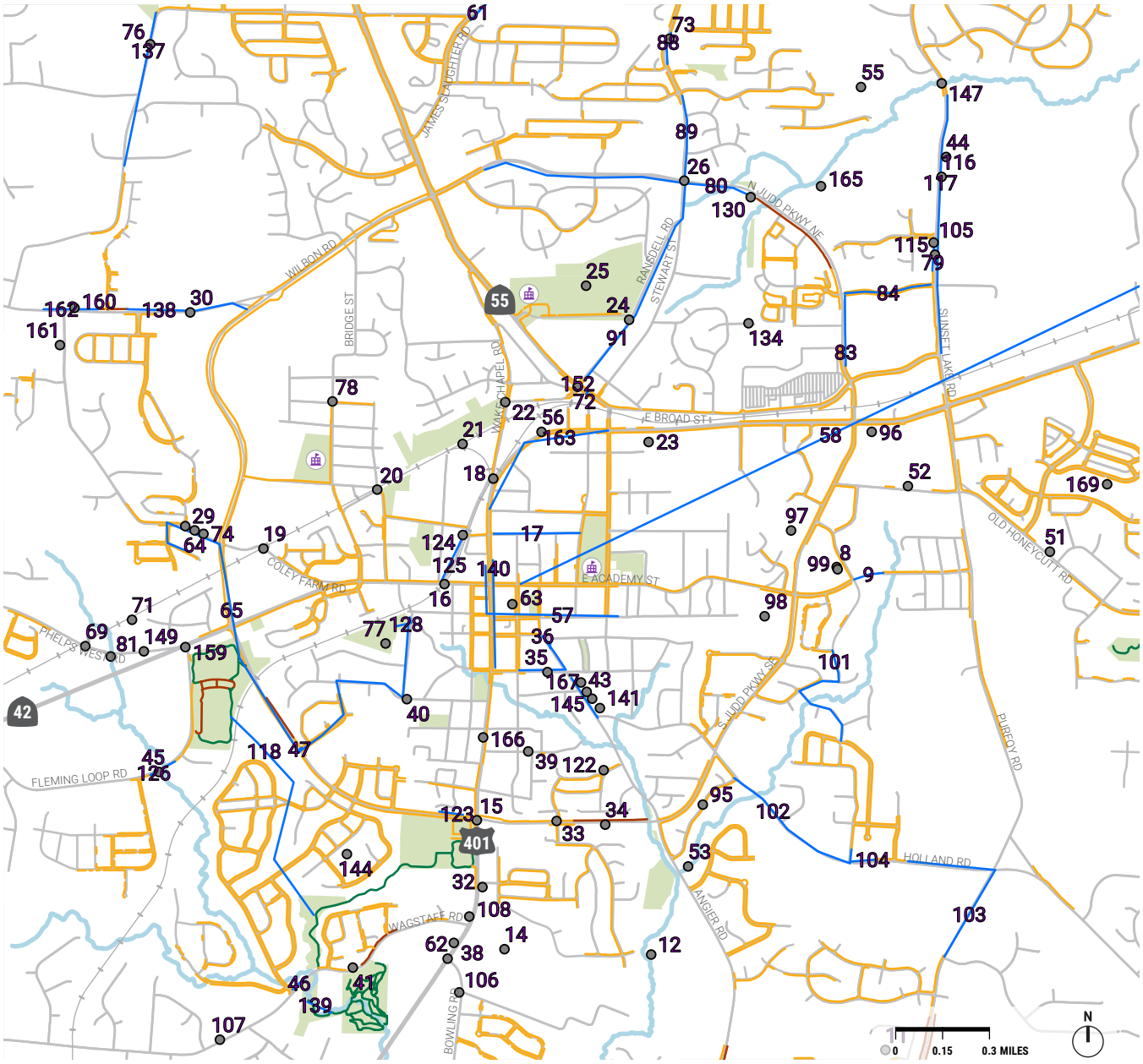
Appendix C: Public Outreach

Map 16: Interactive Map Comments: Downtown



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

PUBLIC COMMENTS

- PUBLIC COMMENTS: POINTS
- PUBLIC COMMENTS: LINES

Table 6: Interactive Map Comments

MapID	Comment Type	Comment
8	Walking	new library
9	Needs improvement	Academy street will connect here - future development
12	Walking	greenway potential along Kenneth Creek?
14	Walking	Location of new elementary and middle school - connectivity needed to adjacent neighborhoods
15	Walking	Sidewalk project to connect to this intersection is in development, will likely be constructed in near term
16	Walking	Need ADA pedestrian accommodation across railroad tracks
17	Needs improvement	E. Jones St sidewalks (Town Hall to Middle School) are in the development process (funding awarded through LAPP)
18	Walking	Intersection needs improvement - difficult intersection to improve due to confluence of railroad tracks and multiple roads - has been previously studied, considering tunnel project
21	Walking	Railroad corridor that is currently inactive - would be great connection from center of FV to southwest side of FV if possible
22	Walking	Wake Chapel Rd has sidewalks on one side, but not a great pedestrian experience due to lack of buffer and traffic speed/volumes
24	Walking	Funded sidewalk (likely 2 years until construction) - LAPP funded
25	Walking	Need better connectivity to the high school
26	Walking	Gaps in the pedestrian network here along Judd Pkwy and Stewart St - possible future development in this area as well
29	Walking	Connecting Grays Creek neighborhood to NW Judd Parkway via sidewalk
30	Walking	Connecting Grays Creek neighborhood to NW Judd Parkway via sidewalk
32	Walking	Coming out of the Village of Charleston across from the Kidney Center and South Park needs sidewalk and crosswalk to be able to enjoy the park/community center. Speeding cars will kill someone one of these days. Trees blocking the visibility of traffic are also an issue. Soon South and Main will add to the congestion.
34	Walking	Complete the sidewalks along SE Judd Pkway please.
35	Walking	Spring street is a corridor to downtown and also part of FV historic district. It is a busy street for traffic from Main st to Angier Road as well as for walkers. PreCovid, during events downtown, Spring St. is close enough for parking and becomes even dangerous. It is also used as a detour street for parades and other times when Main St is closed. Please consider Extending the sidewalks to East Spring as well. Thank you
36	Needs improvement	No sidewalks at all on this very busy wide part of Angler Road. Consider sidewalks and widening the road past Spring to Judd Parkway.
38	Walking	Extend sidewalks south of south park
39	Walking	There are no sidewalks in this entire neighborhood (S. Fuquay / Pine St / Arnold / Senter / Dickens.) yet there are numerous pedestrians out every day having to walk in traffic.
40	Walking	There is an entire section here that has no sidewalks, yet there are daily walkers throughout the area walking in the street.
41	Walking	Jeff Wells Trail is lovely, and there's nice little sidewalk to Caroll Howard Johnson Park, but then there's nothing. Walking from Main Street to the park is treacherous due to curvy road and very little shoulder.
43	Walking	Angie Road after you cross E Spring St is dangerous. It's not uncommon to see walkers, including kids walking from the middle school.
44	Walking	Sidewalks along Sunset Lake RD between Ballentine Subdivision and the Harris Teeter shopping Center (Sunset and Broad) would be very useful!
45	Walking	Connect the sidewalk from Bent Tree subdivision to Fleming Loop Park. There is a small section which, if completed, would increase safety for strollers, children on bikes, pedestrians, etc. There is a curve in the road making it dangerous to see oncoming traffic for those accessing the park from Bent Tree, Fleming Fields and residences on Fleming Loop Road.

Table 8: Interactive Map Comments (Cont)

46	Needs improvement	Sidewalk from bridlemine to the wagstaff bridge missing making walking to environmental park or south park difficult with kids.
47	Needs improvement	Crosswalk would make getting to Fleming loop park safer for the kids.
51	Walking	Missing sidewalk, dangerous for walkers
52	Walking	Missing sidewalk, dangerous for walkers
53	Walking	I could walk to the library, and much of downtown if angier road had more sidewalks.
55	Walking	There is mention in previous documents of a greenway connecting Ballentine to downtown. I think that would be a wonderful addition.
57	Needs improvement	Crossing Main Street continues to be dangerous. Let me start by saying jaywalking is not the entire problem. I live downtown and have to force myself into traffic that isn't slowing down at crosswalks regularly. Maybe crosswalk signs with flashing lights would help. If you want to create a lively downtown you need to make the car traffic respect the foot traffic. Write tickets to both the drivers and the jaywalkers. Develop the mutual respect at the crosswalk.
58	Needs improvement	The corner of Fuquay Ave and Academy has a 5" ledge from the road to the sidewalk where the blacktop was laid and not tapered. It is not ADA COMPLIANT and is impossible to negotiate in a wheelchair or using a stroller. Actually all road accesses are pretty lousy along Fuquay Ave except for the art center crossing at Vance St.
61	Needs improvement	Need sidewalk or additional shoulder space
62	Walking	There are now three subdivisions on Bowling Road that are not connected with Route 401 sidewalks to Downtown.
63	Walking	Coffee
64	Walking	There is no safe way to get to Judd Pkwy from Union Station.
65	Route that works well	This is how I go to the dog park. Believe it or not, it's easier to cross SW Judd Pkwy than W. Academy St.
69	Walking	Can we please add sidewalks to Phelps Farm West Road? Thank you!
71	Walking	Are there any plans to convert this unused railway into a paved greenway trail that leads to downtown Fuquay? It would be an AMAZING asset for the town!!!
73	Walking	There are very few sidewalks along Stewart St. I'd love to be able to walk to downtown from my home.
74	Walking	This short stretch of Coley Farm is unsafe for walking (and biking). It would only require a short distance of sidewalk to increase safety and allow residents of Grays Creek and Union Station to access Flemming Loop, Lincoln Heights, and downtown safely on foot.
76	Walking	Lots of walking traffic between Southern Wake Academy and Briar gate Subdivision.
77	Walking	It would be nice to connect the dog park to Fleming Loop and there seems to be space for a trail.
78	Walking	I think it's very important to add safe side walks from McLean to the intersection of 401 and Wilbon Rd. West Fuquay and on both sides of Wilbon to 401. The food dessert in west Fuquay-Varina means many people without vehicles have to walk to Food Lion regularly
79	Needs improvement	Lots of people from Smith Farms neighborhood walk along the side of Sunset Lake road to get to shopping or connect to other town sidewalks. A sidewalk here would improve the safety of this route.
80	Needs improvement	Add sidewalks to NE Judd Parkway to provide a safe walking and running route
81	Walking	Please add sidewalks on Phelps West into downtown
83	Needs improvement	Sidewalk needed here for safety
84	Needs improvement	Street lights are needed along this route for pedestrian safety.
88	Needs improvement	Need sidewalks
89	Needs improvement	Needs sidewalks
91	Needs improvement	Sidewalk to school
95	Walking	Could you add sidewalks on Angier rd connecting downtown Fuquay all the way to Judd parkway. Many residents would benefit from this. Would love to be able to walk to my favorite coffee shop!

Table 8: Interactive Map Comments (Cont)

96	Walking	Restaurants and groceries. Walking from neighborhoods to the south along Judd Parkway part of the way.
97	Walking	post office by crossing judd parkway
98	Walking	church by crossing judd parkway
99	Walking	library
101	Needs improvement	no sidewalks and very narrow streets, lots of people walk through this neighborhood to reach other neighborhoods, library, church, judd parkway
102	Needs improvement	neighborhoods along holland road need access to judd parkway sidewalks
103	Needs improvement	connectivity between new neighborhoods on purfoy rd that already have sidewalks
104	Needs improvement	missing link along holland rd
105	Walking	Many do Smith Farms residents make their own path from our subdivision to Products Road. It's very sad to see families with small children riding bikes or strollers trying to safely connect to the stores and restaurants at the Fuquay Crossing Shopping Center.
106	Walking	Desperately need side walks here on bowling rd and cross walk to 401 to access South Park ball field.
107	Walking	Wagstaff road needs sidewalk to access parks. Road is narrow and people walk in the street all the time. Very unsafe.
108	Walking	This area (Wagstaff at South Main/401) needs pedestrian access for safety, and an improved intersection.
115	Walking	No sidewalks currently available for walking
116	Walking	Sidewalk from Ballentine to products rd would make walking around the area safer.
117	Needs improvement	Agree with other suggestions that a sidewalk should be created to connect the Ballentine neighborhood to the Sunset Lake Commons area. This section currently requires one to walk along Sunset Lake Rd in the dirt/grass/mud and is unsafe for both pedestrians and drivers as the volume of traffic along Sunset Lake Rd continues to increase.
118	Needs improvement	Create Greenways that connect these parks across town.
122	Walking	We need a sidewalk on Angier Road starting at Senterview Drive to the Fire Station. Very dangerous walking the short distance to downtown from our neighborhood.
123	Needs improvement	Bushes and trees need trimming on Judd Parkway sidewalk across from community center. Sometimes I have to walk in the bike lane to avoid low hanging or overhanging branches.
124	Walking	Rather than trying to improve the walkability of the confluence of the railroad and main street, you could add a walking bridge over the tracks at the end of W. Jones St. Lots of people walk up W. Jones and then have to cross at the dangerous intersection by the railroad.
125	Needs improvement	Railroad St also has a lot of pedestrians. Cars speed down this stretch and also toss out a lot of garbage. The town mowers chew up the trash and create sharp pieces of beer cans and tons of tiny pieces of litter. This could be a nice shady walking path with a sidewalk and guard rail. And can we work on regular litter pick up on this side of town please?! Where there are new expensive homes going up litter is cleaned up. How about the same service for the west side of FV?! Thanks
126	Needs improvement	Connect Bent Tree sidewalk to existing sidewalk for safer commute from our neighborhood to Fleming Loop Park.
128	Needs improvement	Visitors to the dog park need a more direct route from parking walking into the dog park that keeps them(and their pets) out of flowing traffic.
130	Walking	There are portions of Judd parkway between Main Street and Broad that don't yet have sidewalk which make walking or running the whole Judd loop not possible because of the narrow shoulder and blind curves
134	Walking	Would be nice to be able to walk to downtown Varina from the Retreat apartment complex, and would be nice to walk from the neighborhood to the Bengal Townes shops.
137	Needs improvement	walking/bike access along Old Powell Rd from Briar Gate neighborhood to connect to exisiting sidewalks by Southern Wake. Once new mixed use development is built at Broad St/Old Powell it would be nice to have safe bike access.
138	Needs improvement	Sidewalk or Sidepath would be beneficial. Pedestrians currently attempt to walk on Wilbon and it's very dangerous as is.

Table 8: Interactive Map Comments (Cont)

139	Needs improvement	Walking Trails at the environmental park need repairs from erosion.
140	Needs improvement	Traffic doesn't slow at pedestrian crosswalks on Main. I've seen crosswalks in holly springs, Wilmington, and Raleigh that have blinkers imbedded in the road and crossing buttons for pedestrian only crossings.
141	Walking	We love walking with our baby and dog downtown but Angier Rd. is very unsafe for pedestrians and would really benefit from sidewalks.
144	Walking	Angier Rd is quite busy with walkers daily going to/from downtown. We would love to see a sidewalk as traffic can be busy and majority of drivers aren't traveling 35 mph, combined without much room for walkers makes for dangerous conditions.
145	Walking	"Angier Rd is quite busy with walkers daily going to/from downtown. We would love to see a sidewalk as traffic can be busy and majority of drivers aren't traveling 35 mph, combined without much Room for walkers makes for dangerous conditions.
147	Walking	Please make a sidewalk between Hilltop/Bass Lake Intersection to Main Street
149	Walking	Please add sidewalks along Phelps West to access Fleming Loop park and Historic Fuquay
159	Walking	A sidewalk from Fleming loop rd along w academy in both directions to accommodate local walkers trying to get to the park safely
160	Walking	Want to connect Briar Gate Community to Saint Bernadette Church.
161	Walking	Sidewalk connecting Broadwell Trace Community to St Bernadette Church, including crosswalk with flashing sign
162	Needs improvement	Walking path could use a sidewalk from St Bernadette Church to Briar Gate Community
165	Walking	These woods are beautiful and should be preserved, with greenway trails added. The current possibility of a 4-lane road passing through this area would be an incredible loss to what could be a beautiful ecological benefit to the town.
166	Walking	Nee sidewalk on both sides of S Main to South Park. Pedestrian crossing are dangerous and poorly marked. A lot of younger families have located to this area because of relatively low cost housing. A lot of seniors live there too. It very difficult to use the existing pedestrian facilities. A safe bike trail would be welcome to al.
167	Walking	Walking along Angier to downtown is dangerous and risky. Traffic is fast and there is not much room along the side of the road for walking.
169	Walking	a crosswalk would be great

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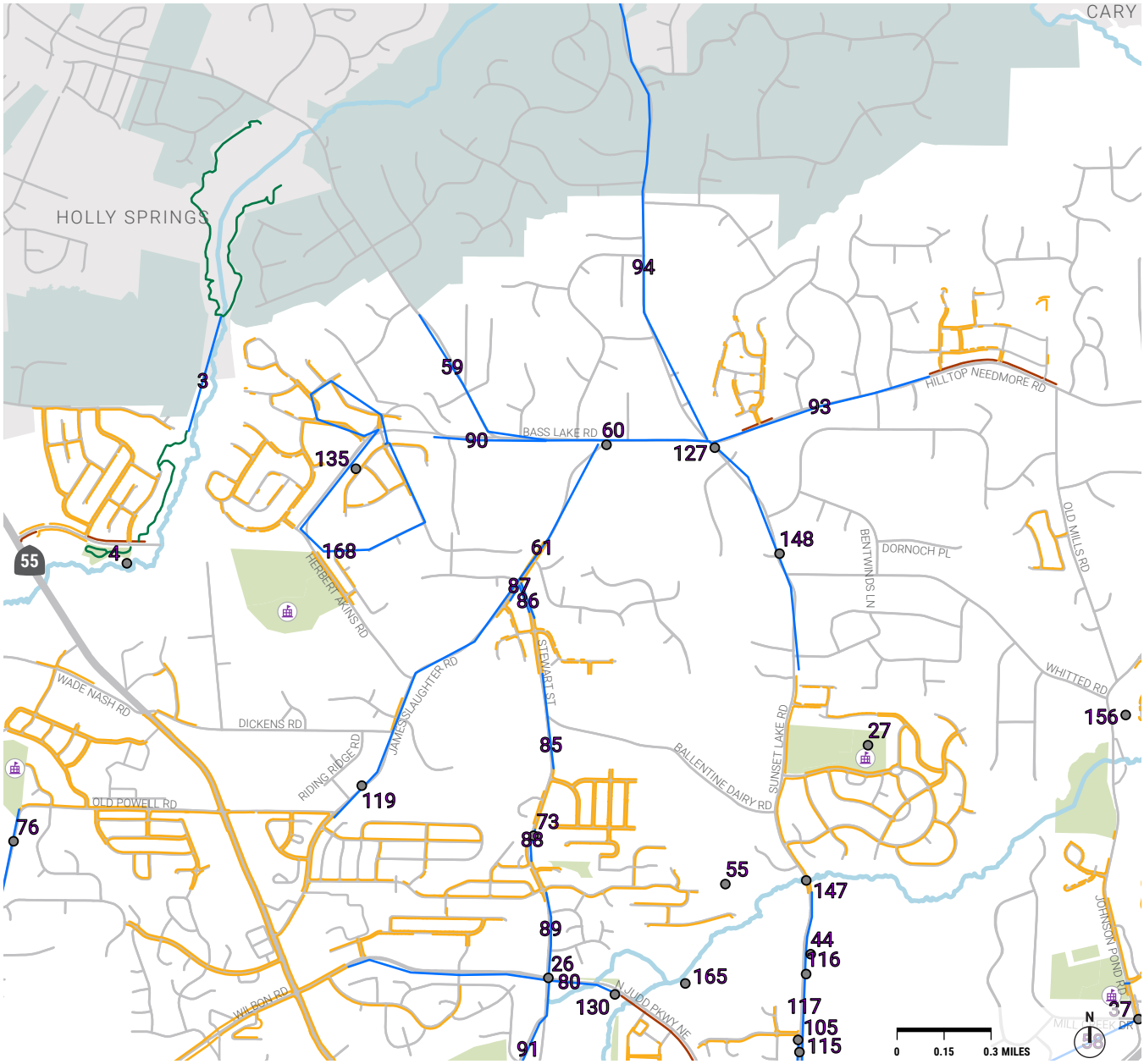
Map 17: Online Input Map Comments: North



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

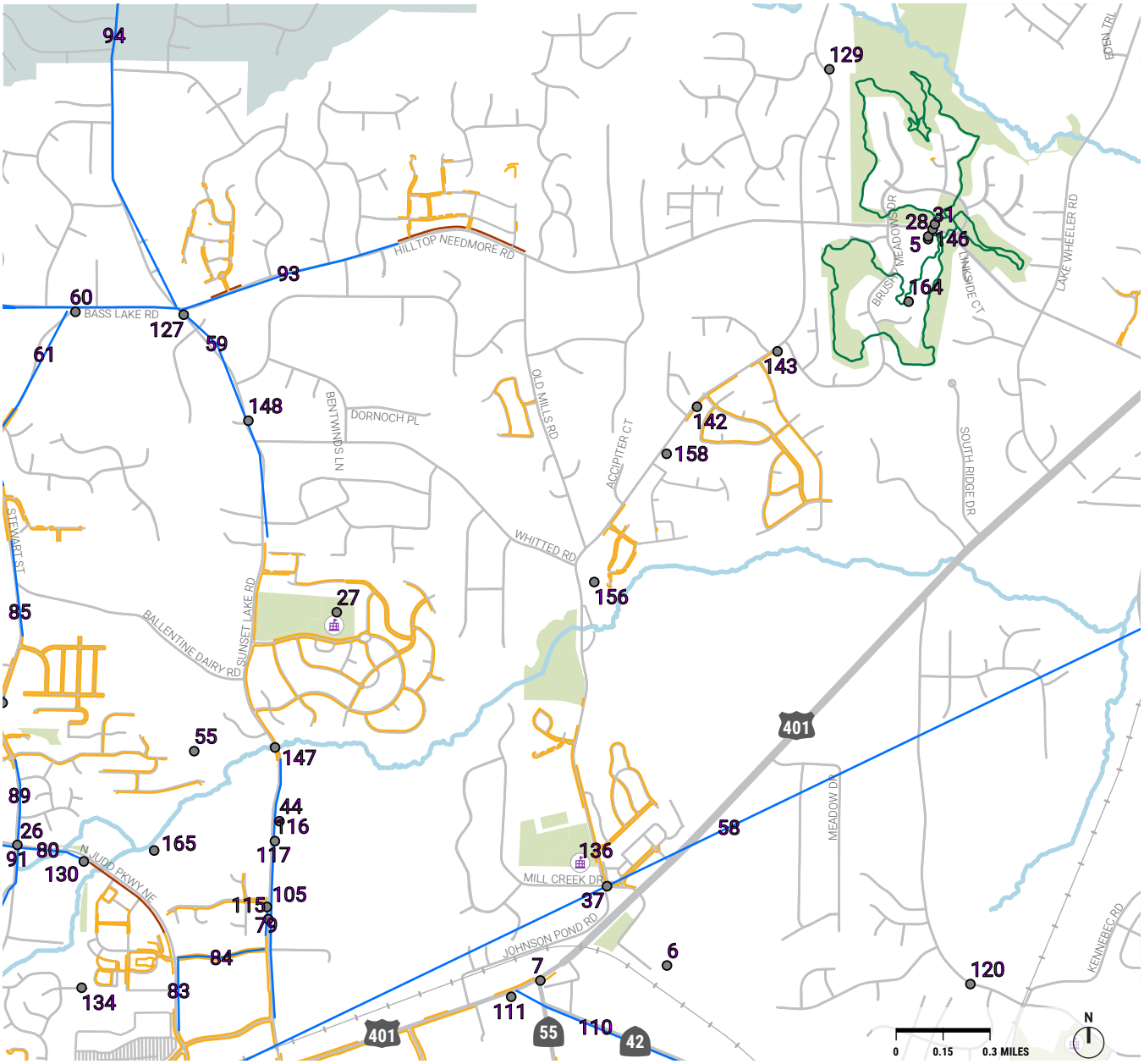
PUBLIC COMMENTS

- PUBLIC COMMENTS: POINTS
- PUBLIC COMMENTS: LINES

Table 8: Interactive Map Comments (Cont)

MapID	Comment Type	Comment
3	Needs improvement	Future extension to the north to Bass Lake - funding needed for construction
4	Walking	Future shared use path extension toward new development/Broad St/NC 55
26	Walking	Gaps in the pedestrian network here along Judd Pkwy and Stewart St - possible future development in this area as well
27	Walking	The ballentine school is inaccessible via walking from anywhere outside of the Ballentine neighborhood. Connections along Hilltop Needmore and Sunset Lake Rd would be a huge benefit.
37	Walking	This intersection is getting tougher to cross.
44	Walking	Sidewalks along Sunset Lake RD between Ballentine Subdivision and the Harris Teeter shopping Center (Sunset and Broad) would be very useful!
55	Walking	There is mention in previous documents of a greenway connecting Ballentine to downtown. I think that would be a wonderful addition.
59	Needs improvement	Needs sidewalk or alternate walking trail. A shoulder for cycling would help too!
60	Walking	Dangerous intersection
61	Needs improvement	Need sidewalk or additional shoulder space
76	Walking	Lots of walking traffic between Southern Wake Academy and Briar gate Subdivision.
80	Needs improvement	Add sidewalks to NE Judd Parkway to provide a safe walking and running route
87	Needs improvement	Needs sidewalks
89	Needs improvement	Needs sidewalks
90	Needs improvement	Needs sidewalk
91	Needs improvement	Sidewalk to school
93	Needs improvement	Connect various sections together along Hilltop Needmore to meet Sunset Lake road walkway.
94	Needs improvement	Add walking feature north on Sunset Lake to meet up with existing sidewalk so as to be able to get to the shopping center.
105	Walking	Many do Smith Farms residents make their own path from our subdivision to Products Road. It's very sad to see families with small children riding bikes or strollers trying to safely connect to the stores and restaurants at the Fuquay Crossing Shopping Center.
115	Walking	No sidewalks currently available for walking
116	Walking	Sidewalk from Ballentine to products rd would make walking around the area safer.
117	Needs improvement	Agree with other suggestions that a sidewalk should be created to connect the Ballentine neighborhood to the Sunset Lake Commons area. This section currently requires one to walk along Sunset Lake Rd in the dirt/grass/mud and is unsafe for both pedestrians and drivers as the volume of traffic along Sunset Lake Rd continues to increase.
119	Walking	Would love access to walk or bike ride into town
127	Walking	Would like to see sidewalks on Sunset Lake Road connecting Bass Lake Road/Hilltop Needmore Road at least to Bentwinds. We live in Vintage Ridge and can not safely walk to any other neighborhood without walking on someone else's property or on the road.
130	Walking	There are portions of Judd parkway between Main Street and Broad that don't yet have sidewalk which make walking or running the whole Judd loop not possible because of the narrow shoulder and blind curves
135	Walking	The town provides no bike or walking access for the NW part of town.
147	Walking	Please make a sidewalk between Hilltop/Bass Lake Intersection to Main Street
148	Walking	Please make a sidewalk between Hilltop/Bass Lake Intersection to Main Street
156	Walking	Would like to be able to walk on Johnson Pond to N Main Street using sidewalks or side paths.
165	Walking	These woods are beautiful and should be preserved, with greenway trails added. The current possibility of a 4-lane road passing through this area would be an incredible loss to what could be a beautiful ecological benefit to the town.
168	Needs improvement	Need pedestrian crossing markings to keep crossing Herbert Akins safe as traffic there increases. Also need sidewalk along Sunset Bluffs common area. Greenway access along one of the Mill Ridge ponds would connect Mill Ridge and future Atwater developments to Herbert Akins schools.

Map 18: Online Input Map Comments: Northeast



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

PUBLIC COMMENTS

- PUBLIC COMMENTS: POINTS
- PUBLIC COMMENTS: LINES

Table 8: Interactive Map Comments (Cont)

MapID	Comment Type	Comment
5	Walking	Existing greenway trails - old golf course; future school and park
6	Walking	Future large retail development - will include new 4-6 lane road connection between US 401 and NC 42 - street will include a sidepath and an at-grade crossing of the railroad
7	Walking	Intersection improvement needed - tricky to get across, many people try (lots of goat paths); NC 55 will be realigned here (NCDOT project U-5751)
26	Walking	Gaps in the pedestrian network here along Judd Pkwy and Stewart St - possible future development in this area as well
27	Walking	The ballentine school is inaccessible via walking from anywhere outside of the Ballentine neighborhood. Connections along Hilltop Needmore and Sunset Lake Rd would be a huge benefit.
28	Walking	The fact that you can't walk to the walking trails at Hilltop Needmore park is ridiculous.
37	Walking	This intersection is getting tougher to cross.
44	Walking	Sidewalks along Sunset Lake RD between Ballentine Subdivision and the Harris Teeter shopping Center (Sunset and Broad) would be very useful!
52	Walking	Missing sidewalk, dangerous for walkers
55	Walking	There is mention in previous documents of a greenway connecting Ballentine to downtown. I think that would be a wonderful addition.
58	Needs improvement	The corner of Fuquay Ave and Academy has a 5" ledge from the road to the sidewalk where the blacktop was laid and not tapered. It is not ADA COMPLIANT and is impossible to negotiate in a wheelchair or using a stroller. Actually all road accesses are pretty lousy along Fuquay Ave except for the art center crossing at Vance St.
59	Needs improvement	Needs sidewalk or alternate walking trail. A shoulder for cycling would help too!
60	Walking	Dangerous intersection
61	Needs improvement	Need sidewalk or additional shoulder space
73	Walking	There are very few sidewalks along Stewart St. I'd love to be able to walk to downtown from my home.
83	Needs improvement	Sidewalk needed here for safety
84	Needs improvement	Street lights are needed along this route for pedestrian safety.
85	Needs improvement	Needs sidewalks
89	Needs improvement	Needs sidewalks
93	Needs improvement	Connect various sections together along Hilltop Needmore to meet Sunset Lake road walkway.
94	Needs improvement	Add walking feature north on Sunset Lake to meet up with existing sidewalk so as to be able to get to the shopping center.
96	Walking	Restaurants and groceries. Walking from neighborhoods to the south along Judd Parkway part of the way.
105	Walking	Many do Smith Farms residents make their own path from our subdivision to Products Road. It's very sad to see families with small children riding bikes or strollers trying to safely connect to the stores and restaurants at the Fuquay Crossing Shopping Center.
110	Needs improvement	Connect Partin place through nc42, nc55, nc401 at five points
111	Walking	Connect five points to shopping areas
113	Walking	Connect Partin Place to willow springs
115	Walking	No sidewalks currently available for walking

Table 8: Interactive Map Comments (Cont)

117	Needs improvement	Agree with other suggestions that a sidewalk should be created to connect the Ballentine neighborhood to the Sunset Lake Commons area. This section currently requires one to walk along Sunset Lake Rd in the dirt/grass/mud and is unsafe for both pedestrians and drivers as the volume of traffic along Sunset Lake Rd continues to increase.
120	Walking	Several walkers and runners frequent this stretch of Dwight Rowland. When you pass Rowland Meadows the shoulders are so narrow that it's hazardous, both for drivers and pedestrians to avoid each other.
121	Walking	Extending the Judd Reserve-installed sidewalk to both the Willow Spring Service Station and the (forthcoming) Dollar General would improve pedestrian safety. Especially since so many people from nearby neighborhoods walk to the gas station already. The increase in traffic DG will bring warrants safer conditions for those without transportation.
127	Walking	Would like to see sidewalks on Sunset Lake Road connecting Bass Lake Road/Hilltop Needmore Road at least to Bentwinds. We live in Vintage Ridge and can not safely walk to any other neighborhood without walking on someone else's property or on the road.
130	Walking	There are portions of Judd parkway between Main Street and Broad that don't yet have sidewalk which make walking or running the whole Judd loop not possible because of the narrow shoulder and blind curves
134	Walking	Would be nice to be able to walk to downtown Varina from the Retreat apartment complex, and would be nice to walk from the neighborhood to the Bengal Townes shops.
136	Needs improvement	Crosswalk needed across johnson pond to safely cross to the school and back. Increased traffic in the AM and PM rush hours makes this difficult to safely cross.
142	Walking	I would love a path to continue from Meadow Bluffs Development to Crooked Creek where you can then get to Hilltop Needmore. There's a very small amount of sidewalk needed but would make an amazing greenway for tons of neighborhoods to safely get to the park! Thank you!
143	Walking	Please add a small sidewalk for park access and safety :)
146	Walking	Hilltop
147	Walking	Please make a sidewalk between Hilltop/Bass Lake Intersection to Main Street
148	Walking	Please make a sidewalk between Hilltop/Bass Lake Intersection to Main Street
155	Needs improvement	Connect Partin Place subdivision to Harrison Place subdivision. There is about 15 feet where there is no sidewalk connecting the two and its unsafe to walk out onto 42 to go between.
156	Walking	Would like to be able to walk on Johnson Pond to N Main Street using sidewalks or side paths.
158	Walking	A sidewalk to the Culver's plaza please !
164	Walking	I cannot access this place by sidewalk. Have to drive from Crooked Creek Meadowview or walk in a busy road
165	Walking	These woods are beautiful and should be preserved, with greenway trails added. The current possibility of a 4-lane road passing through this area would be an incredible loss to what could be a beautiful ecological benefit to the town.
169	Walking	a crosswalk would be great

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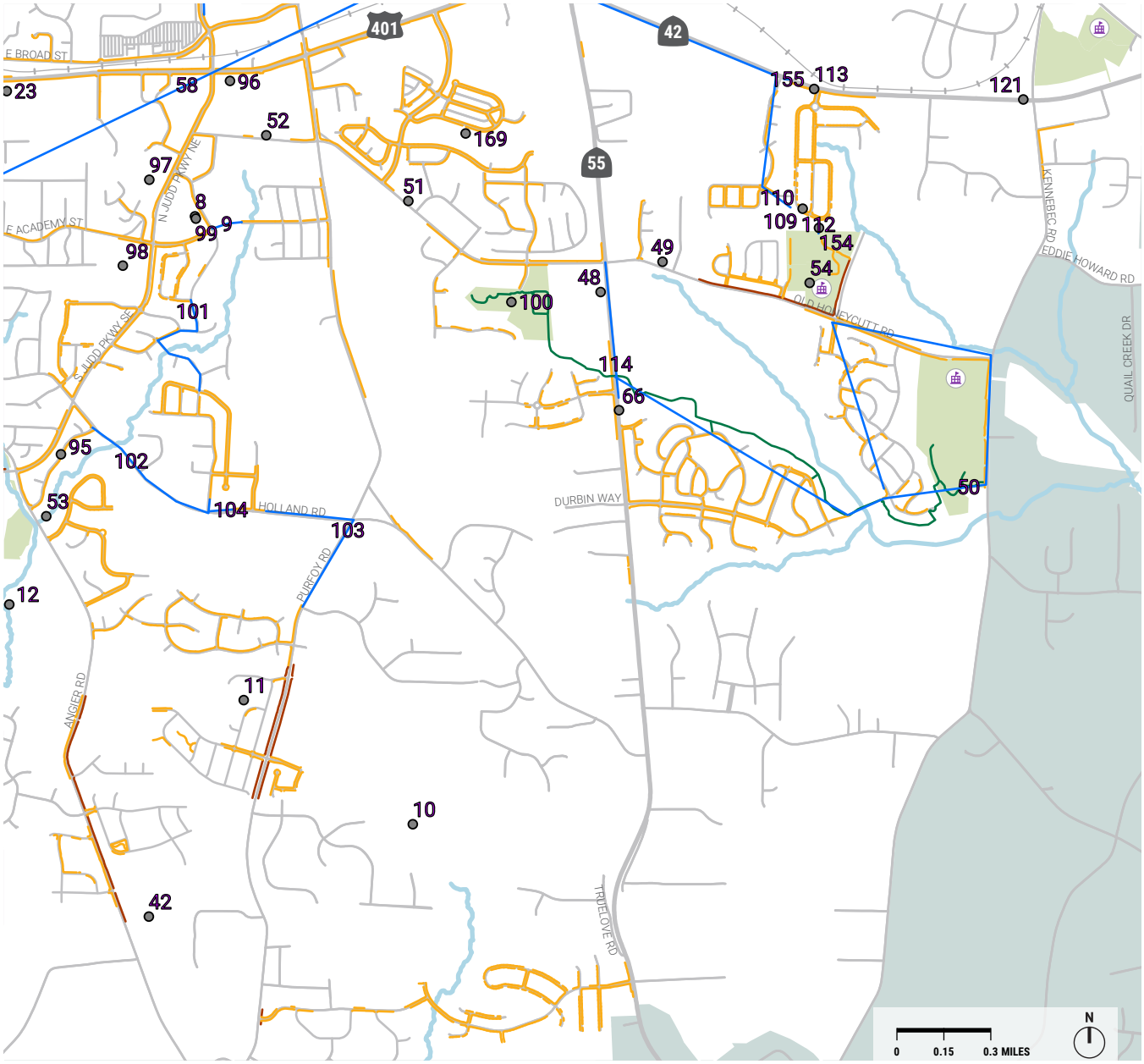
Map 19: Online Input Map Comments: Southeast



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

PUBLIC COMMENTS

- PUBLIC COMMENTS: POINTS
- PUBLIC COMMENTS: LINES

Table 8: Interactive Map Comments (Cont)

MapID	Comment Type	Comment
8	Walking	new library
9	Needs improvement	Academy street will connect here - future development
10	Walking	future development in this area along Neills Creek - will include a greenway trail
11	Walking	future development that will include a greenway
12	Walking	greenway potential along Kenneth Creek?
23	Walking	Development in this area will include a greenway segment along the former railroad corridor
42	Walking	Would like some walking routes that connect all the new neighborhoods to a greenway.
48	Walking	sidewalks end, no store walking access or connection to main road
49	Walking	Sidewalks end - could actually connect greenways if the sidewalks extended
50	Route that works well	works well in good condition
51	Walking	Missing sidewalk, dangerous for walkers
52	Walking	Missing sidewalk, dangerous for walkers
53	Walking	I could walk to the library, and much of downtown if angier road had more sidewalks.
54	Walking	The fact that there aren't enough sidewalks and crosswalks for children to walk to school is a travesty. I don't even live in those neighborhoods and I'm frustrated.
58	Needs improvement	The corner of Fuquay Ave and Academy has a 5" ledge from the road to the sidewalk where the blacktop was laid and not tapered. It is not ADA COMPLIANT and is impossible to negotiate in a wheelchair or using a stroller. Actually all road accesses are pretty lousy along Fuquay Ave except for the art center crossing at Vance St.
66	Walking	Need sidewalk both sides. Need better signal at intersection of 55 and greenway. too many cars ignore flashing light
95	Walking	Could you add sidewalks on Angier rd connecting downtown Fuquay all the way to Judd parkway. Many residents would benefit from this. Would love to be able to walk to my favorite coffee shop!
96	Walking	Restaurants and groceries. Walking from neighborhoods to the south along Judd Parkway part of the way.
97	Walking	post office by crossing judd parkway
98	Walking	church by crossing judd parkway
99	Walking	library
100	Walking	park
101	Needs improvement	no sidewalks and very narrow streets, lots of people walk through this neighborhood to reach other neighborhoods, library, church, judd parkway
102	Needs improvement	neighborhoods along holland road need access to judd parkway sidewalks
103	Needs improvement	connectivity between new neighborhoods on purfoy rd that already have sidewalks
104	Needs improvement	missing link along holland rd
109	Walking	Walking route down nc42 to connect Partin place to nc55 and nc501 at five points
110	Needs improvement	Connect Partin place through nc42, nc55, nc401 at five points
113	Walking	Connect Partin Place to willow springs

Table 8: Interactive Map Comments (Cont)

114	Needs improvement	Sidewalk needed
121	Walking	Extending the Judd Reserve-installed sidewalk to both the Willow Spring Service Station and the (forthcoming) Dollar General would improve pedestrian safety. Especially since so many people from nearby neighborhoods walk to the gas station already. The increase in traffic DG will bring warrants safer conditions for those without transportation.
154	Walking	Need a walking path from South Lakes ED to Partin Place subdivision
155	Needs improvement	Connect Partin Place subdivision to Harrison Place subdivision. There is about 15 feet where there is no sidewalk connecting the two and its unsafe to walk out onto 42 to go between.
169	Walking	a crosswalk would be great

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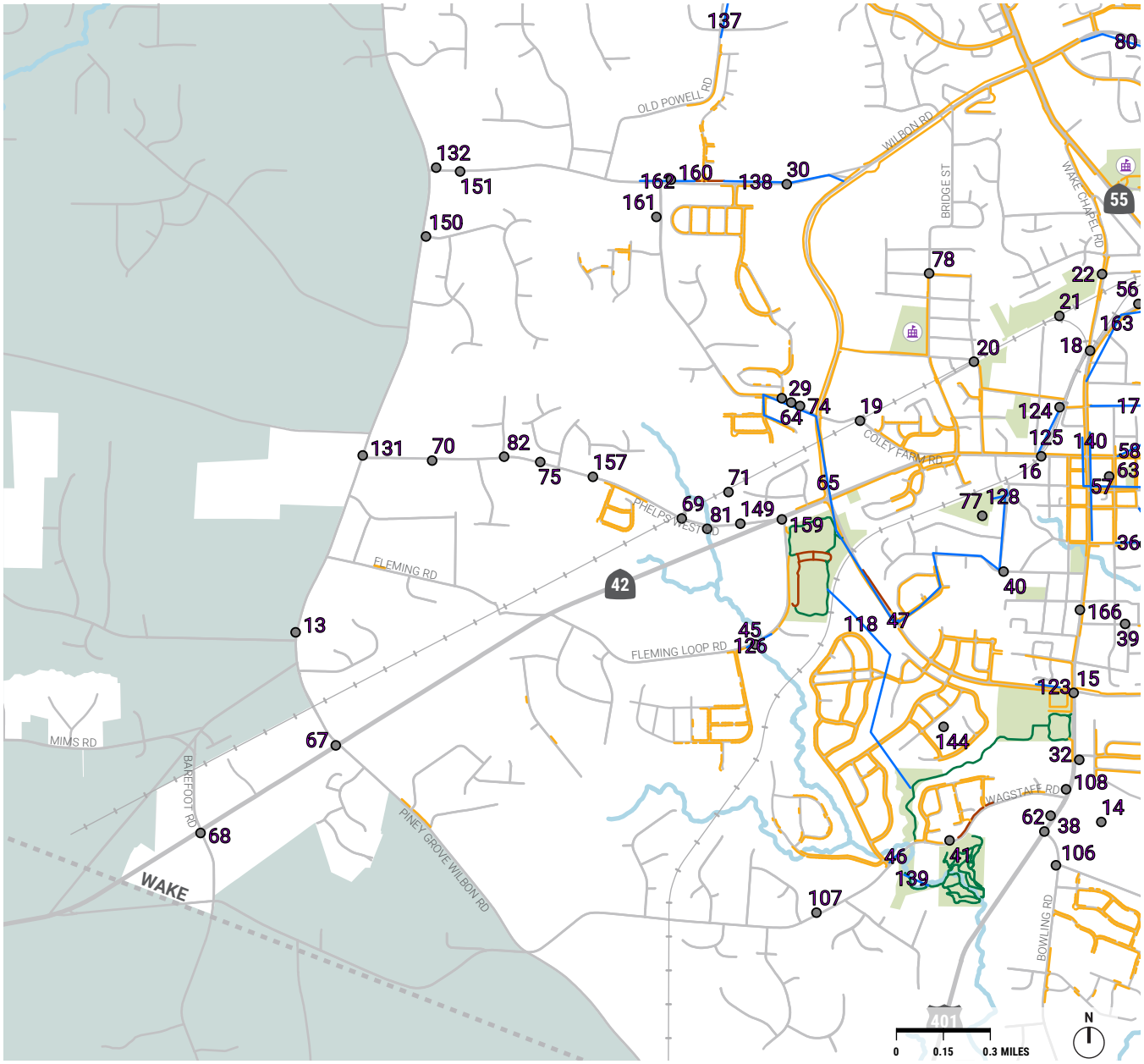
Map 20: Online Input Map Comments: Western



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

PUBLIC COMMENTS

- PUBLIC COMMENTS: POINTS
- PUBLIC COMMENTS: LINES

Table 8: Interactive Map Comments (Cont)

MapID	Comment Type	Comment
13	Walking	NC 751 extenstion - longer-term future roadway project - connect to southern terminus of the American Tobacco Trail to the northwest, and Raven Rock State Park to the south
14	Walking	Location of new elementary and middle school - connectivity needed to adjacent neighborhoods
15	Walking	Sidewalk project to connect to this intersection is in development, will likely be constructed in near term
16	Walking	Need ADA pedestrian accommodation across railroad tracks
17	Needs improvement	E. Jones St sidewalks (Town Hall to Middle School) are in the development process (funding awarded through LAPP)
18	Walking	Intersection needs improvement - difficult intersection to improve due to confluence of railroad tracks and multiple roads - has been previously studied, considering tunnel project
19	Walking	Roadway crossing of railroad tracks recently closed
20	Walking	Roadway crossing of railroad tracks recently closed
21	Walking	Railroad corridor that is currently inactive - would be great connection from center of FV to southwest side of FV if possible
29	Walking	Connecting Grays Creek neighborhood to NW Judd Parkway via sidewalk
30	Walking	Connecting Grays Creek neighborhood to NW Judd Parkway via sidewalk
32	Walking	Coming out of the Village of Charleston across from the Kidney Center and South Park needs sidewalk and crosswalk to be able to enjoy the park/community center. Speeding cars will kill someone one of these days. Trees blocking the visibility of traffic are also an issue. Soon South and Main will add to the congestion.
38	Walking	Extend sidewalks south of south park
39	Walking	There are no sidewalks in this entire neighborhood (S. Fuquay / Pine St / Arnold / Senter / Dickens.) yet there are numerous pedestrians out every day having to walk in traffic.
40	Walking	There is an entire section here that has no sidewalks, yet there are daily walkers throughout the area walking in the street.
41	Walking	Jeff Wells Trail is lovely, and there's nice little sidewalk to Caroll Howard Johnson Park, but then there's nothing. Walking from Main Street to the park is treacherous due to curvy road and very little shoulder.
45	Walking	Connect the sidewalk from Bent Tree subdivision to Fleming Loop Park. There is a small section which, if completed, would increase safety for strollers, children on bikes, pedestrians, etc. There is a curve in the road making it dangerous to see oncoming traffic for those accessing the park from Bent Tree, Fleming Fields and residences on Fleming Loop Road.
47	Needs improvement	Crosswalk would make getting to Fleming loop park safer for the kids.
56	Walking	I feel like one of the advantages FV has over other towns in the triangle is a pair of wonderful downtowns. Furthermore, I would imagine that a decent percentage of our town lives within walking or biking distance of those. Connecting those neighborhoods with downtown will benefit traffic and the town.
62	Walking	There are now three subdivisions on Bowling Road that are not connected with Route 401 sidewalks to Downtown.
63	Walking	Coffee
64	Walking	There is no safe way to get to Judd Pkwy from Union Station.
65	Route that works well	This is how I go to the dog park. Believe it or not, it's easier to cross SW Judd Pkwy than W. Academy St.
67	Walking	OC Hester, Piney Grove Wilbon to Burt Rd. These areas are dangerous and many walkers walk here
68	Walking	Connecting safe walking between Mims Rd, OC Hester, Piney Grove Wilbon and Burt Rd.
69	Walking	Can we please add sidewalks to Phelps Farm West Road? Thank you!
70	Walking	Please add sidewalks to Phelps West Road. It would be so much safer for the walkers in the neighborhoods that come off of that road. Thanks!!
71	Walking	Are there any plans to convert this unused railway into a paved greenway trail that leads to downtown Fuquay? It would be an AMAZING asset for the town!!!

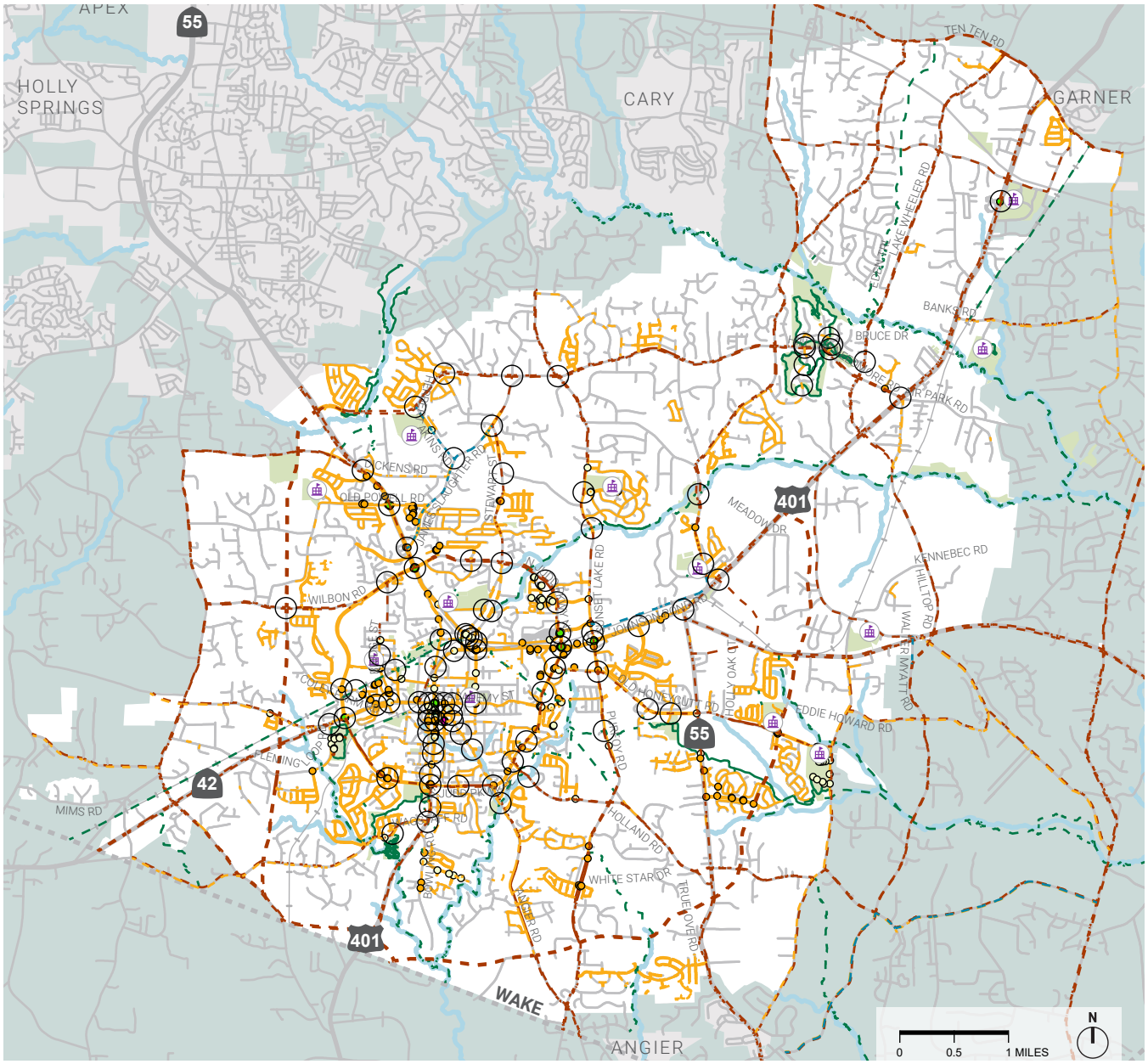
Table 8: Interactive Map Comments (Cont)

75	Walking	Speed bumps are needed on Phelps Road West. Drivers go WAY WAY too fast on this road and it's dangerous. If sidewalks are indeed added here, speed bumps or some of of speed reducing devices will be necessary.
77	Walking	It would be nice to connect the dog park to Fleming Loop and there seems to be space for a trail.
78	Walking	I think it's very important to add safe side walks from McLean to the intersection of 401 and Wilbon Rd. West Fuquay and on both sides of Wilbon to 401. The food dessert in west Fuquay-Varina means many people without vehicles have to walk to Food Lion regularly
80	Needs improvement	Add sidewalks to NE Judd Parkway to provide a safe walking and running route
82	Walking	Need sidewalks all the way down Phelps West to access downtown.
106	Walking	Desperately need side walks here on bowling rd and cross walk to 401 to access South Park ball field.
107	Walking	Wagstaff road needs sidewalk to access parks. Road is narrow and people walk in the street all the time. Very unsafe.
118	Needs improvement	Create Greenways that connect these parks across town.
123	Needs improvement	Bushes and trees need trimming on Judd Parkway sidewalk across from community center. Sometimes I have to walk in the bike lane to avoid low hanging or overhanging branches.
124	Walking	Rather than trying to improve the walkability of the confluence of the railroad and main street, you could add a walking bridge over the tracks at the end of W. Jones St. Lots of people walk up W. Jones and then have to cross at the dangerous intersection by the railroad.
128	Needs improvement	Visitors to the dog park need a more direct route from parking walking into the dog park that keeps them(and their pets) out of flowing traffic.
131	Walking	Walking/cycling on Piney Grove Wilbon…key improvement with pedestrian traffic increasing.
132	Walking	Wilbon Rd. Connectivity for walkers and cyclists between piney grove Wilbon and Wilbon rd to Judd would connect the western part of the town to key destinations like the High School.
137	Needs improvement	walking/bike access along Old Powell Rd from Briar Gate neighborhood to connect to exisiting sidewalks by Southern Wake. Once new mixed use development is built at Broad St/Old Powell it would be nice to have safe bike access.
138	Needs improvement	Sidewalk or Sidepath would be beneficial. Pedestrians currently attempt to walk on Wilbon and it's very dangerous as is.
139	Needs improvement	Walking Trails at the environmental park need repairs from erosion.
140	Needs improvement	Traffic doesn't slow at pedestrian crosswalks on Main. I've seen crosswalks in holly springs, Wilmington, and Raleigh that have blinkers imbedded in the road and crossing buttons for pedestrian only crossings.
144	Walking	Angier Rd is quite busy with walkers daily going to/from downtown. We would love to see a sidewalk as traffic can be busy and majority of drivers aren't traveling 35 mph, combined without much room for walkers makes for dangerous conditions.
150	Walking	A sidewalk or pathway for walkers and cyclists along Piney Grove Wilbon would increase safety as this road is extremely busy now since the road was changed to go straight to the Holly Springs Walmart on Hwy55.
151	Walking	As more and more subdivisions are added to Wilbon Road increasing motorist traffic, there needs to be a safe way for pedestrians and cyclists to get from Wilbon Road to NW Judd Pkwy.
157	Walking	Phelps West and Academy need sidewalks.
159	Walking	A sidewalk from Fleming loop rd along w academy in both directions to accommodate local walkers trying to get to the park safely
160	Walking	Want to connect Briar Gate Community to Saint Bernadette Church.
161	Walking	Sidewalk connecting Broadwell Trace Community to St Bernadette Church, including crosswalk with flashing sign
162	Needs improvement	Walking path could use a sidewalk from St Bernadette Church to Briar Gate Community
163	Needs improvement	The span from CVS to the new FV Town Hall on main street is not pleasant to look at. 1. Consider enforcing parking laws so tractor trailers and other vehicles are not parked in open lots next to Garibaldi, in Citgo gas station, or other vacant lots. 2. Consider investment in burying all power/telephone lines along that stretch to match the portion of main in front of Town hall.
166	Walking	Nee sidewalk on both sides of S Main to South Park. Pedestrian crossing are dangerous and poorly marked. A lot of younger families have located to this area because of relatively low cost housing. A lot of seniors live there too. It very difficult to use the existing pedestrian facilities. A safe bike trail would be welcome to al.

D.

Appendix D: Comprehensive Network Maps (Zoom-ins)

Map 21: Recommendations Overview



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

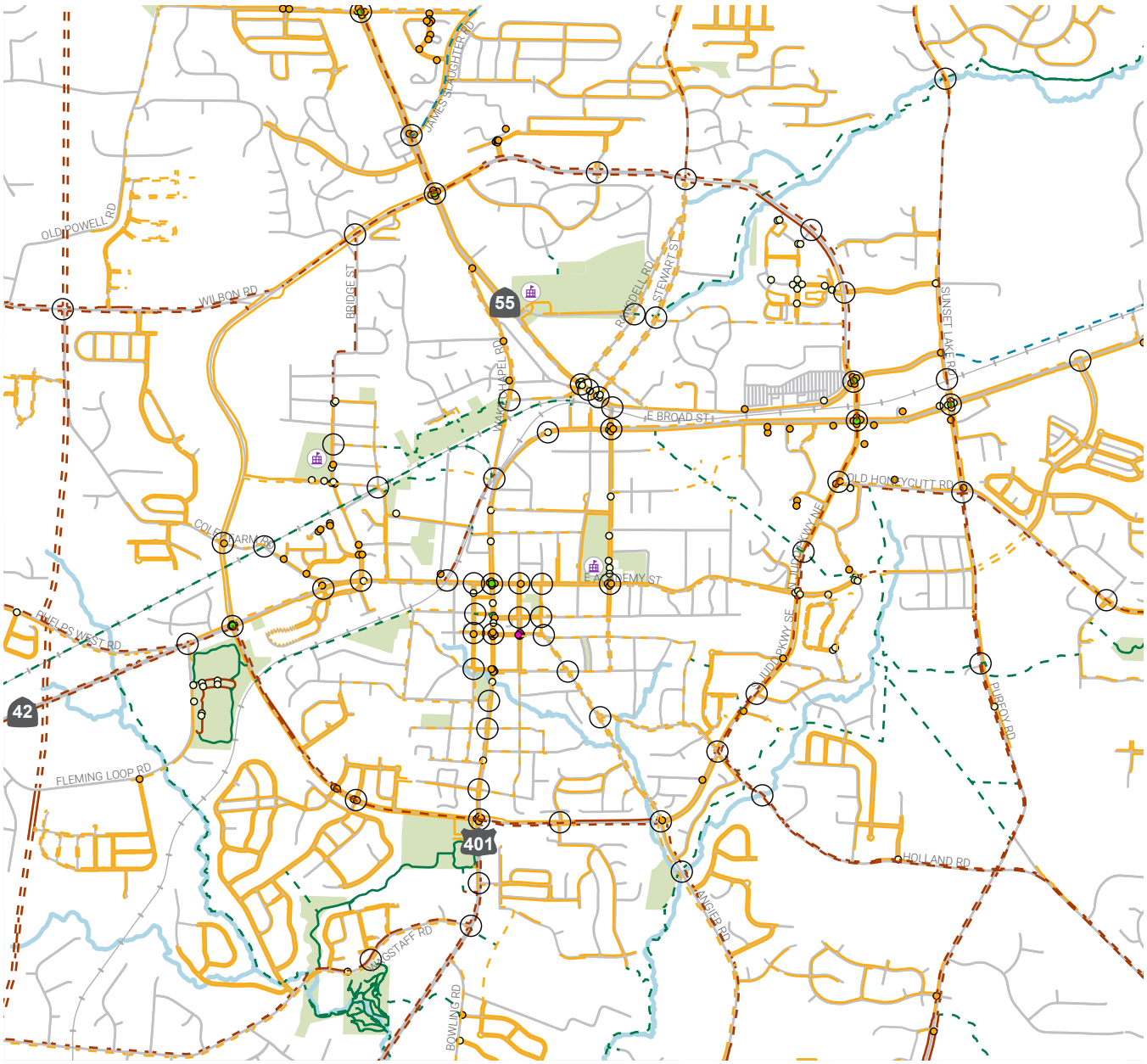
- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

NOTE: This figure is intended only for reference, conceptual planning, and informational purposes. This figure should not be used to establish boundaries, property lines, location of objects, or to provide any other information typically needed for final design, construction or any other purpose when engineered plans are required.

Map 22: Recommendations (Downtown Areas)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD

N

0 0.25 0.5 MILES

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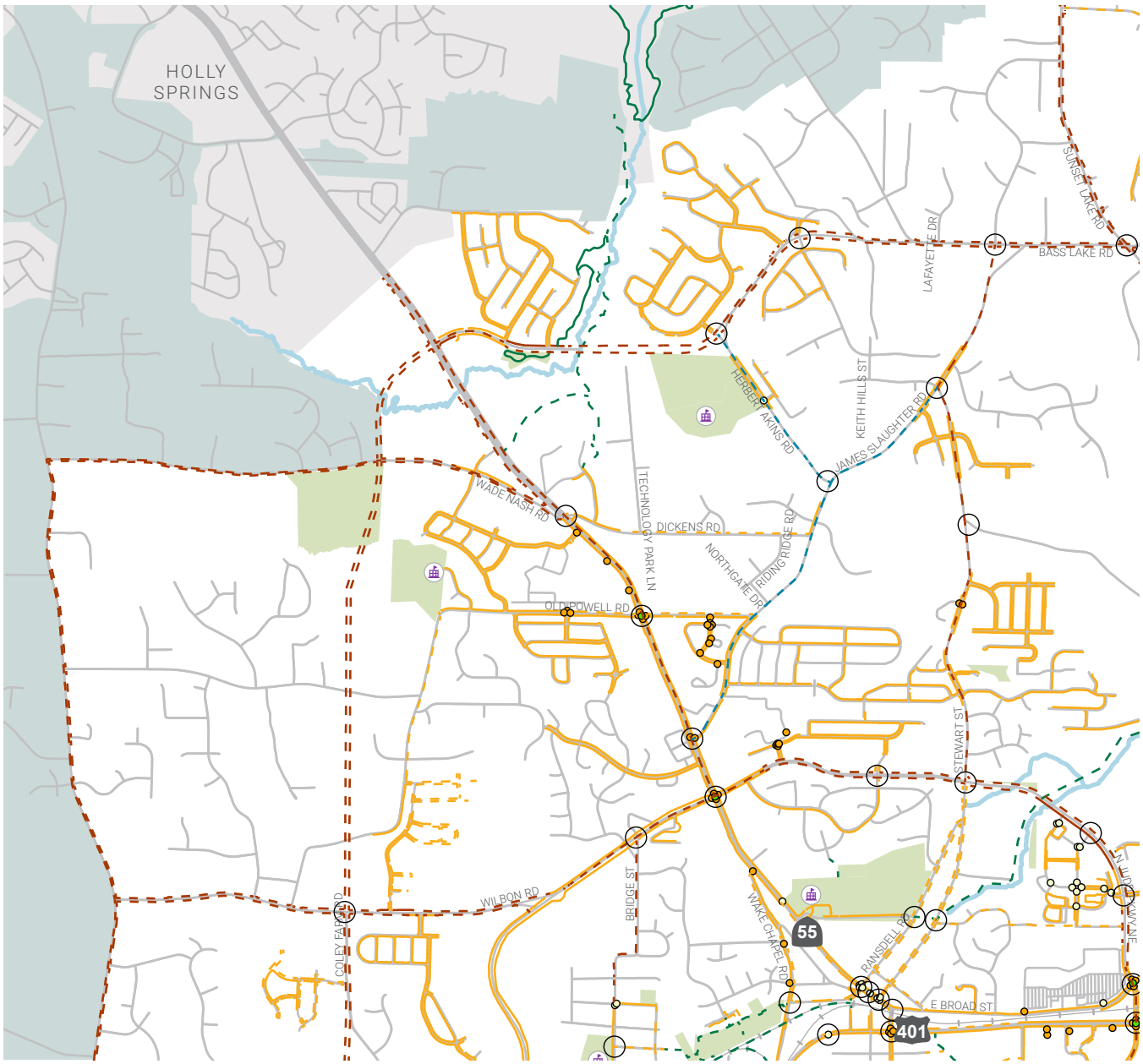
Map 23: Recommendations (Northwest)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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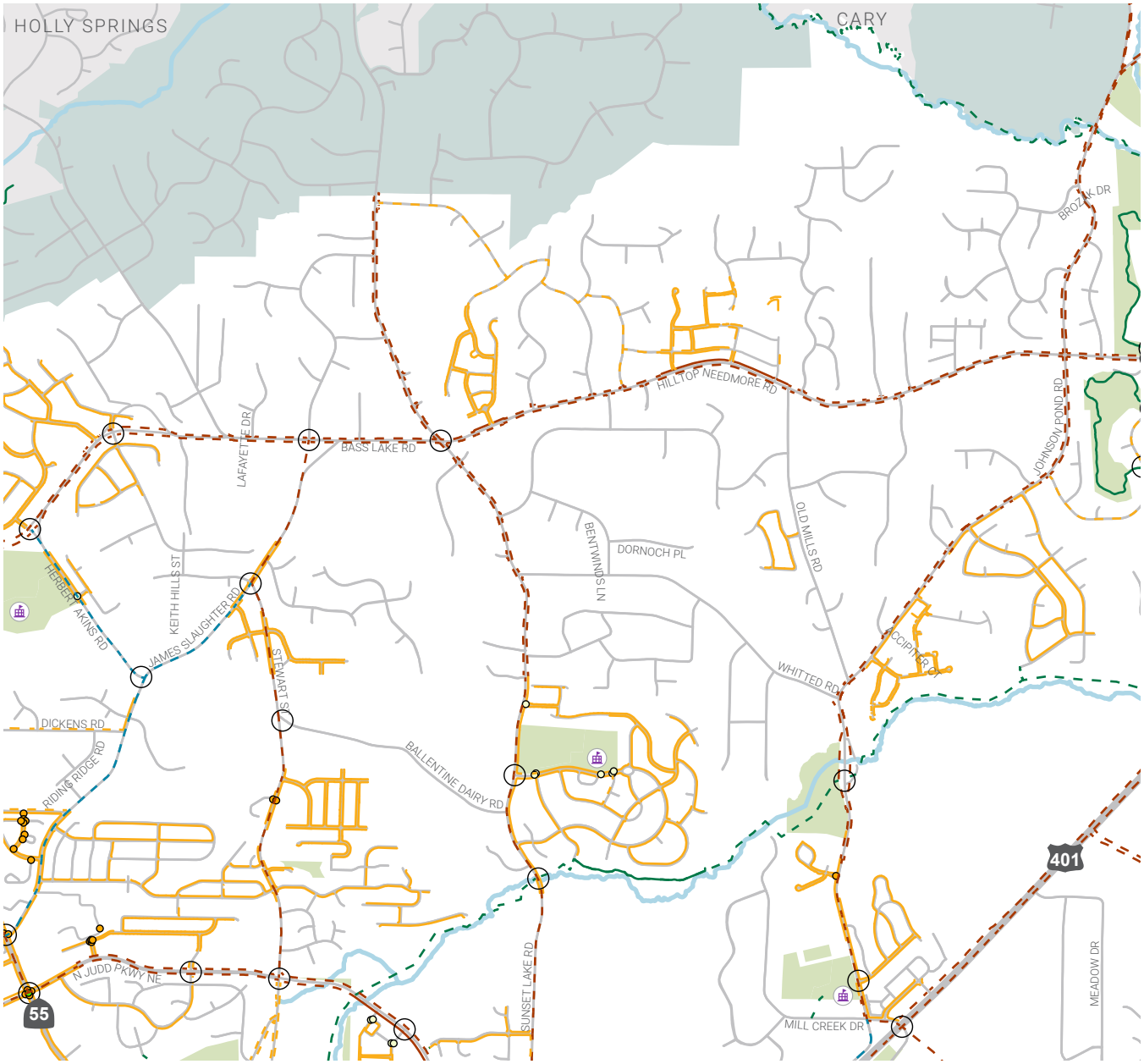
Map 24: Recommendations (North)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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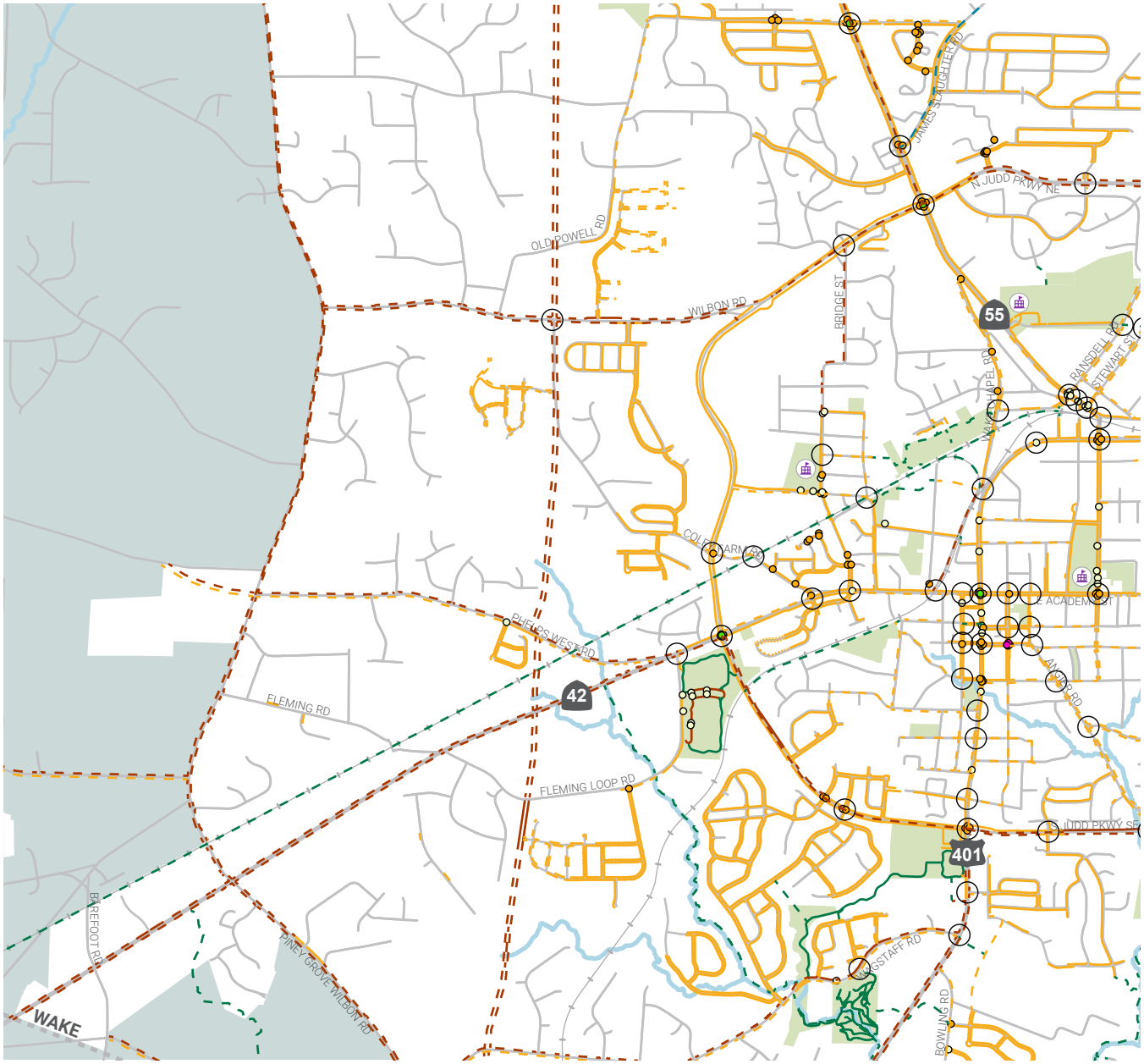
Map 25: Recommendations (West)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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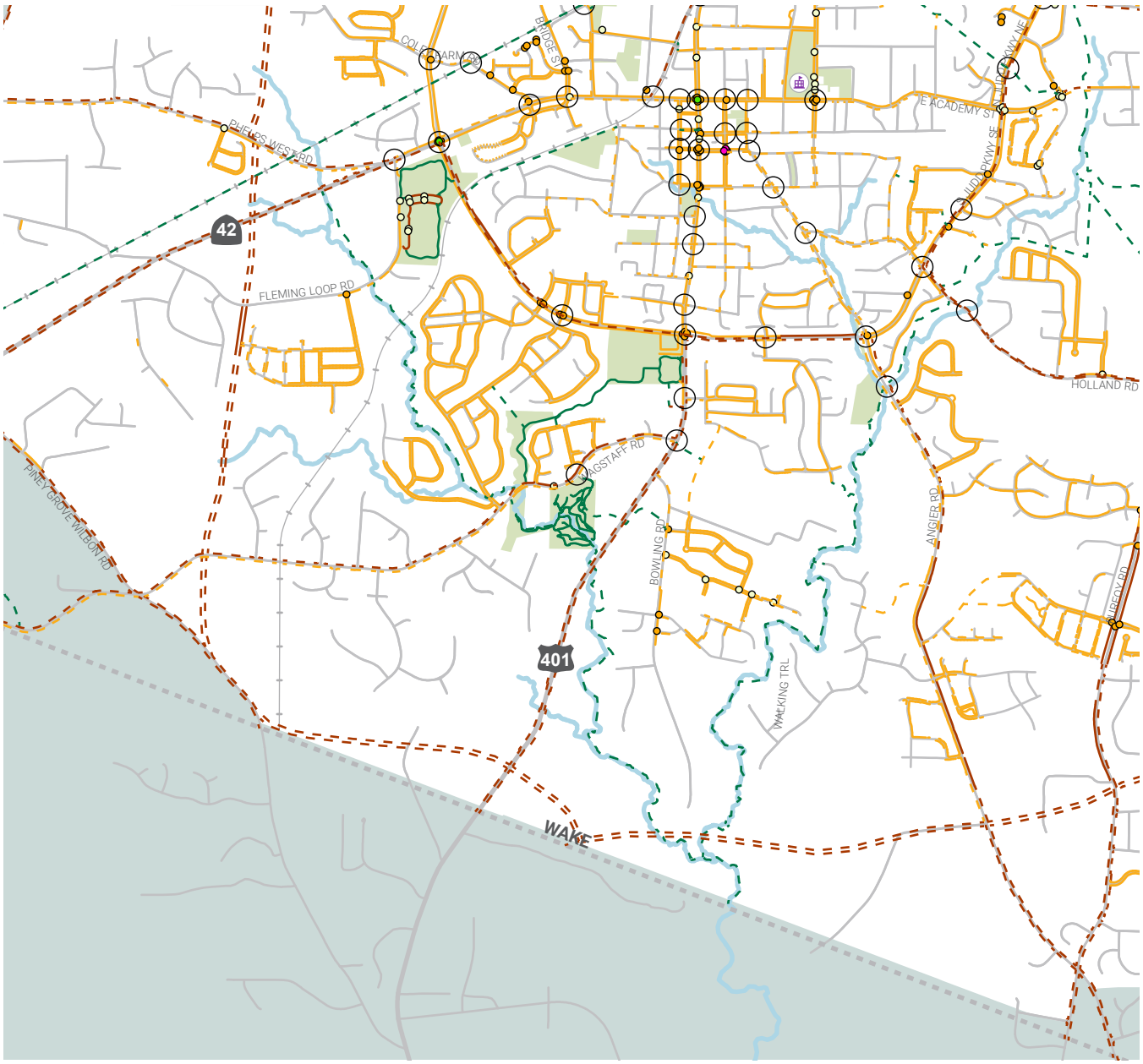
Map 26: Recommendations (South)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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Map 27: Recommendations (Southeast)

EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

NOTE: This figure is intended only for reference, conceptual planning, and informational purposes. This figure should not be used to establish boundaries, property lines, location of objects, or to provide any other information typically needed for final design, construction or any other purpose when engineered plans are required.

Map 28: Recommendations (East)

EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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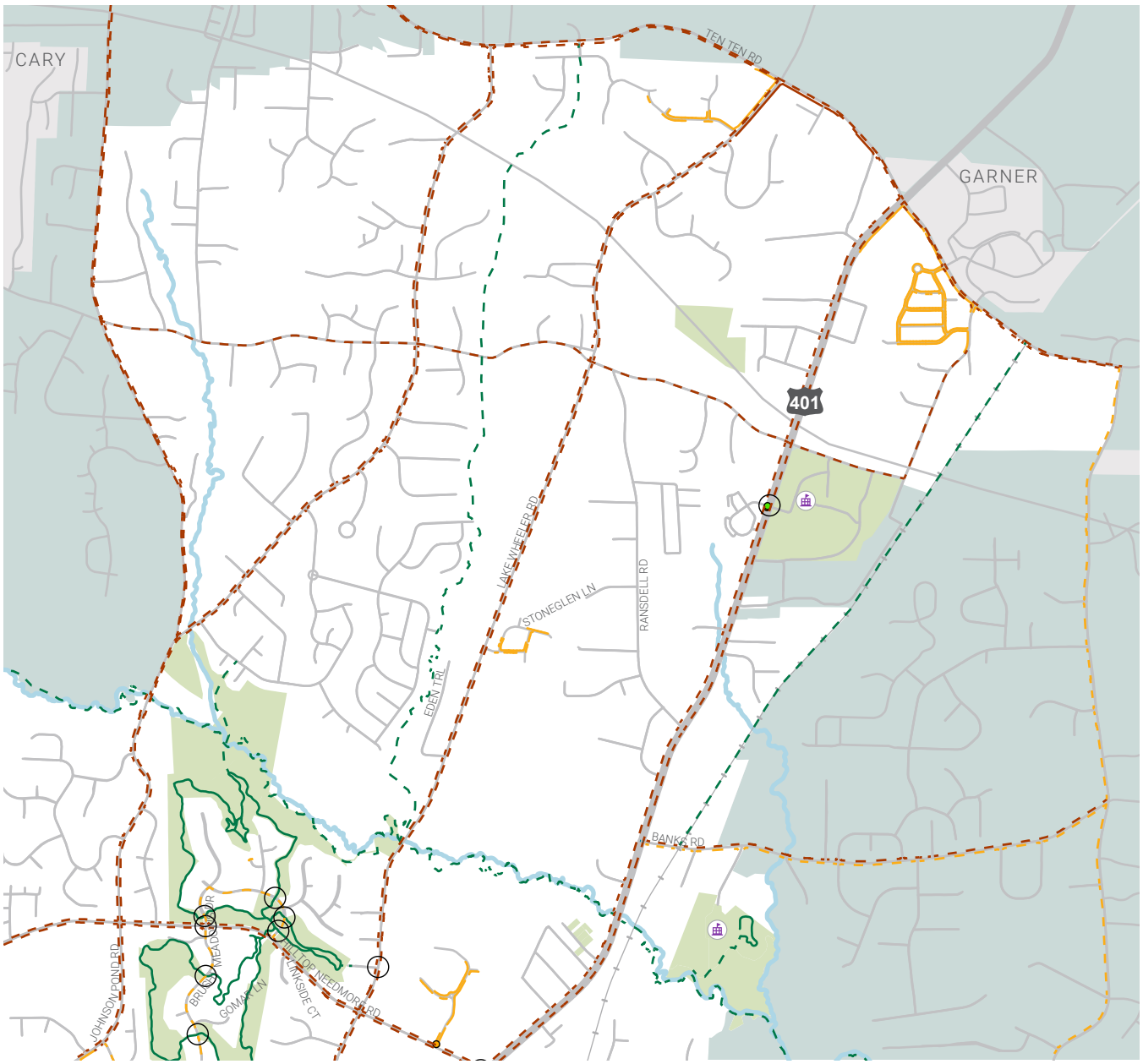
Map 29: Recommendations (Northeast)



EXISTING FACILITIES

- EXISTING GREENWAY
- EXISTING SIDEPATH
- EXISTING SIDEWALK
- PEDESTRIAN CROSSING SIGNAL
- HIGH VISIBILITY CROSSWALK
- TWO-BAR CROSSWAK
- ARTISTIC CROSSWALK

RECOMMENDATIONS

- PROPOSED GREENWAY
- PROPOSED SIDEPATH
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK/SIDEPATH (CENTERLINE)
- CROSSING IMPROVEMENTS

FEATURES AND BOUNDARIES

- SCHOOL
- PARK
- STREAM/RIVER
- RAILROAD
- FUQUAY-VARINA JURISDICTION
- OTHER MUNICIPAL BOUNDARY
- COUNTY BOUNDARY

N

0 0.25 0.5 MILES

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E.

Appendix E: Priority Project Cost Estimates

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

LOCATION:

PRIORITY PROJECT #1: DOWNTOWN INTERSECTION IMPROVEMENTS

DESCRIPTION:

FUQUAY AVE / E. ACADEMY ST: HIGH VIS. XWALKS, REPLACE CURB RAMPS, NEW PEDESTRIAN CROSSING SIGNALS
FUQUAY AVE / E. RALEIGH ST: HIGH VIS. XWALKS, REPLACE CURB RAMPS, ADD STOP SIGNS
S. SPRING AVE / DEPOT ST: HIGH VIS. XWALKS, REPLACE CURB RAMPS, ADD STOP SIGNS
S. SPRING AVE / W. VANCE ST: HIGH VIS. XWALKS, REPLACE CURB RAMPS, ADD IN-STREET YIELD TO PED SIGNAGE
S. SPRING AVE / W. SPRING ST: HIGH VIS. XWALKS, REPLACE CURB RAMPS, ADD IN-STREET YIELD TO PED SIGNAGE
BROAD ST BETWEEN RANSDELL AND STEWART: HIGH VIS. XWALKS AT MIDBLOCK
N. MAIN ST / N. ENNIST ST: HIGH VIS. XWALKS, PUSHBUTTON UPGRADE AND LEAD PEDESTRIAN INTERVAL, REPLACE CURB RAMPS
MAIN ST / ACADEMY ST: HIGH VIS. XWALKS, PUSHBUTTON UPGRADE AND LEAD PEDESTRIAN INTERVAL, REPLACE CURB RAMPS
S. MAIN ST / VANCE ST: HIGH VIS. XWALKS, PUSHBUTTON UPGRADE AND LEAD PEDESTRIAN INTERVAL, REPLACE CURB RAMPS
DEPOT ST BETWEEN S. SPRING AVE AND S. MAIN ST: CONVERT TO FESTIVAL STREET BY INSTALING BOLLARDS AT INTERSECTIONS AND DRIVEWAY ENTRANCES.

INTERSECTIONS 12

COUNTY: WAKE DIVISION: 5

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$30,000.00	$30,000.00
2605000000-N	848	CONCRETE CURB RAMP	53	EA	$3,000.00	$159,000.00
4025000000-E		CONTR FURN, ***SIGN (E)	108	SF	$20.00	$2,160.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	162	LF	$20.00	$3,240.00
4102000000-N	904	SIGN ERECTION, TYPE E	12	EA	$150.00	$1,800.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$40,000.00	$40,000.00
4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	4,225	LF	$8.00	$33,800.00
		FUQUAY AVE / E ACADEMY ST INTERSECTION SIGNAL IMPROVEMENT: PEDESTRIAN TRAFFIC SIGNALS (4 LEGS)	1	LS	$40,000.00	$40,000.00
		N. MAIN ST / N ENNIST ST INTERSECTION SIGNAL IMPROVEMENT: ADD LEAD PEDESTRIAN INTERVAL AND EX. UPGRADE PUSHBUTTONS TO APS	1	LS	$12,000.00	$12,000.00
		MAIN ST / ACADEMY ST INTERSECTION SIGNAL IMPROVEMENT: ADD LEAD PEDESTRIAN INTERVAL AND EX. UPGRADE PUSHBUTTONS TO APS	1	LS	$12,000.00	$12,000.00
		S MAIN ST / VANCE ST INTERSECTION SIGNAL IMPROVEMENT: ADD LEAD PEDESTRIAN INTERVAL AND EX. UPGRADE PUSHBUTTONS TO APS	1	LS	$12,000.00	$12,000.00
		BOLLARD	8	EA	$1,000.00	$8,000.00
		MINOR ITEMS (5%)	1	LS	$16,000.00	$16,000.00

CONSTRUCTION COST SUBTOTAL	$370,000.00
CONTINGENCY (30%)	$111,000.00
UTILITIES (ABOVE GROUND)	$55,000.00
OPINION OF PROBABLE CONSTRUCTION COST	$536,000.00
NCDOT ADMINISTRATION FEE (20%)	$107,200.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$643,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$96,000.00**

NOTE:

ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED.
ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.

COMPUTED BY CJA
DATE 7/26/2022

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

LOCATION: **PRIORITY PROJECT #2: DOWNTOWN (ACADEMY ST, ENNIS ST) RAILROAD CROSSINGS**

DESCRIPTION: **SIDEWALK AND RAILROAD CROSSING IMPROVEMENTS AT W. ACADEMY ST AND N. ENNIS ST. CROSSING OF THE NORTHFOLK SOUTHERN LINE.**

INTERSECTIONS: 2

COUNTY: WAKE

DIVISION: 5

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$29,000.00	$29,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$3,000.00	$3,000.00
0043000000-N	226	GRADING	1	LS	$8,000.00	$8,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	142	SY	$65.00	$9,230.00
2605000000-N	848	CONCRETE CURB RAMP	6	EA	$3,000.00	$18,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	90	SY	$100.00	$9,000.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$30,000.00	$30,000.00
		RAILROAD CROSSING UPGRADE (SIGNAL ARM ASSEBMLIES, PAVING AT TRACK CROSSING, ETC.)	2	LS	$200,000.00	$400,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$2,000.00	$2,000.00
		MINOR ITEMS (5%)	1	LS	$24,000.00	$24,000.00

CONSTRUCTION COST SUBTOTAL	$532,230.00
CONTINGENCY (30%)	$159,670.00
OPINION OF PROBABLE CONSTRUCTION COST	$691,900.00
NCDOT ADMINISTRATION FEE (20%)	$138,380.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$830,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$125,000.00**

NOTE:
- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED
- ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
- EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.

COMPUTED BY: CJA

DATE: 6/24/2022

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

LOCATION: **PRIORITY PROJECT #3: LINCOLN HEIGHTS CONNECTORS**

DESCRIPTION:
SIGNAGE ON CHERRY ST, WASHINGTON ST, DOGWOOD, ST
INTERSECTION IMPROVEMENTS AT WASHINGTON ST / BRIDGE ST AND CHERRY ST / BRIDGE ST
PEDESTRIAN CROSSING OF RAILROAD (INACTIVE) FROM DOGWOOD ST TO LAWRENCE ST
2000 LF 10FT WIDE ASPHALT GREENWAY FROM CHERRY ST TO ACTION PARK AND COBBLESTONE APARTMENTS
520 LF 10FT WIDE ASPHALT GREENWAY FROM LAWRENCE ST TO EASTERN EDGE OF WILLIAM FREEMAN PARK

TOTAL LENGTH: **1.1 MILES**

COUNTY: WAKE DIVISION: 5

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$36,000.00	$36,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$20,000.00	$20,000.00
0043000000-N	226	GRADING	1	LS	$244,000.00	$244,000.00
1121000000-E	520	AGGREGATE BASE COURSE	1,140	TON	$40.00	$45,600.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	320	TON	$200.00	$64,000.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	20	TON	$800.00	$16,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	30	LF	$80.00	$2,400.00
2591000000-E	848	4" CONCRETE SIDEWALK	56	SY	$80.00	$4,480.00
2605000000-N	848	CONCRETE CURB RAMP	3	EA	$3,000.00	$9,000.00
4025000000-E		CONTR FURN, ***SIGN (E)	234	SF	$20.00	$4,680.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	351	LF	$20.00	$7,020.00
4102000000-N	904	SIGN ERECTION, TYPE E	26	EA	$150.00	$3,900.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$30,000.00	$30,000.00
		RECTANGULAR RAPID FLASHING BEACON CROSSING (EA SIGN)	2	EA	$10,000.00	$20,000.00
		PEDESTRIAN RAILROAD CROSSING (INACTIVE RR LINE, PAVING FOR SIDEWALK APPROACH ONLY,ASSUMES NO SIGNALS/ARMS REQUIRED)	1	EA	$25,000.00	$25,000.00
		PEDESTRIAN BRIDGE	20	LF	$3,000.00	$60,000.00
		DRAINAGE ALLOWANCE	1	LS	$20,000.00	$20,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$40,000.00	$40,000.00
		MINOR ITEMS (5%)	1	LS	$31,000.00	$31,000.00

CONSTRUCTION COST SUBTOTAL	$683,080.00
CONTINGENCY (30%)	$204,930.00
OPINION OF PROBABLE CONSTRUCTION COST	$888,010.00
NCDOT ADMINISTRATION FEE (20%)	$177,602.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$1,066,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$160,000.00**

NOTE:
ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED
ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.

COMPUTED BY CJA
DATE 6/24/2022

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: **PRIORITY PROJECT #4: DEPOT GREENWAY EXTENSION**

DESCRIPTION:

1250 LF 10' WIDE ASPHALT GREENWAY FROM PARKER STATION SEGMENT TO JUDD PKWY
PEDESTRIAN HYBRID BEACON IMPROVEMENT AT JUDD PKWY CROSSING
1170 LF 10' WIDE ASPHALT GREENWAY FROM JUDD PKWY TO E. ACADEMY ST/ BRAMBLEHILL DR
510 LF 10' WIDE CONCRETE SIDE PATH ALONG FUTURE E. ACADEMY ST
4650 LF 10' WIDE ASPHALT GREENWAY FROM OLD HONEYCUTT RD TO PURFOY RD
PEDESTRIAN HYBRID BEACON IMPROVEMENT AT PURFOY RD CROSSING
1700 LF 10' WIDE ASPHALT GREENWAY FROM PURFOY RD TO BER CREEK DR
780 LF 5' WIDE CONCRETE SIDEWALK ALONG BER CREEK DR
620 LF 10' WIDE ASPHALT GREENWAY FROM BER CREEK DR TO HONEYCUTT RD PARK GREENWAY
3970 LF 10' WIDE CONCRETE SIDE PATH ALONG FOLD HONEYCUTT RD FROM JUDD PL DR JUST WEST OF BER CREEK DR

TOTAL LENGTH: **2.8 MILES**

COUNTY: WAKE

DIVISION: 5

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$172,000.00	$172,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$110,000.00	$110,000.00
0043000000-N	226	GRADING	1	LS	$819,000.00	$819,000.00
1121000000-E	520	AGGREGATE BASE COURSE	5,800	TON	$40.00	$232,000.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	1,170	TON	$100.00	$117,000.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	75	TON	$720.00	$54,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	4,050	LF	$40.00	$162,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	5,412	SY	$50.00	$270,600.00
2605000000-N	848	CONCRETE CURB RAMP	26	EA	$3,000.00	$78,000.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	28	SY	$250.00	$7,000.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$50,000.00	$50,000.00
		PEDESTRIAN HYBRID BEACON	2	EA	$150,000.00	$300,000.00
		PEDESTRIAN TRAFFIC SIGNALS: OLD HONEYCUTT / PUROFY - ADD PEDESTRIAN SIGNALS (3 LEGS)	1	LS	$20,000.00	$20,000.00
		PEDESTRIAN BRIDGE	30	LF	$3,000.00	$90,000.00
		10' CLEAR WIDTH WOOD BOARDWALK	170	LF	$600.00	$102,000.00
		DRAINAGE ALLOWANCE	1	LS	$260,000.00	$260,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$200,000.00	$200,000.00
		MINOR ITEMS (5%)	1	LS	$144,000.00	$144,000.00

CONSTRUCTION COST SUBTOTAL	$3,187,600.00
CONTINGENCY (30%)	$956,280.00
UTILITIES (ABOVE GROUND)	$10,000.00
OPINION OF PROBABLE CONSTRUCTION COST	$4,153,880.00
NCDOT ADMINISTRATION FEE (20%)	$830,776.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$4,985,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$748,000.00**

NOTE:

ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED.
ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.
THE SIDE PATH ALONG THE FUTURE ACADEMY STREET ASSUMES THE ROAD WILL BE CONSTRUCTED UNDER SEPARATE COST PRIOR TO TRAIL CONSTRUCTION, AND THAT THE ROAD CONSTRUCTION WILL PROVIDE A GRADED SHOULDER AND ANY NECESSARY DRAINAGE TO ACCOMMODATE THE TRAIL.

COMPUTED BY: CJA
DATE: 6/24/2022

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

PRIORITY PROJECT #5: FUQUAY-VARINA MIDDLE SCHOOL CONNECTIVITY

LOCATION: **PATH NOTE 2 - KENNETH CREEK**

DESCRIPTION: **2000 LF 10' WIDE ASPHALT GREENWAY ALONG KENNETH CREEK FROM S. WILLHAVEN DR TO ANDERSON WOOD DR**

TOTAL LENGTH: **0.4 MILES**

COUNTY: WAKE DIVISION: 5

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$68,000.00	$68,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$15,000.00	$15,000.00
0043000000-N	226	GRADING	1	LS	$282,000.00	$282,000.00
1121000000-E	520	AGGREGATE BASE COURSE	890	TON	$50.00	$44,500.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	240	TON	$200.00	$48,000.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	15	TON	$800.00	$12,000.00
2605000000-N	848	CONCRETE CURB RAMP	2	EA	$3,000.00	$6,000.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$10,000.00	$10,000.00
8801000000-E	SP	MSE RETAINING WALL NO ****	1,430	SF	$120.00	$171,600.00
		WOOD SAFETY RAILING	1,200	LF	$50.00	$60,000.00
		PEDESTRIAN BRIDGE	130	LF	$3,000.00	$390,000.00
		DRAINAGE ALLOWANCE	1	LS	$25,000.00	$25,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$30,000.00	$30,000.00
		MINOR ITEMS (5%)	1	LS	$55,000.00	$55,000.00

CONSTRUCTION COST SUBTOTAL	$1,217,100.00
CONTINGENCY (30%)	$365,130.00
OPINION OF PROBABLE CONSTRUCTION COST	$1,582,230.00
NCDOT ADMINISTRATION FEE (20%)	$316,446.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$1,899,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$285,000.00**

NOTE:
- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED.
- ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
- EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.

COMPUTED BY CJA
DATE 6/24/2022

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

FUQUAY-VARINA PEDESTRIAN PLAN

PRIORITY PROJECT #5: FUQUAY-VARINA MIDDLE SCHOOL CONNECTIVITY PATH NOTES 4, 6-9

LOCATION:

DESCRIPTION:

CROSSING IMPROVEMENTS AT WAGSTAFF RD/SOUTH MAIN ST, AND ACROSS WAGSTAFF RD TO CARROLL HOWARD JOHNSON PARK

910 LF 10' WIDE CONCRETE SIDE PATH ALONG WAGSTAFF RD IN GAPS BETWEEN COTTON BROOK DR AND S MAIN ST

850 LF 10' WIDE CONCRETE SIDE PATH ALONG S. MAIN ST FROM WAGSTAFF RD AND ALONG FUQUAY-VARINA HOMES-ELDERLY ENTRANCE

350 LF 10' WIDE ASPHALT SHARED USE PATH FROM FUQUAY-VARINA HOMES-ELDERLY ACCESS ROAD TO SOUTH PARK

TOTAL LENGTH: **0.4 MILES**

COUNTY: WAKE

DIVISION: 5

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		TRAIL ITEMS				
0000100000-N	800	MOBILIZATION	1	LS	$30,000.00	$30,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$16,000.00	$16,000.00
0043000000-N	226	GRADING	1	LS	$94,000.00	$94,000.00
1121000000-E	520	AGGREGATE BASE COURSE	1,010	TON	$40.00	$40,400.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	50	TON	$250.00	$12,500.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	5	TON	$800.00	$4,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	1,500	LF	$50.00	$75,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	1,956	SY	$55.00	$107,580.00
2605000000-N	848	CONCRETE CURB RAMP	12	EA	$3,000.00	$36,000.00
4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$20,000.00	$20,000.00
		DRAINAGE ALLOWANCE	1	LS	$80,000.00	$80,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$20,000.00	$20,000.00
		MINOR ITEMS (5%)	1	LS	$25,000.00	$25,000.00

CONSTRUCTION COST SUBTOTAL	$560,480.00
CONTINGENCY (30%)	$168,150.00
UTILITIES (ABOVE GROUND)	$15,000.00
OPINION OF PROBABLE CONSTRUCTION COST	$743,630.00
NCDOT ADMINISTRATION FEE (20%)	$148,726.00
OPINION OF TOTAL CONSTRUCTION COST (2022)	**$892,000.00**
CONSTRUCTION ENGINEERING AND INSPECTION (15%) (2022)	**$134,000.00**

NOTE:

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- BASED ON 2022 UNIT PRICES, INFLATION NOT INCLUDED
- ASSUMES LAP FUNDING REQUIRING NCDOT ADMINISTRATION FEE.
- EXCLUDES RIGHT-OF-WAY, DESIGN, AND PERMITTING.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNONWN AND NOT INCLUDED.

COMPUTED BY: CJA

DATE: 6/24/2022

Fuquay-Varina Pedestrian Plan 2022
Prepared for the Town of Fuquay-Varina, North Carolina
Prepared by Alta Planning + Design

FUQUAY-VARINA
north carolina

alta

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION