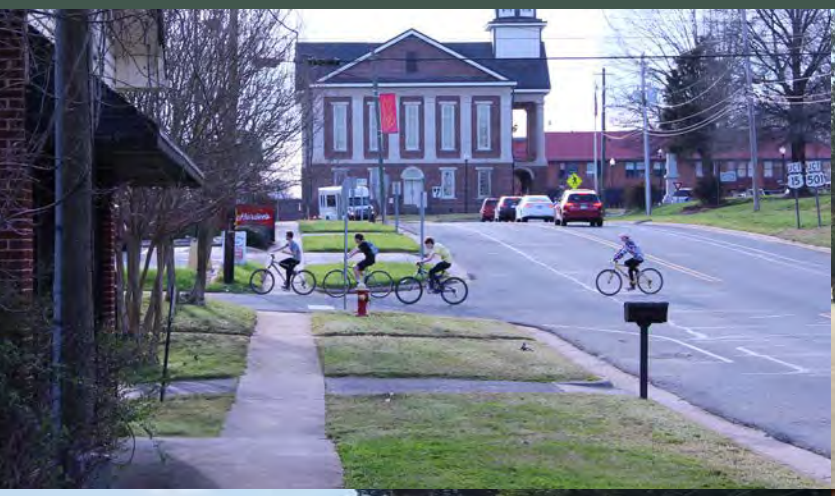
PITTSBORO, NC
BICYCLE & PEDESTRIAN PLAN



Prepared for the Town of Pittsboro & NCDOT
Prepared by Alta Planning + Design
2020

ACKNOWLEDGEMENTS

Thanks to the more than 200 local residents, community leaders, and government staff that participated in the development of this plan through meetings, events, comment forms, and plan review. Special thanks to those who participated as steering committee members, listed below.

PROJECT STEERING COMMITTEE

The Steering Committee is made up of local residents, government staff, and community leaders.

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Prepared by Alta Planning + Design, 111 East Chapel Hill Street, Suite 100, Durham, NC 27701 | www.altaplanning.com

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TOWN OF PITTSBORO

2020

PLAN VISION

Pittsboro will offer residents and visitors many options for bicycling and walking, through well-designed and beautifully maintained greenway trails, and bicycle and pedestrian friendly streets. A connected network of safe sidewalks, bikeways, and greenways strengthens economic vitality, enriches the sense of community, enhances recreation opportunities, and improves overall quality of life.

PITTSBORO BICYCLE & PEDESTRIAN PLAN EXECUTIVE SUMMARY

pittsboronc.org > departments > planning

In 2018, PIttsboro was awarded a matching grant from the North Carolina Department of Transportation (NCDOT), Integrated Mobility Division, to develop a comprehensive bicycle and pedestrian plan. This plan provides a framework for the Town, residents, developers, NCDOT, and other partners to strategically create a bicycle and pedestrian friendly Pittsboro.

The plan provides detailed recommendations for bicycle and pedestrian policies, programs, and infrastructure. It aims to use walking and bicycling as a tool for improvements in connectivity, economy, environment, equity, health, safety, and overall quality of life.

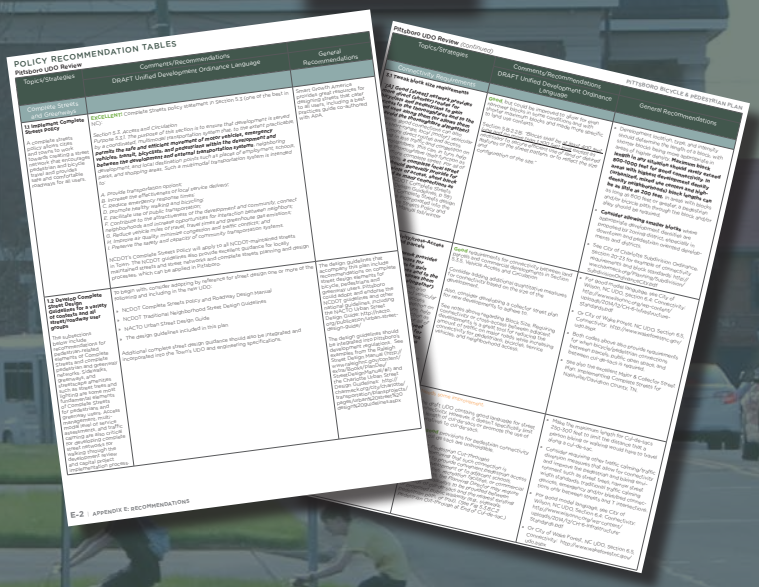
PROGRAMS, POLICIES, AND INFRASTRUCTURE RECOMMENDATIONS

Working towards a bicycle- and pedestrian-friendly Pittsboro requires a comprehensive approach to ensure the most efficient and effective implementation process. Policy, programs, and infrastructure are equally important and complementary elements that require consistent effort and investment from the Town. For details, please see Chapter 3 and Appendix E of the full plan; available at: pittsboronc.gov > departments > planning

GOALS

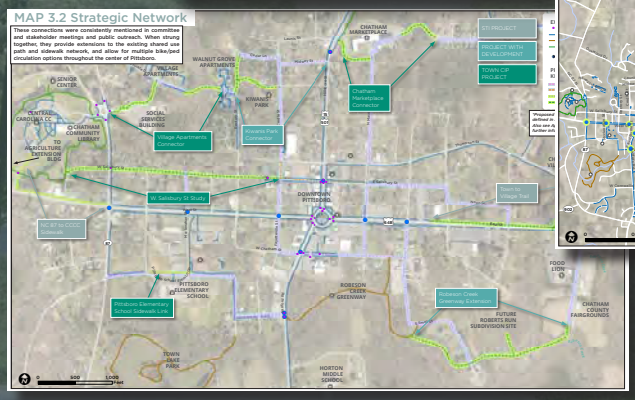
- ENHANCE CONNECTIVITY
- PROMOTE EQUITY
- CREATE A POSITIVE ECONOMIC IMPACT
- ENHANCE HEALTH
- PROTECT THE ENVIRONMENT
- INCREASE SAFETY
- INCREASE LIVABILITY

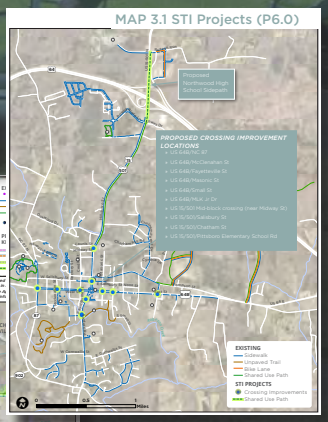
POLICY



PROGRAMMING

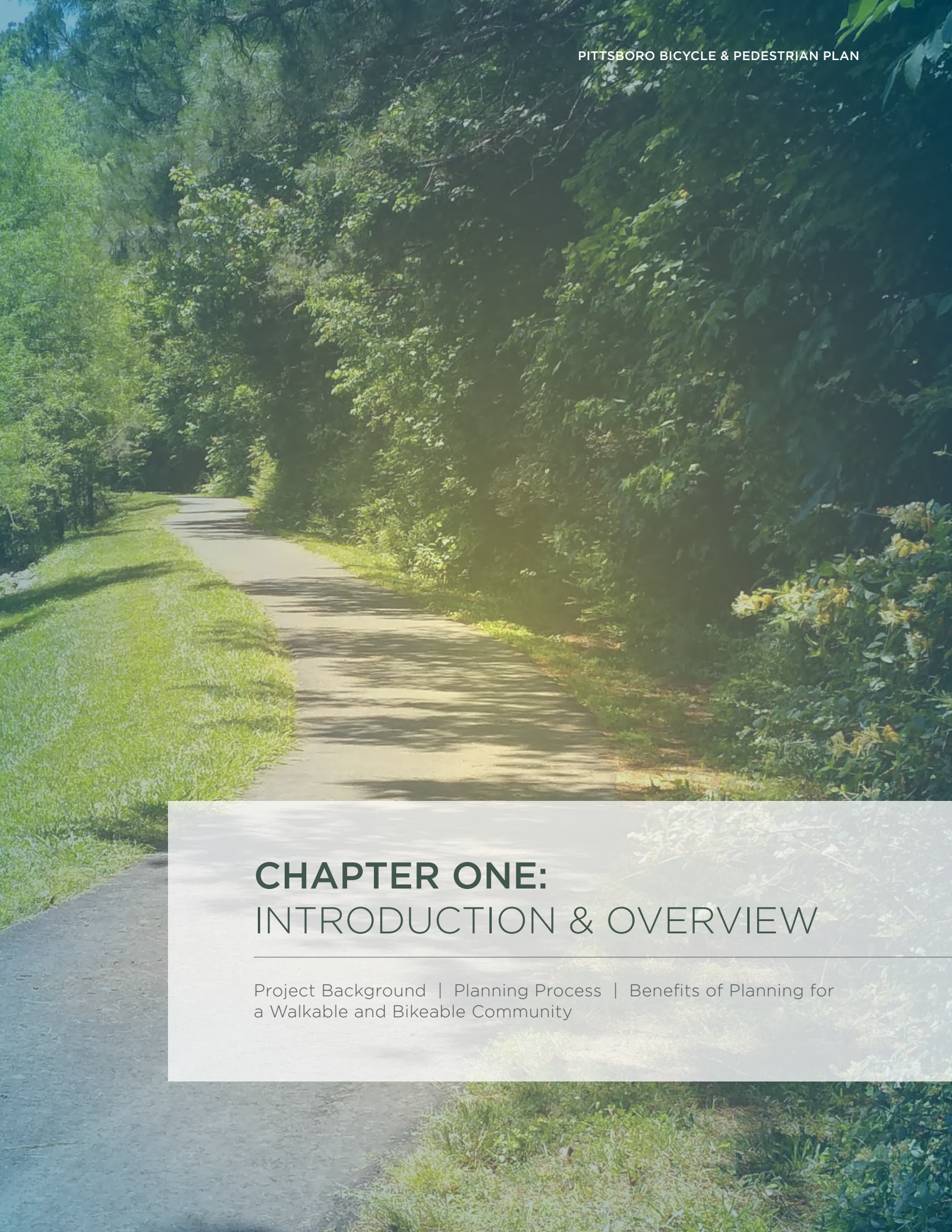
INFRASTRUCTURE





Programs such as Walk/Bike Friendly Communities, UDO update recommendations, and strategic infrastructure recommendations are found in Chapter 3 and Appendix E of the full plan; available at: pittsboronc.gov > departments > planning


PITTSBORO KIWANIS CLUB
KIWANIS INTERNATIONAL
CHARTERED 1950



CHAPTER ONE:
INTRODUCTION & OVERVIEW

Project Background | Planning Process | Benefits of Planning for a Walkable and Bikeable Community

PROJECT BACKGROUND

The Pittsboro Bicycle & Pedestrian Plan was made possible by funding from the North Carolina Department of Transportation (NCDOT). In 2018, the Town of Pittsboro was awarded a matching grant from the North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative. The purpose of the grant is to encourage municipalities to develop comprehensive bicycle and pedestrian plans. To date, the initiative has funded planning efforts in over 200 municipalities across the state. The program is administered through NCDOT's Integrated Mobility Division.

Through the development of this plan, the Town of Pittsboro is building upon the Town's Pedestrian Plan (2009) and other past plans and initiatives (such as the *recently completed Parks & Recreation Plan*), to prioritize future transportation decisions, and identify funding to improve walking and biking facilities. By doing this, **the Town aims to improve safety, connectivity, active living opportunities, and to further accommodate rapid future growth** by focusing on bicycle and pedestrian improvements.

PLANNING PROCESS

The planning process began with a Kickoff Meeting in March 2019, which was the first of four project Steering Committee meetings. The Steering Committee was made up of a combination of local residents, municipal and county staff, educators, 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 bicycling, and providing feedback on plan recommendations.

The planning process included several other important methods of public outreach and involvement. The public comment form, online input map, information booths at community events (and several permanent stations), a walkability assessment, and public workshops were used to gather input for the plan and ask for feedback on the draft plan. The plan and planning process were also promoted through municipal websites.

Above: The first public open house event in May 2019.

Figure 1.1 Key Steps in the Planning Process

BENEFITS OF PLANNING FOR A WALKABLE AND BIKEABLE COMMUNITY

Pittsboro's current walking and bicycling network includes a sidewalk network centered around the downtown core, limited crossing opportunities of the major north/south & east/west roadway corridors (US 64B & US 15/501), very few and fragmented dedicated bicycle facilities, and several park walking/biking trails with varying degrees of bike/ped connectivity. With significant population growth expected in the coming years and decades, bicycle and pedestrian planning will be critical to the enhancement of the overall quality of life for the Town.

Through this plan, the Town of Pittsboro aims to:

- Enhance Connectivity
- Create a Positive Economic Impact
- Protect the Environment
- Promote Equity
- Enhance Health
- Increase Safety
- Increase Livability

SAFETY FOR PEDESTRIANS & BICYCLISTS

Trends and Challenges

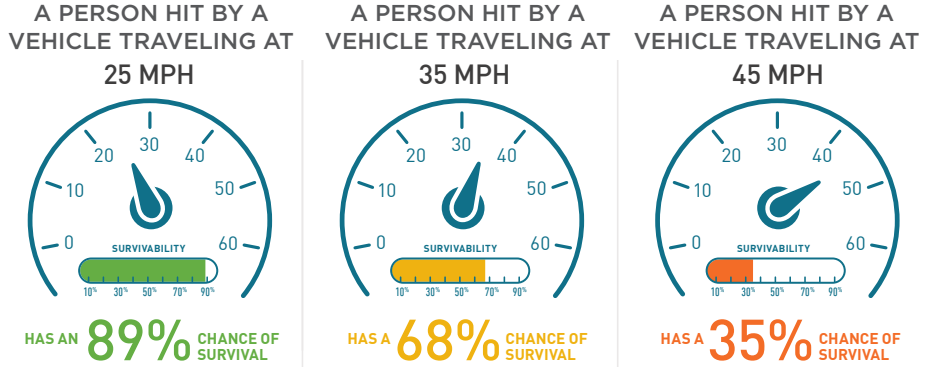
According to a survey of 16,000 North Carolina residents for the 2011 North Carolina Bicycle and Pedestrian Safety Summit, the most commonly reported safety issue for walking and bicycling was inadequate infrastructure (75%).[1] A lack of bicycle and pedestrian facilities, such as sidewalks, bike lanes, trails, and safe crossings, lead to unsafe conditions for bicyclists and pedestrians:

VISION STATEMENT

Pittsboro will offer residents and visitors many options for bicycling and walking, through well-designed and beautifully maintained greenway trails, and bicycle and pedestrian friendly streets. A connected network of safe sidewalks, bikeways, and greenways strengthens economic vitality, enriches the sense of community, enhances recreation opportunities, and improves overall quality of life.

This Vision Statement was developed with input from the Steering Committee, outlining the overall vision for the outcomes of this plan.

- North Carolina has one of the highest rates of bike/ped fatalities per 10k commuters (12th highest and 8th highest for bicycling and walking fatality rates respectively)[2].
- Each year, on average (2014-2018), 16% of all traffic fatalities in North Carolina are bicyclists and pedestrians.[3]
- **There were 23 pedestrian collisions and six bicycle collisions recorded in Pittsboro (See Map 2.5 Bicycle and Pedestrian Crashes, on page 22) from 2007-2018 (NCDOT bike/ped crash database).**
- **From the 2007-2016, the average of 2.3 bike/ped collisions per year equals 0.54 bike/ped crashes per 1,000 residents per year in Pittsboro. This is higher than the NC average of 0.35 bike/ped crashes per 1,000 NC residents during the same 10-year period.**



Source: Tefft, B. C. Impact of speed and a pedestrian's risk of severe injury or death. Accident Analysis & Prevention 50 (2013) 871-878.

Improving Safety

Separate studies conducted by the Federal Highway Administration and the University of North Carolina Highway Safety Research Center demonstrate that installing pedestrian and bicycle facilities directly improves safety by reducing the risk and severity of pedestrian-automobile and bicycle-automobile crashes. For example, installing a sidewalk along a roadway reduces the risk of a pedestrian "walking along roadway" crash by 88 percent. Furthermore, according to the aforementioned survey, 70% of respondents said they would walk or bicycle more if safety issues were addressed, citing a lack of bicycle and pedestrian facilities as the top issues[1] (see Pedestrian Crash Countermeasures below).

The following web addresses link to more comprehensive research on safety.

- http://www.walkbikenc.com/
- http://www.pedbikeinfo.org/data/factsheet_crash.cfm

60%

Shared use paths (greenways and sidepaths) reduce injury rates for bicyclists, pedestrians, and other nonmotorized modes by 60% compared with on street facilities.

Source: Teschke, Kay. "Route Infrastructure and the Risk of Injuries to Bicyclists". (2012). American Public Health Association.

16%

Each year, on average (2014-2018), 16% of all traffic fatalities in North Carolina are bicyclists and pedestrians

Source: NCDOT (2018). Annual Performance Report.

Figure 1.2 Pedestrian Crash Countermeasures

PEDESTRIAN CRASH COUNTERMEASURES	PEDESTRIAN CRASH REDUCTION FACTOR
Install pedestrian overpass/underpass	90%
Install sidewalk (to avoid walking along roadway)	88%
Provide paved shoulder (of at least 4 feet)	71%
Install raised median at unsignalized intersection	46%
Install pedestrian refuge island	36%
Install pedestrian countdown signal heads	25%

Source: Federal Highway Administration. Desktop Reference for Crash Reduction Factors. http://safety.fhwa.dot.gov/

HEALTH IMPACTS OF ACTIVE TRANSPORTATION

Trends and Challenges

North Carolina's transportation system is one of the most important elements of our public environment. Unfortunately, it includes many streets that are unsafe for walking and bicycling, posing barriers to healthy living and active transportation. Key trends and challenges related to health and transportation in North Carolina include:

- Reports have estimated the annual direct medical cost of physical inactivity in North Carolina at $3.67 billion, plus an additional $4.71 billion in lost productivity.[4] However, every dollar invested in pedestrian and bicycle trails can result in a savings of nearly $3 in direct medical expenses.[5]
- Of North Carolinians surveyed, 60% would increase their level of physical activity if they had better access to sidewalks and trails.[1]
- **A top priority for the county is to reduce obesity through strategies that promote physical activity and healthy eating. According to the 2018 Chatham County Community Assessment, 29% of Chatham County residents are obese. Additionally, 16% of residents report having diabetes. When it comes to physical activity, 42% of Chatham residents get the recommended 150 minutes or more of physical activity a week. When asked if they have a safe place to exercise near their home, most Chatham County residents said yes (82%), with a slightly smaller proportion of Pittsboro residents replying yes (76%).**
- Using active transportation to and from school, work, parks, restaurants, and other routine destinations is one of the best ways that children and adults can lead measurably healthier lives. Increasing one's level of physical activity through walking and bicycling reduces the risk and impact of cardiovascular disease, diabetes, chronic disease, and some cancers. It also helps to control weight, improves mood, and reduces the risk of premature death.[6]
- Two 14-year studies of more than 60,000 people investigated if total physical activity, as well as different types of physical activity, were associated with heart failure risk. It found that walking or bicycling at least 20 minutes per day was associated with the largest risk reduction of heart failure.[7]

Figure 1.3 Active Transportation: Pathway to Health

Source: Alta Planning + Design; WalkBikeNC

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

ECONOMIC IMPACTS OF ACTIVE TRANSPORTATION

Economic Trends in North Carolina

Bicycle and pedestrian facilities generate economic returns by supporting local businesses and jobs, attracting visitors, improving local transportation efficiency, saving on health care expenses (see previous page), and generally diversifying the local economy. Below are some key economic trends related to walking and bicycling in North Carolina:

» Walking and biking are economically efficient transportation modes. Many North Carolinians cannot afford to own a vehicle and are dependent on walking and biking for transportation (11% of households in Pittsboro do not have a motor vehicle available).[8]

Bicyclists, pedestrians, and trail users can also add real value to local economies:

» The 22-mile American Tobacco Trail that crosses parts of Durham, Wake, and Chatham Counties, according to a three year study (2015-2017) by the NCDOT Division of Bicycle and Pedestrian Transportation, generates approximately $5.6 million annually in business output. See Executive Summary of the full study on the following page.[9]

» The Greenville (SC) Health System Swamp Rabbit Trail Year 3 Findings by Furman University (Clemson International Institute for Tourism & Research & Development), has demonstrated that the 20-mile Swamp Rabbit Trail's economic impact in the county is approximately $6.7 million per year.[10]

» In Damascus, VA, the self-proclaimed 'Friendliest Trail Town', features 34 miles of trail, where approximately $2.5 million is spent annually related to recreation visits according to a US Forest Service study, The Virginia Creeper Trail: An Assessment of User Demographics, Preferences, and Economics.[11]

» Blood, Sweat, and Gears is an annual long distance ride in Valle Crucis, NC, with over 1,000 participants. According to an Appalachian State University Department of Economics study, "Economic Impact of the 2015 Blood, Sweat, and Gears", the 2015 event had an over $1 million economic impact on the local economy.[12]

$8,220

Average Cost of Operating a Car Per Year

$308

Average Cost of Operating a Bike Per Year

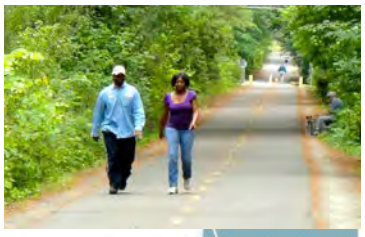
Source: Mohn, T. "Pedaling to Prosperity: Biking Saves U.S. Riders Billions a Year." (2012). Forbes. <goo.gl/YX2r1R>

EXECUTIVE SUMMARY

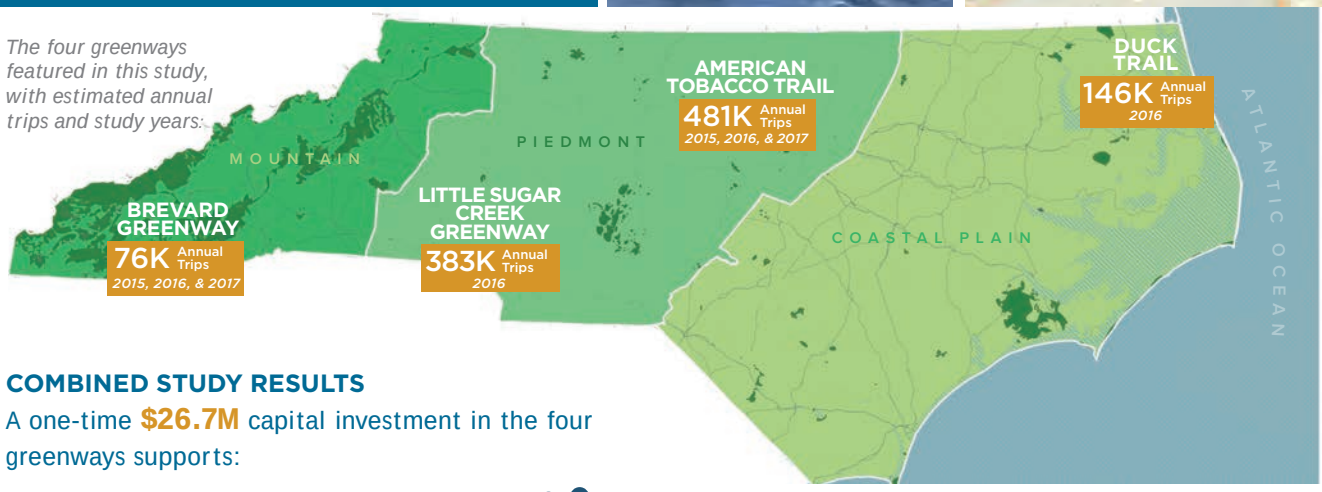
Evaluating the **ECONOMIC IMPACT** of **SHARED USE PATHS** in North Carolina

MARCH 2018

Shared use paths, also known as GREENWAYS, provide a shared space for bicycle and pedestrian travel outside of the roadway. This project's objective was to design and test an approach for measuring the economic contributions of greenways in North Carolina.



The four greenways featured in this study, with estimated annual trips and study years:



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

RETURN ON INVESTMENT: Every **$1.00** of trail construction supports **$1.72** ***annually*** from local business revenue, sales tax revenue, and benefits related to health and transportation.

ITRE · alta PLANNING + DESIGN · Division of Bicycle & Pedestrian Transportation

By: The Institute for Transportation Research and Education and Alta Planning + Design

For: NCDOT Division of Bicycle and Pedestrian Transportation

FULL REPORT: go.ncsu.edu/sharedusepaths

MOBILITY AND ACCESSIBILITY BENEFITS OF ACTIVE TRANSPORTATION

Opportunity to Increase Walking and Bicycling Rates

According to the 2011 Bicycle and Pedestrian Safety Survey, at least 70 percent of North Carolinians would walk or bike more for daily trips if walking and bicycling conditions were improved.[1] With appropriate accommodations, walking and bicycling can provide alternatives to driving for commuting to work, running errands, or making other short trips.

Commute rates for walking and bicycling in North Carolina currently fall below the national average, with just 0.2% of North Carolina commuters bicycling to work and 1.8% walking to work, compared to 0.6% bicycling and 2.8% walking nationwide[8]. North Carolina places 45th for combined walking commute rates and bicycling commute rates in nationwide state rankings.[2]

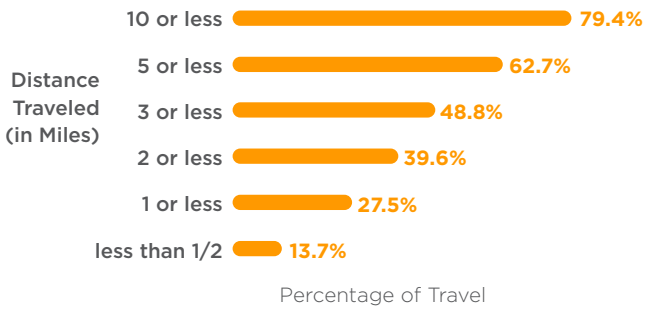
The table on page 12 shows walking and biking rates for Pittsboro, as compared to Chatham County and North Carolina overall.

An estimated 40% of all trips (commute and non-commute) taken by Americans each day are less than two miles, equivalent to a bike ride of 10 minutes or less; however, 13% of all trips (commute and non-commute) are made by walking or bicycling nationwide.[13] To put these numbers into perspective, 34% of all trips are made by walking or bicycling in Denmark and Germany, and 51% of all trips in the Netherlands are by foot or by bike.[14] Germany, Denmark, and the Netherlands are wealthy countries with high rates of automobile ownership, just like the United States. Yet, an emphasis has been placed on providing quality walking and bicycling environments which has alleviated the reliance on motor vehicles for short trips and created a better balance for multiple modes of transportation.

Some participants in this planning process have mentioned that there are a handful of local people who now commute by walking or biking, and the potential for more people to enjoy a safe walking or biking commute could significantly benefit Pittsboro households.

These mobility benefits go beyond commuting as well. Pittsboro as well as the future expansion of the Town as part of the Chatham Park development includes schools, parks, neighborhoods, and small commercial centers within easy walking and biking distances. Residents and visitors can benefit from safe facilities that increase the rate of walking and biking for short trips to these destinations. Furthermore, other aspects of mobility and accessibility also apply to children and those who can no longer drive due to advanced age. Moreover, improved walking infrastructure benefits those who use wheelchairs or scooters, as well as people who have visual impairments.

Figure 1.4 Daily Trip Distances of Americans



Most driving trips are for a distance of five miles or less. Even for those who are only willing to walk or bike distances of one mile or less, there is potential to replace up to one-quarter (27.5%) of daily trips with walking or biking.

Source: Bicycle and Pedestrian Information Center website, www.pedbikeinfo.org

Reduced Vehicle Miles Traveled (VMT) & Congestion

Taking short trips by foot or by bike can help to greatly reduce motor vehicle miles driven and traffic congestion. **Under the Nonmotorized Transportation Pilot Program, walking and bicycling investments contributed to an estimated 23% increase in the number of walking trips and an estimated 48% increase in the number of bicycling trips in four pilot communities between 2007 and 2013.[15]** These individual changes in travel behavior can add up to produce significant societal benefits. Traffic on arterials and other streets can be mitigated as people use sidewalks, bike lanes, paths, and other alternatives to get around. Parking lots can also be made less congested by reducing crowding, circling, and waiting for open spots.

The following web addresses link to more comprehensive research on transportation efficiency.

» http://www.walkbikenc.com/
» http://www.pedbikeinfo.org/data/factsheet_general.cfm

STEWARDSHIP BENEFITS OF ACTIVE TRANSPORTATION

Stewardship addresses the impact that transportation decisions (both at the government/policy level and private/individual level) can have on the land, water and air that Pittsboro residents and visitors enjoy.

Trends and Challenges

Below are some key trends and challenges related to stewardship and transportation in North Carolina:

» Even a modest increase in walking and bicycling trips (in place of motor vehicle trips) can have significant positive impacts for the environment. For example, replacing two miles of driving each day with walking or bicycling will, in one year, prevents 730 pounds of carbon dioxide from entering the atmosphere.[16]
» According to the National Association of Realtors and Transportation for America, 89% of Americans believe that transportation investments should support the goal of reducing energy use.[17]
» **North Carolina's 2009-2013 Statewide Comprehensive Outdoor Recreation Plan (SCORP) found "walking for pleasure" to be the most common outdoor recreational activity, enjoyed by 82% of respondents, and bicycling by 31% of respondents.[18]**

Providing safe accommodations for walking and bicycling in Pittsboro can help to reduce automobile dependency, which in turn leads to a reduction in vehicle emissions – a benefit for Pittsboro residents and visitors and the surrounding environment. As of 2016, 28.5% of U.S. greenhouse gas emissions are attributed to the transportation sector, and personal vehicles account for almost two-thirds (60%) of all transportation emissions.[19] Primary emissions that pose potential health and environmental risks are carbon dioxide, carbon monoxide, volatile organic compounds, (VOCs), nitrous oxides (NOx), and benzene. Children and senior citizens are particularly sensitive to the harmful affects of air pollution, as are individuals with heart or other respiratory illnesses. Increased health risks such as asthma and heart problems are associated with vehicle emissions.[20]

The following web addresses link to more comprehensive research on active transportation and stewardship.

» http://www.walkbikenc.com/
» http://www.pedbikeinfo.org/data/factsheet_environmental.cfm

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CHAPTER TWO:
EXISTING CONDITIONS

Local Context | Existing Conditions | Opportunities & Challenges | Related Plans | Public Input

LOCAL CONTEXT

Founded in the late 1700's as a rural county seat, the Town of Pittsboro maintains a rural setting with close proximity to Jordan Lake State Recreation Area as well as the population centers of the Triangle (Chapel Hill, Durham, and Raleigh). **With three schools (and four more planned as part of the Chatham Park development in the coming decades) and Central Carolina Community College, education is an important part of Pittsboro.** Pittsboro's quaint downtown center and adjacent neighborhoods anchor the scenic, rural landscapes that surround Pittsboro.

As the seat of Chatham County, Pittsboro serves as headquarters for county government. Pittsboro's downtown is known as a regional tourist destination because of its concentration of antique shops, galleries, and restaurants. Other businesses, services, and shopping destinations are located in downtown, which generate many trips. In the center of Pittsboro, at the convergence of US 64B and US 15/501, sits the Chatham County courthouse within a large traffic circle, providing a welcoming vista for arriving motorists as well as pedestrians and bicyclists.

The Town of Pittsboro currently has a population of 4,037 (ACS 2013-2017) and the town limits occupy a total land area of 4.2 square miles. However, this will change dramatically with the Chatham Park development that will grow the population up to 60,000 people and the town limits to over 11 square miles upon full build-out over the next several decades.

The **Central Carolina Community College's (CCCC)** main Chatham County campus is located on the west side of Pittsboro and is separated by NC 87 and US 64B to the rest of town. This is CCCC's primary location for the college's sustainability programs as well as for the culinary arts. The Trail for Health, Art and Nature for Kids to Seniors (T.H.A.N.K.S Trail) is a popular walking/jogging trail that runs along the perimeter of campus.

EXISTING CONDITIONS

Due to the size of Pittsboro, many residents have the potential to walk or bike to their destinations since the parks, schools, neighborhoods, and downtown center are all very proximate. However, due to existing land use, connectivity, and infrastructure conditions, walking and biking are not always safe or comfortable choices. According to the latest census data (2013-2017 ACS), **0% of Pittsboro residents bike to work, and 0% of residents walk to work** (Table 2.1, below). While there are likely a small group of residents that do walk or bike to work, the latest census data (2013-2017 ACS) does not capture any residents that walk or commute by bike. Below is a list of ACS results over the past several years (note - the margin of error is typically near +/- 2%):

Bike	**Walk**
2016 - 0%	2016 - 0.6%
2015 - 0%	2015 - 1.2%
2014 - 0%	2014 - 2.2%
2013 - 0%	2013 - 1.5%
2012 - 0%	2012 - 1.8%

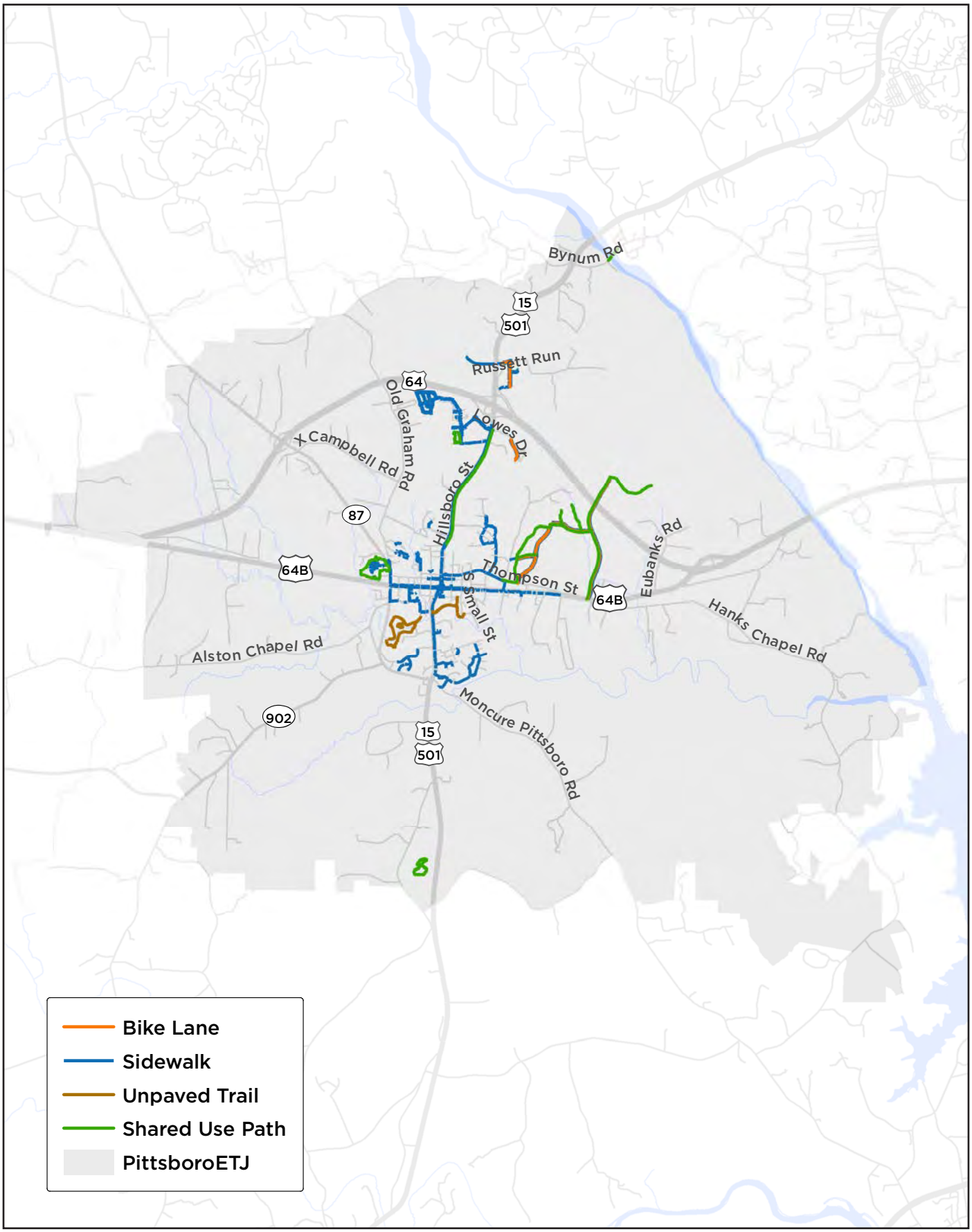
Approximately 2/3rds of the Town's population commutes out of Pittsboro for work, leaving 1/3rd of the working population to have the potential to walk or bike to work. Furthermore, there are significant opportunities for gains in the number of errands and school travel by foot or bicycle due to the proximity of schools, parks, downtown, and neighborhoods.

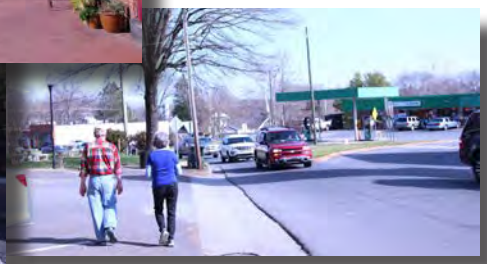
Table 2.1 Demographic Comparison

	PITTSBORO	CHATHAM COUNTY	NORTH CAROLINA
Population[1]	4,037	68,364	10,052,564
Median Age[1]	40.9	42.1	38.3
Median Household Income[1]	$44,700	$44,140	$48,256
% Households without a Vehicle[1]	6.5%	6.7%	6.3%
% Walk to Work[1]	0%	1.3%	1.8%
% Bike to Work[1]	0%	0.1%	0.2%
% School-Age Children (ages 5-19)[1]	20.9%	19%	19.7%

1 US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Map 2.1 - Existing Bicycle & Pedestrian Facilities: Pittsboro ETJ Overview

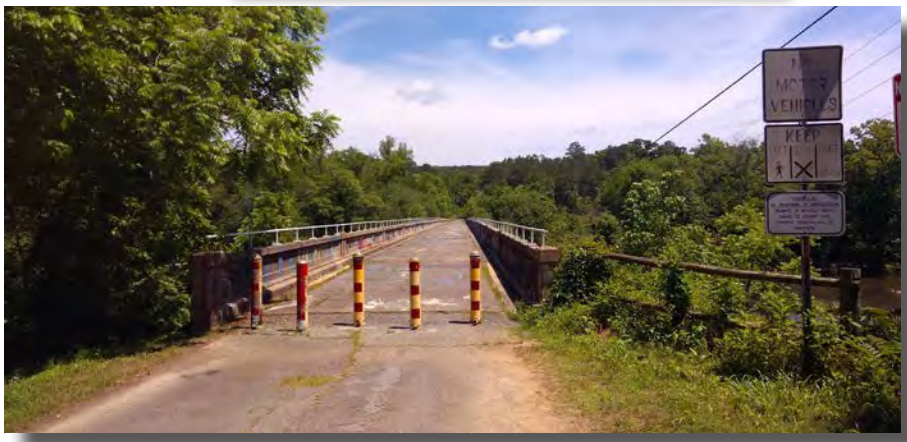




Downtown Pittsboro has a short sidewalk network that largely connects each block in each direction. The sidewalks along US 64B (West St/East St) extend to NC 87 on both sides of West St and extend all the way to Thompson St along East St (south side only). The Hillsboro St sidewalk extends north to Chatham Mills (mostly along the west side of the street), and the Sanford Rd sidewalk extends south to May Farm Rd (near the Moncure Pittsboro Rd intersection). These are examples of significant lengths of sidewalk that form east/west and north/south spines radiating from the circle. However, there are opportunities to improve safety and access by providing crossing improvements and additional connecting walkways from more areas of town.

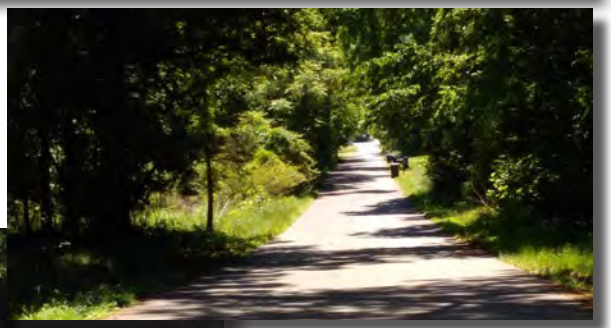
Chatham County Bike Route 3 is signed through Pittsboro along Alston Chapel Rd, Old Goldston Rd, NC 87, Old Graham Rd, Russell Chapel Church Rd, US 15/501, and Bynum Rd into Bynum via the bike/ped bridge over the Haw River.

The only existing bike lanes in Pittsboro are found along Lowes Dr (pictured above), Roundtree Way, and Russet Run.



The Old Bynum Rd bike/ped bridge (pictured right) connects the Pittsboro ETJ to Bynum across the Haw River

Some neighborhood streets such as Masonic Street (pictured to the right) are very low traffic volume and low speed corridors that can serve as low-stress bicycle/pedestrian connections in town. However, some neighborhood streets, such as W. Salisbury St (pictured below) are a cut-through for automobiles, and do not provide a high level of comfort for bicyclists and pedestrians wishing to connect between downtown and Central Carolina Community College.



LACK OF BICYCLE FACILITIES

Besides the short segments of Lowes Dr, Roundtree Way, and Russet Run that include bike lanes, and the Bynum bike/ped bridge over the Haw River, there are no other dedicated facilities specifically for bicycles. However, there are still roads that can serve bicyclists — these include some of the lower-volume, lower speed residential streets, such as Masonic St, Rectory St, Small St, E. Salisbury St, and other small neighborhood streets that connect to them. The issue is that outside this "island" of residential streets, traffic volumes and speeds become higher. While streets like Thompson St, W. Salisbury St, Old Graham Rd, and Alston Chapel Rd may be suitable for bicyclists accustomed to sharing the road with traffic, they are **less suitable in their current condition for inexperienced bicyclists, particularly for children.** Pittsboro's main north/south and east/west thoroughfares, US 15/501 and US 64 B, are significant barriers for bicyclists.

LIMITED PEDESTRIAN FACILITIES

As noted previously in this chapter, a small sidewalk network is present mostly in and around the downtown with longer sections along US 15/501, US 64B and Thompson St. Crosswalks are found on all sides of the downtown circle, US 15/501 at Chatham St, Salisbury St, Launis St (slightly to the south), and Pittsboro Elementary School Rd, and on all sides of the NC 87/Old Graham Rd traffic circle.

In addition to improving overall connectivity, there is room for improvement in design - several crosswalks lack ADA accessibility (US 15/501 crosswalks at Salisbury St and Pittsboro Elementary School Rd). As older sections of sidewalk are improved/replaced, curb ramps and truncated domes, such as those that were installed at the Chatham St/US 15/501 intersection should continue to be incorporated.

Below: Bicyclists must share the road with high volume traffic along US 64 B and US 15/501 currently.

Below: Although US 64 B has no crossing facilities outside of the downtown circle, the existing sidewalks include a wide buffer space between the sidewalk and roadway.

Below: A good example of ADA-compliant curb ramps recently installed at the NC 87/US 64 B intersection. However, crosswalks and pedestrian signals are still needed at the intersection.

OPPORTUNITIES & CHALLENGES

These tables and corresponding maps on the following pages summarize the key, over arching map-based comments from the public, the Steering Committee, stakeholder interviews, and consultant analysis.

Table 2.2 Opportunities & Challenges

ID# from Map 2.4	Observation
1	Existing bike/ped bridge links Bynum Rd in the Pittsboro ETJ across the Haw River to Bynum.
2	This section of US 15/501 from US 64 north to the Orange County line (outside the study area), will be converted to super street over the next decade (STIP: U-6192).
3	Future development on both sides of US 15/501 is an opportunity to incorporate walking/biking connectivity. Sidewalk extension from the Russett Run/US 15/501 intersection to Northwood High School is under development.
4	Old Graham Road provides a lower traffic volume alternative to NC 87 and US 15/501 heading north/west from Pittsboro.
5	Proposed Northwood Access Road from Old Graham Rd to US 15/501.
6	The Haw River Trail system is proposed/developing from Haw River State Park on the Rockingham-Guilford County line to Jordan Lake (80 miles).
7	Chatham Park Way from US 15/501 to the north and US 15/501 to the south will be developed over the next decade (STIP: R-5930, R-5963).
8	The US 15/501 bridge over the US 64 bypass is currently a major barrier for bike/ped connectivity from Powell Place Ln to Northwood High School.
9	Gap along Lowes Dr from US 15/501 through the commercial section on Lowes Dr.
10	This short extension of Lowes Dr includes sidewalks on both sides as well as bike lanes.
11	General area of future village center of Chatham Park development that will be connected by Chatham Park Way. Opportunity to create direct trail connection from Haw River, through the village center, to downtown Pittsboro. The trunk route to the Village Center that will be constructed in the near term is shown here as existing.
12	Hillsboro St from Launis St to Powell Place Ln is scheduled to be widened (STIP: R-5724), and is currently in the design phase (project will be constructed with a sidepath - shown here as existing). The design includes crossing facilities at the Powell Place/Lowes Dr intersection.
13	Bike/ped connectivity east along US 64 beyond the study area is desired for regional connectivity.
14	This section of Chatham Park Way from US 64 Bypass to US 64 Business is currently under construction. Vine Parkway and Wendover Parkway are also under construction with residential development to the west of Chatham Park Way. Sidewalks, bike lanes, and a parallel greenway/ sidepath will be constructed with these sections.
15	Chatham County Bike Route 3 is signed through Pittsboro along Alston Chapel Rd, Old Goldston Rd, NC 87, Old Graham Rd, Russell Chapel Church Rd, US 15/501, and Bynum Rd into Bynum via the bike/ped bridge over the Haw River.
16	Proposed regional park - potential greenway link.
17	Rock Ridge Park is a logical connection point to the south from downtown Pittsboro and beyond toward Sanford.

Map 2.2 - Opportunities & Challenges: Pittsboro ETJ Overview

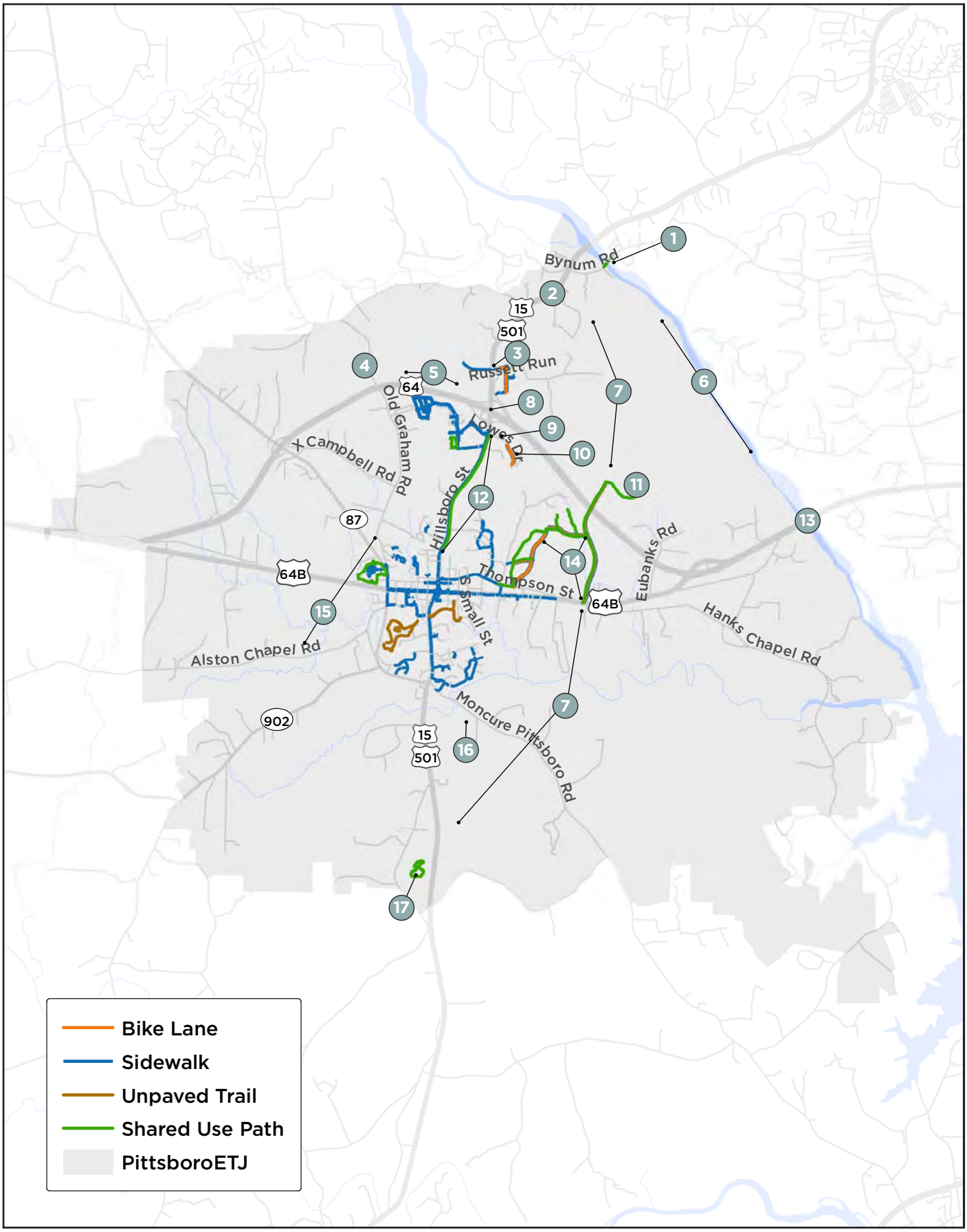


Table 2.2 Opportunities & Challenges (continued)	
ID# from Map 2.5	Observation
18	Path through woods makes the connection between the NC Cooperative Extension and Central Carolina Community College here.
19	The paved loop trail around CCCC and the library is a destination trail for joggers and walkers.
20	Short paved trail links the Senior Center to Central Carolina Community College here.
21	Potential greenway link from the Central Carolina Community College walking/jogging trail to Town Lake Park.
22	Roundabout constructed at the Old Graham Rd /NC 87 intersection includes sidewalks and crosswalks. Future connectivity needed to the residences north of NC 87 and Old Graham Rd.
23	W Salisbury St connects to the Central Carolina Community College Trail (paved walking/jogging path) here via a short patch of grass.
24	No existing crosswalks at the busy NC 87/US 64 intersection, missing sidewalk connection west to CCCC.
25	NC 87 from NC 902 to the US 64 Bypass is scheduled to be modernized (STIP: R-5961).
26	Sidewalk constructed in the last several years.
27	Sidewalk constructed in the last several years.
28	Sidewalk link missing between Farrell St and McClenehan St.
29	Speeding is sometimes observed on W Salisbury St as it is used as a cut through. This is also a gap in the sidewalk network.
30	Informal trail - potential formalize and connect directly to sidewalk network at 87/Old Graham Rd roundabout.
31	Planned crossing improvements as part of future development of Chatham County Schools property.
32	Connection opportunity between Rectory St and Cedar Ln could be coordinated with future residential development and Kiwanis Park improvements.
33	Connectivity needed to/from Oakwood Dr and Park Dr.
34	Gap in sidewalk system.
35	Sidewalks are complete along both sides of US 64B west of the circle to NC 87 and include ample buffer space. However, no existing crossing facilities are found west of the circle.
36	Existing right of way could be used for trail link (or route through McClenahan Street Park)
37	Walking/biking connectivity needed to Kiwanis Park and surrounding neighborhood.

Map 2.3 - Opportunities & Challenges: Downtown Pittsboro (West)

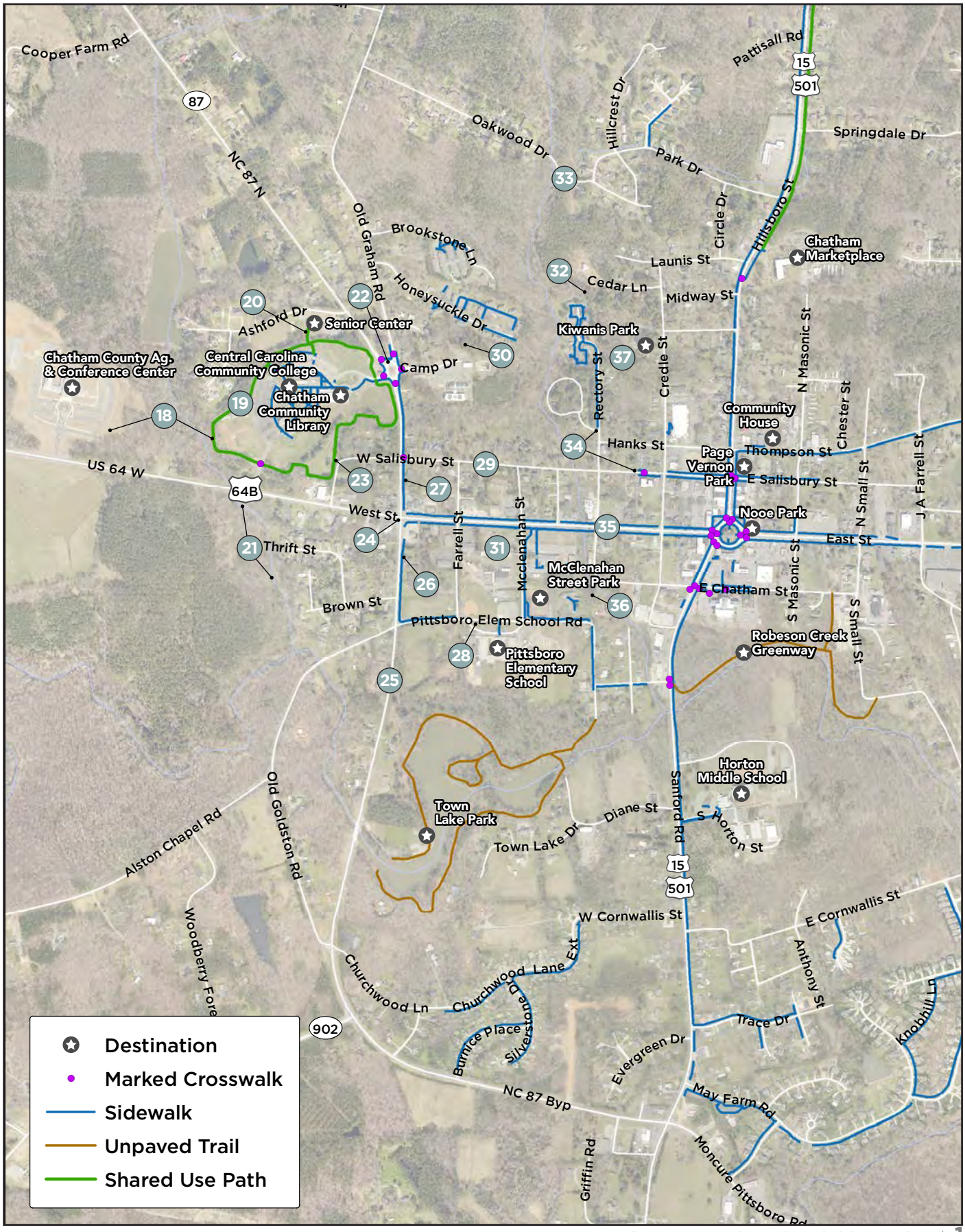
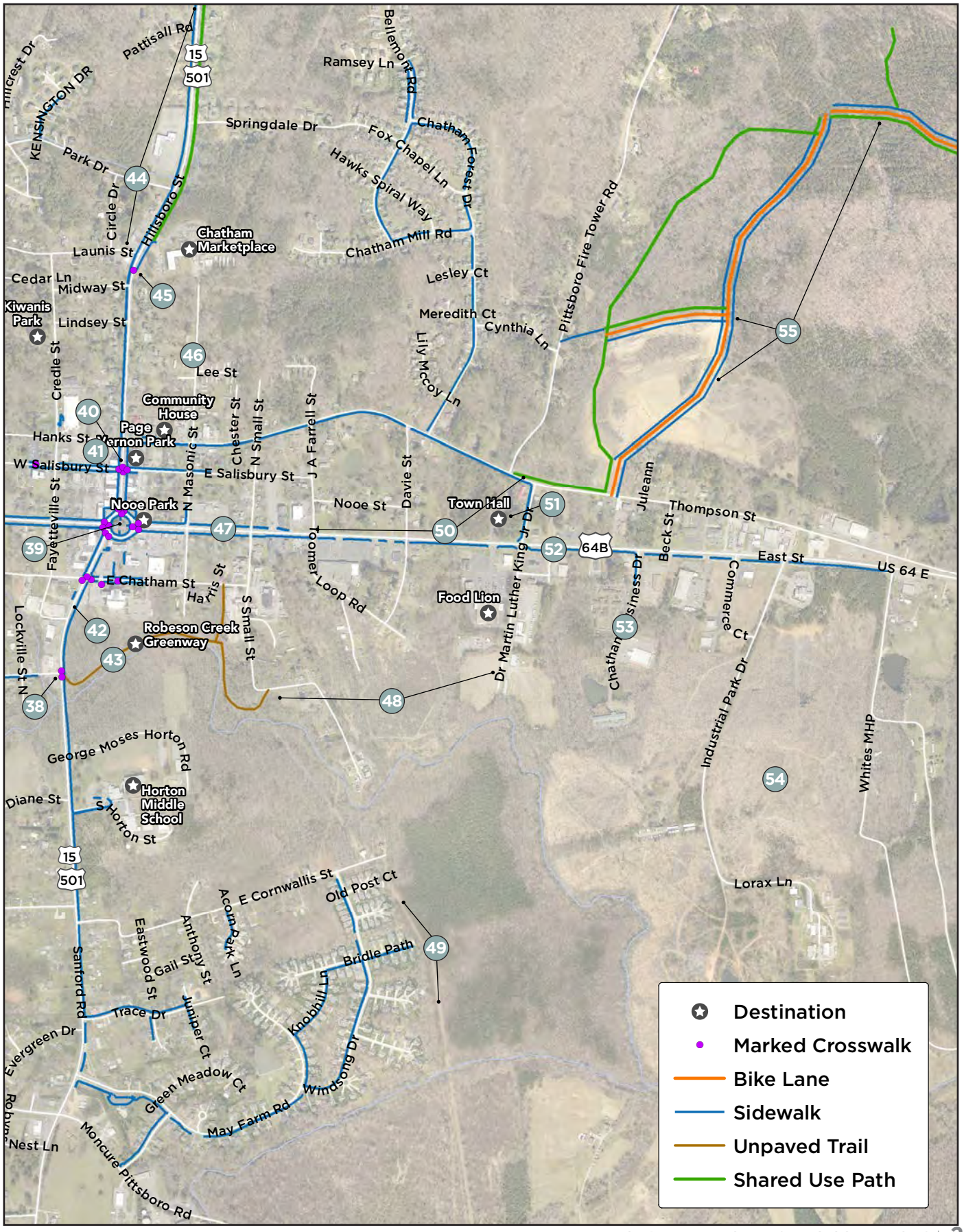


Table 2.2 Opportunities & Challenges (continued)	
ID# from Map 2.6	Observation
38	Existing pedestrian activated signal and crosswalk. ADA curb ramps needed. Sidewalks or shared use path needed to continue south along west side of Sanford Rd.
39	Pedestrian improvements at the circle are currently under design.
40	Existing marked crosswalks and pedestrian activated signals are found at the Hillsboro St/Salisbury St intersection. SW corner lacks ADA accessible landings.
41	Potential Town Hall location - site development could be coordinated with bike/ped improvements in this area.
42	Striped shoulder space provides additional buffer space between the existing sidewalk and automobile traffic on the east side of Sanford Rd.
43	Robeson Creek Greenway (unpaved trail) follows the north side of the creek and connects Sanford Rd to Small St.
44	Hillsboro St from Launis St to Powell Place Ln is scheduled to be widened (STIP: R-5724), and is currently in the design phase (design to include a sidepath).
45	Existing crosswalk does not have great sight lines.
46	Masonic St is a key north/south alternative to US 15/501 that connects Chatham Marketplace directly to a potential link to the Robeson Creek Greenway.
47	Sidewalks west of Small St to the circle have ample buffer space for a more comfortable pedestrian environment. Sidewalk missing east of Main St Station on north side.
48	Potential Robeson Creek Greenway extension and connectors to the Fairgrounds, Roberts Run development, and potential link toward Chatham Park greenway/sidepath system point near current Town Hall location.
49	Town owned property - potential future greenway extension.
50	Potential linear park idea to connect into downtown Pittsboro as well as through the current Town Hall property to the Chatham Park greenway/sidepath system. This project could be branded as a major trail from the heart of downtown Pittsboro through the heart of the Chatham Park Village center, with connectivity potential to the Haw River, Bynum and beyond.
51	Potential park/trailhead opportunity in linking the Chatham Park greenway system toward downtown Pittsboro.
52	No existing crossing facilities along US 64B east of the circle.
53	Sidewalk needed along Chatham Business Dr; this street has a lot of foot traffic from staff and residents out walking for exercise. The road is very narrow and has lots of shipping traffic.
54	Future residential development is planned here.
55	This section of the Chatham Park development is currently under construction. This includes residential development along Vine Parkway, Wendover Parkway, and a connector that will link to the current eastern terminus of Cynthia Ln. Sidewalks, bike lanes, and a parallel greenway/sidepath will be constructed with these sections.

Map 2.4 - Opportunities & Challenges: Downtown Pittsboro (East)

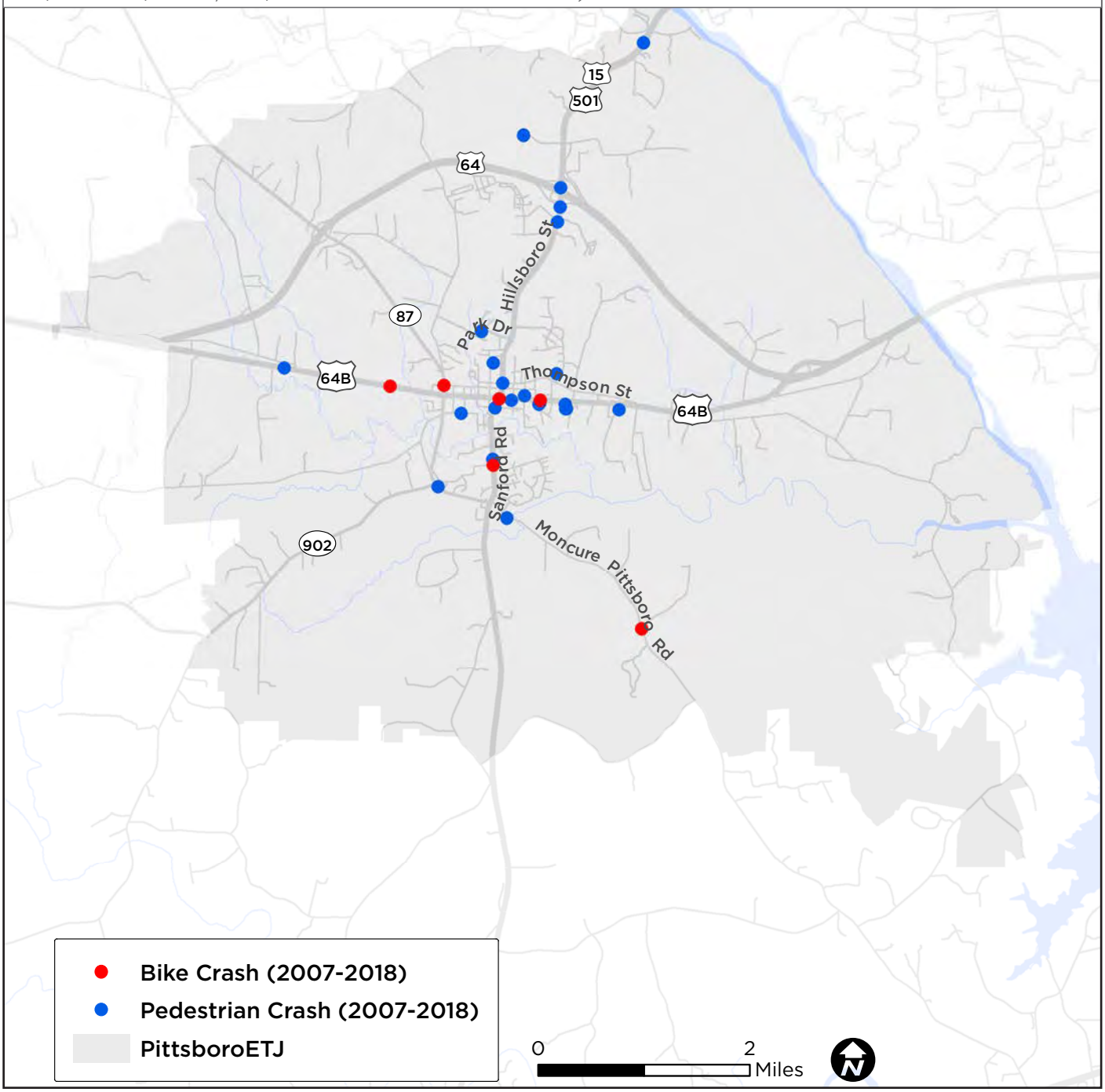


Map 2.5 - Bicycle and Pedestrian Crashes

ABOUT THIS MAP:
This map examines the most recently available crash data for Pittsboro from 2007-2018. There were 23 pedestrian crashes and six bicycle crashes recorded within the study area.

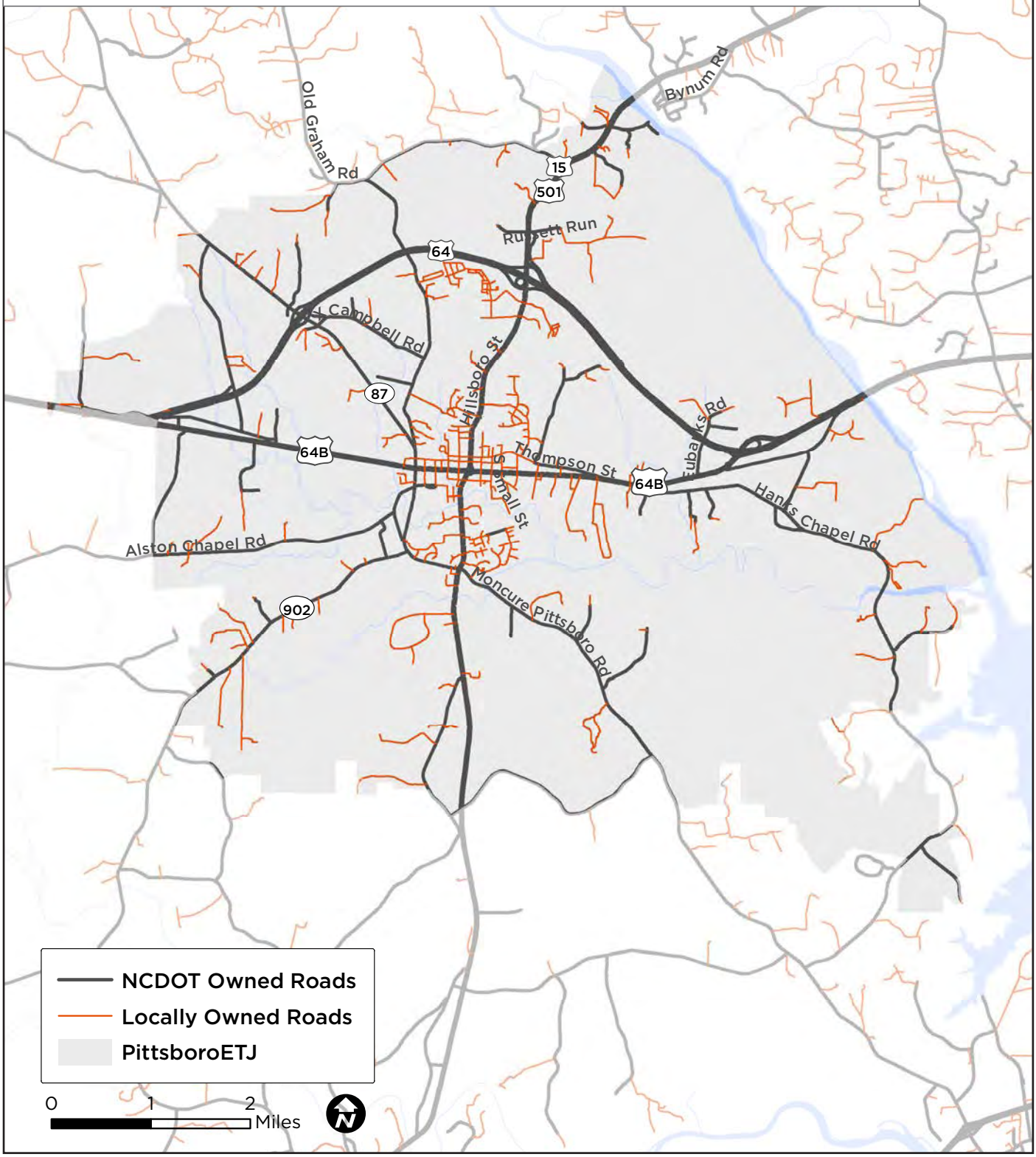
Eight of the 17 pedestrian crashes occurred in parking lots, four along neighborhood streets, and nine along higher traffic volume/high speed roadways (NC 87, US 64, and US 15/501). Two occurred at school crosswalks (one at Northwood High School and one at Pittsboro Elementary School).

All six of the bicycle crashes occurred along higher traffic volume/high speed roadways (NC 87, US 64B, US 15/501, and Moncure-Pittsboro Rd).



Map 2.6 - NCDOT Owned Roads

ABOUT THIS MAP:
This map shows which roadways in Pittsboro are state-versus- locally-owned. Pittsboro will need to coordinate with NCDOT Division 8 and the Integrated Mobility Division to implement this plan's recommended improvements along NCDOT roadways.



RELATED PLANS

A review of previous programs and plans related to Pittsboro bicycle and pedestrian planning is included below. The purpose of the plan review is to identify previous pedestrian and bicycle recommendations and other relevant information in and near the study area. Although this is not an exhaustive list, these plans were the most relevant to the planning and development of bicycle and pedestrian facilities.

PITTSBORO PEDESTRIAN PLAN (2009)

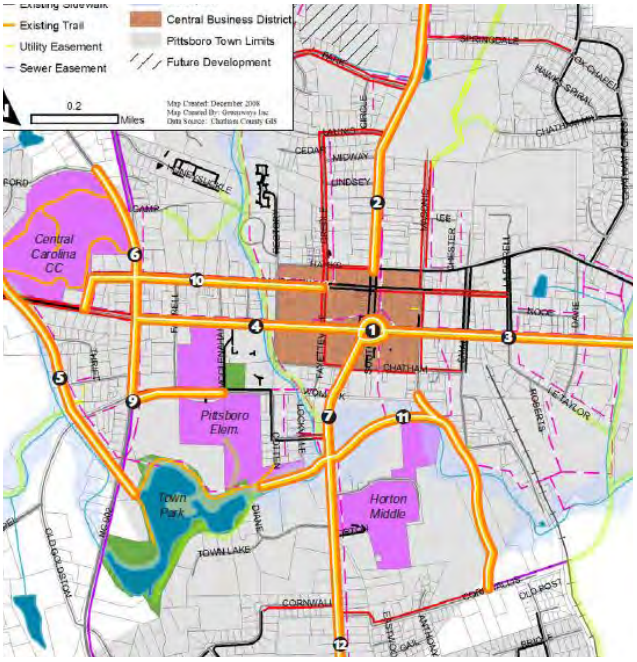
The Pittsboro Pedestrian Plan provides comprehensive infrastructure, policy, and programming recommendations and provides a foundational element for this planning process. To-date, policy improvements related to bicycle/pedestrian travel are being considered as part of the UDO update. Infrastructure recommendations that have been completed include the following:

» Crosswalk improvements at the downtown circle (further improvements pending)
» Mid-block crosswalk of Hillsboro St just south of Launis St to sidewalk link to Chatham Marketplace
» Sidewalks along south side of East St (US 64B from Chatham Business Dr to Thompson St).
» Sidewalk constructed along the east side of NC 87 from US 64B to Old Graham Rd (including roundabout).
» Sidewalk constructed along the east side of NC 87 from US 64B to Farrell St/Pittsboro Elementary School Rd.
» Bridge and gravel trail improvements at Town Lake Park

CHATHAM COUNTY BICYCLE PLAN (2011)

The Chatham County Bicycle Plan included policy and infrastructure recommendations for Pittsboro, including the following:

» Bike lanes along Hillsboro St, Sanford Rd, NC 87 (between Sanford Rd and West St), and US 64B west of NC 87 to the US 64 Bypass



Priority recommendations from the Pittsboro's 2009 Pedestrian Plan. Many of these projects have been completed or are in development.

» Shared Use Paths along US 64 west of the US 64B/US 64 Bypass intersection and east along US 64 east of the US 64B/US 64 Bypass intersection

Programmatic recommendations are organized under several categories including education, encouragement, and enforcement. Policy recommendations include references to the Pittsboro Pedestrian Plan policy recommendations.

TRIANGLE AREA RPO BICYCLE & PEDESTRIAN PLANNING FRAMEWORK (2015)

This document was intended to serve as a guiding policy document for TARPO as future decisions are made on bicycle and pedestrian issues. The document includes specific policy goals and objectives, and recommends a new approach for bicycle and pedestrian project funding prioritization. It is primarily intended as a high-level policy guidance document.

Detailed bicycle and pedestrian infrastructure recommendation maps are included for Pittsboro that include recommendations from previous plans as well as prioritization scoring developed as part of the TARPO Bicycle & Pedestrian Planning Framework.

ONE PITTSBORO PARKS & RECREATION SYSTEM MASTER PLAN (2019)

Several key items from the "One Pittsboro" Parks and Recreation System Master Plan related to walking and biking include the following:

- Incorporation of bicycle, pedestrian, and greenway recommendations from previous planning efforts including a greenways framework map.
- A statistically representative survey (95% level of confidence). Walking and biking trails scored the highest in the priority investment rating. Sidewalks with street trees & benches scored second highest.
- A review of subdivision regulations that recommends the consideration of adding complete streets language into the streets section of the subdivision regulations.

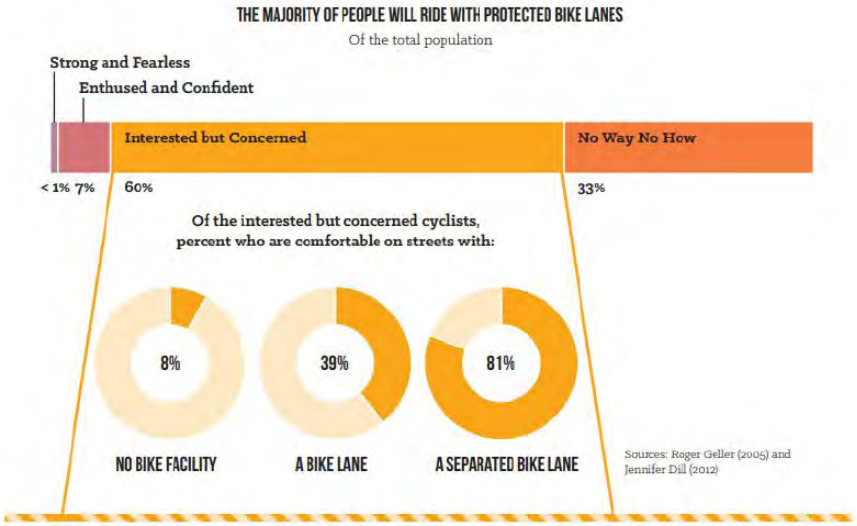


Figure 5.4 Population Bicycle Experience Preference

The above graphic highlighted in the One Pittsboro Parks and Recreation System Master Plan shows the significance of bicycle facilities that are separated from the roadway.

CHATHAM PARK NORTH VILLAGE SMALL AREA PLAN (2017)

Key recommendations related to walking and biking include the following:

- A commitment to "complete streets" and typical roadway sections that include walking and biking infrastructure.
- A greenways plan map that includes a comprehensive network of sidepaths, greenways, and bike routes (see image to the right).
- 10 miles of greenway planned for the North Village Area.
- Locations of parks, Haw River access points, and activity centers (and overall land use).
- A "nested loop" trail design intended to connect residences within a 10-minute walk of the off road greenway system

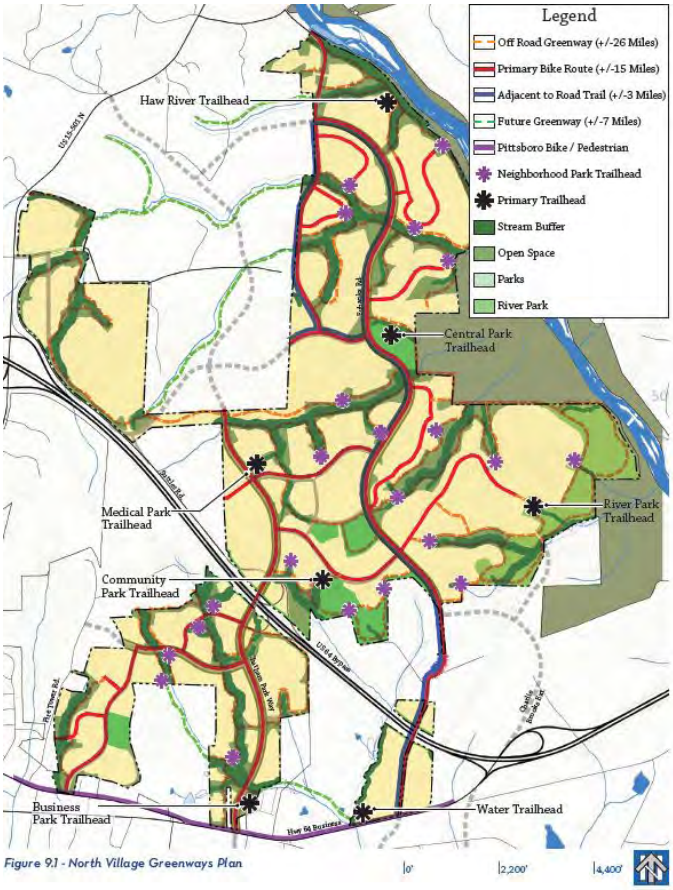


Figure 9.1 - North Village Greenways Plan

LOWER HAW RIVER STATE NATURAL AREA: LOWER HAW TRAILS PLAN (2018)

This plan shows recommendations for trail alignment and opportunities and challenges for trail implementation. The Haw River Trail will be developed as an unpaved hiking trail along the Haw River in the Pittsboro side of the river.

PUBLIC INPUT

To better understand existing conditions and the bicycle and pedestrian priorities of the community, public input was solicited throughout the planning process. Public input formats included:

- An online public comment map and survey
- Public comment map and survey stations at the Chatham Community Library, Central Carolina Community College, Council on Aging, and the YMCA
- 2 Public Input Open Houses
- Outreach at Pittsboro Elementary's Walk to School Day, the Pittsboro Farmers Market, and the annual Juneteenth Celebration
- Community Walkability Assessment

Several strategies were used to inform the community about these public input opportunities. The town and steering committee members shared information with the public using social media (Facebook), website posts, flyers and posters, press releases, and direct email outreach.

PUBLIC COMMENT FORM

There were more than 240 respondents to the public comment form. Although not statistically significant like the One Pittsboro survey, the results that follow still reflect the voices of hundreds of residents across Pittsboro who have an interest in the local walking and biking network. Summary responses are displayed below.

240+

Total survey respondents

84% **WALK/BIKE FOR EXERCISE**

75% **WALK/BIKE TO ENJOY BEING OUTSIDE**

41% **WALK/BIKE FOR TRANSPORTATION**

84% say improving walking and biking conditions in Pittsboro is **Very Important.**

92% would walk or bike more often if there were more sidewalks and bikeways in Pittsboro.

TOP LOCATIONS IN NEED OF WALKING/BICYCLING IMPROVEMENTS, ACCORDING TO THE SURVEY (most often mentioned from written comments):

1. US 15/501
2. US 64B
3. Downtown connectivity
4. Powell Place connectivity
5. Salisbury St

What is the likelihood that the following types of walking and biking facilities would influence you to bike more often? (% responding "VERY LIKELY" shown below and to the right)

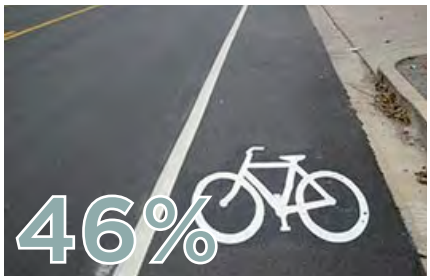
Greenways (shared use paths)

Separated bike lanes (physically separated from traffic)

Sidewalks

Safer intersections

Buffered bike lanes



Bike lanes

Wayfinding signage

62% walk or bike weekly or daily

28% walk or bike monthly or at least a few times a year

10% Never walk or bike

ACCORDING TO RESPONDENTS,

THE TOP **THREE** DESTINATIONS

THAT ARE MOST IMPORTANT TO CONNECT WITH WALKWAYS/ BIKEWAYS ARE:

1. Downtown
2. Local Parks
3. Library, Restaurants (Tie)

PUBLIC INPUT OPEN HOUSES AND OUTREACH EVENTS

Community members who attended these events were asked to provide their feedback on proposed walking and biking infrastructure facilities and programming. Community members were also offered the opportunity to share open-ended responses to questions about the outcomes they hoped to see and current walking and biking opportunities and barriers in Pittsboro.

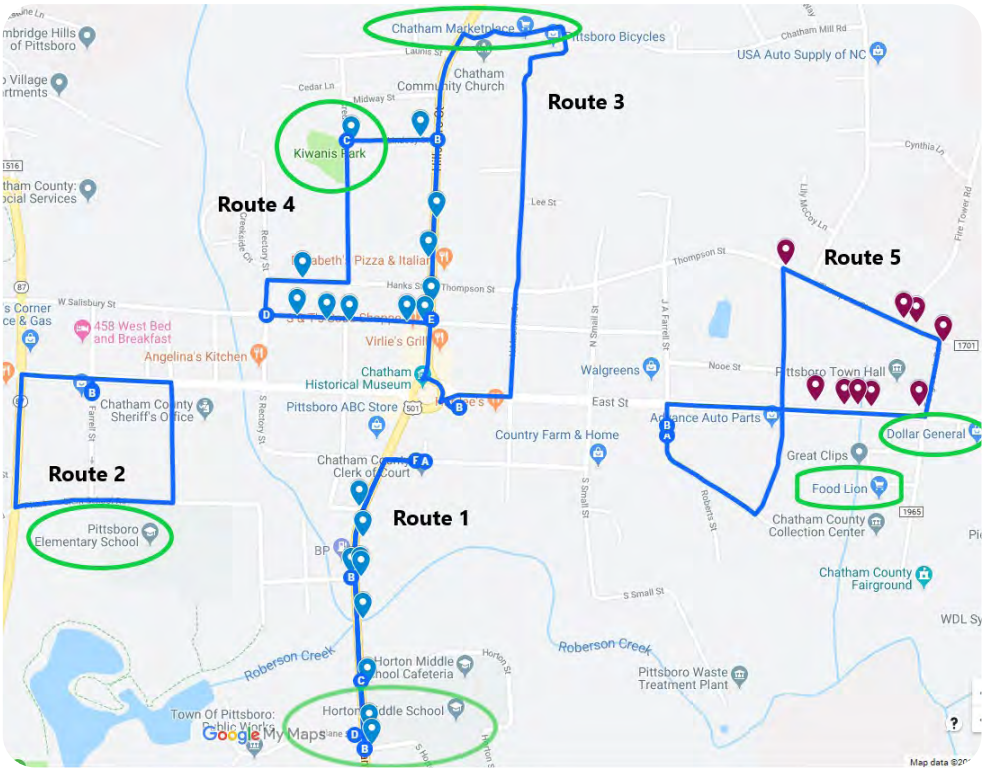
Like the survey results, feedback collected during these public input events suggested that community members preferred infrastructure dedicated to biking and walking (i.e. greenways, separate bikeways, sidewalks) rather than street accommodations for bicyclists and pedestrians (i.e. buffered bike lanes, paved shoulders). When it came to programming, a notable number of event participants selected the Walk Friendly and Bike Friendly Communities Designations as their top choice, explaining that they saw this as a first step in building the political and community will for improving biking and pedestrian infrastructure in Pittsboro. Increased trail maintenance, public art as traffic calming, and Active Routes to Schools were also popular choices.

Many of the open-ended responses collected during the public input events were already included in Table 2.2. Themes that emerged from these responses included safety, connectivity, and infrastructure. Community members mentioned the lack of and a desire for these key elements. A few people raised concerns about the lack of political will and capital investment to accomplish the goals of a comprehensive bicycle and pedestrian plan.

COMMUNITY WALKABILITY ASSESSMENT

To gain an on-the-ground community member perspective of Pittsboro's walkability, the Chatham Health Alliance and Chatham County Public Health Department organized a community walkability assessment. A total of 21 individuals participated in the assessment including 10 community members, 3 town staff, 3 planning experts, 2 community partners, and 3 town officials. The routes chosen for the assessment centered on several important primary destinations: Horton Middle School, Pittsboro Elementary School, Downtown Pittsboro, Chatham Mills, Kiwanis Park, the Dollar General, and the Food Lion.

During the walkability assessment, participants were asked to take notes on route elements such as street crossings and intersections, sidewalks, speed and driver behavior, and comfort and appeal. Each group also took photos along the route that captured the identified walkability strength or weakness. After completing their routes, participants reconvened for a debrief that



Above: the five routes from the walkability assessment

involved translating their field notes into overall route ratings and recommendations for improvement and sharing their findings with the group.

Overall, the findings from the walkability assessment suggest that Pittsboro is not a pedestrian friendly town. All groups rated street crossings and intersections, sidewalks, and side paths as poor to fair. The comfort and appeal of the walking routes were also rated poorly. Notably, these poor ratings did not reflect a complete lack of pedestrian infrastructure or walking appeal. Participants observed that pedestrian infrastructure like sidewalks, ADA compliant curbs, and pedestrian crossing signals were present along some of the routes and many of the primary destinations were in close proximity to one another. Participants noted that you could walk in Pittsboro but that did not mean that Pittsboro was walkable. As evidence, they pointed to several key concerns about current pedestrian conditions:

1. **Inconsistent Pedestrian infrastructure** (e.g. sidewalks on only one-side of the street and missing crosswalks and pedestrian crossing signals),
2. **Gaps in infrastructure limiting connectivity** (e.g. sidewalks stop at the entrance to commercial parking lots and schools and no sidewalks on side roads to primary destinations), and
3. **Absence of amenities that encourage walking** (e.g. shade trees, wayfinding signs, benches, bathrooms, well-maintained sidewalks, and traffic calming and pedestrian buffer features)

Safety	•Repair and maintain safe pedestrian walking routes, with special attention to accessibility
Connectivity	•Expand connectivity between primary Pittsboro destinations and neighborhoods
Comfort and Appeal	•Invest in pedestrian amenities that improve the streetscape environment and make the walking experience more inviting to pedestrians

**See Appendix C for further details on Walkability Assessment themes and recommendations*

In addition to pedestrian infrastructure recommendations, walkability assessment participants encouraged the town and planners to continue efforts to engage a diversity of community members in the planning and implementation process. They also advocated for continuing cross-sector partnerships with the Chatham Health Alliance and Chatham County Public Health Department to assist with the implementation of the adopted Bike and Pedestrian Plan.

T.H.A.N.K.S.

Trail for Health, Art and Nature for Kids to Senior

A gift to the community made by
The Chatham County Council on Aging
Central Carolina Community College
and many volunteers and community members

Funding provided by the Division of Parks and Recreation of
the NC Department of Environment and Natural Resources

CHAPTER THREE: RECOMMENDATIONS

Basis of Recommendations | Recommendations | Policy | Programming | Infrastructure

BASIS OF RECOMMENDATIONS

This chapter outlines the recommendations for making Pittsboro safer and more enjoyable for walking and bicycling within the existing municipal limits and ETJ. Recommendations were developed based on information from several qualitative and quantitative sources. Input sources for the plan are summarized in the diagram below.

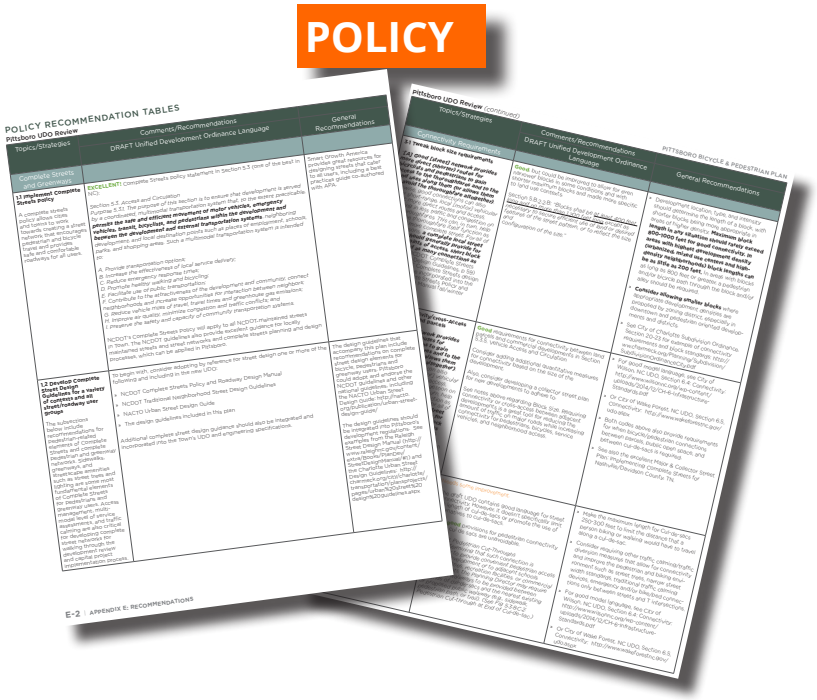
Figure 3.1 Basis of Recommendations

RECOMMENDATIONS

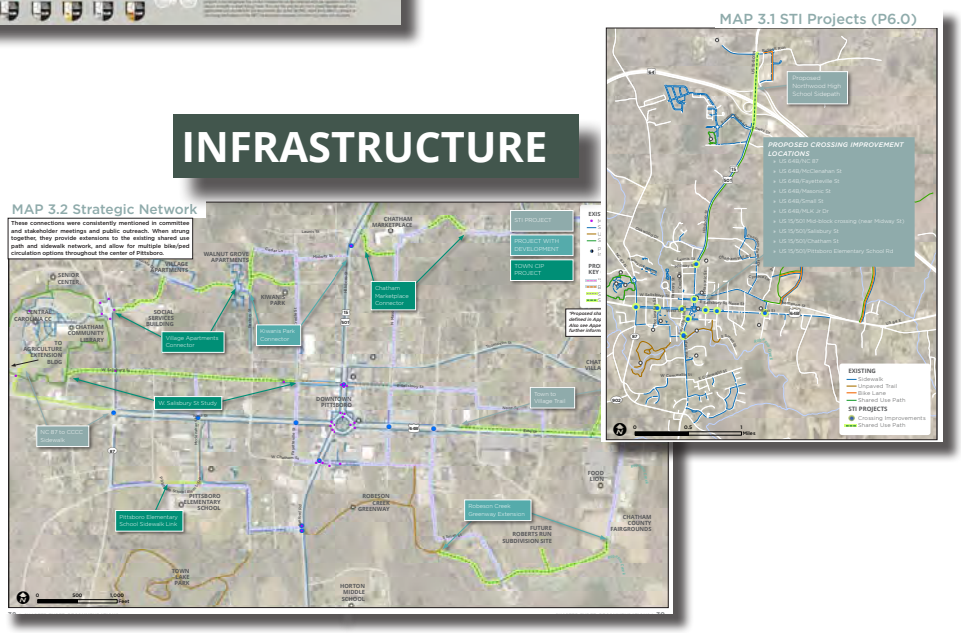
Working towards a bicycle- and pedestrian-friendly Pittsboro requires a comprehensive approach to ensure the most effecient and effective implementation process. Policy, programs, and infrastructure are equally important and complementary elements that require consistent effort and investment from the Town. These elements are summarized in this section, with further detail found in Appendix E.

PROGRAMMING

POLICY



INFRASTRUCTURE



POLICY

Bicycle and pedestrian needs must be considered within the context of Pittsboro's transportation and land use system. To improve safety, community character, and transportation choices requires investment in public transit, bikeways, sidewalks and land use patterns that put a variety of destinations and services within close proximity. Through the statewide promotion of Complete Street design guidelines, and by working to advance Context-Sensitive Solutions (CSS), the North Carolina Department of Transportation is a willing partner to those communities desiring a transportation system that reinforces community character for economic development, community health, and livability.

One of the most cost-effective implementation strategies for Pittsboro is to establish land use and transportation policies and development regulations that promote bikeable/walkable new development, programs, and capital projects. As part of a comprehensive approach to developing recommendations for a more bikeable/walkable town, the project team reviewed Pittsboro's draft UDO standards to identify general issues and opportunities impacting the bicycle and pedestrian environment.

The recommendations are organized into major categories of "Complete Streets and Greenways", "Pedestrian-oriented Urban Design Elements", and "Connectivity." All of the major categories are interrelated, but based on the existing conditions analysis, and the goals of this plan, the following policy recommendations should be implemented first.

Key Regulatory Recommendations:

1. Update development regulations and engineering standards to include and reflect best practices for pedestrian, bicycle, and greenway design, including those recommended in the design guidelines sections of this plan.
2. Implement and enforce connectivity requirements to promote comprehensive, low-stress pedestrian, bicycle, and greenway networks.
3. Develop a policy to require all projects by the Town and NCDOT and regional partners to review the recommendations of this plan to ensure that infrastructure projects include recommended bicycle and pedestrian treatments.

Further detail can be found in the policy recommendation tables found in Appendix E.

Shade and buffer space adds significant value to bicycle and pedestrian facilities. These elements of urban design are important to incorporate into the UDO

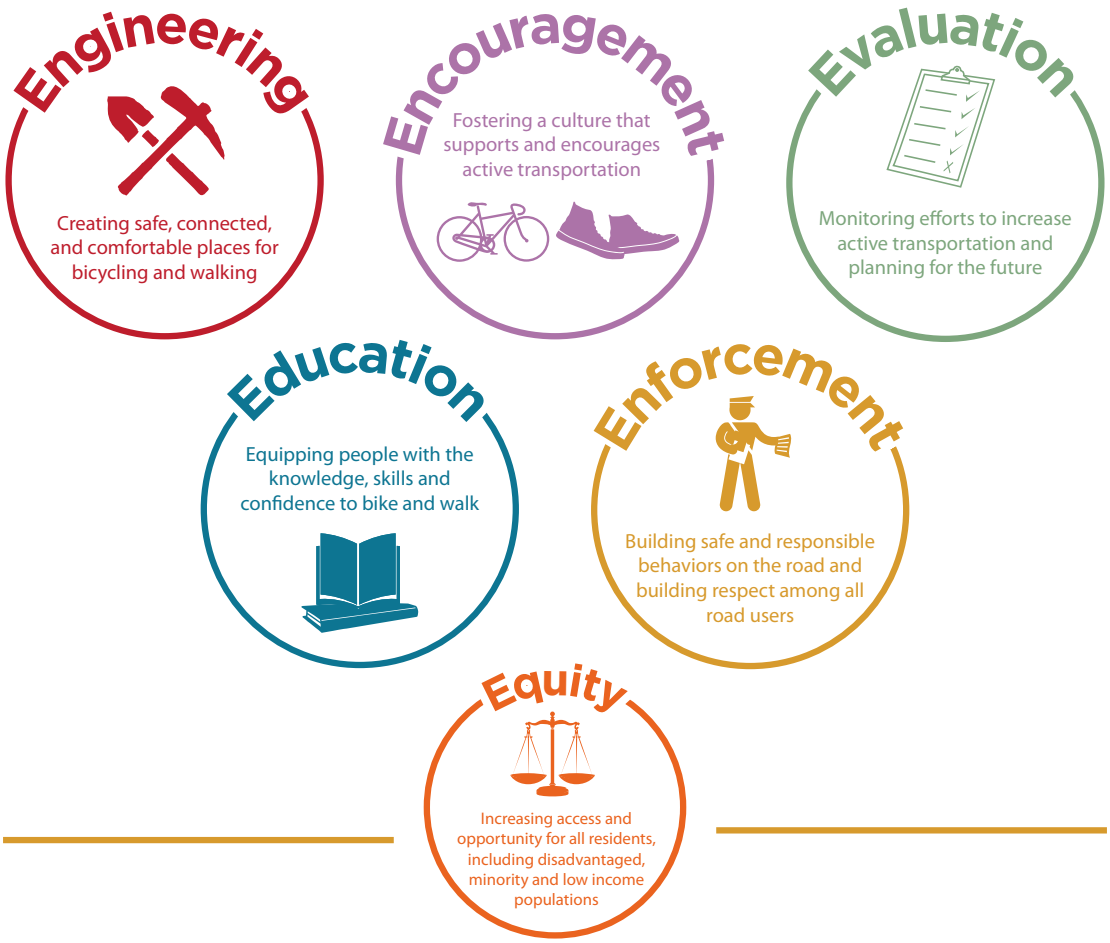
PROGRAMMING

Program recommendations are essential and complementary to policy and infrastructure recommendations. The ideal goal is to develop a culture of safe and enjoyable walking and bicycling built on comprehensive actions and initiatives by diverse groups of people. A model used to describe this comprehensive approach is called the 6 E's: Engineering, Education, Encouragement, Enforcement, Evaluation, and Equity (see diagram below).

Based on public input and partnership opportunities with community stakeholders such as the Chatham Health Alliance and Chatham County Public Health Department, the following programs are recommended:

- Walk Friendly and Bicycle Friendly Communities Designation
- Traffic Calming including low cost installations like crosswalk art
- Safe Routes to School
- Signage and Wayfinding
- Pedestrian Amenities
- Watch for Me NC

Further information on the program ideas can be found in Appendix E.



INFRASTRUCTURE

Recommendations are organized into the following categories based on overall implementation mechanisms that could be most suitable for a particular project. These categories can change depending on STI funding awards, development opportunities that may arise in the future, and many other variables that can affect the implementation process. These projects were consistently mentioned in committee and stakeholder meetings and public outreach, and strategically build upon the existing bicycle & pedestrian network.

MAP 3.1 STI PROJECTS (P6.0): Pittsboro had the opportunity to submit two bike/ped projects for consideration in the STI process in July 2019 (P6.0)(see Appendix B for further detail on the STI process). Aligned with the most often mentioned barriers from public and stakeholder feedback, these projects address issues with crossing and/or traveling along US 64B and US 15/501. These projects include the following:

- Northwood High School Sidepath
- US 64/US 15/501 Crossing Improvements

These projects are particularly well positioned for STI funding since they are along NCDOT owned roadways and will require close coordination with NCDOT Division 8 for implementation. For future rounds of the STI process, projects such as the Town to Village Trail and NC 87 to CCCC Sidewalk could be well suited for STI submittal. See Map 3.2 on page 38 for other potential project locations and Appendix E for project detail.

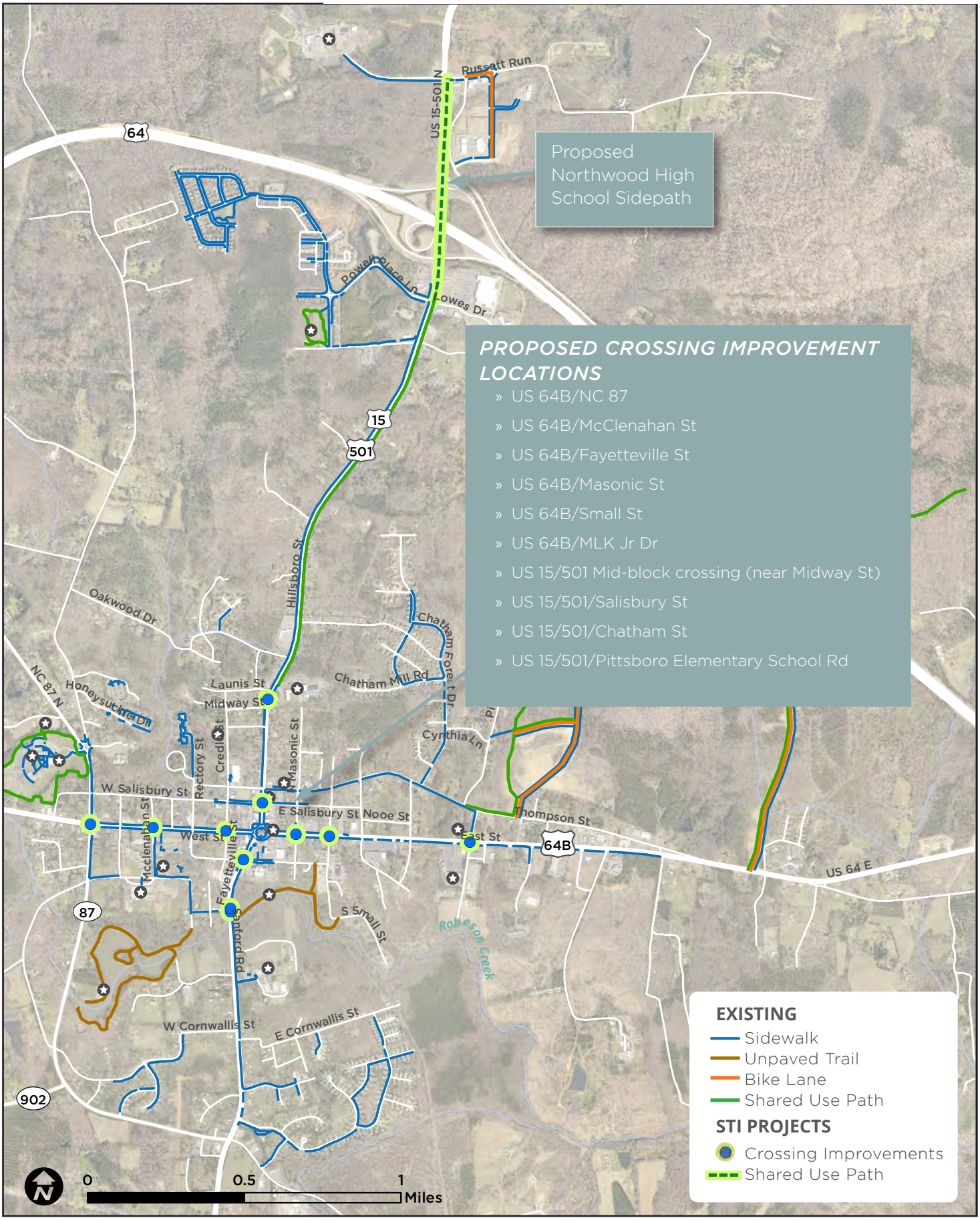
MAP 3.2 STRATEGIC NETWORK - PROJECTS WITH DEVELOPMENT: These projects are key opportunities for coordinating future development with greenway implementation. While the Chatham Park development is a large example of a development that will include comprehensive bicycle and pedestrian connectivity with development, two smaller developments - the Cedar Lane Subdivision and Roberts Run Subdivision can incorporate greenway connectors that will significantly enhance walking and biking options in their respective areas of Pittsboro. These two subdivision projects are referred to as the following in Map 3.2 on page 38 (see Appendix E for further project detail):

- Kiwanis Park Connector
- Robeson Creek Greenway Extension

MAP 3.2 STRATEGIC NETWORK - TOWN CIP PROJECTS: These are projects that will most likely be led by the Town of Pittsboro. These include short greenway or sidewalk links to fill gaps/connect isolated residential areas, and neighborhood street corridors that can (and currently do in many cases) serve as comfortable bicycle and pedestrian connectors across Pittsboro. These projects are referred to as the following in Map 3.2 on page 38 (see Appendix E for further project detail:

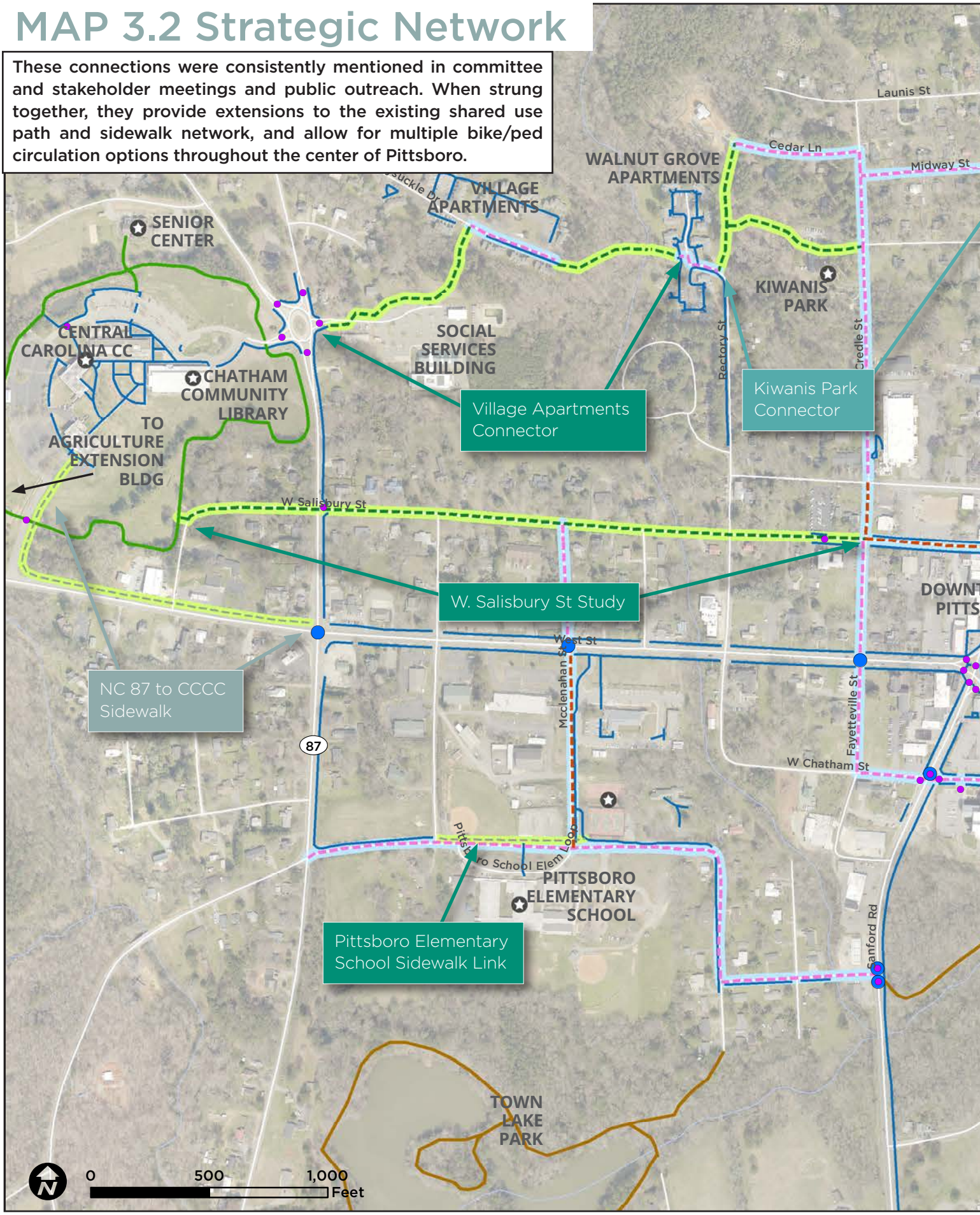
- Pittsboro Elementary School Sidewalk Link
- W. Salisbury St Study
- Village Apartments Connector
- Chatham Marketplace Connector
- Neighborhood Street Connectors (Shared Lane/sidewalk)

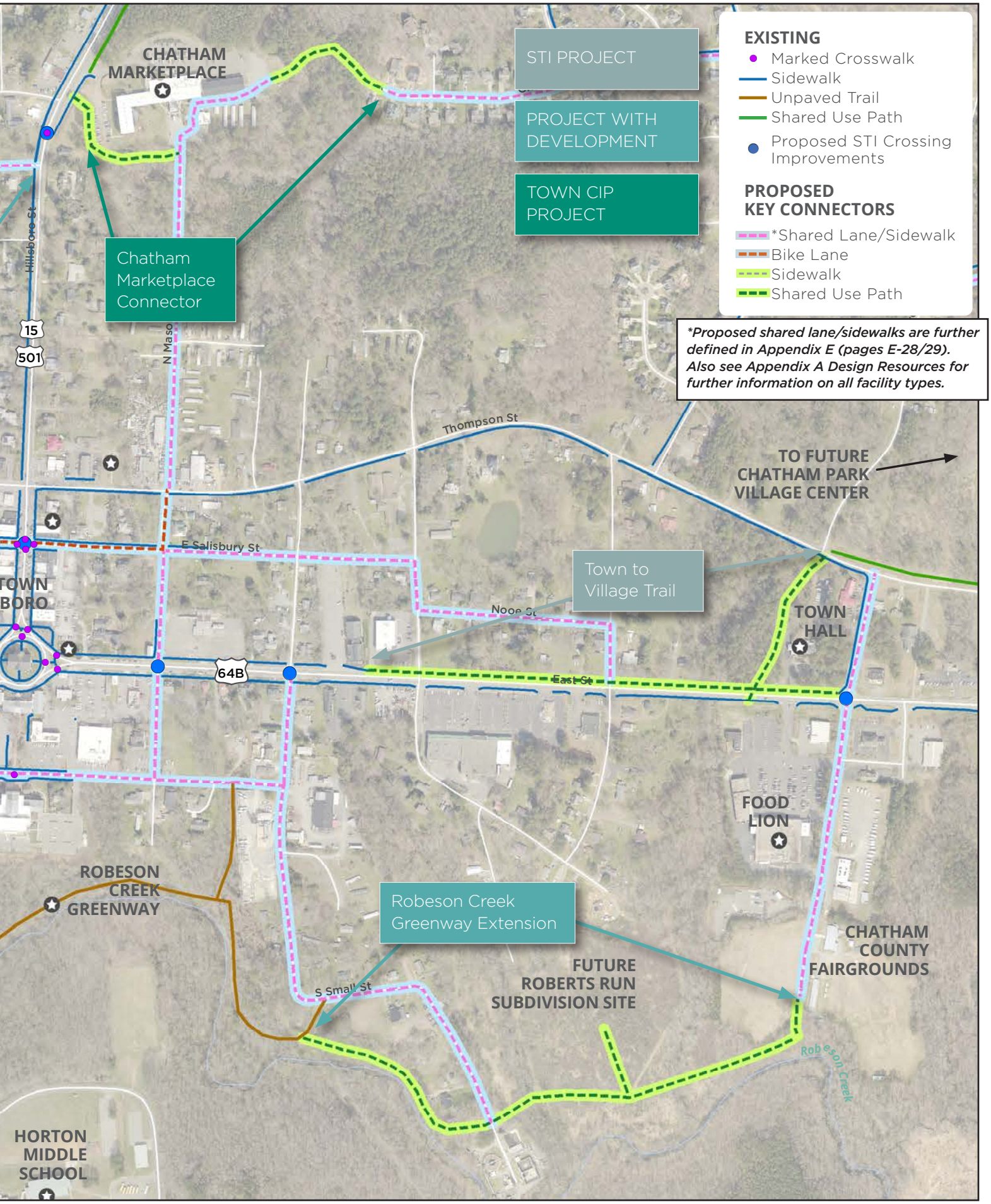
MAP 3.1 STI Projects (P6.0)



MAP 3.2 Strategic Network

These connections were consistently mentioned in committee and stakeholder meetings and public outreach. When strung together, they provide extensions to the existing shared use path and sidewalk network, and allow for multiple bike/ped circulation options throughout the center of Pittsboro.




STI PROJECT
PROJECT WITH DEVELOPMENT
TOWN CIP PROJECT
EXISTING
Marked Crosswalk
Sidewalk
Unpaved Trail
Shared Use Path
Proposed STI Crossing Improvements
PROPOSED KEY CONNECTORS
*Shared Lane/Sidewalk
Bike Lane
Sidewalk
Shared Use Path
*Proposed shared lane/sidewalks are further defined in Appendix E (pages E-28/29). Also see Appendix A Design Resources for further information on all facility types.
CHATHAM MARKETPLACE
Chatham Marketplace Connector
Hillsboro St
15
501
N Maso
Thompson St
TO FUTURE CHATHAM PARK VILLAGE CENTER
E Salisbury St
Town to Village Trail
Nooe St
TOWN HALL
64B
East St
FOOD LION
ROBESON CREEK GREENWAY
Robeson Creek Greenway Extension
S Small St
FUTURE ROBERTS RUN SUBDIVISION SITE
CHATHAM COUNTY FAIRGROUNDS
Robeson Creek
HORTON MIDDLE SCHOOL

Long-Term Vision

Comprehensive Network

The comprehensive network displayed on the following page was largely developed during past planning processes such as the 2009 Pedestrian Plan, 2011 Chatham County Bicycle Plan, and 2019 One Pittsboro Parks & Recreation System Master Plan. This comprehensive network should be built incrementally over time. These are long term recommendations that may be implemented in conjunction with future roadway projects, new development, and/or a myriad of potential public/private/non-profit sector partnerships. While longer term, they are an important vision of this plan, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating bicycle and pedestrian facilities. As progress is made on the infrastructure recommendations displayed here in Chapter 3 and in Appendix E, new projects should be selected from this comprehensive map of recommendations (see detailed maps of the comprehensive network in Appendix E pages E-40 through E-51).

REGIONAL TRAILS AS AN ECONOMIC DEVELOPMENT OPPORTUNITY FOR PITTSBORO

Pittsboro is uniquely positioned to implement several trails that can serve as regional connections or destinations in themselves: Chatham County Bike Routes, The Haw River Trail, The Pittsboro to Sanford Rail Trail, and the Town to Village Trail as proposed in this plan. There are several existing features (developing Chatham Park shared use path system, signed Chatham County Bike Routes, and Haw River bike/ped bridge to Bynum) from which to build, but regional connectivity and associated economic benefits will only come with connected/continuous, dedicated bicycle and pedestrian facilities. This type of impact can come in the form of increased property values and revenue from increased tourism (in addition to savings associated with health benefits of active living). A research group (Headwaters Economics) compiled 120 studies on the impacts of trails in a single library, searchable by type of benefit, use, year, and region. For more on this topic, please refer to this research available at: https://headwaterseconomics.org/economic-development/trails-pathways/trails-research/.

ROBESON CREEK GREENWAY A

Over time, the existing 1/2 mile Robeson Creek Greenway should be extended nine miles to the Robeson Creek Boat Ramp at the Haw River/ Jordan Lake. In combination with the future Haw River Trail and future Town to Village Trail, the Robeson Creek Greenway could be part of a scenic trail loop in the eastern part of the Pittsboro ETJ.

HAW RIVER TRAIL B

The Haw River Trail is a developing regional trail that will eventually connect through the Pittsboro ETJ Haw River section. This space along the Haw River in the Pittsboro ETJ is protected for conservation. It will include an unpaved hiking trail in the future, with multiple planned access points.

PITTSBORO TO SANFORD RAIL TRAIL C

This former railroad corridor has long been inactive and abandoned. With the future water/sewer line that will connect Pittsboro to Sanford, this is an opportunity to include recreation access and a greenway trail on top of the water/sewer line as part of this project, saving significant resources by combining the two projects.

TOWN TO VILLAGE TRAIL D

A direct connection between downtown Pittsboro and the future Village Center of the Chatham Park development will connect a high concentration of businesses and residences in the two distinct sections of Pittsboro. It will provide Chatham Park residents with direct walking/biking access to downtown Pittsboro businesses and destinations and vice versa. This can also serve as the main walking/biking route for downtown Pittsboro residents and visitors to connect to Haw River access points via the future Chatham Park development access points.

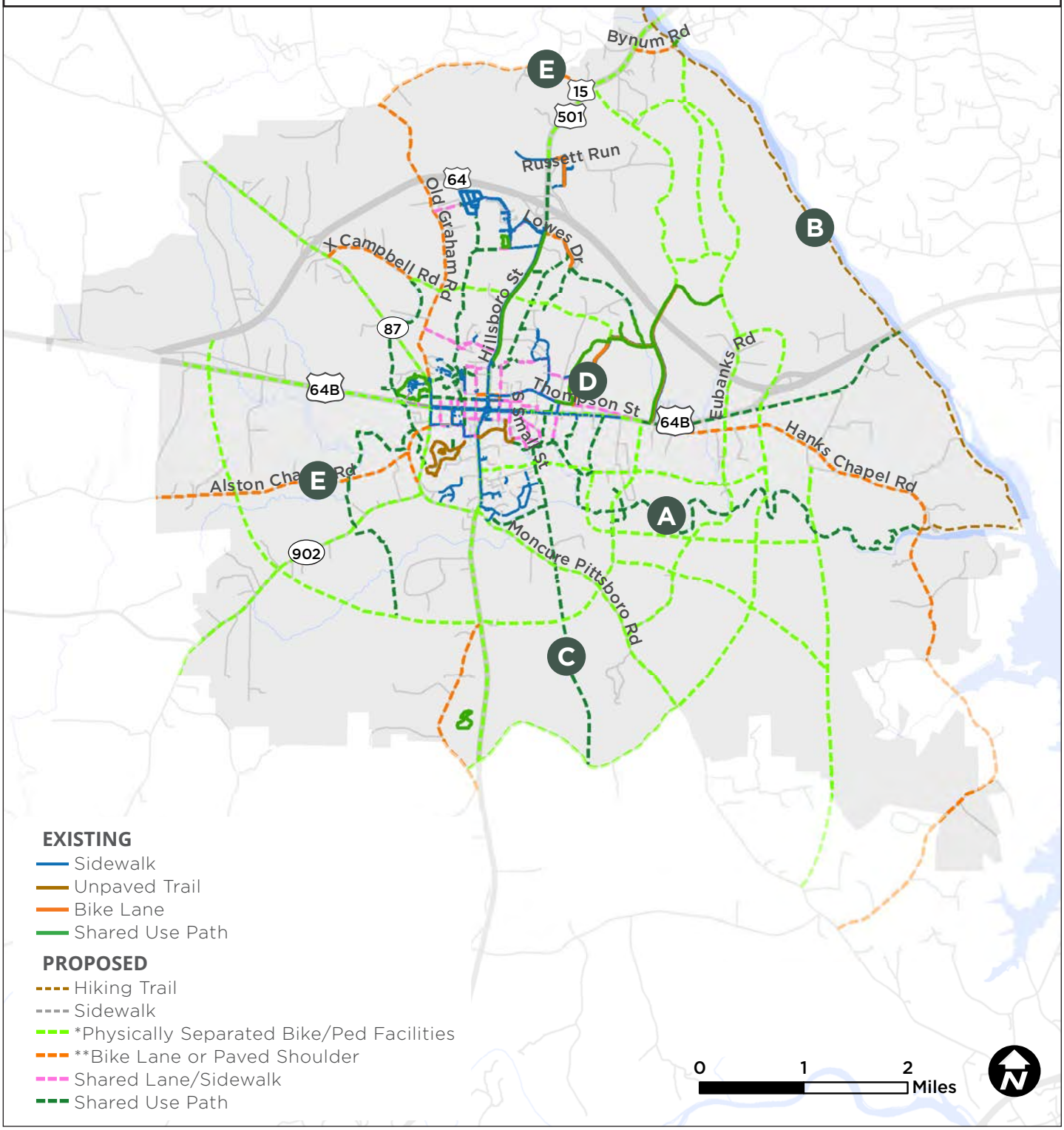
CHATHAM COUNTY BIKE ROUTES E

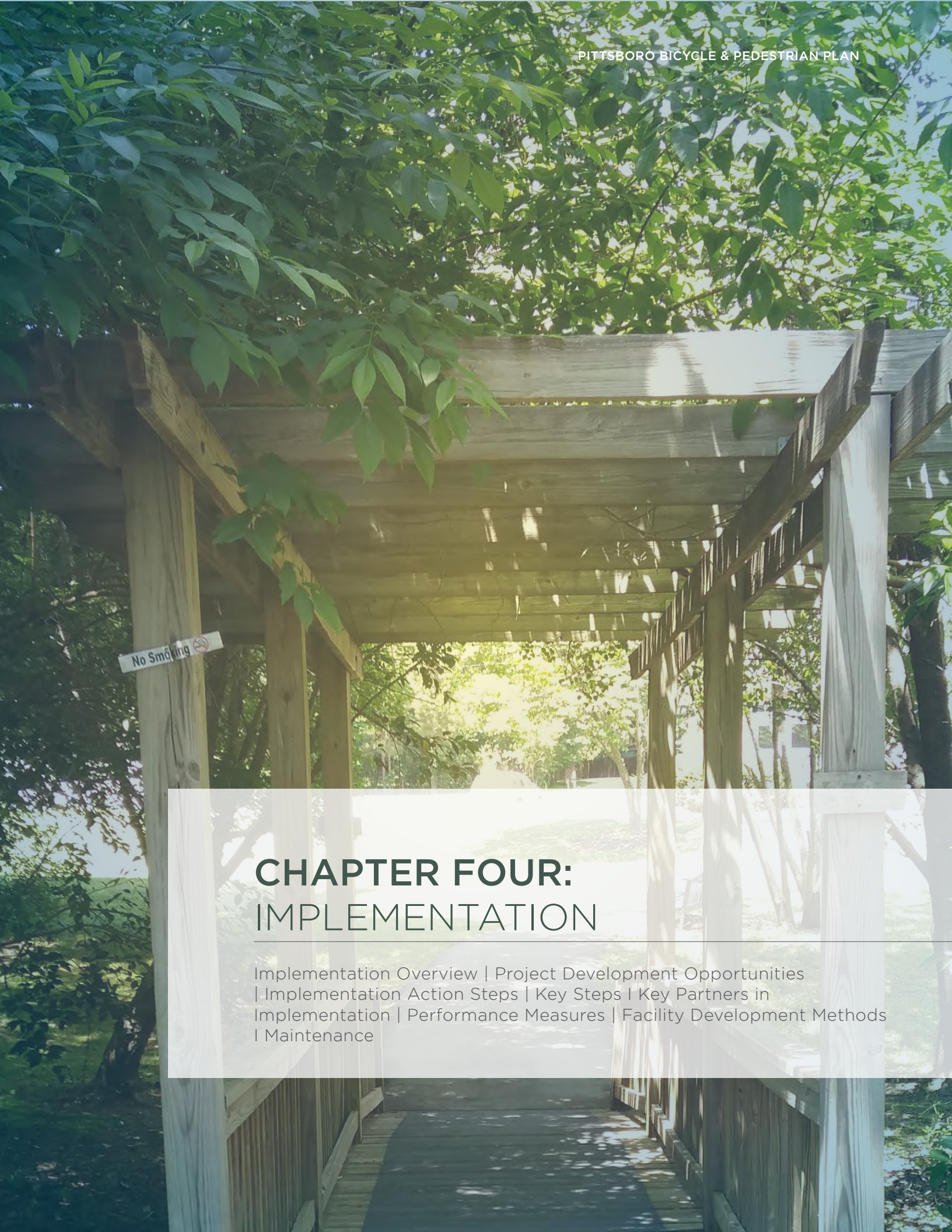
Chatham County Bike Route Loops A & B are signed through Pittsboro along Russell Chapel Church Rd, a short section of US 15/501, and Bynum Rd (part of Loop A), and Alston Chapel Rd, Old Goldston Rd, Pittsboro Elementary School Rd, Sanford Rd, Moncure Pittsboro Rd (part of Loop B). These mostly rural roads should have bicycle infrastructure such as paved shoulders/bike lanes with bicycle friendly rumble strips added to them during roadway improvement projects.

Long-Term Vision
Comprehensive Network

*For physically separated bike/ped facilities (from roadway): this refers to higher traffic volume/higher speed corridors where greater separation from motorist traffic is especially important. These roads include NC 87, US 64B, US 15/501, NC 902, Moncure-Pittsboro Rd, and future proposed collector and arterial roads. Solutions in the future should consider sidepath design, but should also consider a combination of separated bike lanes and sidewalks during the design process. If those design options are not feasible, paved shoulders with bicycle friendly rumble strips should be incorporated into the design.

**For paved shoulder recommendations, most of these roadways are under 1,000 AADT with speed limits of 45-55 mph. The Small Town and Rural Multimodal Network Design Guide recommends at least 5' paved shoulder in these instances (http://ruraldesignguide.com/visually-separated/paved-shoulder).





CHAPTER FOUR: IMPLEMENTATION

Implementation Overview | Project Development Opportunities | Implementation Action Steps | Key Steps I Key Partners in Implementation | Performance Measures | Facility Development Methods I Maintenance

IMPLEMENTATION OVERVIEW

This chapter defines a structure for managing the implementation of the Pittsboro Bicycle and Pedestrian Plan. Implementing the recommendations within this plan will require leadership and dedication to pedestrian and bicycle facility development on the part of a variety of partners. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue. Even small amounts of local funding are essential for matching and leveraging outside sources. Pittsboro need not accomplish the recommendations of this plan by acting alone; success will be realized through collaboration with regional and state agencies, the private sector, and non-profit organizations. Funding resources that may be available are presented in Appendix B of this plan.

It is difficult to know what financial resources will be available at different time frames during the implementation of this plan. However, there are still important actions to take in advance of major investments, including key organizational steps, the initiation of education and safety programs, and the development of strategic, phased, bicycle and pedestrian facilities. Even just getting a project "shovel-ready" can be a huge step towards implementation, as many funding sources look more favorably upon projects that are already in public right-of-way, planned, and designed. Following through on these priorities will allow stakeholders to prepare for the development of bicycle and pedestrian projects over time, while taking advantage of strategic opportunities as they arise.

Expansion of Kiwanis Park as well as the small Cedar Lane development project nearby serve as opportunities to improve walking and biking connectivity with upcoming development.

PROJECT DEVELOPMENT OPPORTUNITIES FOR IMPLEMENTING THE PITTSBORO BICYCLE AND PEDESTRIAN PLAN

Project development opportunities and key players are summarized in this graphic, and in Table 4-1 that follows.

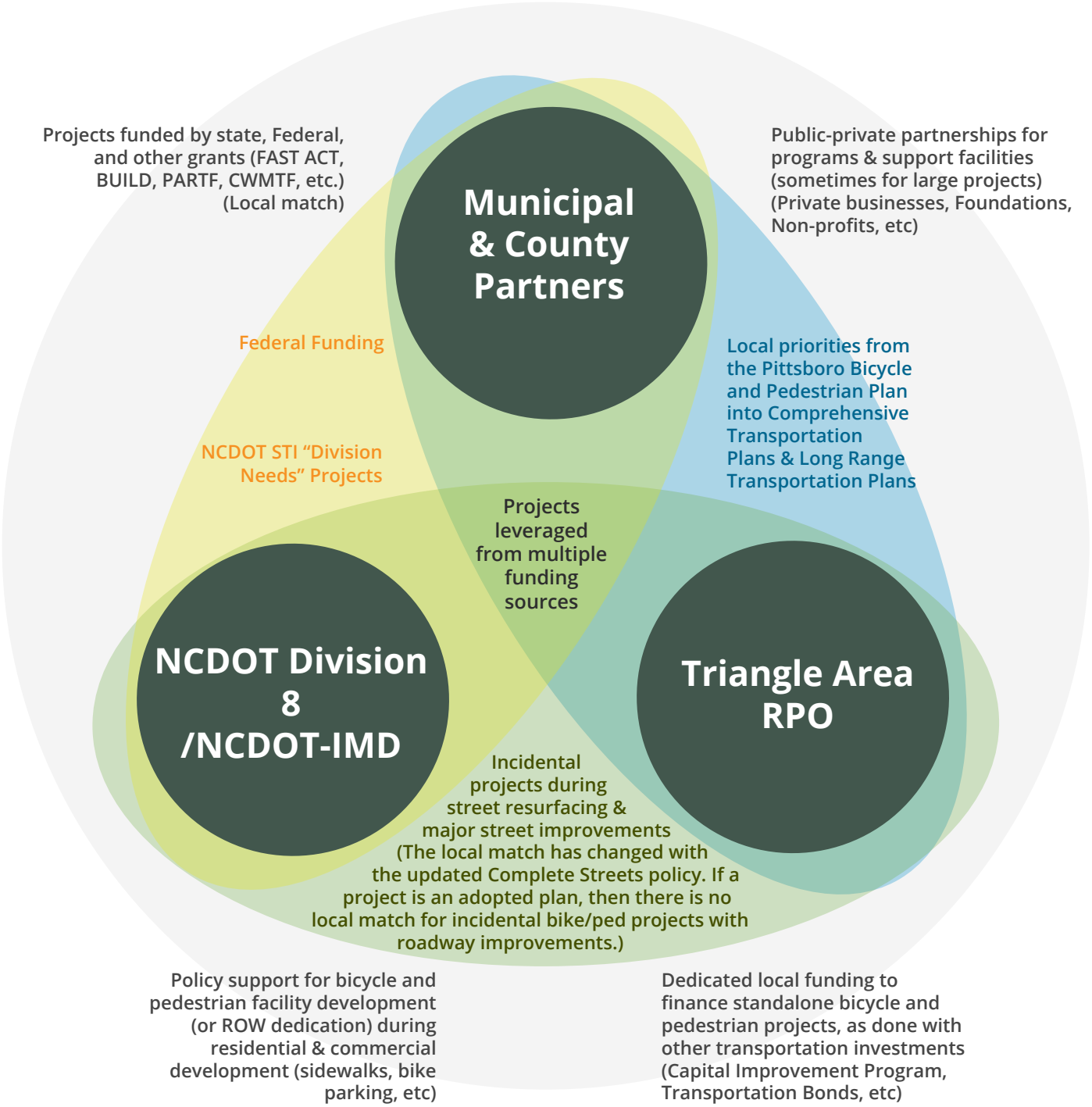


Table 4.1 Implementation Action Steps

TASK	LEAD	SUPPORT	DETAILS	PHASE
Present this plan to the Board of Commissioners.	Project Consultants	Project Steering Committee	Presentation to the Board of Commissioners in 2020.	Short-term (2020)
Approve this plan.	NCDOT Integrated Mobility Division	Project Consultants	Official letter of approval in 2020.	Short-term (2020)
Adopt this plan.	Town of Pittsboro	Project Steering Committee, Project Consultants	Through adoption, the Plan becomes an official planning document of Pittsboro. Adoption does not commit the Town to dedication of funding, but rather shows intention to support plan implementation over time. It also signals to outside funding groups that Pittsboro has undergone a successful, supported planning process, which is key to securing outside funding.	Short-term (2020)
Amend the Chatham County CTP to reference facility recommendations in this plan.	Town of Pittsboro	Chatham County, NCDOT	With the new NCDOT Complete Streets Policy, the CTPs are now the defining planning documents that are considered with the updated cost share policy.	Short-term (2020)
Designate an advisory committee for the implementation of this plan.	Town of Pittsboro	Project Steering Committee	Leadership from Town staff and members of the Project Steering Committee should become the advisory committee for guiding the implementation of this plan (often called a Bicycle and Pedestrian Advisory Committee or "BPAC"). The BPAC should focus on implementation of this plan. For the purpose of these action steps, this group will be referred to as "BPAC" below.	Short-term (2020)
Communicate the goals of this plan and its recommendations to other local and regional groups.	BPAC	Town of Pittsboro	The purpose of this step is to network with potential project partners, and to build support for implementing the recommendations. Possible groups to receive a presentation: Triangle Area RPO, local businesses, Central Carolina Community College, Chatham County Planning, Chatham County Health Department, Chatham Health Alliance, Chatham Chamber of Commerce, NCDOT Division 8, etc.	Short-term/ Ongoing (2020-)
Update zoning and development ordinances to better support walking and bicycling.	Town of Pittsboro	BPAC	See the recommended policies in Chapter 3 and Appendix E.	Short-term (2020)
Engage new programs.	Town of Pittsboro, BPAC	Chatham Health Department, Chatham Health Alliance	New programs should be launched, as described in Chapter 3 and Appendix E, including the BFC/WFC programs, traffic calming, Safe Routes to School, wayfinding/signage, amenities, and Watch for Me NC (see Chapter 3 and Appendix E).	Short-term/ Ongoing (2020-)

Table 4.1 Implementation Action Steps (Continued)

TASK	LEAD	SUPPORT	DETAILS	PHASE
Seek designation as a Bicycle-Friendly Community & Walk-Friendly Community.	Town of Pittsboro, BPAC	Chatham Health Department, Chatham Health Alliance	The development of this plan and the formation of a BPAC are essential first steps toward becoming a designated Bicycle-Friendly and Walk-Friendly Community. With progress on program, policy, and infrastructure recommendations, Pittsboro should be in a position to apply for and receive recognition by 2022.	Short-/Mid-Term (2020-2023)
Begin annual meeting with key project partners.	Town of Pittsboro, BPAC	Triangle Area RPO, NCDOT Division 8 and Integrated Mobility Division, Chatham County, Central Carolina Community College	Key project partners should meet on an annual basis to evaluate the implementation of this Plan. Meetings could also include on-site tours of infrastructure project corridors.	Short-term/ Ongoing (2020-)
Notify the Town of upcoming roadway reconstruction, resurfacing, and restriping projects in Pittsboro.	NCDOT Division 8, Triangle Area RPO	Town of Pittsboro, BPAC	Provide sufficient time for comments (in advance of the design phase); Incorporate bicycle/pedestrian recommendations from this Plan into future updates to the CTP and into future project design plans.	Short-term/ Ongoing (2020-)
Submit to NCDOT for STIP prioritization scoring the projects identified within this plan.	Triangle Area RPO, Town of Pittsboro	BPAC, NCDOT Division 8 and Division of Integrated Mobility	Triangle Area RPO, Town of Pittsboro, BPAC, and NCDOT Division 8 should coordinate to fund some of this plan's project recommendations through the STI process over time. Use the plan project sheets and recommendation maps to communicate project details.	Complete 2019 P6.0/ Ongoing P7.0 etc
Seek multiple funding sources and facility development options.	Town of Pittsboro, BPAC	NCDOT Division 8 and Integrated Mobility Divison, Triangle Area RPO, Chatham County, Central Carolina Community College, private developers	Chapter 3 contains project cost estimates (TBD) and Appendix B contains potential funding opportunities. To allow continued development of the project recommendations, capital funds for bicycle and pedestrian facility construction should be set aside every year. Powell Bill funds should be programmed for facility construction. Funding for an ongoing maintenance program should also be included in operating budgets.	Short-term/ Ongoing (2020-)
Complete all project recommendations identified in the Strategic Network	Town of Pittsboro, BPAC	NCDOT Division 8 and Integrated Mobility Divison, Triangle Area RPO, Chatham County, Central Carolina Community College, private developers	Chapter 3 and Appendix E provides information on infrastructure projects. Aim to complete all project recommendations in 5-10 years.	Ongoing (2020-2030)
Plan Update	Town of PIttsboro, BPAC	Triangle Area RPO, NCDOT Division 8 and Integrated Mobility Division, Chatham County, Central Carolina Community College	This plan should be updated by 2025 (about five years from adoption). If many recommendations have been implemented by then, a new set of recommendations should be established. If not, a new implementation strategy should be established.	Long-Term (2025)

BICYCLE & PEDESTRIAN INFRASTRUCTURE PRIORITIZATION

This table below is meant to serve as a general guide for comparing bicycle and pedestrian infrastructure projects. When deciding the order in which to build out a community-wide network, it is just as important to be strategic in considering how new projects build upon previous projects as it is to build in order of any given list. It is also important to consider opportunities to build facilities as they arise. For example, some of the most cost-effective opportunities to build facilities are during new development and roadway construction, regardless of priority ranking (The Hillsboro St widening project scheduled for construction in the near-term and the future Cedar Lane and Robert Run Subdivisions are good examples of such opportunities).

The examples below are commonly utilized during bike/ped infrastructure project development processes. They generally align with STI process prioritization criteria that are categorized under safety, accessibility/connectivity, demand/density, and cost effectiveness (see Appendix B for further information on STI prioritization criteria). All of these projects listed below connect to an existing trail or bike/ped facility, were supported in public and stakeholder feedback, and identified in a previously adopted plan.

While the implementation process for many of these projects can happen simultaneously, this table can serve as a tool for decision makers to compare projects when delegating resources for implementation. Additional criteria can be added to the table as well to examine other points of comparison. Equity, population density, traffic impacts, community cohesion, community aesthetic/beautification, and return on investment are other examples that can be quantified by various metrics.

Potential implementation mechanisms (see page 36 for summary)

STI PROJECT | PROJECT WITH DEVELOPMENT | TOWN CIP PROJECT

Name	Facility Types*	Connects to a Park	Connects to a School or CCCC	Connects to an Existing Trail or Bike/Ped Facility	In An Adopted Plan	Connects to a Commercial Center	Reported Bicycle or Pedestrian Crash Along Route	Supported in public and Stakeholder Feedback
US 64B & US 15/501 Crossing Improvements	Crossing Facilities	✓	✓	✓	✓	✓	✓	✓
Northwood High School Sidepath	SUP	✓	✓	✓	✓	✓	✓	✓
Pittsboro Elementary School Sidewalk Link	SW, Crossing Facilities	✓	✓	✓	✓			✓
W. Salisbury St Study	SUP/SL	✓	✓	✓	✓	✓	✓	✓
Village Apartments Connector	SUP/SL		✓	✓	✓			✓
Kiwanis Park Connector	SUP/SL	✓		✓	✓	✓		✓
Chatham Marketplace Connector	SUP/SL			✓	✓	✓		✓
Robeson Creek Greenway Extension	SUP	✓	✓	✓	✓			✓
Town to Village Trail	SUP			✓	✓	✓	✓	✓
NC 87 to CCCC Sidewalk	SW, Crossing Facilities		✓	✓	✓	✓		✓

**Facility Types: Separated Bicycle Lane (SBL); Shared Use Path (SUP); Sidewalk (SW); Shared Lane (SL)*
These projects are summarized in Chapter 3 and detailed further in Appendix E.

KEY STEPS

The following represent key, immediate action steps for Pittsboro and its partners:

Adopt This Plan

Adoption does not obligate the Town of Pittsboro 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 of Pittsboro, per the updated NCDOT Complete Streets Policy.

Form a Bicycle & Pedestrian Advisory Committee

Leadership from the Town of Pittsboro Planning Department, Chatham County Health Department, Chatham Health Alliance, and members of this project's steering committee should become the advisory committee for guiding the implementation of this plan (often called a Bicycle and Pedestrian Advisory Committee or "BPAC"). The BPAC should focus on implementation of this plan.

The BPAC should have representation from active pedestrians and commuting and recreational cyclists and should champion the recommendations of this plan. **The formation of this group would be a significant step in becoming designated as a Bicycle Friendly and Walk Friendly Community (see program recommendations in Chapter 3 and further detail in Appendix E).** The committee would provide a communications link between the residents of the community and local government. They should also continue to meet periodically, and be tasked with assisting municipal staff in community outreach, marketing, and educational activities recommended by this plan.

Update Town Policies

Policy recommendations are presented in Table 4.1 in Chapter 3. In their essence, new policies and updated existing policies are low-cost or zero-cost means for Pittsboro to influence or enforce walking and biking improvements. As Pittsboro continues the UDO update process, the recommendations from this plan should be incorporated into the UDO update.

Engage New Programs

Program recommendations can be found in Chapter 3 with further detail in Appendix E. During this planning process, the Chatham County Health Department and Chatham Health Alliance led a Walkability Assessment and should continue engaging all program recommendations in 2020, working closely across Pittsboro and Chatham County departments, including Parks and Recreation, Planning, and the Sheriff's Office.

Begin Work on Infrastructure Projects

The implementation of walking and biking infrastructure projects will take time and will happen through multiple mechanisms including the NCDOT SPOT process, Pittsboro's CIP, land development, park and open space development, and incidental improvements that can happen during scheduled roadway reconstruction, resurfacing, or maintenance. Because infrastructure is the high dollar item of this plan, Pittsboro should consider setting aside a revenue stream for local match or standalone projects.

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, dedication of resources, and policy updates 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 bicycle and 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 Bicycle and Pedestrian Advisory Committee (BPAC)

The Committee should be prepared to:

» Meet with Pittsboro staff and evaluate progress of the plan's implementation and offer input regarding pedestrian, bicycle, and trail-related issues.

» Assist Pittsboro staff in applying for grants and organizing bicycle- and pedestrian-related events and educational activities.

» Build upon current levels of local support for pedestrian and bicycle issues and advocate for local project funding.

Role of the Local NCDOT Division 8

Division 8 of the NCDOT is responsible for the construction and maintenance of pedestrian and bicycle facilities on NCDOT-owned and maintained roadways in Pittsboro, or is expected to allow for the municipalities to do so with encroachment agreements. Pittsboro should be proactive and take the lead in communicating with and working with Division 8, but Division 8 should also be prepared to do the following, as they are able:

» Recognize this plan as not only an adopted plan of Pittsboro, but also as an approved plan of the NCDOT.

» Become familiar with the bicycle and 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 standards 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 Pittsboro staff of all upcoming roadway reconstruction or resurfacing/restriping projects in Pittsboro, no later than the design phase. Provide sufficient time for comments from Pittsboro 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

Police departments are responsible for providing the community the highest quality law enforcement service and protection to ensure the safety of citizens and visitors. The Pittsboro 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 bicycle- and pedestrian-related laws, but also motorist laws that affect walking and bicycling, such as speeding, running red lights, aggressive driving, etc.

» Participate in bicycle- and pedestrian-related education programs.

» Review safety considerations as projects are implemented.

Role of Developers

Developers in Pittsboro can play an important role in facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of on-road bicycle facilities, sidewalks, trails or crossing facilities. The Chatham Park Development is one such example as they have plans to incorporate walking and biking infrastructure into each phase of development. 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.

» Revised development regulations should require that developers install bike and pedestrian infrastructure and/or contribute in-lieu fees as part of the subdivision review and approval process.

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

Role of Local & Regional Stakeholders

Stakeholders for bicycle and pedestrian facility development and related programs, such as Chatham County, Triangle Area RPO, Central Carolina Community College, 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 Pittsboro for implementation, specifically in relation to funding opportunities, such as grant writing and developing local matches for facility construction.

» Triangle Area RPO should continue to work with Pittsboro 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. Building on the outreach conducted during this planning process by the Chatham County Health Department and Chatham Health Alliance, BPAC should be prepared to engage local residents and groups by:

» Asking for input regarding bike/ped issues in Pittsboro.

» Enlisting volunteers for bicycle- and 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.

Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service to provide for many of the program ideas outlined in Chapter 3 of this plan. Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride and personal connections to Pittsboro's trail, bicycle, and pedestrian networks.

PERFORMANCE MEASURES (EVALUATION AND MONITORING)

Pittsboro should establish performance measures to benchmark progress towards fulfilling the recommendations of this plan. BPAC should play a key role in presenting these performance measures in an annual evaluation update. Performance measures could address the following aspects of bicycle and pedestrian transportation and recreation in Pittsboro:

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

FACILITY DEVELOPMENT METHODS

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

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

North Carolina Department of Transportation (NCDOT) Strategic Transportation Investments (STI)

The NCDOT's State Transportation Improvement Program is based on the Strategic Transportation Investments Bill, signed into law in 2013. The Strategic Transportation Investments (STI) Initiative introduces the Strategic Mobility Formula, a way to fund and prioritize transportation projects.

All independent bicycle and pedestrian projects are placed in the "Division Needs" category, and are currently ranked based on 50% data (safety, accessibility/connectivity, demand/density, and cost effectiveness) and 50% local input. See Appendix B for more information.

Residential and Commercial Development

The construction of bicycle and pedestrian facilities should be required during development. Construction of facilities that corresponds with site construction is more cost-effective than retrofitting. In commercial development, emphasis should also be focused on safe bicyclists and pedestrian access into, within, and through large parking lots. This ensures the future growth of the bicycle and pedestrian network and the development of safe communities.

Local Roadway Construction or Reconstruction

Bicyclists and pedestrians should be accommodated any time a new road is constructed or an existing road is reconstructed. In the longer-term, all new roads with moderate to heavy motor vehicle traffic should have bicycle and pedestrian facilities.

Repaving

Repaving projects provide a clean slate for revising pavement markings. When a road is repaved, the roadway should be restriped to create narrower lanes and provide space for bike lanes and shoulders, where feasible. In addition, if the spaces on the sides of non-curb and gutter streets have relatively level grades and few obstructions, the total pavement width can be widened to include paved shoulders.

NCDOT provides four-year plans that include resurfacing schedules. Please see the following website - https://connect.ncdot.gov/resources/Asset-Management/HMIP-Plans/Pages/HMIP.aspx.

According to the 2020-2024 HMIP Plans, Fire Tower Rd, Alston Chapel Rd, US 15/501 south of Launis St, US 64B east of the downtown traffic circle, X Campbell Rd, and Hanks Chapel Rd are schedule for improvements. See the Comprehensive Netowrk in Appendix E for recommendations along these corridors.

Bridge Construction or Replacement

Provisions should always be made to include a bicycling and walking facility as a part of vehicular bridges. All new or replacement bridges should accommodate two-way travel for all users. Even though bridge construction and replacement does not occur regularly, it is important to consider these policies for long-term bicycle and pedestrian planning.

Easements

Pittsboro should explore opportunities to revise existing easements to accommodate public access greenway trail facilities. Adopting policy language to allow for public access for trail users, as a matter of right, on all new sewer and utility easements would greatly enhance the development of greenways. Sewer easements are very commonly used for this purpose, offering cleared and graded corridors that easily accommodate trails. This approach avoids the difficulties associated with acquiring land, and it better utilizes the Town's resources. The Robeson Creek Greenway is an excellent example of utilizing a water/sewer corridor for trail development.

MAINTENANCE

The physical condition of bicycling and walking facilities such as bike lanes, pavement markings, paved shoulders, shared use paths, and sidewalks, is an important consideration when residents consider choosing bicycling or walking for transportation or other uses.

Developing 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 facility maintenance in Pittsboro.

Bicycle and 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.
- Foremost, protect life, property and the environment.
- 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 ongoing 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.

Routine Maintenance

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacements such as fixing cracks and potholes or repairing a broken hand railing.

Routine Maintenance Tasks

Certain tasks should be performed on a regular basis to keep all network facilities in good, usable condition. Maintenance tasks should be conducted more frequently for facilities where use is the most concentrated. The frequency of required maintenance tasks should be established as new facilities are implemented and should be reviewed and updated annually to reflect any changes in usage, safety issues, etc.

Basic housekeeping of facilities will ensure that the network is clean and functional and will also improve the life of each facility. Volunteer efforts, should be utilized in managing trails, partnering with other local groups and agencies where possible.

When on-street facilities, such as a bicycle lane or shoulder, become filled with debris, bicyclists are forced into the motor vehicle lane. Poor maintenance can contribute to crashes and deter potential bicyclists unwilling to risk flat tires and skidding on roadways.

Periodic checks should be made of the on-street bikeway network with the majority of work being confined to spot fixes and damage response. Street sweeping of on-street facilities will need to be part of the roadway maintenance program to ensure that the roadway is cleared curb to curb (see Chapter 3 for further detail on sweeping bike lanes).

To maintain a high quality network, regular attention should be given to the surrounding landscape, both natural and man-made. This not only improves the aesthetic quality of the network but also improves the users' sense of safety, as well. Vegetation management tasks include the following:

- Tree and shrub trimming and pruning
- Mowing of vegetation
- Mulching and edging
- Invasive species control

Remedial Maintenance

Remedial Maintenance refers to correcting significant defects in the network, as well as repairing, replacing or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a five to ten year cycle such as repainting, seal coating asphalt pavement or replacing signage. Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction remedial maintenance include stabilization of a severely eroded hillside, repaving a trail surface or a street used for biking, or replacing a footbridge. Remedial maintenance should be part of a long-term capital improvement plan.

Some repairs are minor, such as repainting or resurfacing bicycle lanes and can be done in conjunction with other capital projects, such as repaving the adjacent street.

General remedial tasks for off-street facilities can include:

- Replenish gravel, mulch, or other materials
- Repaint/restripe/stain
- Repave/seal
- Replace asphalt or concrete
- Remove encroaching debris along paved trail/sidewalk edges
- Regrade to prevent or eliminate low spots and drainage issues

- Add culverts, bridges, boardwalks, retaining walls, etc. to prevent or eliminate drainage/erosion issues
- Reroute trail, if necessary, to avoid environmentally sensitive or overused areas and any safety issues

For on-street facilities, pavement overlays represent good opportunities to improve conditions, if done carefully. A ridge should not be left in the area where bicyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects also offer opportunities to widen a roadway or to re-stripe a roadway with bike lanes.

Compaction is an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway surface nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks.

General remedial tasks for on-street facilities can include:

- Maintain a smooth pothole-free surface.
- Maintain pavement so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- During chip seal maintenance projects, if the pavement condition of the bike lane is satisfactory, it may be appropriate to chip seal the travel lanes only. However, use caution when doing this so as not to create an unacceptable ridge between the bike lane and travel lane.
- Ensure that inlet grates, and manhole and valve covers are within 1/4 inch of the finished pavement surface and are made or treated with slip-resistant materials.

SEASONAL MAINTENANCE

Seasonal tasks should be performed as needed. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to facility users. Designated maintenance crews would remove leaf debris, snow, and ice from all network facilities as soon as possible. Leaf debris is potentially hazardous when wet and special attention should be given to facilities with heavier usage. Ice control and removal of ice build-up is a continual factor because of the freeze-thaw cycle. Ice control is most important on grade changes and curves. Ice can be removed or gravel/ice melt applied. After the ice is gone, leftover gravel should be swept as soon as possible.

HABITAT ENHANCEMENT & SHADE

The presence/absence of vegetation and the type of vegetation present along walking/biking facilities affects habitat quality, the effectiveness as a wildlife corridor, ecological sustainability, the aesthetic experience, and overall comfort for the bicyclist/pedestrian. Walking/biking facilities are more effective at providing wildlife habitat when they have trees and shrubs present. Planting native vegetation along walking/biking facilities can enhance the user's feeling of "getting back to nature," but can also provide important cover on hot and cold days alike. However, planting woody vegetation may not be an option on trails whose alignments are on sewer or power line rights-of-way based on planting depth requirements. In locations where trees and shrubs are lacking and can be planted, native species are the most ecologically sustainable choice. As a group, native species require less maintenance than horticultural plantings and often provide wildlife with a food source.

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 shared-use trails 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.

PITTSBORO
BICYCLE & PEDESTRIAN PLAN

Prepared for the Town of Pittsboro, North Carolina & NCDOT
Prepared by Alta Planning + Design

2020

APPENDIX A:
DESIGN RESOURCES

DESIGN GUIDELINE RESOURCES

Planners and project designers should refer to these standards and guidelines in developing the infrastructure projects recommended by this plan. The following resources are from the NCDOT website, for *"Bicycle & Pedestrian Project Development & Design Guidance",* located here:

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

All resources listed below are linked through the web page listed above, retrieved in August 2019.

NATIONAL GUIDELINES

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, Streets & Sidewalks, and Shared Use Paths

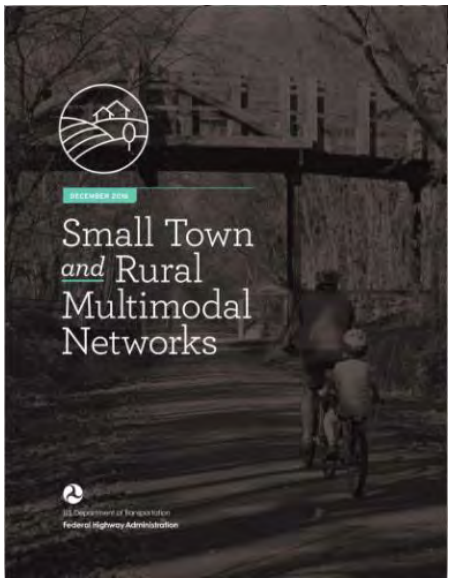
NORTH CAROLINA GUIDELINES

Manual on Uniform Traffic Control Devices (MUTCD):
- 2009 NC Supplement to MUTCD
- Part 7. Traffic Controls for School Areas
- Part 9: Traffic Controls for Bicycle Facilities

North Carolina Department of Transportation (NCDOT):
- WalkBikeNC: The Statewide Pedestrian and Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Roadway Design Manual (will include updated NCDOT Complete Streets design guidance in fall/winter 2020)
- 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

Route Signing & Mapping
- Bike Maps and Routes
- Share the Road Initiative
- How to Select Routes
- NCDOT Bicycle Route Signing & Mapping Program

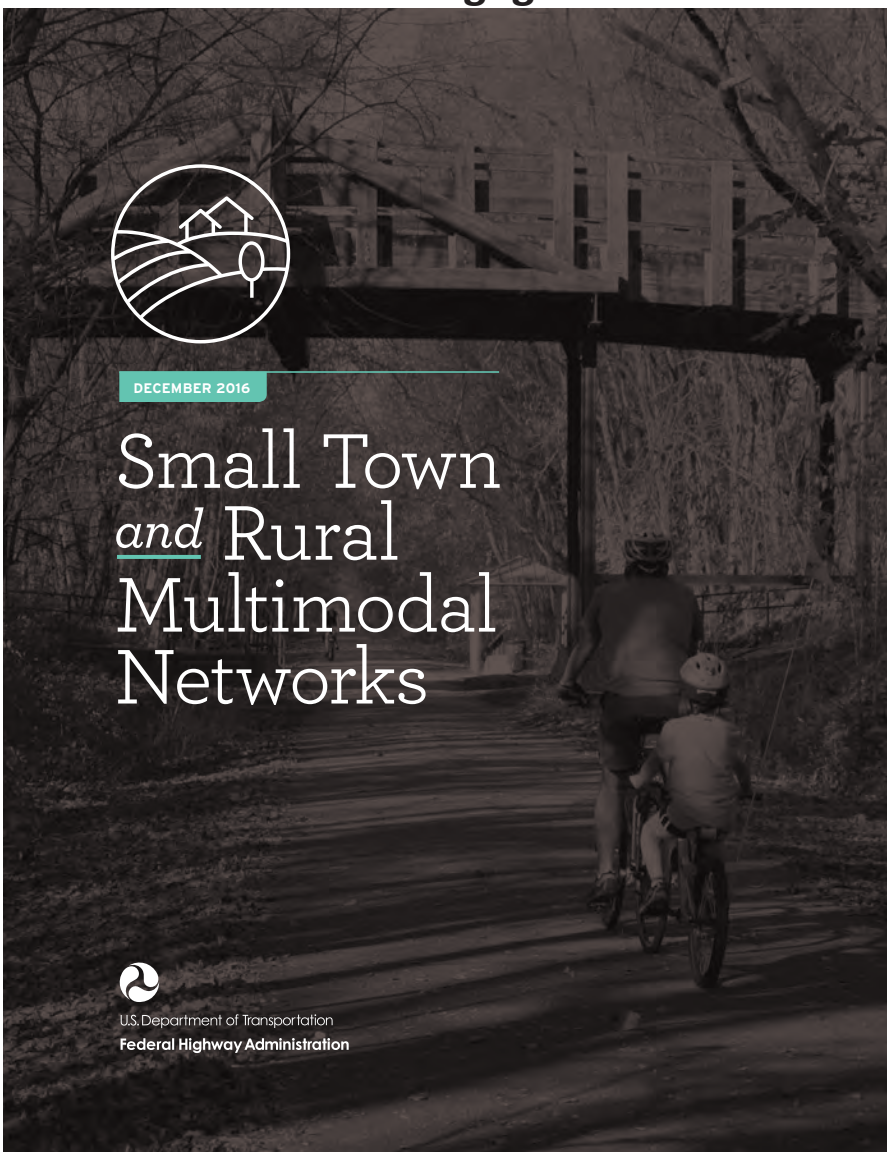


The FHWA Small Town and Rural Multimodal Networks guide is referenced throughout this document and is linked through the NCDOT main webpage above. The companion website for the Small Town and Rural Multimodal Networks guide is www.ruraldesignguide.com

SMALL TOWN AND RURAL MULTIMODAL NETWORKS DESIGN GUIDE

The Small Town and Rural Multimodal Networks guide is a design resource and idea book to help small towns and rural communities support safe, accessible, comfortable, and active travel for people of all ages and abilities. In general, design guidelines for bicycling and walking have been geared towards the urban context. The Small Town and Rural Multimodal Networks design guide is a recent publication by the FHWA that builds upon past design guidance, but is taylored to the rural context. This guide is referenced throughout the infrastructure recommendations in this plan.

www.ruraldesignguide.com

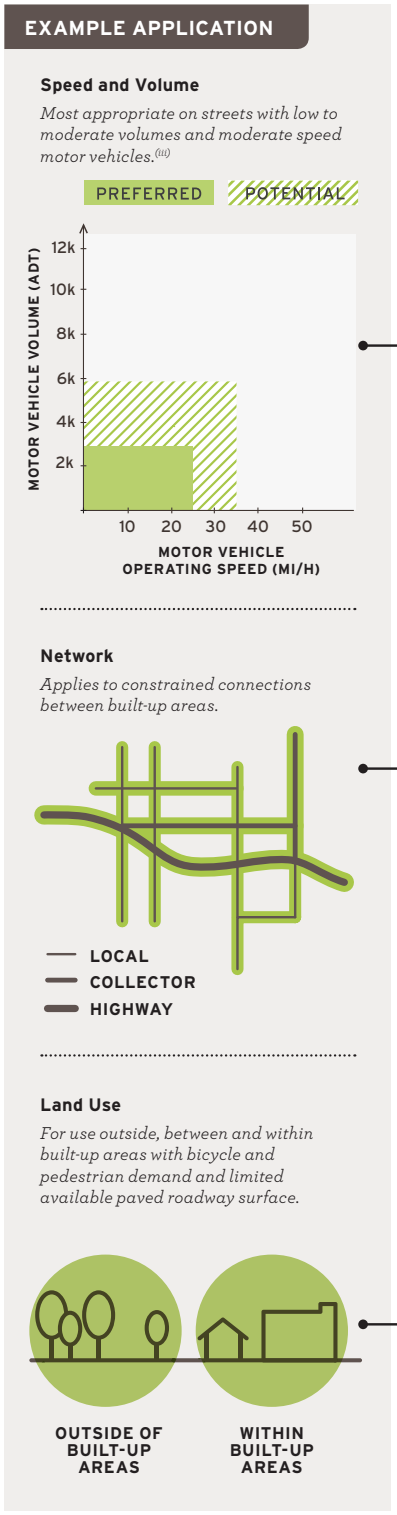


For more information on facility design, please see the Small Town and Rural Multimodal Networks Design Guide (www.ruraldesignguide.com) as well as a list of design resources on the previous page.

The guide is intended to:

- Provide a bridge between existing guidance on bicycle and pedestrian design and rural practice.
- Encourage innovation in the development of safe and appealing networks for bicycling and walking in small towns and rural areas.
- Provide examples of peer communities and project implementation that is appropriate for rural communities.

HOW TO USE THE SMALL TOWN AND RURAL MULTIMODAL NETWORKS DESIGN GUIDE



A Speed and Volume

Where is the facility type most appropriate, based on typical speed and volume of motor vehicles?

B Network

On which part of a roadway network is the facility type likely to be applicable?

C Land Use

Is this facility type most appropriate in built up developed rural areas, or less-developed basic rural areas?

A Speed and Volume

Motor vehicle operating speeds and the volumes on a roadway are key considerations in selecting the most appropriate bicycle and pedestrian facilities along a particular roadway. Generally speaking, the greater the speed and volume of motor vehicle traffic, the greater the amount of separation is desired for comfortable biking and walking facilities. Where streets have low volumes and low speeds, the need for separation is less critical, and mixing modes may be appropriate.

The speed and volume chart summarizes how speed and volume affect possible facility options.

B Network

The collection of roadways and multimodal facilities in a community creates a network. Networks are interconnected pedestrian and/or bicycle transportation facilities that allow people of all ages and abilities to safely and conveniently get to where they want to go. The network not only connects to destinations within a community, but also creates connections between communities and to external destinations. There are varying levels of comfort associated with roadways within the network, ranging from low-volume, low-speed local streets to high-speed, high volume arterial roadways. Successful networks also provide equitable access regardless of income level.

C Land Use

Land use describes the manner and intensity in which land is developed or modified from its natural state. Built-up areas, such as commercial districts in a small town, contain a higher density of attractions, destinations, and people, and may support a greater diversity of bicycle and pedestrian amenities. Outside of built-up areas, the land use patterns are much less dense, with more space between destinations.

See Chapter 1 of the Small Town and Rural Multimodal Networks design guide for further information - www.ruraldesignguide.com

BICYCLE AND PEDESTRIAN FACILITY TYPES

The descriptions that follow offer a brief overview of facility types recommended in this plan. **For more information on facility design, please see the Small Town and Rural Multimodal Network Design Guide (www.ruraldesignguide.com) as well as a list of design resources on page A-2. Also see the NC Terminology for Active Travel guide for further information on facility types - https://connect.ncdot.gov/projects/BikePed/Documents/NC%20Terminology%20for%20Active%20Travel.pdf.**

Sidewalks

Sidewalks are a fundamental component of a pedestrian network.

- Sidewalks in Pittsboro should be at least 5' wide, and, where possible, should include a buffer strip between the sidewalk and roadway.
- Areas of higher pedestrian volume may require 7' wide sidewalks, and sidewalks serving as part of the shared use path system should be at least 10' in width (sidepaths).

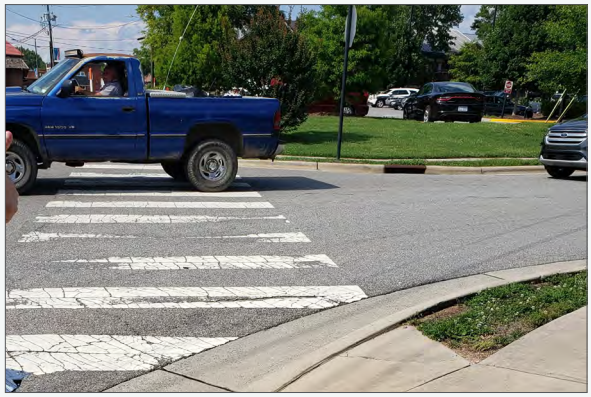
Sidewalk example along Hillsboro St near downtown Pittsboro

Crossing Improvements

Standard crossing improvements, such as crosswalks and curb ramps, help facilitate and guide pedestrians on sidewalks and sidepaths across intersections and side streets, while also visually highlighting pedestrian space to motorists.

- Signage should be included on side streets to alert approaching drivers to look both ways for crossing pedestrian and bicycle traffic before turning.
- Crossings that link to sidewalk on each side of the road should possess curb cuts that comply with ADA requirements, including ramps, landings, slope, and other elements. In-roadway signage can be used to remind drivers of the state law to yield to pedestrians in the crosswalk.
- Some of these treatments have been proven to reduce crashes, as shown in the 2007 FHWA Crash Reduction Factors Study (http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_tctpepc/).

High-visibility crossing improvements use continental markings (see image below), and can be supplemented with a variety of treatments, such as pedestrian countdown signals, median safety islands, signage, and other treatments that facilitate safe crossings at busy intersections.



High-visibility crosswalk example across the east side of the Chatham St/US 15/501 intersection

Shared Use Paths (Independent Right-of-Way)

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

- Paths operating in independent corridors 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.
- Serves connections independently of the street network. May function as a network alternative to road and highway connections.
- Generally appropriate outside of built-up areas, and also as a corridor connection within built-up areas.

Shared use path (independent ROW) example, paved shared use path.

Shared use path (independent ROW) example, unpaved shared use path

Sidepaths (Roadway Right-of-Way)

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.

- Most appropriate in corridors with few driveways and intersections.
- For use on roads with high volumes, and moderate to high speed motor vehicle traffic.
- For use on arterial links on the regional or local biking and walking network
- For use inside of built up areas to provide a dedicated space for pedestrians.

Sidepath example with ample buffer space.

Separated Bike Lane example

Separated Bike Lane example

Separated Bike Lanes

A separated bike lane is a facility for exclusive use by bicyclists that is located within or directly adjacent to the roadway and is physically separated from motor vehicle traffic with a vertical element.

- For use on roads with high motor vehicle volumes, and moderate to high speed motor vehicle traffic.
- Serves primary connections on major roads through and across communities.
- For use inside built-up areas where a moderate to high volume of bicyclists and pedestrians is expected.

Striped 'Buffered' Bike Lane example

Bike Lane example (Lowes Dr)

Bicycle Lanes

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and optional signs. A bike lane is located directly adjacent to motor vehicle travel lanes and follows the same direction as motor vehicle traffic.

- Appropriate on streets with moderate volumes and moderate speed. May function on multi-lane streets with heavy traffic, but fails to provide a low-stress experience in this condition, which would appeal to larger numbers of bicyclists.
- Serves moderate distance trips connecting local bikeway routes to regional corridors.
- For use inside, or between, built up areas where increased pedestrian and/or bicycle activity is present or expected.

Example Paved Shoulders

Paved Shoulders

Paved shoulders on the edge of roadways can be enhanced to serve as a functional space for bicyclists and pedestrians to travel in the absence of other facilities with more separation.

- Appropriate on roads with moderate to high volumes and speeds and on roadways with a large amount of truck traffic. May function on multilane roads with heavy traffic, but fails to provide a low-stress experience in this condition.
- Serves long-distance and regional travel.
- Appropriate outside and within built up areas, near school zones and transit locations, and where there is expected pedestrian and bicycle activity. Walkable/Bikeable shoulders should be provided along both sides of NCDOT roads and highways routinely used by bicyclists and pedestrians.
- If roadways are widened to accommodate increasing traffic volumes, or as curb and gutter is added, upgrades to another bicycle facility should be provided, such as bicycle lanes, separated bicycle lanes, or road-separated sidepaths, depending on the context of the roadway.
- *Note: Paved shoulders service bicyclists/pedestrians as an auxiliary function, in addition to their many other primary purposes (emergency support, roadway maintenance prevention, etc.). These facilities are not designed / implemented as solutions, but simply as low-cost, short-term improvements where more appropriate bicycle facilities (such as separated bicycle lanes/sidepaths) are not feasible.*

Example Advisory Shoulders

Advisory Shoulders

Advisory shoulders create usable shoulders for bicyclists and pedestrians on a roadway that is otherwise too narrow to accommodate one. The shoulder is delineated by pavement marking and optional pavement color. Motorists may only enter the shoulder when no bicyclists/pedestrians are present and must overtake these users with caution due to potential oncoming traffic.

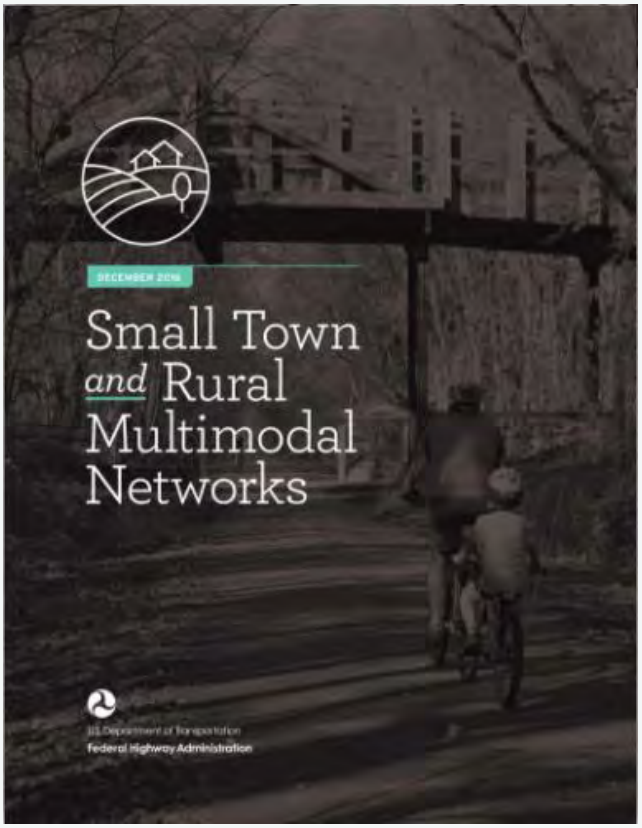
- Most appropriate on streets with low to moderate volumes and moderate speed motor vehicles.
- Applies to constrained connections between built up areas.
- For use outside, between, and within built up areas with bicycle and pedestrian demand and limited available paved roadway surfaces.
- *Note: Advisory shoulders are a new treatment type in the United States and no performance data has yet been collected to compare to a substantial body of international experience. In order to install advisory shoulders, an approved Request to Experiment is required as detailed in Section 1A.10 of the MUTCD. FHWA is also accepting requests for experimentation with a similar treatment called "dashed bicycle lanes."*

Example of shared-lane markings on pavement.

Shared-Lane Markings (Sharrows)

These pavement marking symbols (also known as sharrows) are useful in locations where there is insufficient width to provide bike lanes. The marking also alerts road users to the lateral position bicyclists are likely to occupy within the traveled way, therefore encouraging safer passing practices. Shared-lane markings may also be used to reduce the incidence of wrong-way bicycling. Shared-lane markings may be applicable in the following scenarios:

- In a shared lane with adjacent on-street parallel parking, to assist bicyclists with lateral positioning that reduces the chance of a bicyclist impacting the open door of a parked vehicle.
- On wide outside lanes, to indicate more appropriate positioning away from the curb or the edge of the traveled way.
- On a section of roadway with shared lanes, to fill a gap between two sections of roadway that have bike lanes, or to fill a gap between a shared use path and a nearby destination, or other similar connections.
- On a section of roadway where the lanes are too narrow for a bicyclist and motorist to travel side-by-side in the lane.



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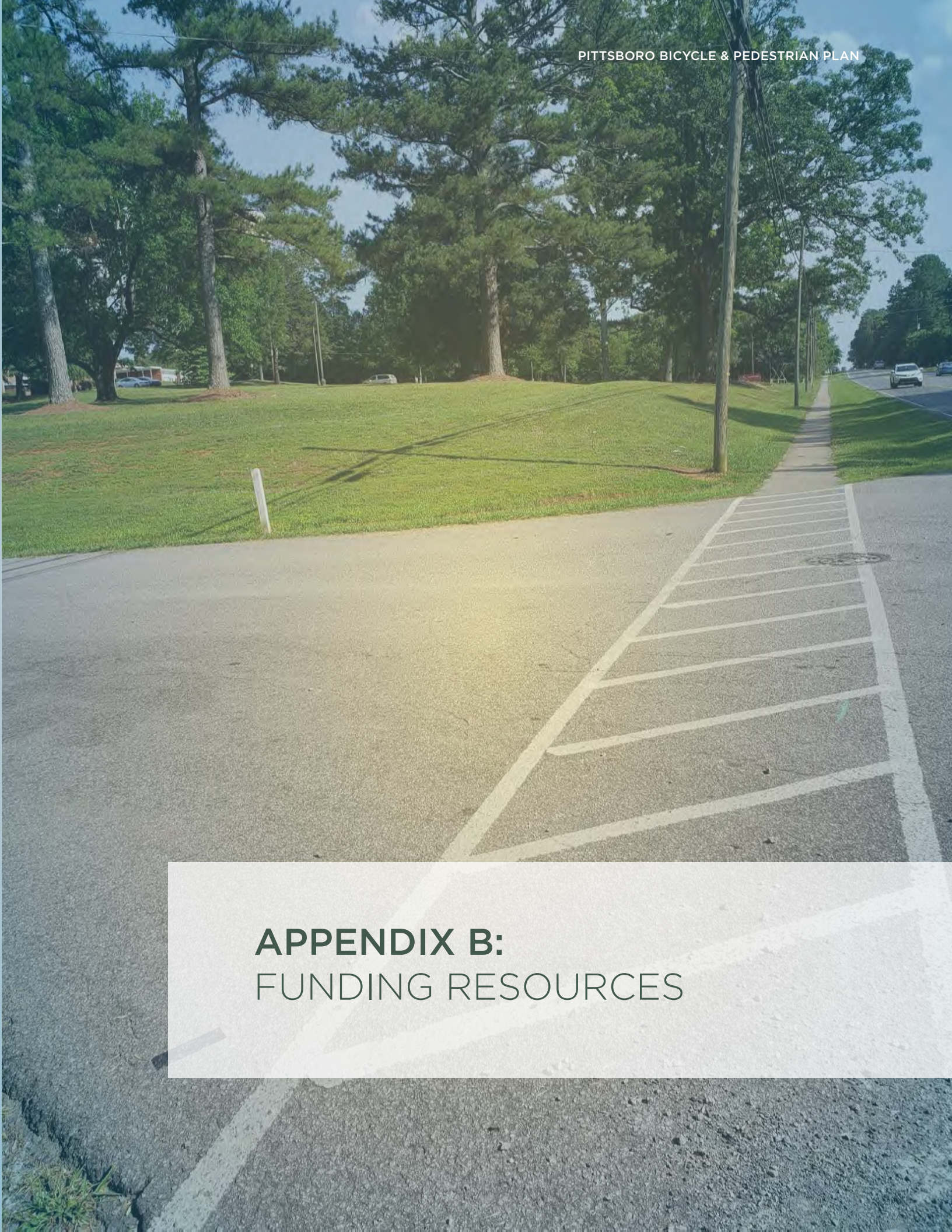
The guide is intended to:

- Provide a bridge between existing guidance on bicycle and pedestrian design and rural practice.
- Encourage innovation in the development of safe and appealing networks for bicycling and walking in small towns and rural areas.
- Provide examples of peer communities and project implementation that is appropriate for rural communities.



APPENDIX B:
FUNDING RESOURCES

OVERVIEW

When considering possible funding sources for bicycle and pedestrian projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding that 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 non-profit 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 bicycle and pedestrian 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 BUILD), 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 inter-modal 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 used 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

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

OTHER FEDERAL FUNDING SOURCES

BUILD TRANSPORTATION DISCRETIONARY GRANT PROGRAM

The Consolidated Appropriations Act of 2019 appropriated $900 million for National Infrastructure Investments previously known as TIGER grants, and now called BUILD Transportation grants. As with previous rounds of TIGER, funds for the FY2019 BUILD Transportation program are to be awarded on a competitive basis for projects that will have a significant local or regional impact. The grant application for FY 2019 closed in July.

DOT intends to award up to 50% of BUILD Transportation grant funding to projects located in rural areas that align well with the selection criteria. The FY 2019 BUILD program's selection criteria gives 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.

For more information: https://www.transportation.gov/BUILDgrants

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 permanent 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.

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 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 it 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:

1. Initial Project Review (NCDOT Strategic Prioritization Office (SPOT))
2. Review Projects and Data (NCDOT Integrated Mobility Division (IMD)
3. Review Data (MPOs, RPOs, Divisions)
4. Review Updates and Calculate Measures (NCDOT IMD)
5. 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
- 20% of total project cost is currently required as non-federal match by local governments. State law prohibits state match for bicycle and pedestrian projects, except for Powell Bill.
- Project must be included in an adopted plan (per Division of Bike/Ped)
- Includes adopted bicycle plans, greenway plans, pedestrian plans, Safe Routes to School action plans, comprehensive transportation plans (CTPs), and long range transportation plans

Specific Improvement Types

1. Grade-Separated Bicycle Facility (Bicycle)
2. Off-Road/Separated Linear Bicycle Facility (Bicycle)
3. On-Road; Designated Bicycle Facility (Bicycle)
4. On-Road Bicycle Facility (Bicycle)
5. Multi-Site Bicycle Facility (Bicycle)
6. Grade-Separated Pedestrian Facility (Pedestrian)
7. Protected Linear Pedestrian Facility (Pedestrian)
8. Multi-Site Pedestrian Facility (Pedestrian)
9. Improved Pedestrian Facility (Pedestrian)

Bundling Projects

- Allow 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

STI Bicycle & Pedestrian Project Scoring

Criteria	Measure	Division Needs (50%)
Safety	(Number of crashes x 40%) + (Crash severity x 20%) + (Safety risk x 20%) + (Safety benefit x 20%)	20%
Accessibility/ Connectivity	Points of Interest pts + Connections pts + Route pts	15%
Demand/ Density	# of households and employees per square mile near project	10%
Cost Effectiveness	(Safety + Accessibility/Connectivity + Demand/Density) / Cost to NCDOT	5%

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:

1. The average daily traffic volume of a roadway and whether the proposed project will generate additional traffic.
2. Any restrictions on a roadway.
3. Any safety issues with a roadway.
4. The condition of the lanes, shoulders, and pavement on a roadway.
5. 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 included 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. This is increasingly common with the adoption of NCDOT's "Complete Streets" Policy.

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, and usually with a local match. On-road bicycle accommodations, if warranted, typically do not require a local match.

"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 project. 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 Copmlete Streets Policy, NCDOT pays the full cost for incidental projects if the project is proposed in a locally adopted plan.

For more information: https://connect.ncdot.gov/projects/BikePed/Documents/Complete%20Streets%20Implementation%20Guide%20v1.31.20%20FINAL.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 countermeasures, 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

Complete Street Cost Share			
Facility Type	**In Plan**	**Not in Plan, but Need Identified**	**Betterment**
Pedestrian Facility	NCDOT pays full	Cost Share	Local
On Road Bicycle Facility	NCDOT pays full	NCDOT pays full	Local
Side Path	NCDOT pays full	Cost Share	Local
Greenway Crossing	NCDOT pays full	Cost Share	Local
Bus Pull Out	NCDOT pays full	Cost Share	Local
Bus Stop (pad only)	NCDOT pays full	Cost Share	Local

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).

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

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 AND ADOPT-A-TRAIL GRANTS

The Adopt-a-Trail Grant Program (AAT) awards $108,000 annually to government agencies, nonprofit organizations and private trail groups for trail projects. 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 $100,000 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: http://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/eligibility

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. Grant requests should range between $2,500 and $15,000 and must be matched equally with non-federal funds. Grant funds may be awarded to any unit of local or state government, public educational institutions, approved non-profit 501(c)(3) organizations, and other tax-exempt organizations. First time municipal applicant and municipalities seeking Tree City USA status are given priority for funding.

For more about Tree City USA status, including application instructions, visit: http://ncforestservice.gov/Urban/urban_grant_overview.htm

LOCAL GOVERNMENT FUNDING SOURCES

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. Each category is described below. A variety of possible funding options available to North Carolina jurisdictions for implementing bicycle projects are also described below. However, many will require specific local action as a means of establishing a program if it's not already in place.

POWELL BILL PROGRAM

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as outlined by G.S. 136-41.1 through 136-41.4. Powell Bill funds shall be expended only for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities. It may also be used for planning, construction,

and maintenance of bikeways or sidewalks within municipal limits or within the area of a metropolitan planning organization or rural planning organization.

For more information: https://connect.ncdot.gov/municipalities/State-Street-Aid/Pages/default.aspx

CAPITAL RESERVE FUND

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants, and donations for the specified use.

CAPITAL PROJECT ORDINANCES

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

LOCAL IMPROVEMENT DISTRICT (LID)

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks, or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation.

MUNICIPAL SERVICE DISTRICT

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the town-wide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts, and can include projects such as street, sidewalk, or bikeway improvements within the downtown taxing district.

TAX INCREMENT FINANCING

Project Development Financing bonds, also known as Tax Increment Financing (TIF) is a relatively new tool in North Carolina, allowing localities to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Streets, streetscapes, and sidewalk improvements are specifically authorized for TIF funding in North Carolina. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria that are approved by a local governing body. TIF funds are generally spent inside the boundaries of the TIF district, but they can also be spent outside the district if necessary to encourage development within it. Although larger cities use this type of financing more often, Woodfin, NC is an example of a small town that has used this type of financing.

MUNICIPAL VEHICLE TAX

NCGS 20-97 allows municipalities to establish a vehicle fee/tax and a percentage of funding can be used for maintaining, repairing, constructing, reconstructing, widening, or improving public streets in the city or town that do not form a part of the State highway system.

OTHER LOCAL FUNDING OPTIONS

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Installment purchase financing
- In-lieu-of fees
- Partnerships

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/

AMERICAN GREENWAYS EASTMAN KODAK AWARDS

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants ($500 to $2,500) to stimulate the planning, design, and development of greenways. These grants can be used for activities such as mapping, eco-logical assessments, surveying, conferences and design activities; developing brochures, interpretative displays, audio-visual productions or public opinion surveys; hiring consultants; incorporating land trusts; and/or building footbridges, planning bike paths or other creative projects.

Grants are primarily awarded to local, regional, or statewide nonprofit organizations. Public agencies may apply but preference is given to community organizations. Grants are awarded based on the importance of the project to local greenway development efforts, demonstrated community support, extent to which the grant will result in matching funds, likelihood of tangible results, and the capacity of the organization to complete the project.

For more information: http://www.rlch.org/funding/kodak-american-greenways-grants

NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants, and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation 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 governement agencies, educational institutions, Native Amerian tribes, and nonprofit 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.

The Conservation Alliance Funding Criteria:

- 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.

The project should have a good chance of final success within four years.

For more information: http://www.conservationalliance.com/grants/?yearly=2019

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION (BCBS)

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/grantees/available-grants/

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

LOCAL TRAIL SPONSORS

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

CORPORATE DONATIONS

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

PRIVATE INDIVIDUAL DONATIONS

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from an individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

FUNDRAISING/CAMPAIGN DRIVES

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

VOLUNTEER WORK

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers 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 fund-raising, maintenance, and programming needs.

INNOVATIVE FUNDING OPTIONS

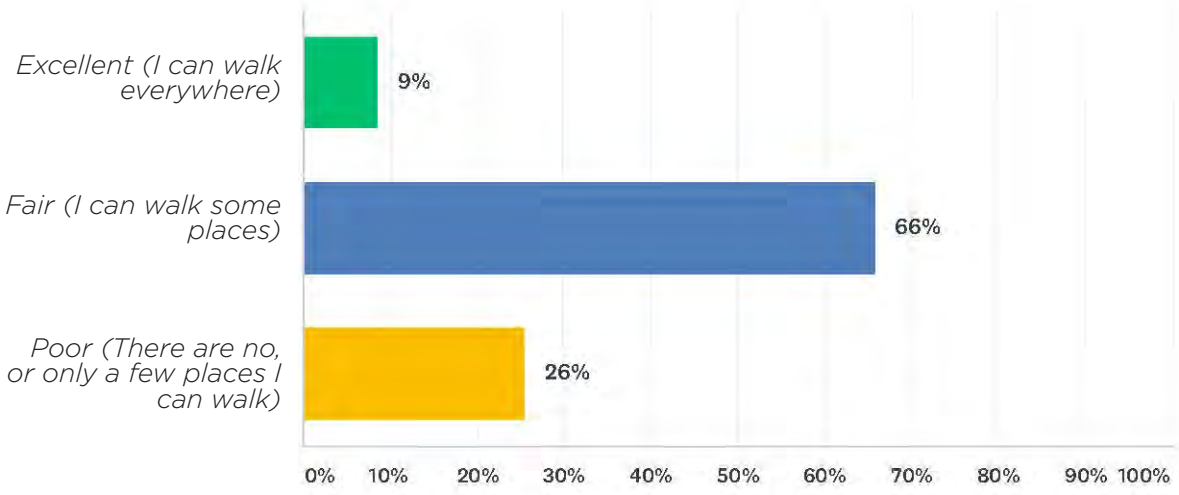
Crowdsourcing "is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers." An example crowdsourcing tool used locally with some success is "ioby", which offers the ability to organize different forms of capital—cash, social networks, in-kind donations, volunteers, advocacy: https://www.ioby.org/about

APPENDIX C:
PUBLIC INPUT

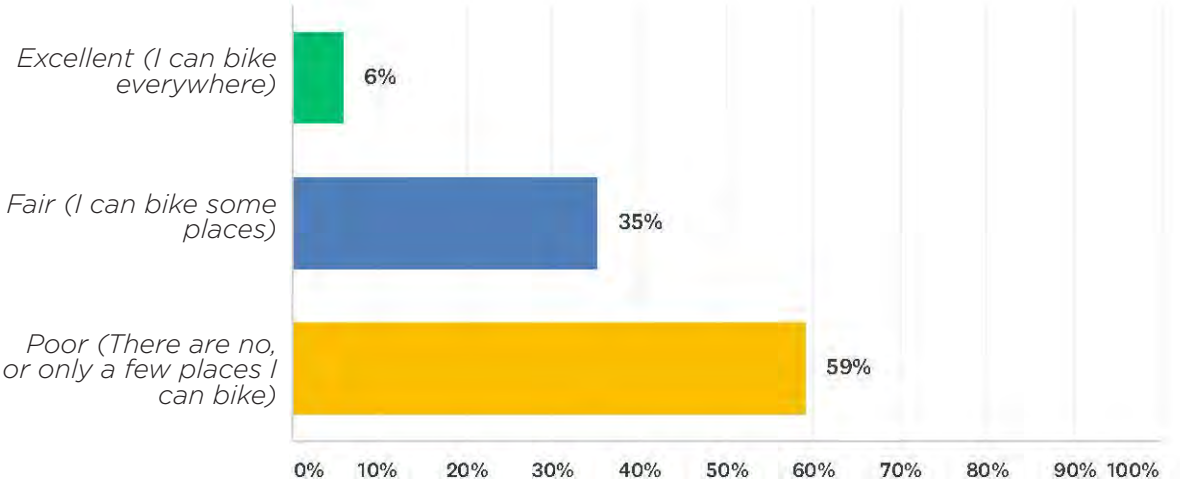
PUBLIC SURVEY RESPONSES

Summary highlights from the comment form are found at the end of Chapter 2, and the charts below provide further detail into the 246 survey responses that were collected.

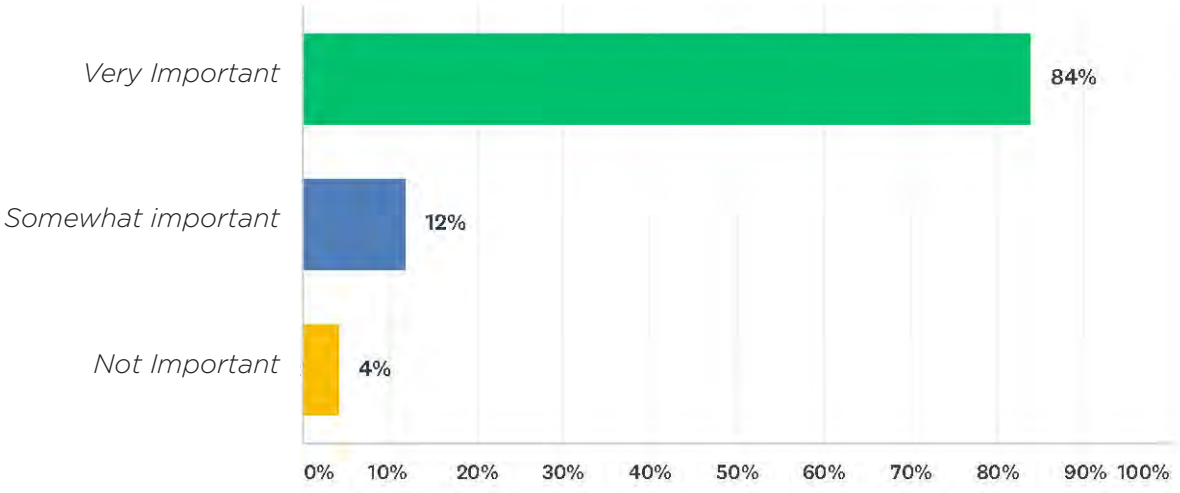
Q.1 How do you rate present walking conditions in Pittsboro?



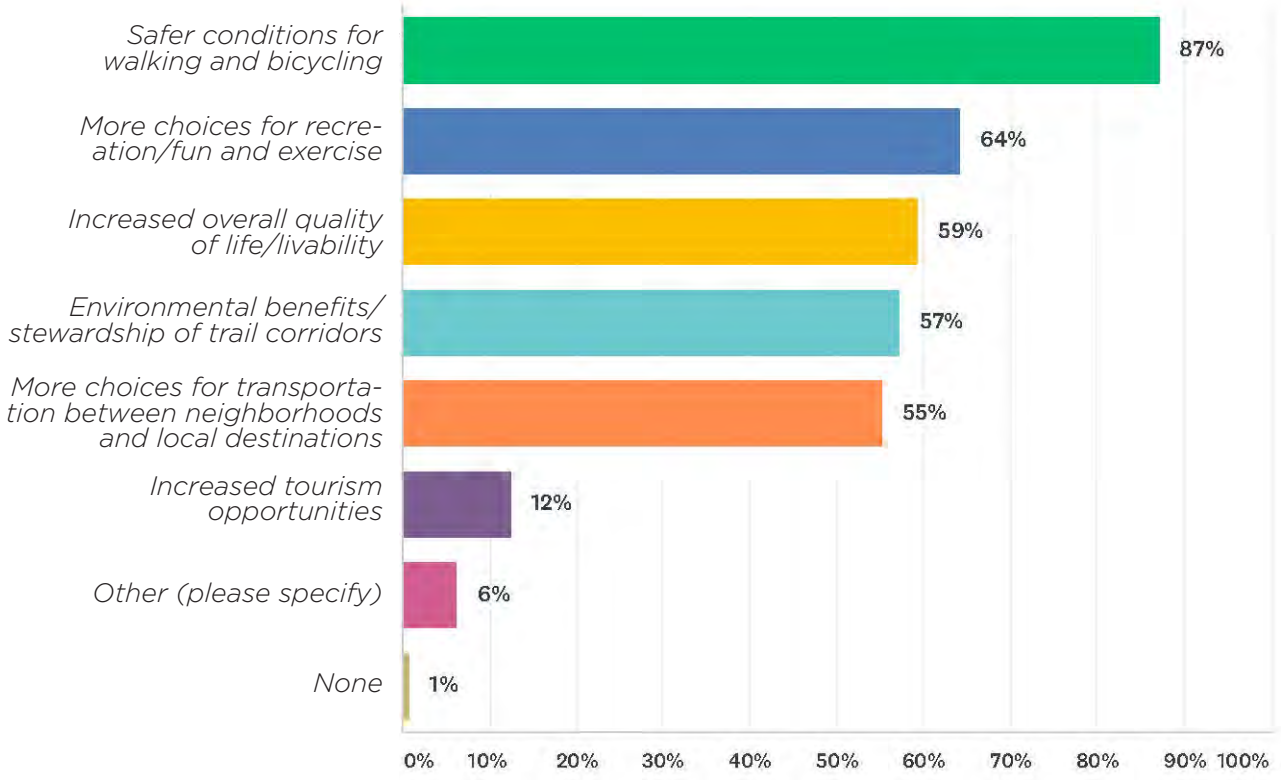
Q.2 How do you rate present biking conditions in Pittsboro?



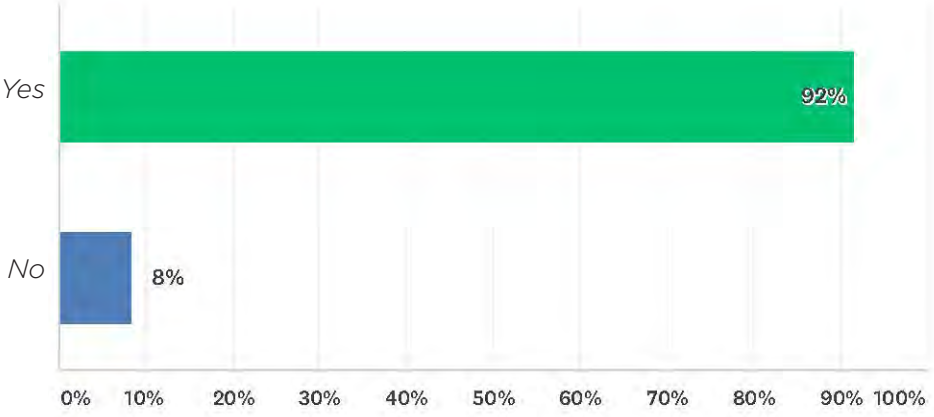
Q.3 How important to you is improving walking and biking conditions in Pittsboro?



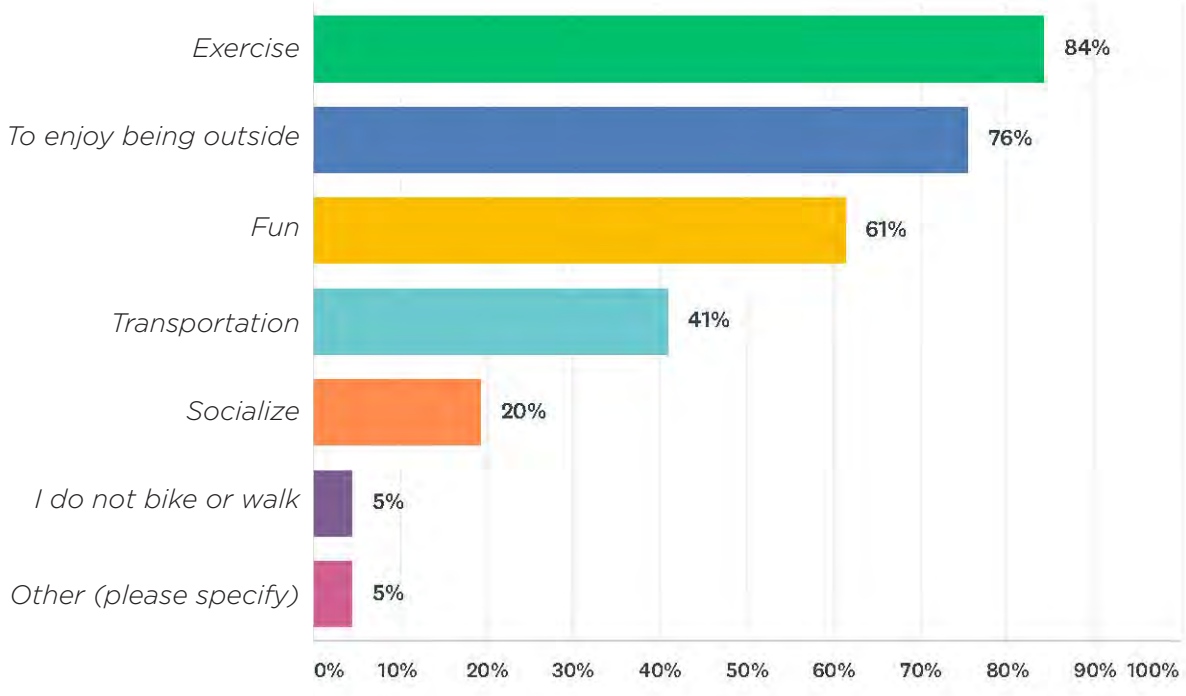
Q.4 What should be the most important goals and outcomes of this plan? *(check all that apply)*



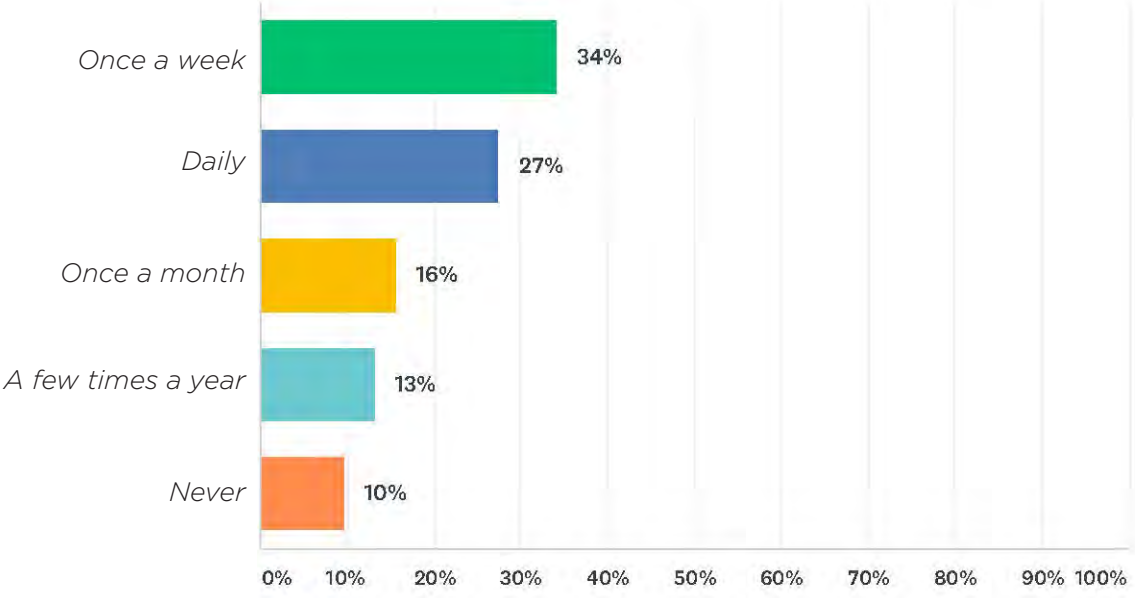
Q.5 Would you walk and/or ride your bike more often if there were more sidewalks and bikeways in Pittsboro?



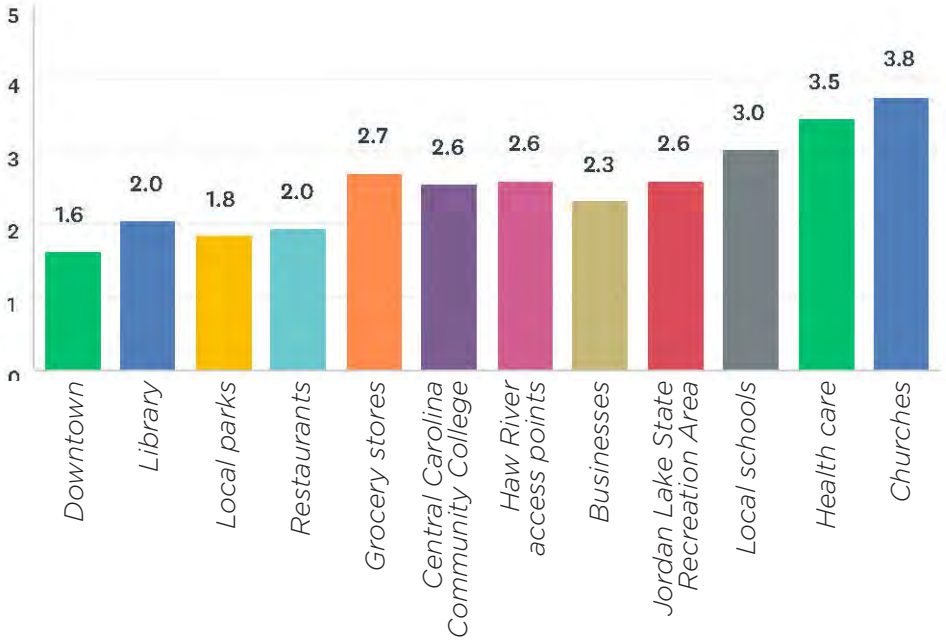
Q.6 When you ride your bicycle or walk in Pittsboro, what is the purpose of your trip? *(check all that apply)*



Q.7 Approximately, how often do you ride your bike or walk in Pittsboro?



Q.8 Please rate each destination by how important it is to you to reach by walking and/or bicycling?*(1=most like to reach, 5=least like to reach)*



Q.9 What is the likelihood that the following types of bike/ped facilities would influence you to walk or bike more often? **For answers to this question, see graphic on page 27 in Chapter 2.**

Q.10 What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing.
The top five locations from written comments are highlighted on page 26 of Chapter 2. Below is a list of all written comments to this question that were received.

	What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing.
1	Lowes Hardware to downtown
2	Hike area from laundromat south to the circle prior to the school
3	Connection b/t Chatham Forest and Lowes/ Carolina Brewery. Currently I cannot walk/bike there on Hillsboro
4	Downtown to Lowes on Hillsboro
5	Downtown to Mary Hayes Park and Lowes
6	15/501 N coming out of Pittsboro bike lane
7	15-501 north of downtown - too narrow, 45mph speed limit - no sidewalks
8	Powell place to downtown area
9	Need crosswalks at Lowes crossing over to Cruizers.
10	Powell place
11	Between Chatham Marketplace and town, need sidewalks. Sidewalks needed all along hillsboro
12	Ped crossing over 15/501 near E or W cornwallis
13	15-501
14	Sidewalks on both sides of Hillsboro
15	15-501 north to at least Northwood High from center of town
16	Powell Place to Chatham Mill
17	15-501 / Hillsborough St between downtown and Powell Place / US 64 Bypass
18	pedestrian crossing @ intersection of Powell place Lane & 15-501
19	The 15/501 and 64 overpass area needs pedestrian-safe crosswalks and walkways so that people can safely cross over to visit Penguin Place, Bellemont Station, and Mosaic
20	Powell Place Lane and Chapel Hill Road
21	Hillsboro St./15 501
22	Powell Place to CCCC
23	Powell place to downtown
24	Connect Powell Place area to downtown
25	Lowes to downtown
26	Walking/Bicycle from Powell Place to Downtown via 15-501
27	From Powell Place to Downtown
28	Hillsboro street north from Chatham Mill.
29	Between Lowes and downtown Pittsboro
30	From 15501 at Lowe's home improvement to downtown area
31	Rte. 15/501 between 64 and downtown
32	East street
33	Hillsborough Street from downtown to Powell Place/Lowe's - need sidewalk and bike lane

	What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing. (Continued)
34	Between Powell Place and downtown
35	Extend sidewalk on Hillsboro street to Lowe's store
36	Powell Place to downtown and to Lowe’s
37	Powell Place to library
38	Bike Lane/sidewalk - Downtown to Russett Run
39	Between downtown and Powell place
40	Hillsboro st connecting downtown to Chatham park
41	The area from Powell place to downtown- I see people walking all the time and it’s unsafe
42	Schools NHS
43	N 15 501 heading from downtown to Lowes
44	Northwood high school to penguin place
45	Powell Place to anywhere!
46	15-501 from Powell Place to Downtown
47	15/501 North from town to northwood
48	15-501 between downtown and Lowes
49	Hillsboro Street between Chatham Marketplace and Lowes (needs some kind of trail/bike access)
50	Hillsboro Street between downtown and Chatham Mills East side of road
51	Mosaic to Downtown
52	15-501 between downtown and the high school
53	Powell Place to Downtown and CCCC
54	15-501 south into town needs sidewalks
55	South of town on Sanford Rd, particularly the western side of the road.
56	Lowes Building Supply
57	Hillsboro Street between downtown and Lowes area
58	Hillsboro Street from Lowes to town
59	Hillsboro Street downtown
60	15-501 North
61	Going Downtown from 15/501
62	Chatham Mill to Lowe Dr.
63	15 501. Sidewalks to get downtown
64	Hillsboro St from 64 to Downtown
65	Powell Place
66	Sidewalks along 64 bypass to downtown Pittsboro
67	Hillsboro St - increased traffic making this less welcoming to foot and bike
68	15-501 corridor
69	along 15-501 from everywhere especially north
70	64 W in town
71	Sidewalks on both sides of the street by Walgreens/ side by the ABC store
72	Hwy 64
73	WEst St- access to bakery
74	Post office area, East St
75	Across from Walgreens
76	"West Street" from circle to cccc
77	Business 64
78	64 East from downtown to SECU

	What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing. (Continued)
79	Along Bus 64
80	East Street
81	Bus 64 Hwy
82	More crosswalks from 87s or 64W to courthouse and Hillsboro St
83	Siteway in front of Wal-Greens continuing all the way to credit union
84	crossing the 64 to Pittsboro ES, and then to Horton MS ---schools!
85	From Downtown Pittsboro to fringe businesses
86	Downtown
87	all downtown
88	Downtown
89	downtown
90	Within 1mile radius of town circle @ courthouse
91	Circle by the courthouse is dangerous
92	Downtown
93	Downtown/fix rough and irregular sidewalks.
94	Downtown Pittsboro neighborhoods
95	Courthouse Circle
96	Downtown traffic circle area
97	Down town PBO
98	Down town
99	Downtown area needs to be less of walking hazard for older people
100	Start with improvement in around circle
101	All of downtown could use repaired sidewalks and
102	both traffic circles
103	town center
104	Downtown PBO
105	Circle: it’s hard to stop for pedestrians without a car hitting you from behind
106	Downtown
107	Get to downtown
108	All through downtown
109	Downtown sidewalks!!!
110	Downtown area surrounding all exits
111	Extend the sidewalk across from THE MOD to reach all the way to the traffic circle.
112	Downtown needs bike lanes
113	The circle, it's tricky to cross

	What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing. (Continued)
114	The circle
115	Crosswalk across from the Mod
116	Downtown
117	In town but outside the couple blocks of downtown
118	Downtown
119	DOWNTOWN ACCESS SIDEWALKS
120	downtown
121	downtown
122	Salsbury ST
123	Salisbury St- need sidewalks
124	West Salisbury Street
125	A sidewalk is needed on West Salisbury street from highway 87 to downtown.
126	E and W Salisbury St - sidewalks
127	Salisbury Street
128	West Salisbury Street
129	Salisbury St
130	Salsbury ST
131	CCCC
132	By library
133	Powell place to CCCC
134	Near Central Carolina Community College/ library
135	Community College to local businesses
136	Sidewalk from library down Old Graham Rd.
137	From COA to Bus 64/87
138	Near PBO Elementary School
139	Pittsboro Elementary School area (on all sides)
140	Pittsboro Elementary
141	Schools/Parks
142	Town to school
143	Horton middle school
144	schools. more students could bike/walk reducing car traffic
145	Downtown to Town Lake Park: way finding signage and sidewalks from the Sherriff's office to tennis courts and around to the park with the park trails actually developed to be sustainable and safe with lighting for evening walking!
146	Pittsboro Town Lake Park
147	Town Lake Park

	What are the top three locations for improving conditions for walking and bicycling in Pittsboro? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane, or intersection/street crossing. (Continued)
148	87 from churchwood to Town lake park
149	Lake
150	Willow Springs SD to Lake Town Park
151	Trails and areas to walk that are not on a main road
152	Bicycle Lane
153	I cant imagine
154	Trail improvement/safety @Robeson Creek Greenway (laundrymat over to Southern States)
155	roberson creek road
156	S.Small St.
157	Credle St
158	Secondary Streets around downtown
159	Around the haw river
160	Old Graham Rd
161	902 - buffered bike lane
162	Thompson st
163	Need Greenway trail from Moncure to Pittsboro - Moncure/Pittsboro Rd is not safe for cyxleinf
164	Pittsboro Moncure Rd to Log Barn Rd
165	Sidewalks connecting Jack Bennett Rd to Briar Chapel/The Veranda
166	Mt. Guilead Church Rd
167	Jordan Lake
168	Hamlet Chapel Road
169	Side walks that are in good condition
170	Having a sidewalk down Old Graham Road to at least as far as Oakwood drive would be nice! People fly down old graham.
171	Haw River/ Bynum
172	Litter/trash on the side of Thompson Street
173	Thompson St
174	Near Old Graham Road where folks from the village are on foot
175	Walking/biking NC 902 from Town Lake Park to 64 intersection. Every vehicle SPEEDS and there's no sidewalk or bike lane part of the way.

WALKABILITY ASSESSMENT THEMES AND RECOMMENDATIONS

The following section details the themes and recommendations from the Community Walkability Assessment. See the Public Input section of Chapter 2 for summary information.

SAFETY

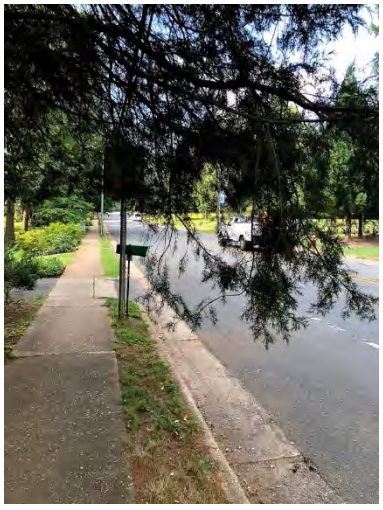
REPAIR AND MAINTAIN SAFE PEDESTRIAN WALKING ROUTES, WITH SPECIAL ATTENTION TO ACCESSIBILITY.

Along all five of the designated routes, participants highlighted consistent concerns for pedestrian safety. This concern for the low degree of pedestrian safety in the Town of Pittsboro was also reflected in aggregate rating of overall safety that each route group reported at the end of the Community Walkability Assessment event. On a 5-point scale ranging from poor to fair to good to very good to excellent, none of the five groups rated street crossings and intersections nor sidewalks and side paths above fair.

Each route group's concerns centered around two categories: sidewalk and crosswalk infrastructure. While there are sidewalks in the center of downtown Pittsboro, the quality of the sidewalk infrastructure varies significantly, and quickly becomes nonexistent when leaving the heart of downtown. During the walk, participants flagged multiple instances of cracked and uneven sidewalks along designated routes (a). Furthermore, participants noted that a majority of sidewalks that exist in Pittsboro are not wide enough for strollers or wheelchairs to navigate safely and comfortably (b). Lastly, sidewalk maintenance was an identified issue: multiple groups noted instances of low hanging trees over sidewalks and debris such as cables laying across the sidewalk along the routes (c). This type of debris made participants feel that walking was potentially unsafe and inaccessible to walkers with limited mobility.

Cracked sidewalk, Route 1 (a)

Narrow sidewalk, Route 2 (b)



Overhanging tree, Route 3 (c)

Crosswalks represented another top concern of participants. Overall, participants were concerned by both the lack of crosswalks in the town, as well as the poor usability and accessibility of existing crosswalks. Multiple groups marked locations on their route maps where they felt the creation of a crosswalk would greatly increase pedestrian safety. For example, participants on Route 1 flagged that there is no way to cross from residential neighborhoods across the 15-501 highway and participants on Route 2 noted a need for a crosswalk at the intersection of 65 and 87. Of the crosswalks that currently exist in the Town of Pittsboro, participants took note that many of the crosswalks still felt unsafe or inaccessible. For example, route groups noted crosswalks that gave an unrealistically short number of seconds to walk across the crosswalk. Furthermore, multiple route groups noted crosswalks that lead to a curb instead of a curb cut ramp (d,e). Both of these crosswalk deficiencies make such crosswalks inaccessible to those with limited mobility and those using strollers and wheelchairs. Route groups also noted that speed limits in areas where pedestrian traffic could be lowered. Lastly, route groups praised the existence of crosswalks that had pedestrian signals and paint along the intersection to delineate pedestrian crossing zones (d). Many participants saw value in expanding these features to all existing and new crosswalks.

Crosswalk stairs no curb cuts, Route 3 (d)

Crosswalk no curb cuts, sparse paint, Route 1(e)

Discontinuous, sidewalk, Route 4 (f)

SAFETY RECOMMENDATIONS

» Construction:
- Repair broken and uneven sidewalks
- Widen sidewalks for wheelchair and stroller accessibility
- Add new crosswalks across high-traffic streets
- Build sidewalk curb cuts on both sides of crosswalks

» Improvement:
- Remove debris, low hanging trees, and other hazards
- Improve existing crosswalks (increase cross time, add pedestrian signals, paint crosswalk)
- Increase crosswalk cross time
- Add pedestrian signals to crosswalks
- Paint crosswalks along intersections to delineate pedestrian crossing zones
- Decrease road speed limits leaving downtown and where pedestrian traffic is high

CONNECTIVITY

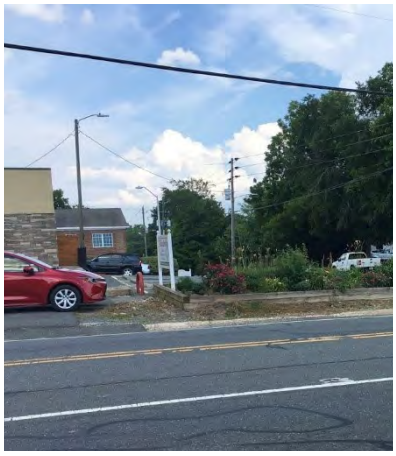
INCREASE CONNECTIVITY BETWEEN PRIMARY PITTSBORO DESTINATIONS AND NEIGHBORHOODS

The Town of Pittsboro is home to many community gathering places including schools, the library, storefronts, restaurants, grocery stores, places of worship, and greenways. Unsurprisingly, participants reflected that the lack of continuous, safe routes between such primary destinations was a principle reason a resident would make the decision to drive rather than walk in Pittsboro.

In route group field notes, participants flagged two areas for improvement in connectivity. The first component of connectivity participants highlighted was the need for a fully connected sidewalk infrastructure. For example, route group 5 noted that pedestrian infrastructure to the Dollar Tree and Food Lion ended at or before parking lots for these businesses, making pedestrians vulnerable to disorganized and dangerous traffic in the parking lot (g). Similarly, route group 4 noted that the sidewalk leaving downtown Pittsboro feeds directly into the Elizabeth's Pizza parking lot (h). Participants observed that the presence of way-finding signs would also help to improve connectivity between primary destinations.

In addition to ensuring that pedestrian infrastructure fully connects primary destinations and neighborhoods, participants also made calls for the construction of new sidewalk and crosswalk infrastructure to connect destinations that are currently inaccessible to pedestrian travel. For example, route group 1 recommended connecting Town Lake to the Greenway. Finally, participant notes called for sidewalks on both sides of the street. Presently, if a sidewalk exists in the town, the majority exist only on one side of the road.

Sidewalk feeds into Food Lion parking lot, Route 5 (g)



Sidewalk ends in Elizabeth's Pizza parking lot, Route 4 (h)

CONNECTIVITY RECOMMENDATIONS

» Construction:
- Connect neighborhoods and parks/greenways with new, accessible sidewalk infrastructure
- Build sidewalks on both sides of the road in areas with high pedestrian traffic or potential

» Improvement:
- Add wayfinding signs along pedestrian routes directing to Pittsboro primary destinations

COMFORT AND APPEAL

INVEST IN PEDESTRIAN AMENITIES THAT IMPROVE THE STREETSCAPE ENVIRONMENT AND MAKE STREETS MORE INVITING

For participants, walkability entailed not only the physical existence of infrastructure that makes pedestrian travel functionally safe and possible; rather, for participants the degree to which pedestrian routes are comfortable, inviting, and appealing is critical. All route groups made explicit note of at least one missing amenity that limited the comfort and appeal of the route. Route groups named a wide range of amenities that they felt would encourage walking between primary destinations in Pittsboro and create an inviting sense of place. To increase shade, reduce traffic noise, and increase aesthetic appeal, participants noted that adding flowers, shrubs, and trees would make the walking experience more inviting to pedestrians (i, j). Similarly, participants articulated value in adding benches and public restrooms to popular pedestrian routes to lower the barriers to walking and increase the comfort of the pedestrian experience. Lastly, route groups noted narrow buffer areas between sidewalks and the street, decreasing the comfort of the walking experience by making pedestrians have to compete with traffic noise to hold a conversation and by making pedestrians feel more vulnerable to car traffic (i, j).

Narrow, non-landscaped buffer 1, Route 5 (i)

Narrow, non-landscaped buffer 1, Route 3 j)

COMFORT AND APPEAL RECOMMENDATIONS

» Construction:
  - Widen and landscape pedestrian buffer zones

» Improvement (pedestrian amenities):
  - Benches, bushes, trees, trash cans, public restrooms

APPENDIX D:
EXISTING CONDITIONS

OPPORTUNITIES & CHALLENGES - EXISTING CROSSINGS AND KEY ROADWAY CONFIGURATIONS INVENTORY

Traffic volumes, speed limits, roadway dimensions, and crossing infrastructure are important elements to consider when analyzing bicycle and pedestrian infrastructure. Below are a collection of street view images and notes detailing these components.

Table 2.3 Inventory of Existing Pedestrian Crossing Facilities

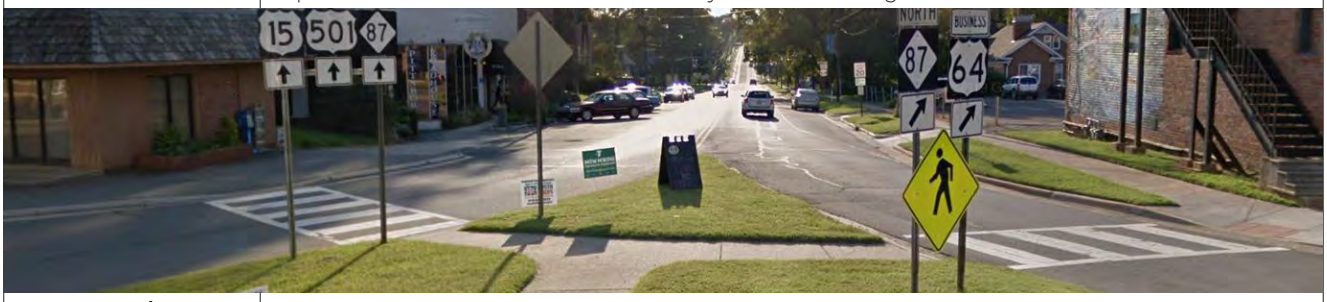
Facility Type/ Location	Notes
Downtown Circle Crosswalks	The downtown circle has marked high visibility crosswalks with curb ramps at every crossing around the circle. Future improvements to the circle in the near term will include pedestrian improvements. The circle contains the only marked crossings of US 64B in Pittsboro.
	
Hillsboro St/ Salisbury St	Marked crosswalks with pedestrian activated signals are found on all four corners of the Hillsboro St/Salisbury St intersection in downtown Pittsboro. The southwest corner is not ADA accessible and the existing curb ramps are angled toward the middle of the intersection rather into the corresponding crosswalk.
	
Hillsboro St/Launis St	This mid-block crossing is the only marked crossing of Hillsboro St north of Salisbury St and links to Chatham Marketplace. Public comments during this planning process indicated that motorists can have difficulty seeing pedestrians, especially as they are coming from the south.
	
Sanford Rd/Pittsboro Elementary School Rd	Marked crosswalks and pedestrian countdown signals are found along the north and south side of the Sanford Rd/Pittsboro Elementary School intersection. Curb ramps are lacking on all four corners and sidewalk connectivity is needed on west side of the intersection.
	

Table 2.3 Inventory of Existing Pedestrian Crossing Facilities (continued)

Facility Type/ Location	Notes
NC 87/Old Graham Rd Crosswalks	The NC 87/Old Graham Rd roundabout has marked high visibility crosswalks with curb ramps at every side of the intersection.
	
Sanford Rd/Chatham St	High visibility crosswalks with curb ramps are found at the Sanford Rd/Chatham St intersection. The north and west sides are relatively long (65 ft and 45 ft respectively).
	
Millbrook Dr/Powell Place Ln	Millbrook Dr/Powell Place Ln is an example of another roundabout that has been constructed with high visibility crosswalks, pedestrian islands, and curb ramps at every side of the intersection.
	
NC 87/US 64B	Curb ramps have been recently upgraded on all sides of the NC 87/US 64B intersection, but no crosswalks are currently found here.
	

Table 2.4 Roadway Inventory

Street Name	Appx. Road Width (ft)	Predominant Lane Configuration	Curb & Gutter (Y/N)	AADT*	Speed Limit
US 64B (East of NC 87 and west of Industrial Park Dr)	40-44'	3-lane (including parking and center turn lane)	Yes (east of NC 87 and west of MLK Jr Dr)	8,600-12,000	20-35 MPH
					
US 15/501 (Sanford Rd - Circle to Pittsboro Elementary School Rd)	43-44'	2-3-lane (including parking and turn lanes)	Yes	10,000	20-35 MPH
					
US 15/501 (Hillsboro St - Circle to Chatham Marketplace)	40-44'	2-lane (including parking and turn lanes)	Yes	14,000	20-35 MPH
					
US 15/501 (Hillsboro St - Chatham Marketplace to Old Rock Springs Cemetery Rd)	22-24'	2-lane	No	14,000	35-45 MPH
					

**Annual Average Daily Traffic (AADT) traffic volumes from NCDOT Traffic Survey Group (2018)*
Images from Google Street View.

Table 2.4 Roadway Inventory *(continued)*

Street Name	Appx. Road Width (ft)	Predominant Lane Configuration	Curb & Gutter (Y/N)	AADT*	Speed Limit
NC 87 (through Pittsboro)	22-24'	2-lane	No	3,500-7,100	35-45 MPH
					
Thompson St (Hillsboro St to US 64B)	18-20'	2-lane	South side only west of MLK Jr Dr	840	25-35 MPH
					
W Salisbury St (Rectory St to NC 87)	18-20'	2-lane	No	N/A	25 MPH
					
Masonic St (Thompson St to Chatham Marketplace)	18-20'	2-lane	No	N/A	25 MPH
					

**Annual Average Daily Traffic (AADT) traffic volumes from NCDOT Traffic Survey Group (2018)*
Images from Google Street View.


CAR WASH
ENTER
CIRCLE CITY GRILL
CLEARANCE

APPENDIX E:
RECOMMENDATIONS

POLICY RECOMMENDATION TABLES

Pittsboro UDO Review

Topics/Strategies	Comments/Recommendations	
	DRAFT Unified Development Ordinance Language	General Recommendations
Complete Streets and Greenways		
1.1 Implement Complete Streets Policy A complete streets policy allows cities and towns to work towards creating a street network that encourages pedestrian and bicycle travel and provides safe and comfortable roadways for all users.	**EXCELLENT!** Complete Streets policy statement in Section 5.3 (one of the best in NC): *Section 5.3. Access and Circulation* *Purpose 5.3.1. The purpose of this section is to ensure that development is served by a coordinated, multimodal transportation system that, to the extent practicable,* ***permits the safe and efficient movement of motor vehicles, emergency vehicles, transit, bicyclists, and pedestrians within the development and between the development and external transportation systems****, neighboring development, and local destination points such as places of employment, schools, parks, and shopping areas. Such a multimodal transportation system is intended to:* *A. Provide transportation options;* *B. Increase the effectiveness of local service delivery;* *C. Reduce emergency response times;* *D. Promote healthy walking and bicycling;* *E. Facilitate use of public transportation;* *F. Contribute to the attractiveness of the development and community, connect neighborhoods and increase opportunities for interaction between neighbors;* *G. Reduce vehicle miles of travel, travel times and greenhouse gas emissions;* *H. Improve air quality, minimize congestion and traffic conflicts; and* *I. Preserve the safety and capacity of community transportation systems.* NCDOT's Complete Streets Policy will apply to all NCDOT-maintained streets in Town. The NCDOT guidelines also provide excellent guidance for locally maintained streets and street networks and complete streets planning and design processes, which can be applied in Pittsboro.	Smart Growth America provides great resources for designing streets that cater to all users, including a best practices guide co-authored with APA.
1.2 Develop Complete Street Design Guidelines for a variety of contexts and all street/roadway user groups The subsections below include recommendations for pedestrian-related elements of Complete Streets and complete pedestrian and greenway networks. Sidewalks, greenways, and streetscape amenities such as street trees and lighting are some most fundamental elements of Complete Streets for pedestrians and greenway users. Access management, multi-modal level of service assessments, and traffic calming are also critical for developing complete street networks for walking through the development review and capital project implementation process.	To begin with, consider adopting by reference for street design one or more of the following and including in the new UDO: » NCDOT Complete Streets Policy and Roadway Design Manual » NCDOT Traditional Neighborhood Street Design Guidelines » NACTO Urban Street Design Guide » The design guidelines included in this plan Additional complete street design guidance should also be integrated and incorporated into the Town's UDO and engineering specifications.	The design guidelines that accompany this plan include recommendations on complete street design elements for bicycle, pedestrians and greenway users. Pittsboro could adopt and endorse the NCDOT guidelines and other national guidelines, including the NACTO Urban Street Design Guide: http://nacto.org/publication/urban-street-design-guide/ The design guidelines should be integrated into Pittsboro's development regulations. See examples from the Raleigh Street Design Manual (http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#1) and the Charlotte Urban Street Design Guidelines: http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx

Pittsboro UDO Review *(continued)*

Topics/Strategies	Comments/Recommendations DRAFT Unified Development Ordinance Language	General Recommendations
Complete Streets and Greenways		
1.3 Require pedestrian accommodations, including by roadway type Pedestrian facilities should be determined based on street types and land uses of a given roadway corridor.	Pittsboro has generally **very good** sidewalk requirements. However, the exception of sidewalks on both sides of principal arterials is counter-intuitive and contrary to best practice. *5.2.2.A. (see also 5.3.8 Pedestrian Access and Circulation)* *4. Streets shall be bordered by **sidewalks on both sides** (except on alleys, service drives and principal arterials). The Commissioners may grant exceptions upon recommendation of the Planning Board if it is shown that local pedestrian traffic warrants their location on one side only, or if it is demonstrated that adverse impacts would occur from stormwater runoff.* *5. Residential sidewalks shall be a minimum of five feet in width. Sidewalks serving mixed use and commercial areas shall be eight feet in width unless excepted by the Commissioners. New streets and modifications to existing streets shall adhere to the design standards in the Town of Pittsboro Pedestrian Transportation Plan.*	1. Require sidewalks on both sides of *all* arterial and collector streets, at a minimum. 2. Consider a greater range of sidewalks requirements based on street and land use context. In areas such as downtown and pedestrian-oriented business districts with buildings at the back of the sidewalk and ground level retail, sidewalks should be as wide as 10-18 feet wide. Also: The design guidelines recommended as part of this plan should be considered for incorporation or inclusion by reference in the Town's UDO and/or engineering specifications.
1.4 Require designated bikeways (bike lanes, shoulders, greenways, etc) during new development or redevelopment	**Excellent** requirements in Section 5.3.7 Bicycle Access and Circulation Minor modification to consider: » Subsection B: modify to specify "Bikeways", which can include bike lanes, but also other types of bicycle-specific infrastructure (e.g., shared use paths, bike routes, separated bike lanes, etc.), as recommended by an adopted plan. Include by reference the design guidance of this plan for the development of bicycle facilities and greenways.	Also, see: » Chapters 6 of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. sections 6.8.2, 6.9, 6.10. http://www.wakeforestnc.gov/udo.aspx » Chapter 7 of the Wilson, NC UDO regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-7-Parks-Open-Space.pdf

Pittsboro UDO Review *(continued)*

Topics/Strategies	Comments/Recommendations	
	DRAFT Unified Development Ordinance Language	General Recommendations
Complete Streets and Greenways		
1.5 Require dedication, reservation or development of greenways Pedestrian facilities should be determined based on street types and land uses of a given roadway corridor.	**Very Good.** *5.3.8.B. Greenway Paths Required* *All new development except individual lot development of a single-family detached, duplex, or manufactured home (on an existing lot) dwellings* ***shall incorporate into its required open space any greenway path or shared use path called for across the development site by the Parks and Recreation Master Plan.*** *Such incorporation shall include installation of the path and recording of an associated pedestrian access easement, if applicable.* Develop and/or include by reference the design guidance of this plan for greenways.	Where greenway construction cannot politically or legally be required, consider offering incentives in the form of reduced fees, cost sharing, density bonuses, or reduction in other open space requirements when adopted greenways are constructed through private development. » See the incentives offered by the City of Asheville to promote public policy goals for example: http://www.ashevillenc.gov/civicax/filebank/blobdload.aspx?BlobID=23087 » For additional examples of incentives, see also: https://www.law.ufl.edu/_pdf/academics/centers-clinics/clinics/conservation/resources/incentive_strategies.pdf » See requirements in Wake Forest, NC UDO, Section 6.8.2 Greenways: "When required by Wake Forest Open Space & Greenways Plan or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above]." http://www.wakeforestnc.gov/udo.aspx
1.6 Require new sidewalks, greenways, etc., to connect to existing facilities	**Excellent.** Section 5.3.8 provides excellent requirements for facility connectivity.	Connectivity of facilities is critical for walking and biking conditions. New development should be required to connect to or extend existing facilities bicycle and pedestrian facilities. See the following for other good examples: » Chapters 6 of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. sections 6.5.3, 6.8.2, 6.9, 6.10. http://www.wakeforestnc.gov/udo.aspx » Chapter 7 of the Wilson, NC UDO regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-7-Parks-Open-Space.pdf » New Hanover County, NC's EDZD Zoning District provides points for new developments that connect to the existing bikeway network and key destinations and provides a good definition of the bikeway network. (Section 54.1-14 and following.)

Pittsboro UDO Review *(continued)*

Topics/Strategies	Comments/Recommendations DRAFT Unified Development Ordinance Language	General Recommendations
Complete Streets and Greenways		
1.7 Consider pedestrian concerns and Level of Service (LOS) in Traffic Impact Analyses and other engineering studies Beyond LOS for motor vehicle travel at intersections, Pittsboro should consider adopting multi-modal level of service standards where active transportation and transit use are expected to be high. Consideration of bicycle and pedestrian levels of service assure adequate facilities for bicyclists and pedestrians in new development and capital improvements. This also helps promote walking and bicycling and transit use as a legitimate means of transportation.	Requirements for TIAs are not included in the draft UDO. If the Town does include them in the future, consider the examples to the right for models.	» The City of Raleigh uses multi-modal level of service approach in determining road improvements and traffic mitigation: http://www.raleighnc.gov/content/extra/Books/PlanDev/StreetDesignManual/#71 » Charlotte, NC uses Pedestrian LOS and Bicycle LOS Methodologies for intersection improvements in their Urban Street Design Guidelines: http://charmeck.org/city/charlotte/transportation/plansprojects/pages/urban%20street%20design%20guidelines.aspx
1.8 Adopt traffic calming programs, policies, and standards Traffic calming on local streets increases safety and comfort for all roadway users, including pedestrians and cyclists. It also increases neighborhood livability.	The Town has a **good** traffic calming policy. Considering adding traffic calming design guidance to the Town's engineering standards or developing a separate traffic calming design guide.	» FHWA has developed a comprehensive Traffic Calming ePrimer. » The Town of Huntersville has a good Traffic Calming Policy, which includes guidance on implementation and types of traffic calming features allowed. » See also the NACTO Urban Bikeway Design Guide section on Bicycle Boulevards, which includes traffic calming measures.
1.9 Develop an access management program or policy Limiting turning movements on major roadways and requiring cross-access between adjacent parcels of land, including commercial developments, is a great tool for reducing the amount of traffic and turning movements on major roads while increasing safety and connectivity for pedestrians, bicycles, and cars.	**Good** requirements in section 5.3.5. Vehicular Access and Circulation, subsection C. Vehicular Access Management. Also, good requirements for access management are included in the referenced NCDOT policy. Consider adding language to match the Access Density guidelines in the NCDOT Complete Streets Guide noted at right.	The NCDOT Complete Streets Planning and Design Guidelines provides recommended "Access Density" guidelines (See Chapter 4, page 61 and 62 and following). These guidelines could be the basis for regulatory updates to the municipal codes. Note - NCDOT Complete Streets design guidance will be incorporated into the NCDOT Complete Streets Policy and Roadway Design Manual fall/winter 2020.

Pittsboro UDO Review *(continued)*

Topics/Strategies	Comments/Recommendations	
	DRAFT Unified Development Ordinance Language	General Recommendations
Pedestrian-oriented Urban Design Elements		
2.1 Require Planting Strips and Street Trees When planted in a planting strip between the sidewalk and the curb, street trees provide a buffer between the pedestrian zone and the street. In addition to their value for improving the air quality, water quality, and beauty of a community, street trees can also help slow traffic and improve comfort for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down.	Needs improvement. 5.2.2.A.6: *New streets shall include street trees as follows: a. Streets located in districts other than Mixed-use and Nonresidential Base Districts shall provide an appropriate canopy which shades both the street and the sidewalk.* Require planting strips and street trees **on all street types** based on context. Provide guidelines for planting strip widths, which should be 8 feet to allow for large maturing shade trees.	» See NCDOT Complete Streets Planning and Design Guidelines (Chapter 4) for context-based pedestrian and "green" zone recommendations: http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf. Note - NCDOT Complete Streets design guidance will be incorporated into the NCDOT Complete Streets Policy and Roadway Design Manual fall/winter 2020. » See also, Town of Wendell UDO Chapter 8, especially section 8.8, Street Trees: http://files.wendell.gethifi.com/departments/planning/zoning/udo-unified-development-ordinance/Chapter_8_-_amended_092611.pdf
2.2 Require Pedestrian-Scale Street Lighting	**Very Good.** Consider adding additional detail on lighting type, especially for sidewalks and streetscapes and pedestrian crossings. ***5.9.5. Lighting Standards for Bikeways, Walkways, and Parks*** *Ground areas along bikeways, walkways, and lighted areas in parks shall be illuminated between 0.2 and 0.5 average maintained footcandle.*	» Pedestrian-scale lighting along streets and at intersections is one of the most important tools for pedestrian crash prevention. Pittsboro should consider adding additional detail to its good street lighting standards. » See Town of Wendell UDO, Sections 11.10 and 11.11 for pedestrian-scaled lighting requirements by zoning district and for lighting requirements for greenways and walkways: http://files.wendell.gethifi.com/departments/planning/zoning/udo-unified-development-ordinance/Chapter_11_-_amended_071410.pdf
2.3 Adopt bicycle parking requirements	The draft UDO includes **very good** and thoughtful recommendations for bicycle parking based on land uses. However, the requirements are primarily oriented to people visiting by bicycle (short term visitors, customers, etc.) and don't include provisions for people who may access a destination by bicycle for work or to live or study and need more protected, covered, and long-term bicycle parking options. Design standards for bicycle parking (Section 5.4.8) are also **very good**. They could be improved by including specification for the acceptable types of racks (inverted U-racks or similar are preferred, as shown in 5.4.8). The design standards can also include acceptable standards for long-term bicycle parking. Additionally, "bicycle" parking requirements should also consider potential parking for personal electric scooters, and other micromobility devices that are increasing in use.	» Different standards of bicycle parking are needed for short-term visitors and customers and for longer term users like employees, residents, and students. The City of Charlotte provides very good parking standards for short and long-term bicycle parking. » See City of Wilson UDO, Chapter 9: Parking & Driveways, Section 9.4 and 9.6: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf » Good standards for bicycle parking design can be found through the Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines. (www.apbp.org) » Bicycle Parking Model Ordinance, Change Lab Solutions: http://changelabsolutions.org/publications/bike-parking » City of SF Zoning Administrator Bulletin for designs/layout/etc. The bulletin is in itself a great document that includes limits on hanging racks, how to park family bikes, and various configurations: http://www.sf-planning.org/ftp/files/publications_reports/bicycle_parking_reqs/Leg_BicycleParking_ZABulletinNo.9.pdf

Topics/Strategies	Comments/Recommendations DRAFT Unified Development Ordinance Language	General Recommendations
Connectivity Requirements		
3.1 Tweak block size requirements *"**[A] Good [street] network provides more direct (shorter) routes for bicyclists and pedestrians to gain access to the thoroughfares and to the land uses along them (or allows them to avoid the thoroughfare altogether)**. Likewise, good connections can also allow short-range, local [motor] vehicular traffic more direct routes and access, resulting in less traffic and congestion on the thoroughfares. This can, in turn, help make the thoroughfare itself function as a better, more complete street. For all of these reasons, **a complete local street network should generally provide for multiple points of access, short block lengths, and as many connections as possible**."* (NCDOT Complete Streets Planning and Design Guidelines, p 59) Note - NCDOT Complete Streets design guidance will be incorporated into the NCDOT Complete Streets Policy and Roadway Design Manual fall/winter 2020.	**Good**, but could be improved to allow for even narrower blocks in some conditions and with shorter maximum blocks and made more specific to land use contexts. Section 5.B.2.2.B: *"Blocks shall be at least 400 feet long and no more than 1,200 feet long except as necessary to secure efficient use of land or desired features of the street pattern, or to reflect the size and configuration of the site."*	» Development location, type, and intensity should determine the length of a block, with shorter blocks being more appropriate in areas of higher density. **Maximum block length in any situation should rarely exceed 800-1000 feet for good connectivity. In areas with highest development density (urbanized, mixed use centers and high-density neighborhoods) block lengths can be as little as 200 feet.** In areas with blocks as long as 800 feet or greater, a pedestrian and/or bicycle path through the block and/or alley should be required. » **Consider allowing smaller blocks** where appropriate development densities are proposed by zoning district, especially in downtown and pedestrian oriented developments and districts. » See City of Charlotte Subdivision Ordinance, Section 20-23 for example of connectivity requirements and block standards: http://ww.charmeck.org/Planning/Subdivision/SubdivisionOrdinanceCity.pdf
3.2 Require connectivity/cross-Access between adjacent land parcels ***"[A] Good [street] network provides more direct (shorter) routes for bicyclists and pedestrians to gain access to the thoroughfares and to the land uses along them (or allows them to avoid the thoroughfare altogether)**. Likewise, good connections can also allow short-range, local [motor] vehicular traffic more direct routes and access, resulting in less traffic and congestion on the thoroughfares. This can, in turn, help make the thoroughfare itself function as a better, more complete street. For all of these reasons, **a complete local street network should generally provide for multiple points of access, short block lengths, and as many connections as possible."*** (NCDOT Complete Streets Planning and Design Guidelines, p 59) Note - NCDOT Complete Streets design guidance will be incorporated into the NCDOT Complete Streets Policy and Roadway Design Manual fall/winter 2020.	**Good** requirements for connectivity between land parcels and commercial developments in Section 5.3.5. Vehicle Access and Circulation Consider adding additional quantitative measures for connectivity based on the size of the development. Also, consider developing a collector street plan for new developments to adhere to. See notes above regarding Block Size. Requiring connectivity or cross-access between adjacent developments is a great tool for reducing the amount of traffic on major roads while increasing connectivity for pedestrians, bicycles, service vehicles, and neighborhood access.	» For good model language, see City of Wilson, NC UDO, Section 6.4: Connectivity: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf » Or City of Wake Forest, NC UDO, Section 6.5, Connectivity: http://www.wakeforestnc.gov/udo.aspx » Both codes above also provide requirements for when bicycle/pedestrian connections between parcels, public open space, and between cul-de-sacs is required. » See also the excellent Major & Collector Street Plan: Implementing Complete Streets for Nashville/Davidson County, TN.
3.3 Limit dead end streets or cul-de-sacs Dead end streets or Cul-de-sacs, while good at limiting motor vehicular traffic in an area, are a severe hindrance pedestrian and bicycle connectivity and over all neighborhood accessibility, including for emergency access and other services.	Needs some improvement. The draft UDO contains good language for street connectivity. However, it doesn't specifically limit the length of cul-de-sacs or promote the use of alternatives to cul-de-sacs. **Very good** provisions for pedestrian connectivity where cul de sacs are unavoidable. *5.3.8.C.2. Pedestrian Cut-Throughs* *a. On determining that such connection is necessary to provide convenient pedestrian access within a development or to adjacent schools, transit facilities, recreation facilities, or commercial developments, the Planning Director may require pedestrian walkways to be provided between the ends of cul-de-sacs and the nearest existing or proposed public walkway (e.g., sidewalk, pedestrian path, or trail). (See Fig 5.3.8.C.2: Pedestrian Cut-through at End of Cul-de-sac.)*	» Make the maximum length for Cul-de-sacs 250-300 feet to limit the distance that a person biking or walking would have to travel along a cul-de-sac. » Consider requiring other traffic calming/traffic diversion measures that allow for connectivity and improve the pedestrian and biking environment such as street trees, narrow street width standards, traditional traffic calming devices, emergency and/or bike/ped connections only between streets and T intersections. » For good model language, see City of Wilson, NC UDO, Section 6.4: Connectivity: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf » Or City of Wake Forest, NC UDO, Section 6.5, Connectivity: http://www.wakeforestnc.gov/udo.aspx

Pittsboro UDO Review *(continued)*

Topics/Strategies	Comments/Recommendations	
	DRAFT Unified Development Ordinance Language	General Recommendations
The following documents were referenced for this policy and regulatory review. Other references for best practices are listed in the columns on far the right.		REFERENCED DOCUMENTS AND RESOURCES: » NCDOT Complete Streets Policy and Roadway Design Manual (Concurrent update, completed fall/winter 2020) » NCDOT *Traditional Neighborhood Development (TND) Guidelines*. » City of Wilson, NC UDO: https://www.wilsonnc.org/development-services/unified-development-ordinance/ » Town of Wendell, NC UDO: http://www.townofwendell.com/departments/planning/development/zoning/udo-unified-development-ordinance » City of Wake Forest, NC UDO: http://www.wakeforestnc.gov/udo.aspx » Town of Davidson, NC Planning Ordinance, https://www.ci.davidson.nc.us/1006/Planning-Ordinance » Association of Pedestrian and Bicycle Professionals' *Bicycle Parking Guidelines*. (www.apbp.org) » *Making Neighborhoods More Walkable and Bikeable*, ChangeLab Solutions: http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf » *Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities*, ChangeLab Solutions http://changelabsolutions.org/bike-policies And other documents noted in this column in the rows above.

PROGRAM RECOMMENDATIONS DETAIL

Become Designated as Bicycle Friendly Community

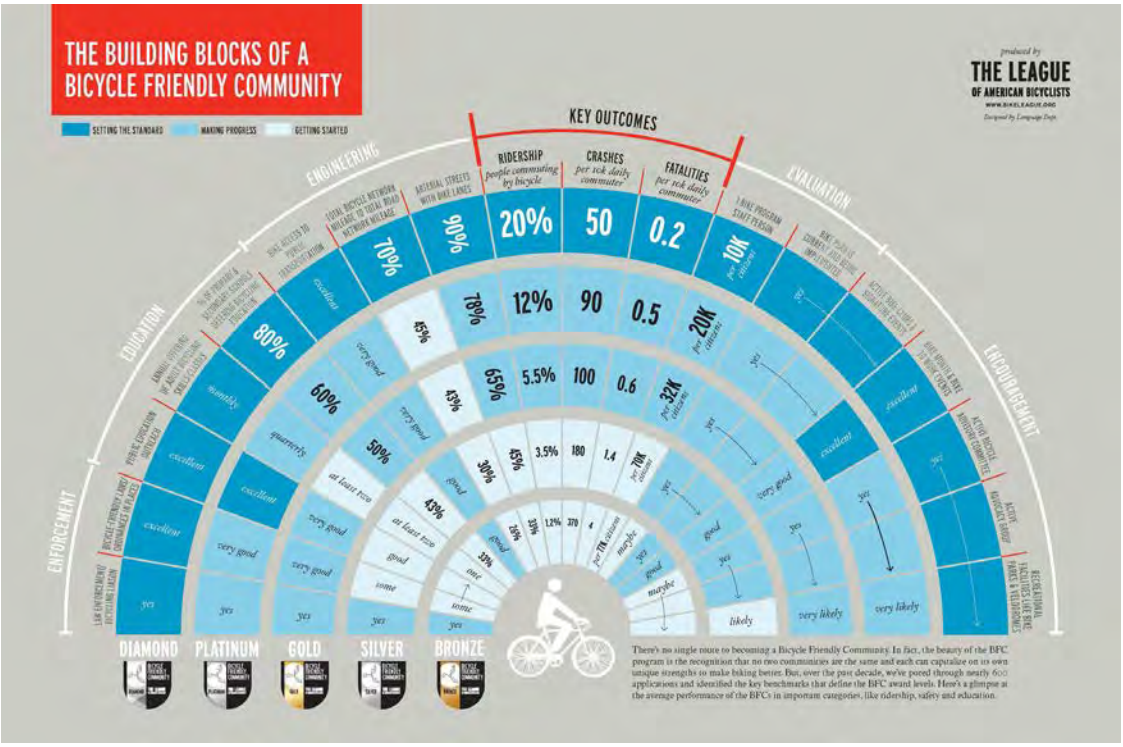
A long-term goal for Pittsboro should be to seek a "Bicycle Friendly Community" (BFC) designation from the League of American Bicyclists. The BFC campaign is an award program that recognizes municipalities that actively support bicycling activities and safety. A Bicycle Friendly Community provides safe accommodation for bicycling and encourages its residents to bicycle for transportation and recreation. Boone and Davidson are examples of small North Carolina towns that have become designated as Bicycle Friendly Communities.

The high standards of the LAB BFC program make receiving an award designation both an achievement and an honor recognizing local progress in bicycling. Communities that have received awards have gone on to see significant increases in bicycle traffic as compared to non-BFCs. The League BFC program works because it:

» Inspires action among those who want to improve conditions for bicyclists.
» Guides progress by setting standards and acting as a road map for becoming bicycle friendly.
» Rewards persistence as communities make progress in changing their culture and built environment.
» Provides a widely-recognized accolade that celebrates local advancement.

The application process is thorough and is in itself a key part of becoming more bicycle-friendly since it:

» Aids communities in building new partnerships.
» Develops new local measurement metrics.
» Creates momentum for improvement projects.
» Provides a checklist of implementation ideas even before submission.
» Collects data useful for future planning efforts.
» Generates feedback and implementable guidance from LAB.



The following info graphic from the League of American Bicyclists website (http://bikeleague.org/sites/default/files/BFC%20infographic.pdf) provides a summary of the building blocks of a bicycle friendly community.

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. The program recognizes communities which have achieved high levels of walking and low rates of pedestrian crashes while also recognizing communities which 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, and Evaluation 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.

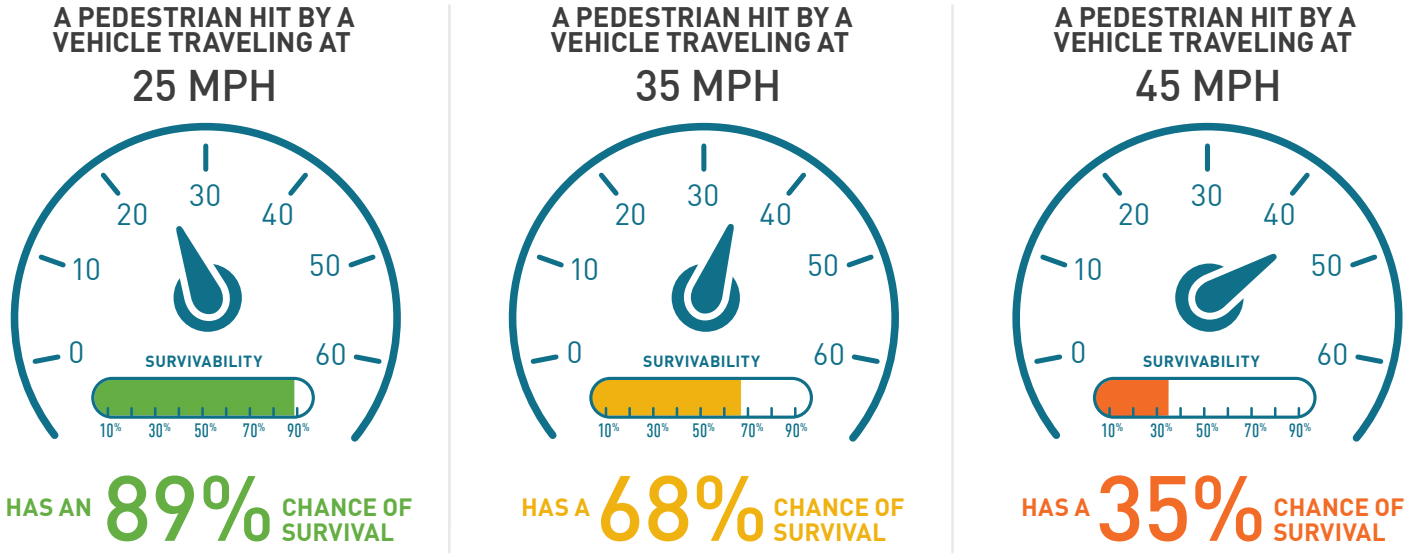
With this plan and its top recommendations completed, the Town of Pittsboro should be in a position to apply for and receive a bronze-level BFC status and recognition as a Walk Friendly Community.

Speed Reduction & Traffic Calming

Lowering speed limits has enormous safety benefits for all users, including bicyclists and pedestrians, by lowering both the rate and severity of crashes. In addition to a media campaign spreading awareness, enforcement of existing speed limits as well as strategic speed limit reduction and traffic calming measures, can save lives.

The Town of Pittsboro should consider lowering all neighborhood street speed limits from 25 mph to 20 mph. For areas where speeding is consistently observed such as W. Salisbury St, consider additional traffic calming measures such as speed tables or other measures.

For NCDOT owned roads where there is a desire to lower the speed limit, requests can be submitted by citizens and public agencies to the NCDOT Division 8 Traffic Engineer. See NCDOT Division 8 contact information here - https://apps.ncdot.gov/dot/directory/authenticated/UnitPage.aspx?id=647



Tefft, B. C. *Impact speed and a pedestrian's risk of severe injury or death*. Accident Analysis & Prevention 50 (2013) 871-878.

Traffic Calming Murals

Creative approaches to intersection design can include an artistic, community-based approach to improve an intersection for pedestrian use and community use in general. Residents and local artists decide on a pavement design that they feel reflects the local character of the neighborhood and paint the street to transform the intersection into a pedestrian plaza. The intersection remains open to motor vehicle traffic, but the design encourages drivers to slow down, watch for pedestrians, and treat the intersection as a plaza where pedestrians have priority. See examples from around the country to the right/below.

The Town's main role and responsibility for these types of projects would include allowing this art on these Town-owned and maintained streets, any necessary permitting, and possibly some motorist education about driving in these areas. The actual painting, production and maintenance of these murals could be led by local residents, artists and non-profit partners.

Safe Routes to School

The purpose of this program is to increase the number of North Carolinians that meet physical activity recommendations by the Centers for Disease Control and Prevention (CDC) by increasing the number of elementary and middle school students who safely walk and bike to or at school.

Safe Routes to School is a national movement that aims to make it safer and easier for students to walk and bike to school. At the local level, these programs include education and encouragement for families and schools to support safe walking an bicycling to school. This can include one-time awareness events, such as a Walk to School Day, or ongoing programs and policies to support walking and biking to or at school.

The North Carolina Safe Routes to School Handbook is a resource that is available to all schools in Pittsboro.

While Pittsboro's Northwood High School is already engaged in a yearly bike to school day (with a police escort due to a lack of walking and biking infrastructure connectivity), it is recommended that all schools in Pittsboro aim to increase the number of students who safely walk and bike to school.

Resources:

- North Carolina Safe Routes to School Handbook: https://www. communityclinicalconnections.com/srtshandbook/index.html
- NCDOT Safe Routes to School non-infrastructure grant opportunity: https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx
- Safe Routes to School National Partnership: https://www. saferoutespartnership.org/safe-routes-school

Image Source: NCDOT

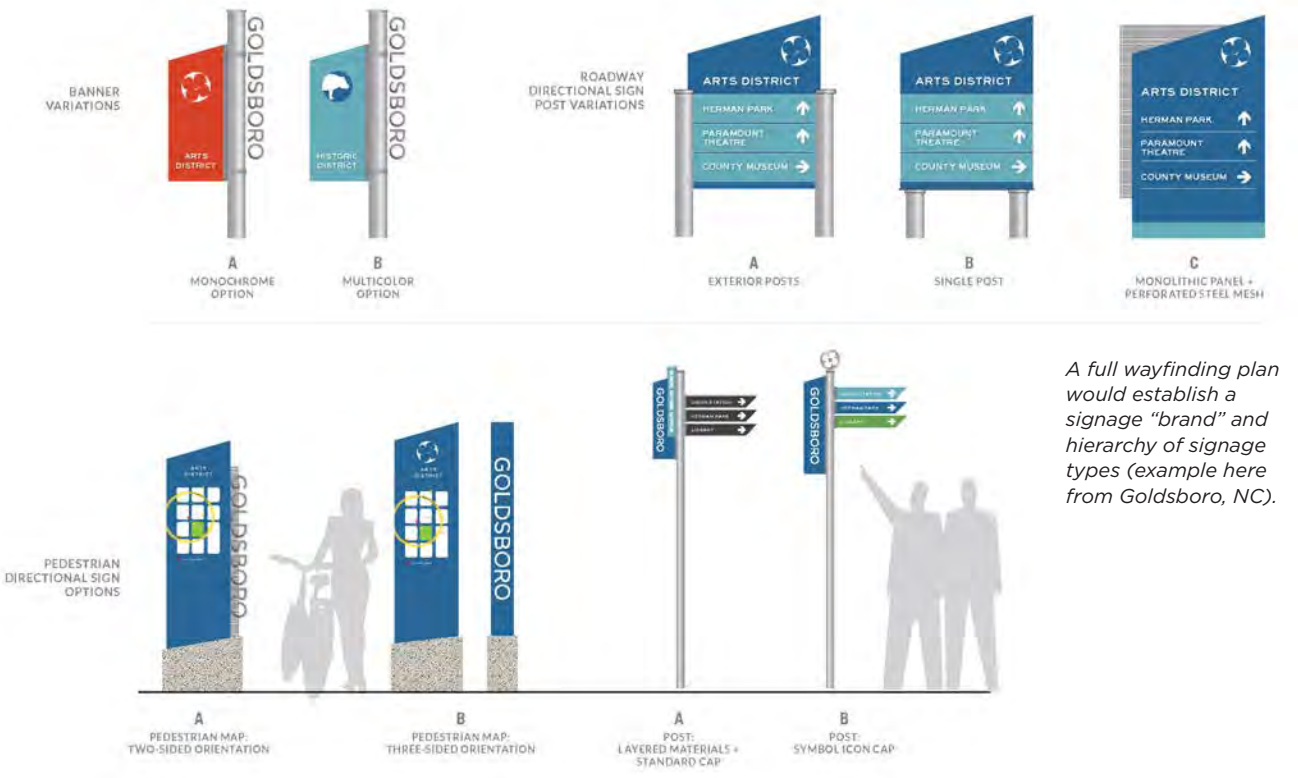
A Bike to School event in North Carolina.

Signage and Wayfinding

A relatively low-cost program that Pittsboro can pursue is to make and post simple wayfinding signs, to make it easier for people to find destinations, and to point how short it is to walk to various places in Town. The Walk [Your City] program is designed to do just that.

For a longer-term, more comprehensive approach to wayfinding, Pittsboro should conduct a full wayfinding plan. The plan would establish an agreed-upon signage "brand" (a.k.a., look and feel of the signs), a hierarchy of signage types (route confirmation, directional, and kiosk signage, for example), and a signage placement plan that shows exactly where each sign and sign type will be placed.

Road signage has traditionally been expensive and car-centered, leaving walkers and bikers by the wayside. Walk [Your City] lets anyone from citizens to corporations quickly and affordably promote healthy lifestyles, public safety, and human-centered transit. Visit http://walkyourcity.org/ for more information.



A full wayfinding plan would establish a signage "brand" and hierarchy of signage types (example here from Goldsboro, NC).

Pedestrian Amenities

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

Street Trees

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

Street Furniture

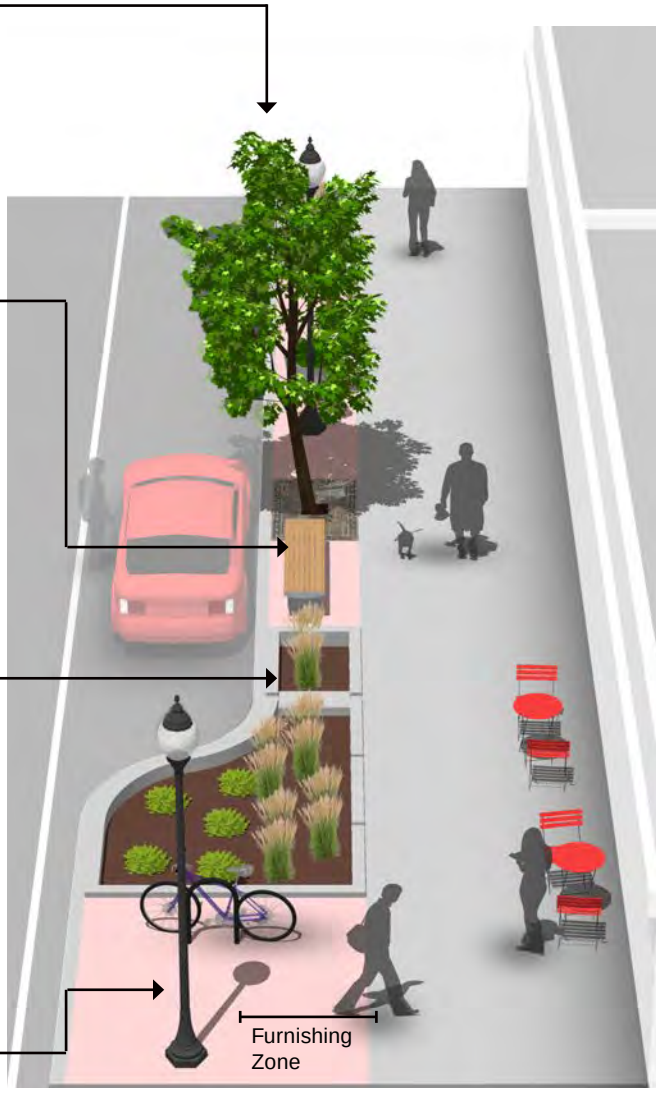
Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Benches should be 20" tall to accommodate elderly pedestrians comfortably. Benches can be simple (e.g., wood slats) or more ornate (e.g., stone,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

Green Features

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

Lighting

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



Materials and Maintenance

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

Additional References

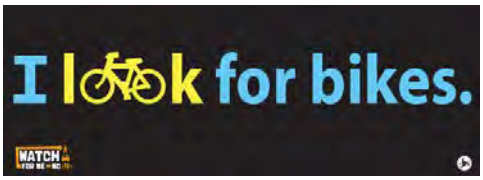
United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
NCDOT. (2012 - updated August 2019). Complete Streets Planning and Design Guidelines.

Media Campaign to Educate Motorists, Bicyclists, and Pedestrians

Watch for Me NC is a comprehensive campaign aimed at reducing the number of bicyclists and pedestrians hit and injured in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police.

Watch for Me NC is administered by the NCDOT Integrated Mobility Division. Pittsboro should apply to this program to access materials and guidance. As a part of this program, Pittsboro could:

- Distribute the educational materials made available by NCDOT at local events, with local businesses, and in renters' information packets and property owners' guest information books.
- Work with police officers to hand out bicycle lights along with bicycle and pedestrian safety cards.
- Broadcast program promotions and educational videos on the local government access channel.
- Enforce motorist rates of yielding to pedestrians.



Resources:

Watch for Me NC website: watchformenc.org

Bicycle Helmet Initiative

Since 2007, the Bicycle Helmet Initiative has helped equip thousands of children with a helmet – a simple and essential means of reducing bicyclist injuries and fatalities.

Funded by the proceeds from North Carolina's "Share the Road" specialty license plate, the program distributes helmets to government and non-government agencies conducting bicycle safety events for underprivileged children. Children are among the key demographic involved in bicycle-related incidents:

- On average, 20 bicyclists are killed each year in North Carolina, according to N.C. Department of Transportation statistics. One in six is under 16 years old.
- Children 5 to 14 years old visit emergency rooms for bicycle-related injuries more than any other sport or recreational activity.
- Typically, less than 50 percent of children wear safety helmets, according to Safe Kids Worldwide. The Helmet Safety Institute says wearing a helmet can reduce the risk of severe brain injuries by 88 percent.

Resources:

The application process and further information can be found at - https://www.ncdot.gov/initiatives-policies/safety/bicycle-helmets/Pages/default.aspx

INFRASTRUCTURE RECOMMENDATIONS DETAIL

STI PROJECT: NORTHWOOD HS SIDEPATH

The Hillsboro St (US 15/501) widening project (STIP: R-5724) will be constructed in the near term and will include a sidepath along the east side of the street from the Chatham Marketplace driveway to Lowes Dr. This will be a major improvement for north/south bike/ped connectivity in Pittsboro.

This sidepath should be extended north to Northwood High School. This would also provide a link to the existing Mosaic development as well as the current development under construction north of Russett Run.

TYPE

» Sidepath

TRIP GENERATORS

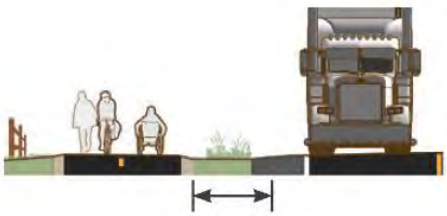
» Northwood High School

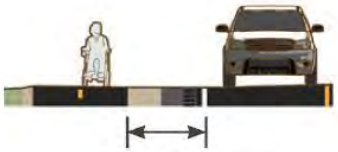
» Mosaic Commercial Center

» Powell Place Ln neighborhood

» Commercial area at Lowes Dr

» Downtown Pittsboro





POTENTIAL RIGHT-OF-WAY NEEDS

» None

PARTNERSHIPS

» Town of Pittsboro

» NCDOT

» Chatham Park

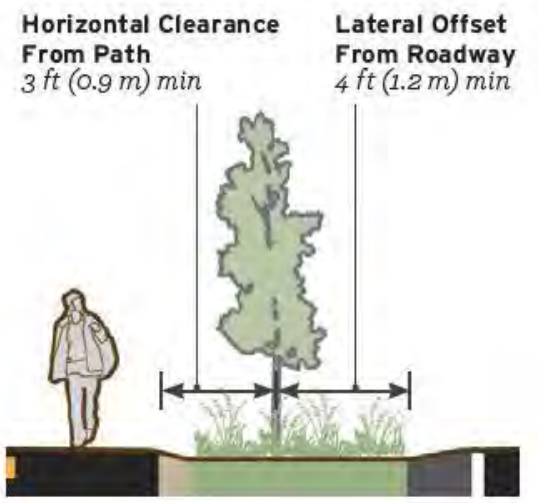
IMPLEMENTATION

» STI Project - submitted in P6.0 in 2019

COST ESTIMATE

» $941,000*

*Estimate is not based on an engineering design, and is for planning purposes only. Cost is based on 2019 Unit Prices, inflation not included. See Appendix E for further information on cost estimates. Estimated Construction Costs do not include special landscaping, lighting, green infrastructure, ROW acquisition, engineering design, permitting, or construction engineering and inspection. A 10% NCDOT administration fee required for Federally funded projects is assumed and included with this construction cost estimate.



» Sidepaths offer a low-stress experience for bicyclists and pedestrians on network routes otherwise inhospitable to walking and bicycling due to high-speed or high-volume traffic.

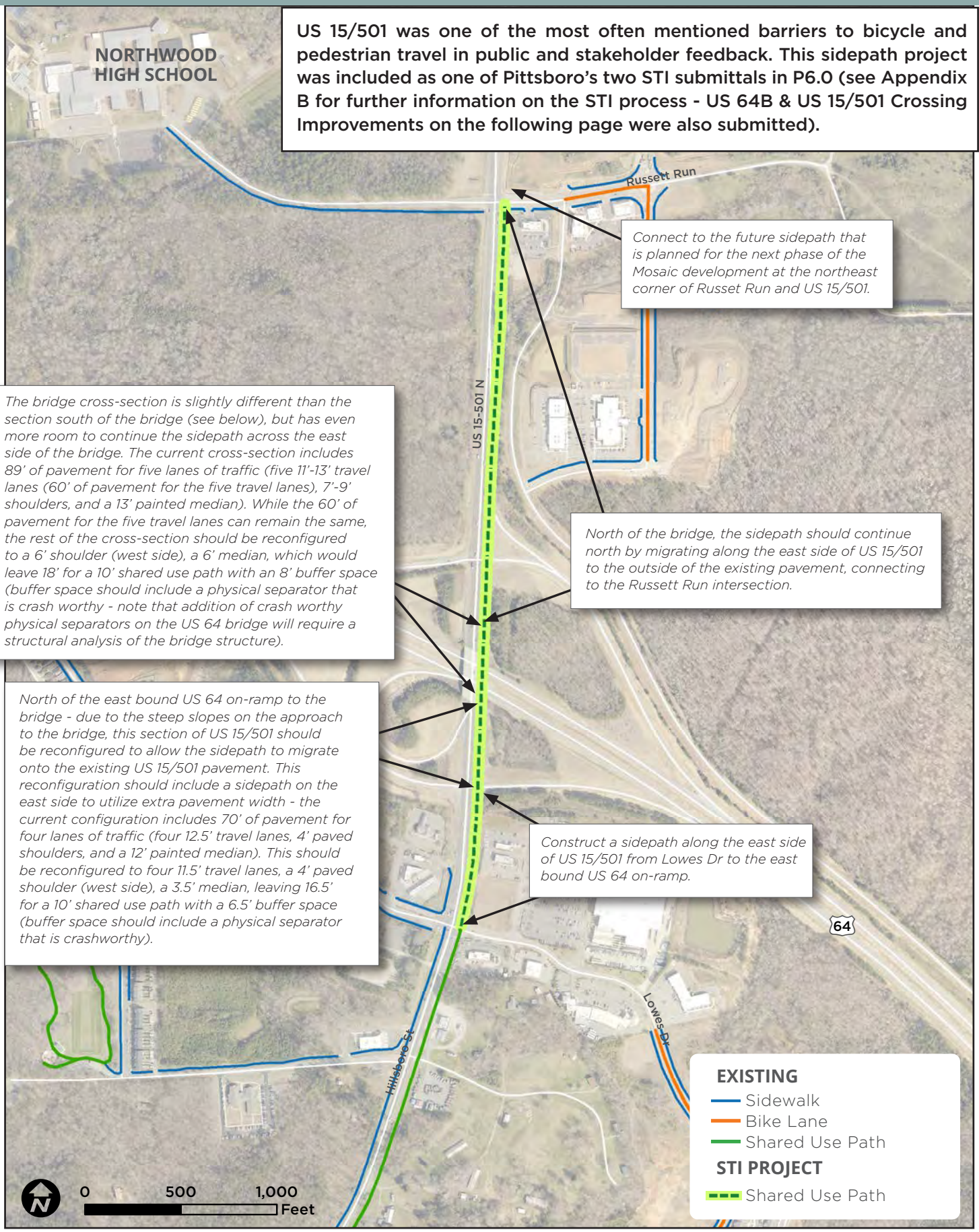
» Preferred minimum separation width is 6.5 ft (2.0 m). Minimum separation distance is 5 ft (1.5 m).

» Separation narrower than 5 ft is not recommended, although may be accommodated with the use of a physical barrier between the sidepath and the roadway. The barrier and end treatments should be crashworthy which may introduce additional complexity if there are frequent driveways and intersections. Refer to the AASHTO Roadside Design Guide 2011 for additional information.

For more information on sidepath design, please see the Small Town and Rural Multimodal Network Design Guide pages 4-11 — 4-18 (www.ruraldesignguide.com).

STI PROJECT: NORTHWOOD HS SIDEPATH

US 15/501 was one of the most often mentioned barriers to bicycle and pedestrian travel in public and stakeholder feedback. This sidepath project was included as one of Pittsboro's two STI submittals in P6.0 (see Appendix B for further information on the STI process - US 64B & US 15/501 Crossing Improvements on the following page were also submitted).



Connect to the future sidepath that is planned for the next phase of the Mosaic development at the northeast corner of Russet Run and US 15/501.

The bridge cross-section is slightly different than the section south of the bridge (see below), but has even more room to continue the sidepath across the east side of the bridge. The current cross-section includes 89' of pavement for five lanes of traffic (five 11'-13' travel lanes (60' of pavement for the five travel lanes), 7'-9' shoulders, and a 13' painted median). While the 60' of pavement for the five travel lanes can remain the same, the rest of the cross-section should be reconfigured to a 6' shoulder (west side), a 6' median, which would leave 18' for a 10' shared use path with an 8' buffer space (buffer space should include a physical separator that is crash worthy - note that addition of crash worthy physical separators on the US 64 bridge will require a structural analysis of the bridge structure).

North of the bridge, the sidepath should continue north by migrating along the east side of US 15/501 to the outside of the existing pavement, connecting to the Russett Run intersection.

North of the east bound US 64 on-ramp to the bridge - due to the steep slopes on the approach to the bridge, this section of US 15/501 should be reconfigured to allow the sidepath to migrate onto the existing US 15/501 pavement. This reconfiguration should include a sidepath on the east side to utilize extra pavement width - the current configuration includes 70' of pavement for four lanes of traffic (four 12.5' travel lanes, 4' paved shoulders, and a 12' painted median). This should be reconfigured to four 11.5' travel lanes, a 4' paved shoulder (west side), a 3.5' median, leaving 16.5' for a 10' shared use path with a 6.5' buffer space (buffer space should include a physical separator that is crashworthy).

Construct a sidepath along the east side of US 15/501 from Lowes Dr to the east bound US 64 on-ramp.

STI PROJECT: US 64B & US 15/501 CROSSINGS

Other than the traffic circle in the center of downtown, there are currently no crosswalks across US 64B for its entirety through Pittsboro. US 64B carries high traffic volumes and is 35 mph outside of the downtown core, creating a barrier for your average pedestrian/bicyclist. The proposed crosswalks on the following pages will improve connectivity between the northern and southern halves of Pittsboro. US 64B and US 15/501 were the most often cited barriers to bicycle and pedestrian travel in public and stakeholder comments.

TYPE

» Crossing improvements

PROPOSED CROSSING IMPROVEMENT LOCATIONS (SEE FOLLOWING PAGES)

» US 64B/NC 87

» US 64B/McClenahan St

» US 64B/Fayetteville St

» US 64B/Masonic St

» US 64B/Small St

» US 64B/MLK Jr Dr

» US 15/501 Mid-block crossing (near Midway St)

» US 15/501/Salisbury St

» US 15/501/Chatham St

» US 15/501/Pittsboro Elementary School Rd

POTENTIAL RIGHT-OF-WAY NEEDS

» None

PARTNERSHIPS

» Town of Pittsboro

» NCDOT

IMPLEMENTATION

» STI Project - submitted in P6.0 in 2019

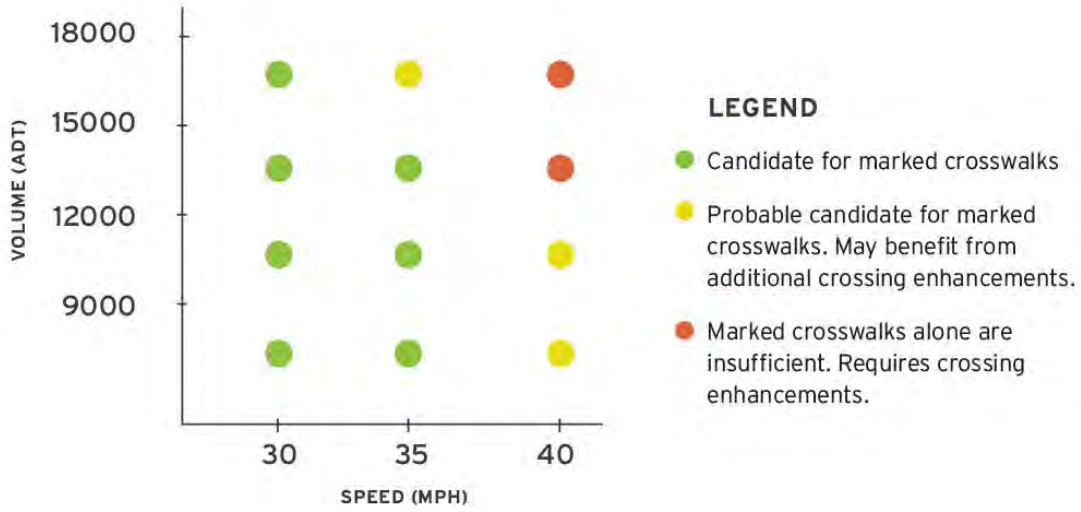
COST ESTIMATE

» $568,000*

*Estimate is not based on an engineering design, and is for planning purposes only. Cost is based on 2019 Unit Prices, inflation not included. See Appendix E for further information on cost estimates. Estimated Construction Costs do not include special landscaping, lighting, green infrastructure, ROW acquisition, engineering design, permitting, or construction engineering and inspection. A 10% NCDOT administration fee required for Federally funded projects is assumed and included with this construction cost estimate.

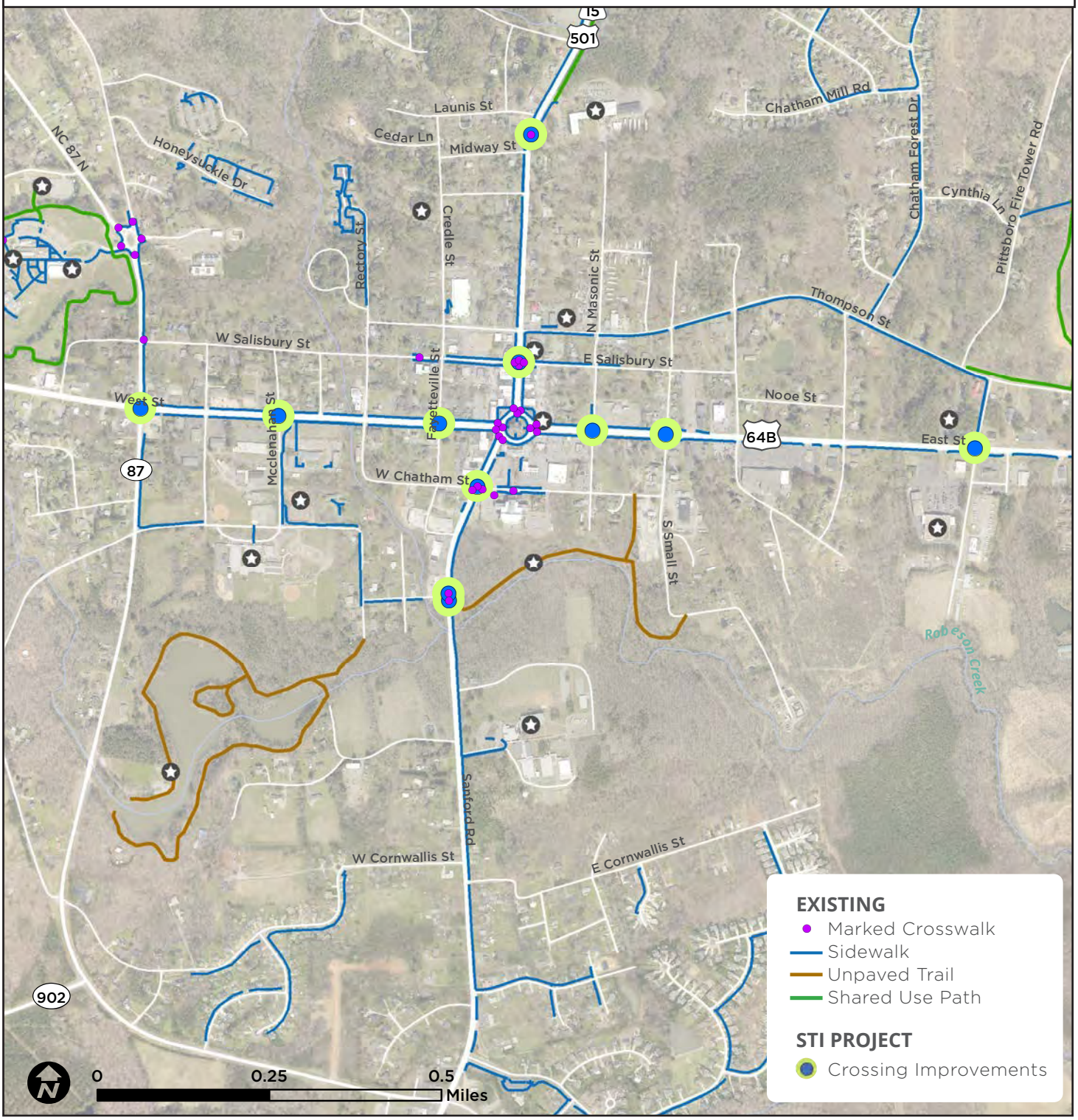
The proposed US 64B crosswalks at McClenahan St, Fayettevlle St, Masonic St, and Small St all have space where median safety islands could be constructed, similar to the existing mid-block crossing along US 15/501 between Midway St and Launis St. See the Small Town and Rural Multimodal Network Design Guide pages 4-7 - 4-8 for further guidance (ruraldesignguide.com).

Conditions unsuitable for a marked crosswalk alone are candidates for additional enhancements such as curb extensions, median islands and/or active warning beacons. Chart adapted from FHWA Safety Effects of Marked Crosswalks at Uncontrolled Locations 2005 Table 2-11 (data for two-lane roadway at non school crossings).

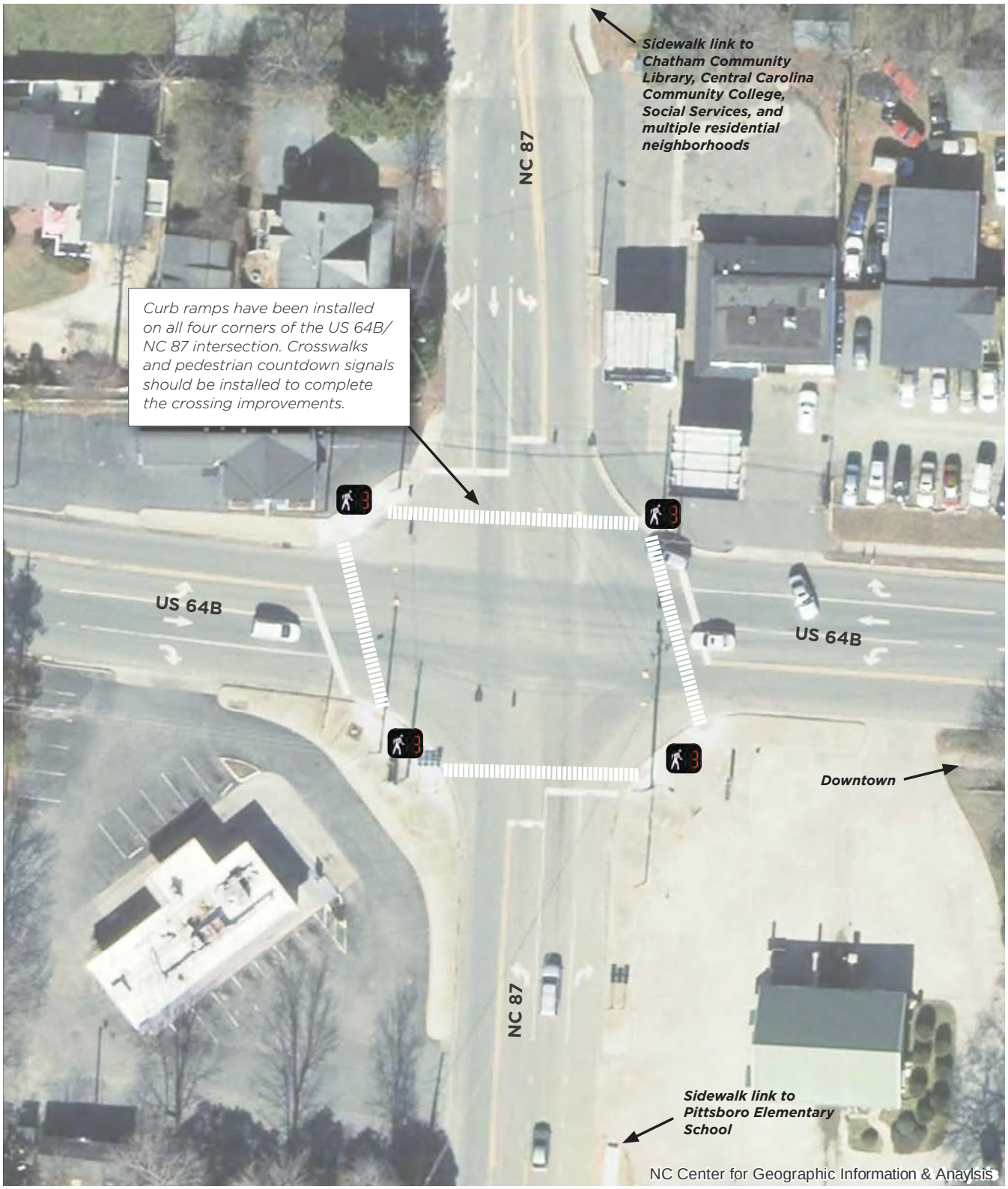


STI PROJECT: US 64B & US 15/501 CROSSING IMPROVEMENTS

These proposed crossing improvements provide strategic opportunities to cross Pittsboro's busiest thoroughfares, US 64B and US 15/501. Currently, the only US 64B crosswalks are found at the downtown circle. US 64B and US 15/501 were the most often mentioned barriers to bicycle and pedestrian travel in public and stakeholder feedback. These crossing improvements were bundled together and submitted as one STI project in P6.0 (see Appendix B for further information on the STI process). Detail for these crossing recommendations are included on the following pages of this appendix.



US 64B/NC 87

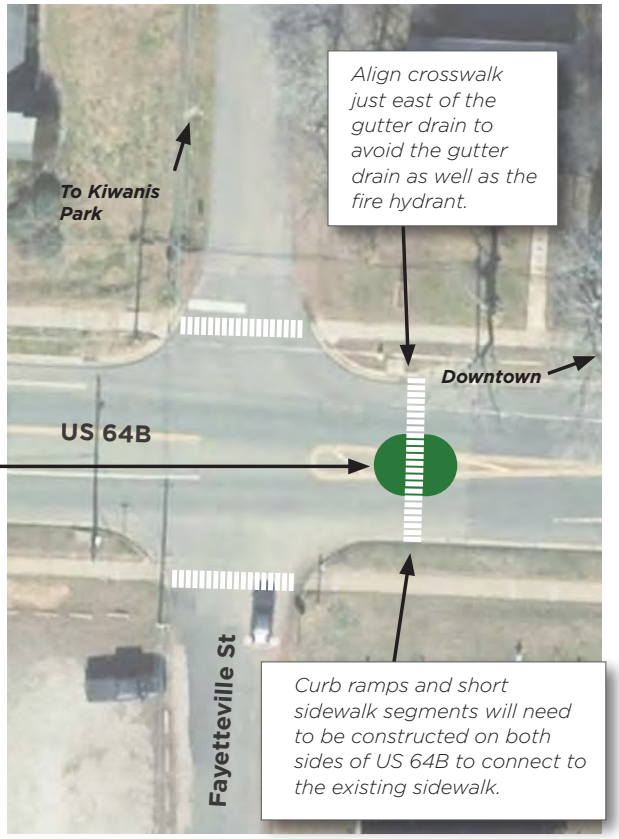

Sidewalk link to Chatham Community Library, Central Carolina Community College, Social Services, and multiple residential neighborhoods
NC 87
Curb ramps have been installed on all four corners of the US 64B/ NC 87 intersection. Crosswalks and pedestrian countdown signals should be installed to complete the crossing improvements.
US 64B
US 64B
Downtown
NC 87
Sidewalk link to Pittsboro Elementary School
NC Center for Geographic Information & Analysis

US 64B/FAYETTEVILLE ST

Construct crosswalk along east side of the US 64B/ Fayetteville St intersection - this side of the intersection is preferable due to the lack of center turn lane.

The pavement width is approximately 44' at this location, allowing space for the construction of a median safety island.

High visibility crosswalks should also be painted along both the north and south sides of the intersection to connect the existing east/west sidewalks.

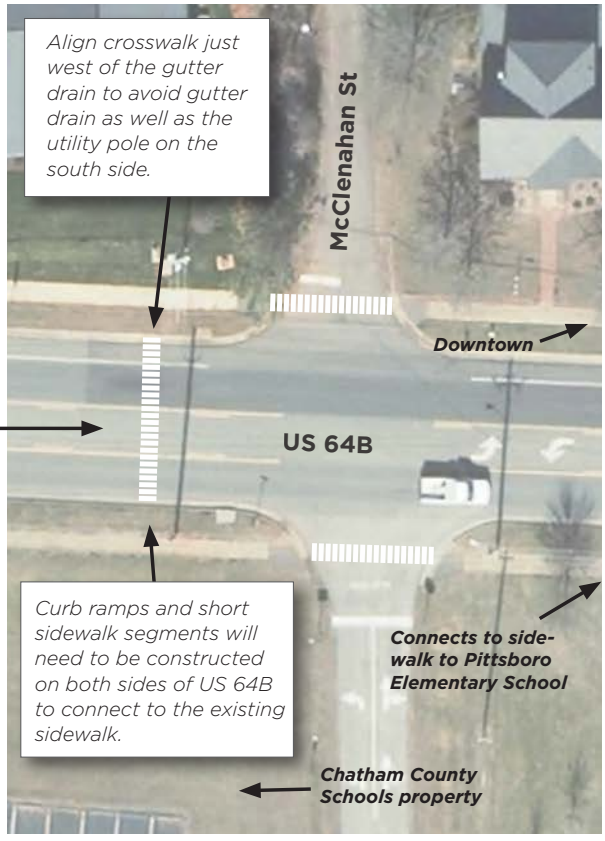


US 64B/MCCLENAHAN ST

Construct crosswalk along the west side of the US 64B/ McClenahan St intersection - the Town of Pittsboro and NCDOT are currently coordinating this improvement with the upcoming development on the Chatham County Schools' property at the southwest corner of the intersection.

The pavement width is approximately 44' for the crossing along the west side of the street. Constructing a median safety island will require eliminating the left turn onto McClenahan St, and a traffic analysis should be conducted before implementation.

High visibility crosswalks should also be painted along both the north and south sides of the intersection to connect the existing east/west sidewalks.

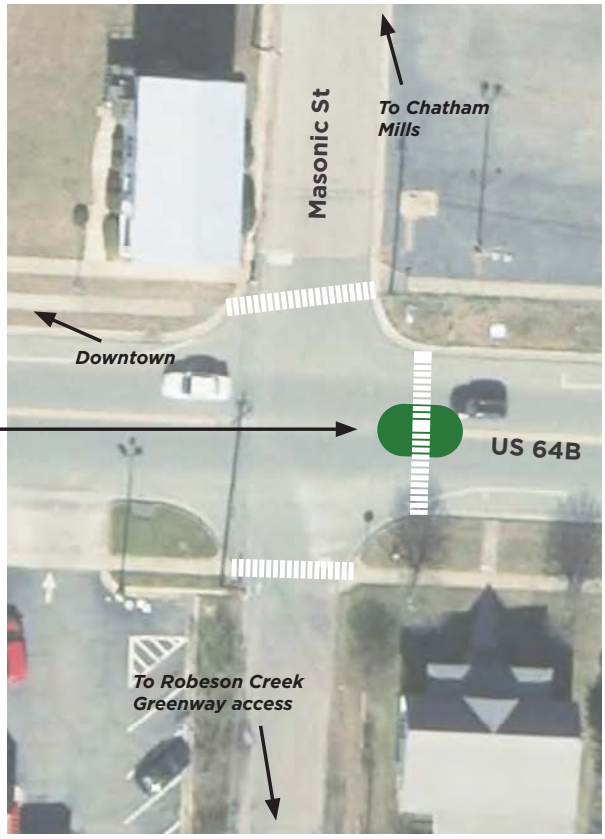


US 64B/MASONIC ST

Construct crosswalk with curb ramps on the east side of the US 64B/Masonic St intersection - this side of the intersection is preferable to the west side due to the proximity of the Hardee's driveway on the southwest corner of the intersection.

The pavement width is approximately 44' for the crossing along the east side of the street, allowing space for the construction of a median safety island.

High visibility crosswalks should also be painted along both the north and south sides of the intersection to connect the existing sidewalks.

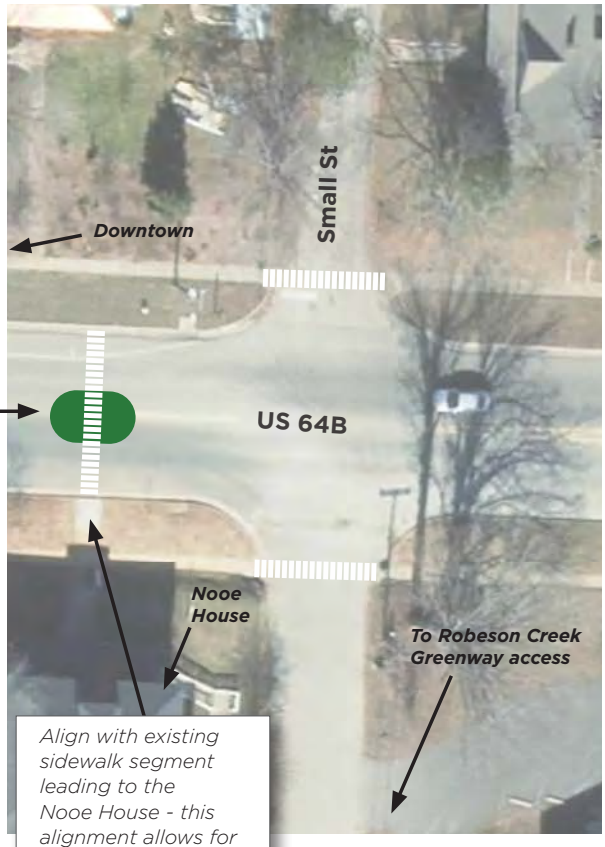


US 64B/SMALL ST

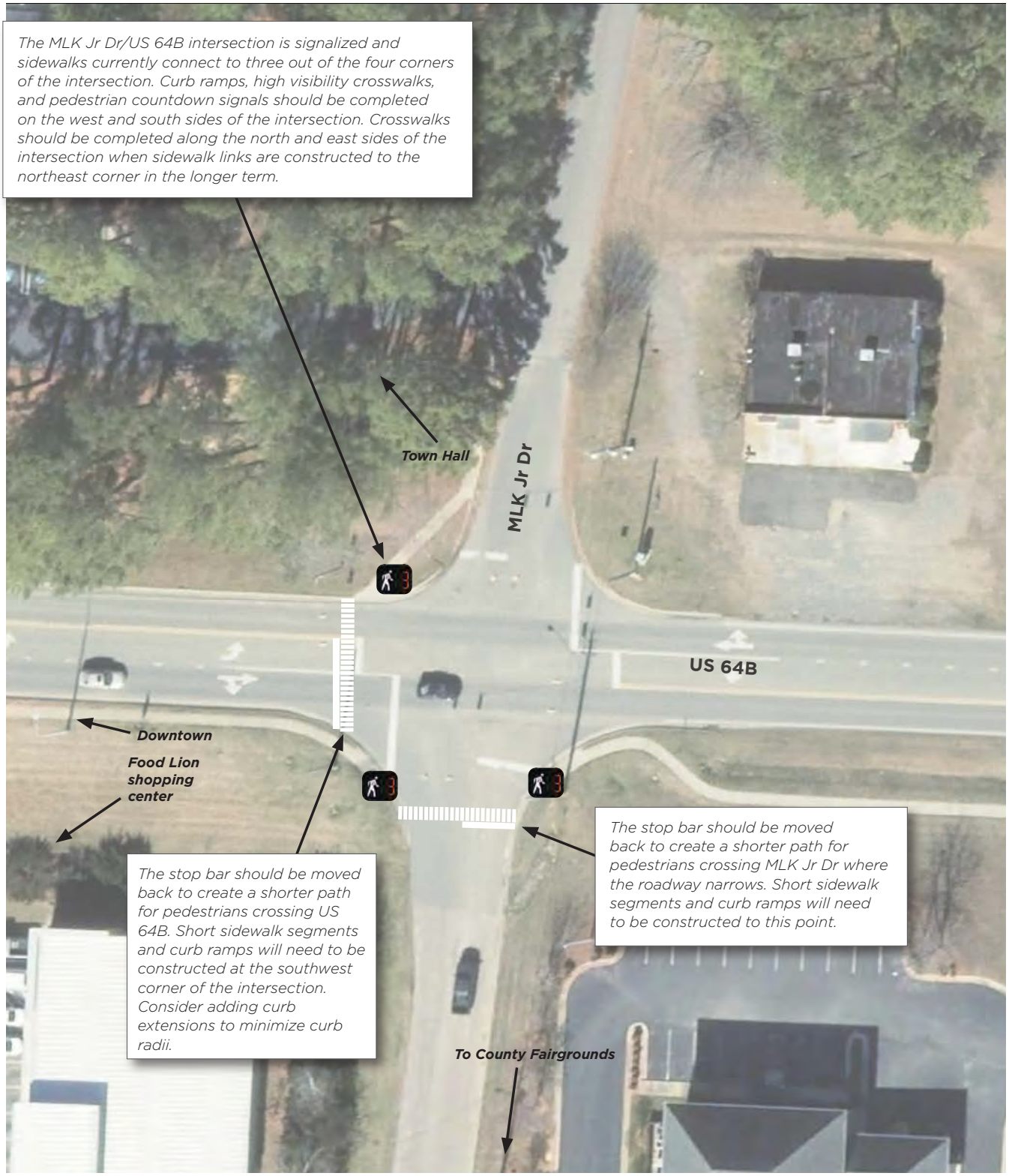
Construct crosswalk with curb ramps along the west side of the US 64B/Small St intersection - this side of the intersection is preferable due to the sight lines.

The pavement width is approximately 44' for the crossing along the west side of the street, allowing space for the construction of a median safety island.

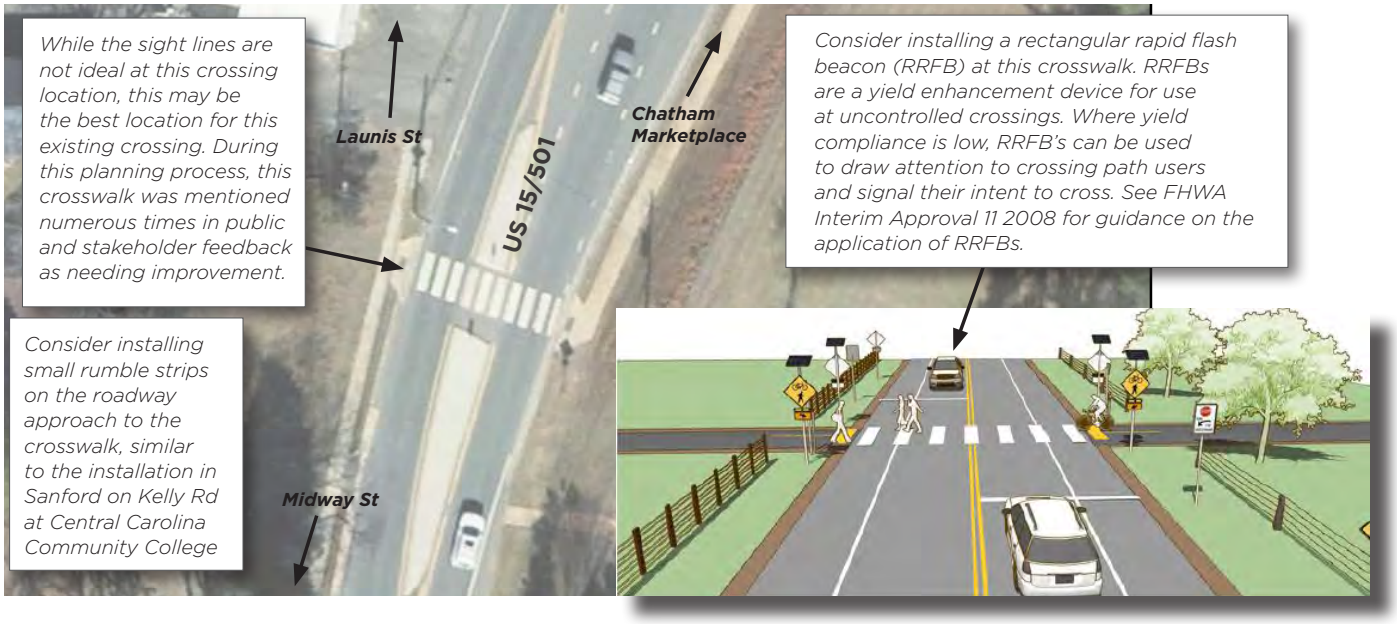
High visibility crosswalks should also be painted along both the north and south sides of the intersection to connect the existing east/west sidewalks.



US 64B/MLK JR DR



HILLSBORO ST (US 15/501) MID-BLOCK CROSSING (BETWEEN LAUNIS ST AND MIDWAY ST)



SANFORD RD (US 15/501)/PITTSBORO ELEMENTARY SCHOOL RD

1 http://ruraldesignguide.com/visually-separated/pedestrian-lane

SANFORD RD (US 15/501)/PITTSBORO ELEMENTARY SCHOOL RD

Consider installing a rectangular rapid flash beacon (RRFB) at this crosswalk. RRFBs are a yield enhancement device for use at uncontrolled crossings. Where yield compliance is low, RRFB's can be used to draw attention to crossing path users and signal their intent to cross. See FHWA Interim Approval 11 2008 for guidance on the application of RRFBs.

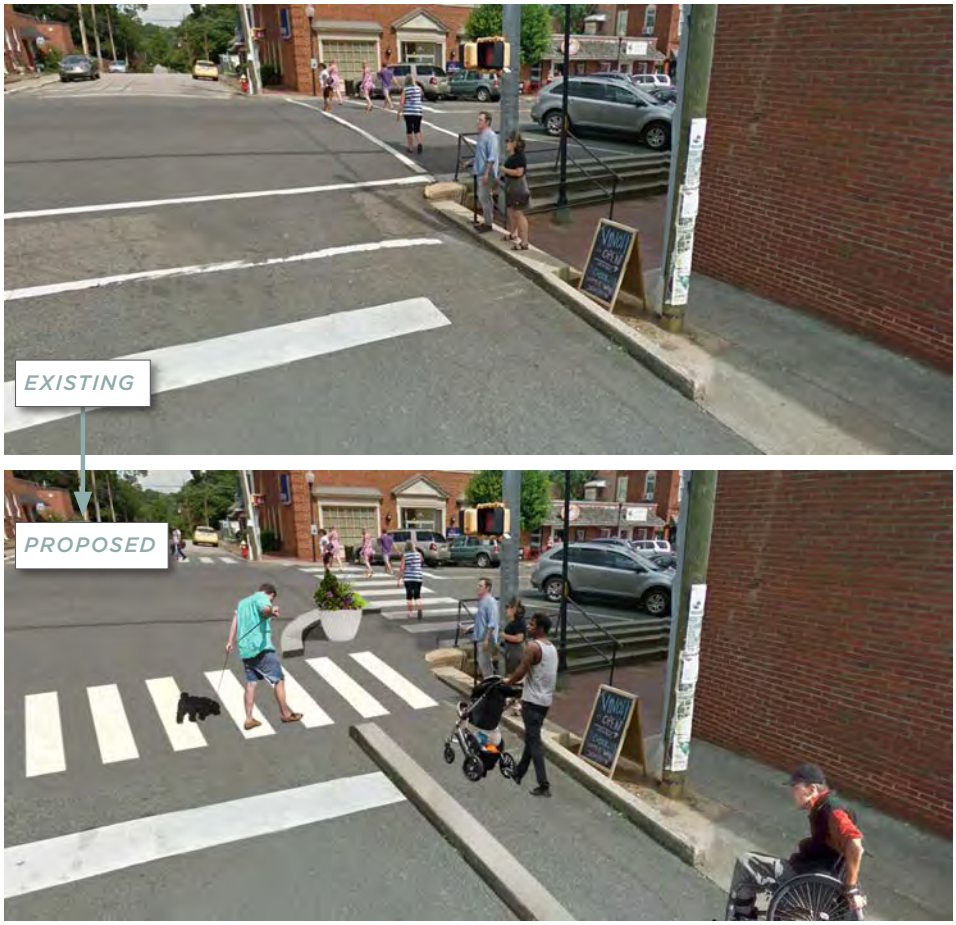
Add curb extensions to minimize curb radii and shorten the crossing distance for pedesrians at both the nothwest and northeast corners of the intersection. These curb extensions could utilize extra shoulder space in the existing pavement.

This roadway cross-section is very wide with multiple turn lanes and high traffic volumes. While high-visibility crosswalks and ADA accessible curb ramps have been recently installed, further enhancements are recommended to provide improvement pedestrian comfort.

Consider installing a rectangular rapid flash beacon (RRFB) at this crosswalk. RRFBs are a yield enhancement device for use at uncontrolled crossings. Where yield compliance is low, RRFB's can be used to draw attention to crossing path users and signal their intent to cross. See FHWA Interim Approval 11 2008 for guidance on the application of RRFBs.

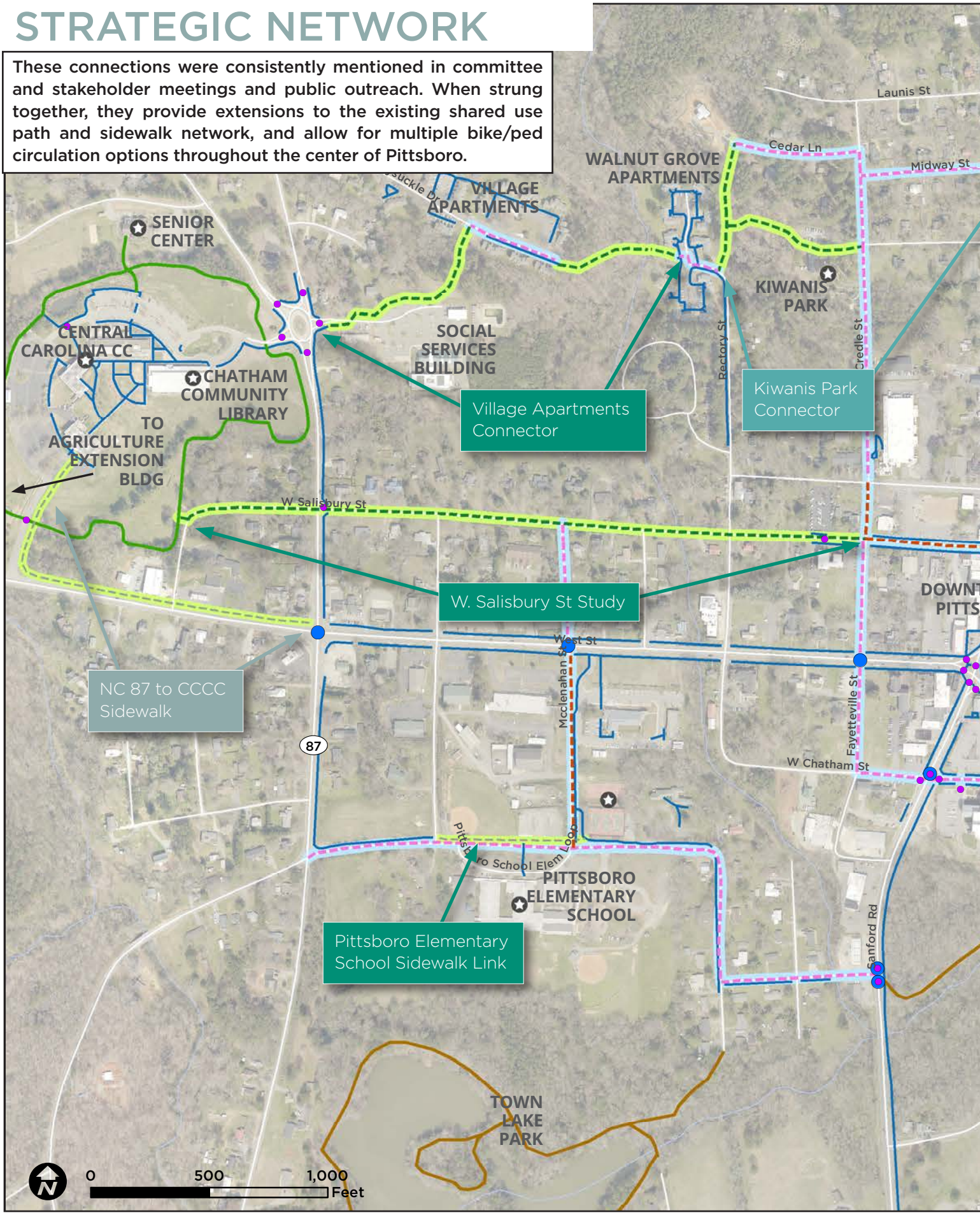
HILLSBORO ST (US 15/501)/ SALISBURY ST

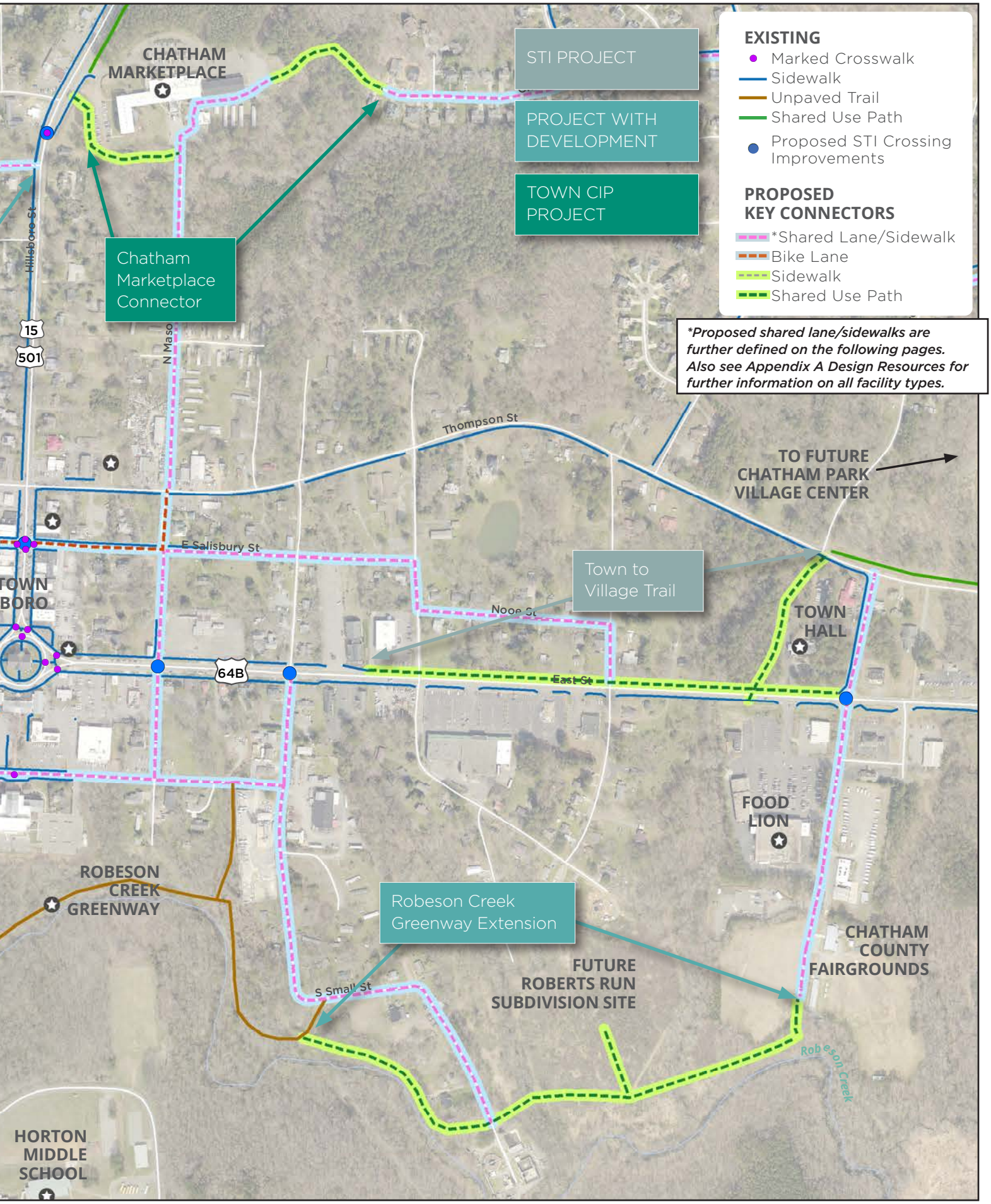
The southwest corner of the Hillsboro St/ Salisbury St intersection provides a unique challenge for ADA accessibility and general safety for all pedestrians crossing to/from this corner. The photo simulation below shows one option for utilizing the extra roadway space between the on-street parking and travel lanes at this corner.



STRATEGIC NETWORK

These connections were consistently mentioned in committee and stakeholder meetings and public outreach. When strung together, they provide extensions to the existing shared use path and sidewalk network, and allow for multiple bike/ped circulation options throughout the center of Pittsboro.




STI PROJECT
PROJECT WITH DEVELOPMENT
TOWN CIP PROJECT
EXISTING
Marked Crosswalk
Sidewalk
Unpaved Trail
Shared Use Path
Proposed STI Crossing Improvements
PROPOSED KEY CONNECTORS
*Shared Lane/Sidewalk
Bike Lane
Sidewalk
Shared Use Path
*Proposed shared lane/sidewalks are further defined on the following pages. Also see Appendix A Design Resources for further information on all facility types.
CHATHAM MARKETPLACE
Chatham Marketplace Connector
Hillsboro St
15
501
N Maso
Thompson St
TO FUTURE CHATHAM PARK VILLAGE CENTER
E Salisbury St
Town to Village Trail
Nooe St
TOWN HALL
64B
East St
FOOD LION
ROBESON CREEK GREENWAY
Robeson Creek Greenway Extension
S Small St
FUTURE ROBERTS RUN SUBDIVISION SITE
CHATHAM COUNTY FAIRGROUNDS
Robeson Creek
HORTON MIDDLE SCHOOL

SHARED LANE/SIDEWALK RECOMMENDATIONS

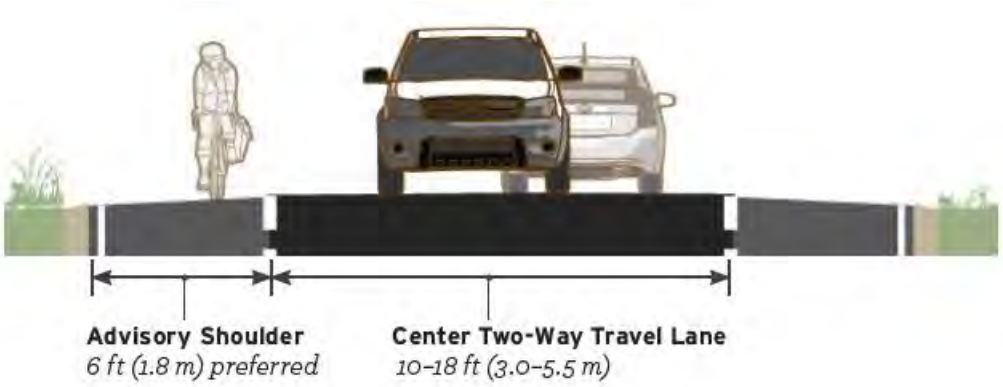
In Pittsboro, the neighborhood grid near the downtown center consists of relatively low traffic volume and low speed motorist traffic. These streets depicted in Map 3.2 in the main document, are generally comfortable for bicycle and pedestrian travel today, but will play a larger role in connectivity, especially upon completion of the STI/With Development/CIP Projects. Furthermore, with the expected population growth in the near and long-term related to the Chatham Park Development in Pittsboro, traffic volumes, even on these neighborhood streets, will likely increase.

Ideally, these streets would be complete with sidewalks that link to the downtown sidewalk network system, but retroffiting established streets with sidewalks or sidepaths can carry a very high cost, especially where drainage, utilities, vegetation, and right-of-way may need modification. Below are several low-cost options for creating a better balance between bicyclists, pedestrians, and motorists along these key streets in the near term.

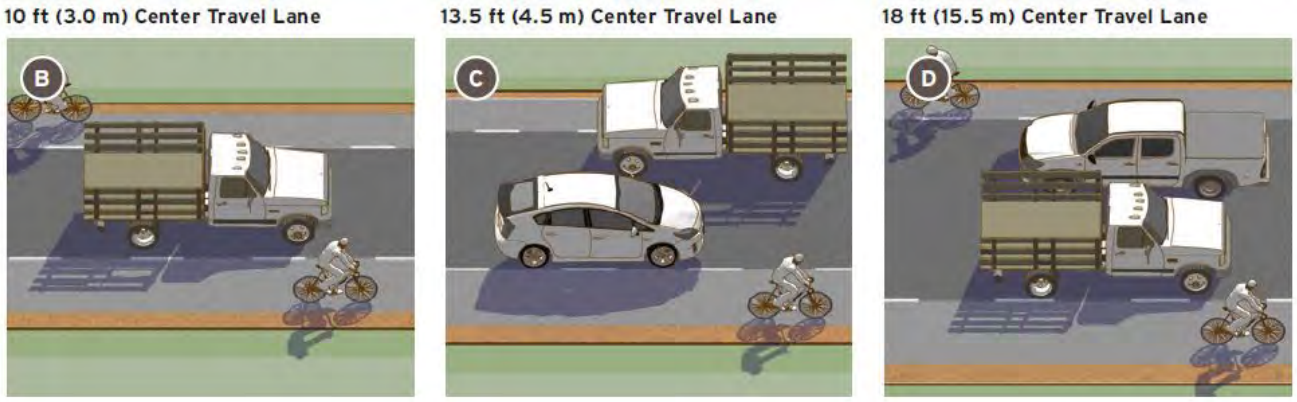
Note - Mixed traffic facilities are most appropriate on roads with low volumes of traffic operating at low speeds. These facilities are shared between motorists, bicyclists, and sometimes pedestrians. The low intensity of motor vehicle traffic allows users to negotiate space in comfort without the need for robust separation.

ADVISORY SHOULDER

Advisory shoulders create usable shoulders for bicyclists on a roadway that is otherwise too narrow to accommodate one. The shoulder is delineated by pavement marking and optional pavement color. Motorists may only enter the shoulder when no bicyclists are present and must overtake these users with caution due to potential oncoming traffic.



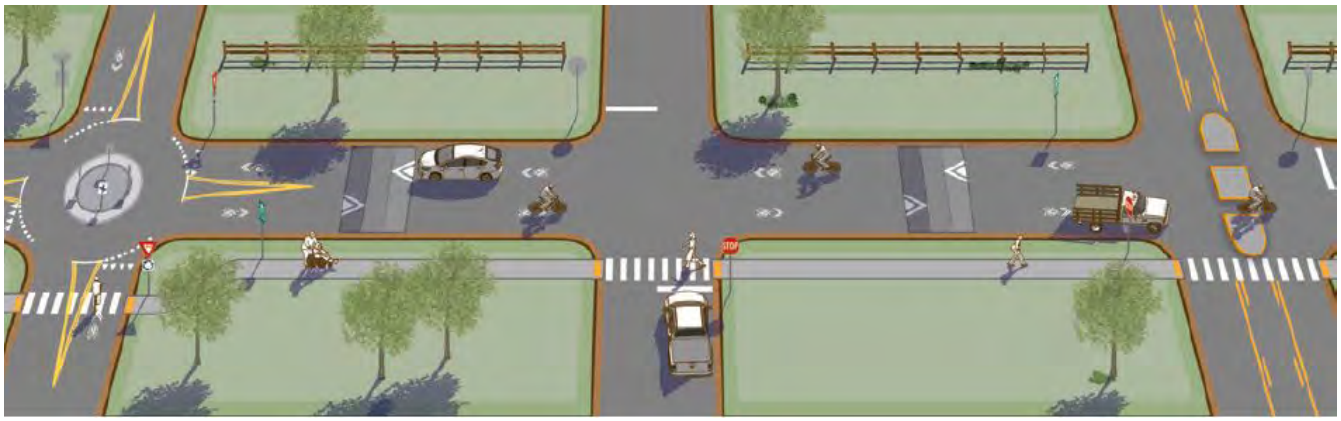
Advisory shoulders clarify positioning and yield priority on roads too narrow to provide exclusive travel space. When pedestrians or bicyclists are present, motorists may need to yield to users present in the advisory shoulder before passing. For more information on advisory shoulders, please see the Small Town and Rural Multimodal Network Design Guide pages 2-17 — 2-24 (www.ruraldesignguide.com).



Total roadway width affects the number of road users that can meet and pass simultaneously. Wider roadways allow for more simultaneous interactions and can support higher volumes of motor vehicles.

BICYCLE BOULEVARD

Bicycle boulevards provide a bicycle-priority route designed to offer convenient, low-stress access to local destinations and through neighborhoods. Combinations of access management, traffic calming, and crossing treatments work in concert to enhance the bicycling experience.



Bicycle boulevards combine road markings, traffic-calming measures, and crossing improvements designed to enhance the comfort and priority of bicyclists traveling along the route. For more information on bicycle boulevards, please see the Small Town and Rural Multimodal Network Design Guide pages 2-9 — 2-16 (www.ruraldesignguide.com).

YIELD ROADWAY

Yield roadways can effectively serve local travel needs, maintain aesthetic preferences, and is a common form for low-volume local rural roads. When operating at very-low volumes and at low speeds, pedestrians and bicyclists 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, and may not need any improvements other than signage.

Very low volume/low speed neighborhood streets in Pittsboro, such as the western section of Hanks St (pictured above), operate as yield roadways, comfortable for walking and bicycling in it's present condition. Other streets such as W. Salisbury St that are slightly wider and carry higher traffic volumes, may benefit significantly from Advisory Shoulders or even higher levels of separation from motorist traffic (see W. Salisbury St Study on pgs E-30 - E-31 for considerations along W. Salisbury St.). For more information on yield roadways, please see the Small Town and Rural Multimodal Network Design Guide pages 2-3 — 2-8 (www.ruraldesignguide.com).

PITTSBORO ELEMENTARY SCHOOL SIDEWALK LINK

This project completes the sidewalk gap directly in front of Pittsboro Elementary School and would improve the crosswalk from the parking lot driveway to the school across Pittsboro Elementary School Rd.

TYPE

» Sidewalk and crossing improvements

TRIP GENERATORS

» Pittsboro Elementary School

» Town Lake Park

» Robeson Creek Greenway

» Downtown Pittsboro

» McClenahan Street Park

POTENTIAL RIGHT-OF-WAY NEEDS

» None

PARTNERSHIPS

» Town of Pittsboro

» Chatham County

IMPLEMENTATION

» Town CIP

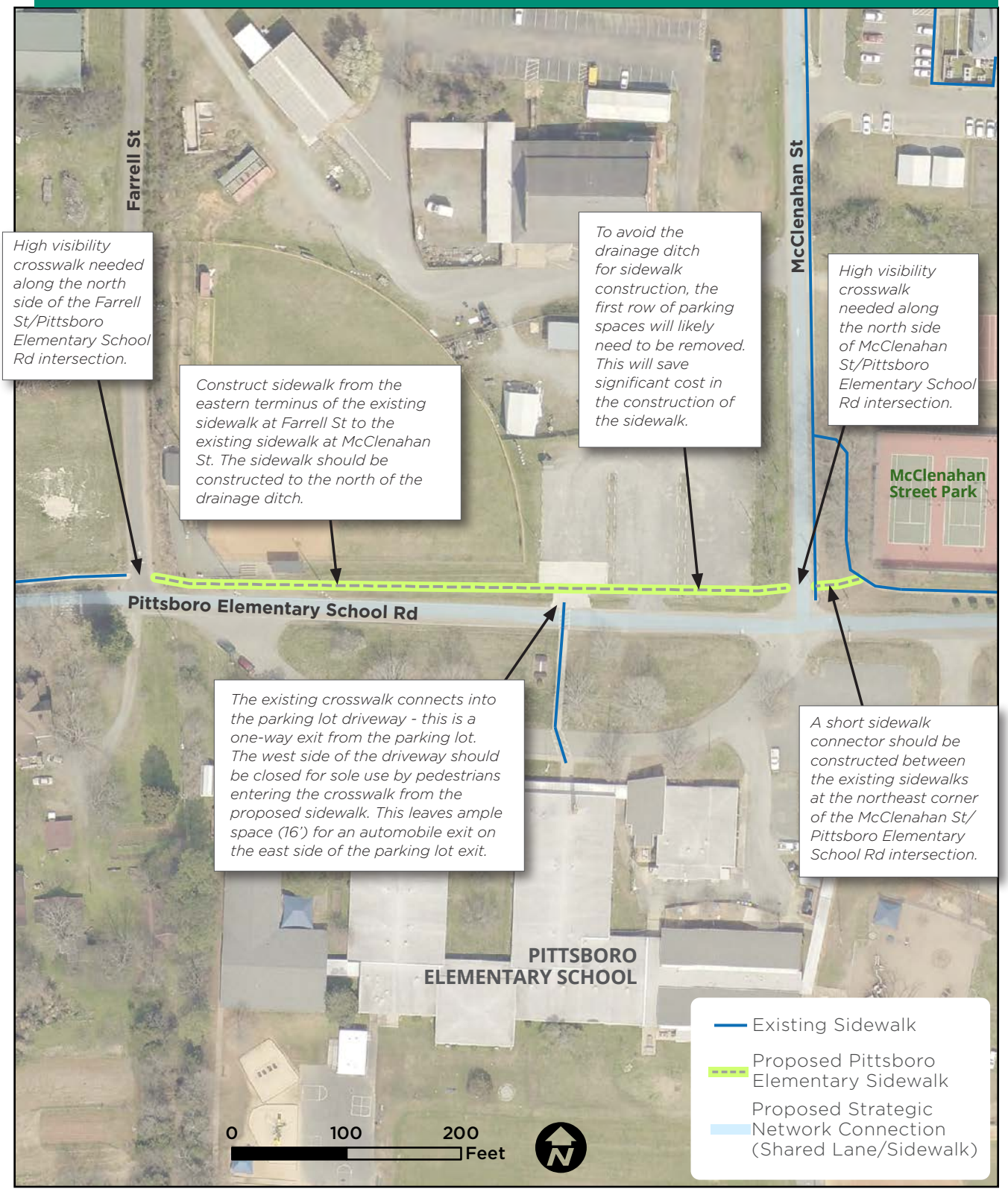
COST ESTIMATE

» $145,000*

*Estimate is not based on an engineering design, and is for planning purposes only. Cost is based on 2019 Unit Prices, inflation not included. See Appendix E for further information on cost estimates. Estimated Construction Costs do not include special landscaping, lighting, green infrastructure, ROW acquisition, engineering design, permitting, or construction engineering and inspection. A 10% NCDOT administration fee required for Federally funded projects is assumed and included with this construction cost estimate.

Existing crosswalk leading from the parking lot driveway to the sidewalk entrance to Pittsboro Elementary School.

PITTSBORO ELEMENTARY SIDEWALK LINK



W. SALISBURY ST STUDY

W. Salisbury St is a neighborhood street that connects Central Carolina Community College and surrounding residences to downtown Pittsboro. This is a popular walking/jogging/bike connection (only option besides US 64B) between the T.H.A.N.K.S. trail around the Central Carolina Community College campus, adjacent residences, and downtown businesses. This corridor is shaded and carries much lower traffic volumes than the US 64B corridor.

TYPE

» Options include advisory shoulders, traffic calming, or creating a one-way street (utilizing half of the pavement width for bike/ped traffic)

TRIP GENERATORS

» Central Carolina Community College
» Chatham Community Library
» T.H.A.N.K.S. Trail
» Chatham County Ag. Center
» Businesses at the US 64B/NC 87 intersection
» Chatham County Social Services
» Adjacent residences
» Downtown Pittsboro

POTENTIAL RIGHT-OF-WAY NEEDS

» Potentially none

PARTNERSHIPS

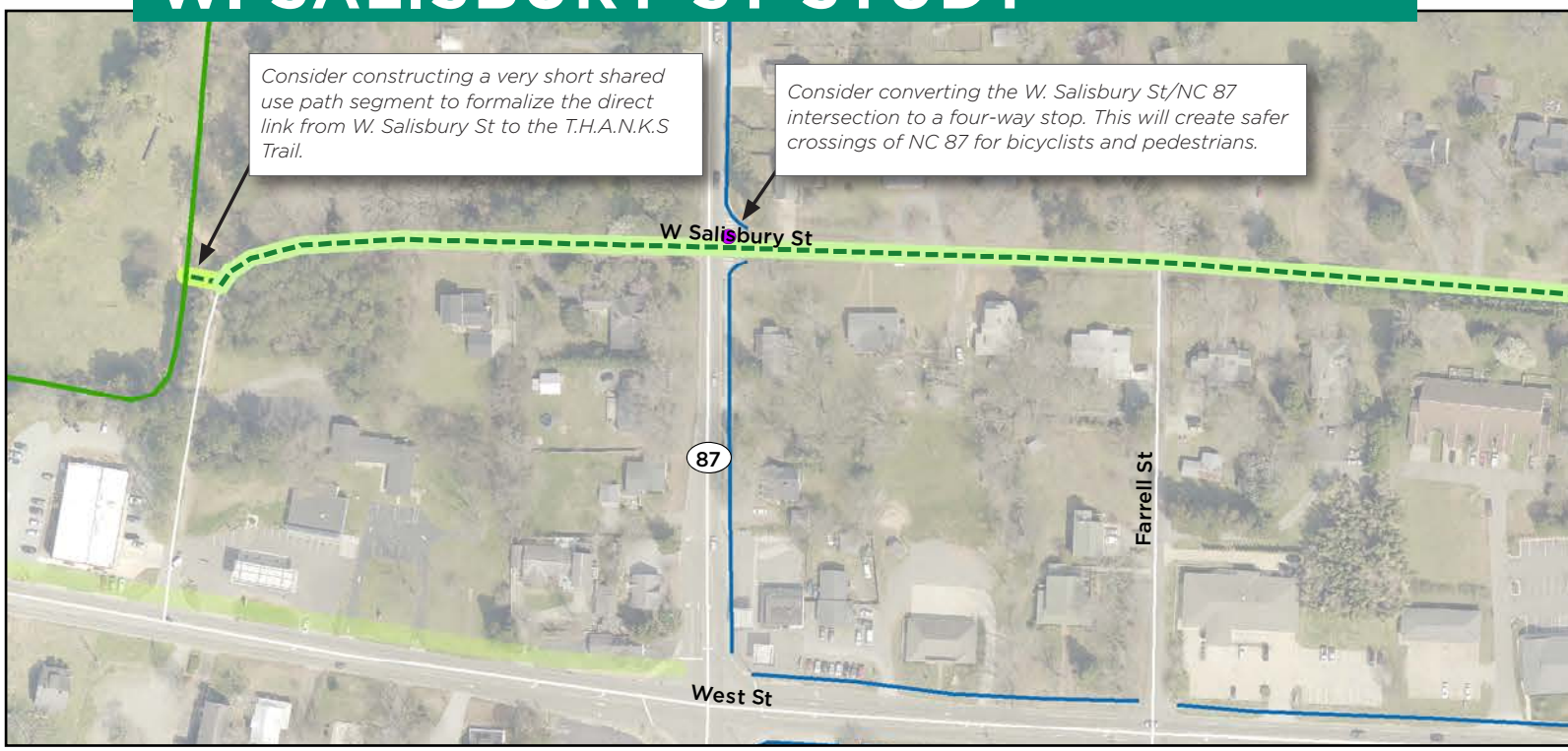
» Town of Pittsboro
» Central Carolina Community College
» NCDOT
» Adjacent residences

IMPLEMENTATION

» Town CIP - conduct feasibility study with additional public outreach in consideration of options displayed on the following page

Pedestrians on W. Salisbury St

W. SALISBURY ST STUDY



DESIGN OPTIONS & CONSIDERATIONS

Dedicated bicycle and pedestrian facilities should be continued along W. Salisbury St from the T.H.A.N.K.S. trail to Fayetteville St, connecting to the existing sidewalk network into downtown Pittsboro. Several options should be considered and further examined.

Option 1: Shrared Use Path: Convert W. Salisbury St to a one-way street heading east. This would allow space within the existing pavement to create a shared use path space. The current pavement width is 18'-19'. 9' should be designated for the east bound motorist lane, and the remaining 9'-10' should be designated for shared use bike/ped travel with buffer striping. Adding 1' of pavement on each side of the road during resurfacing would strengthen this option as well. This is similar to a two-way neighborhood street (Atlantic Ave, pictured right) in Kinston, NC that was converted to a one-way road to accommodate a two-way separated bikeway that connects a greenway trail to downtown Kinston.

Option 2: Advisory Shoulders: Convert W. Salisbury St to an advisory shoulder configuration. This is currently how the road functions with pedestrians and bicyclists sharing the road and negotiating space with motorists. The 18'-19' pavement width could be converted to a 9' center lane for motorists and 4.5'-5' advisory shoulders on each side of the road to reserve space that is prioritized for bicyclists and pedestrians (median example to the right - see pages 2-17 - 2-24 in the Small Town and Rural Multimodal Network Design Guide).

Option 3: Bicycle Boulevard: Implement bicycle boulevard treatments including signage, shared lane markings, and traffic calming features. Consider implementing a median at the Rectory St intersection to discourage cut through motorist traffic (median example to the right - see pages 2-9 - 2-16 in the Small Town and Rural Multimodal Network Design Guide).

VILLAGE APARTMENTS CONNECTOR

The Village Apartments are a very short distance from CCCC, the library, Kiwanis Park, Chatham Marketplace, Town Lake Park, and downtown Pittsboro. Short shared use path links could provide extensive bike/ped connectivity to Village Apartments residents (and potentially the apartment complex to the north).

TYPE

» Shared use path; shared lane/sidewalk

TRIP GENERATORS

» Central Carolina Community College
» Chatham Community Library
» Town Lake Park
» Downtown Pittsboro
» Chatham County Social Services

POTENTIAL RIGHT-OF-WAY NEEDS

» Each shared use path segment would need ROW acquisition

PARTNERSHIPS

» Town of Pittsboro
» Village Apartments ownership
» Walnut Grove Apartments ownership

IMPLEMENTATION

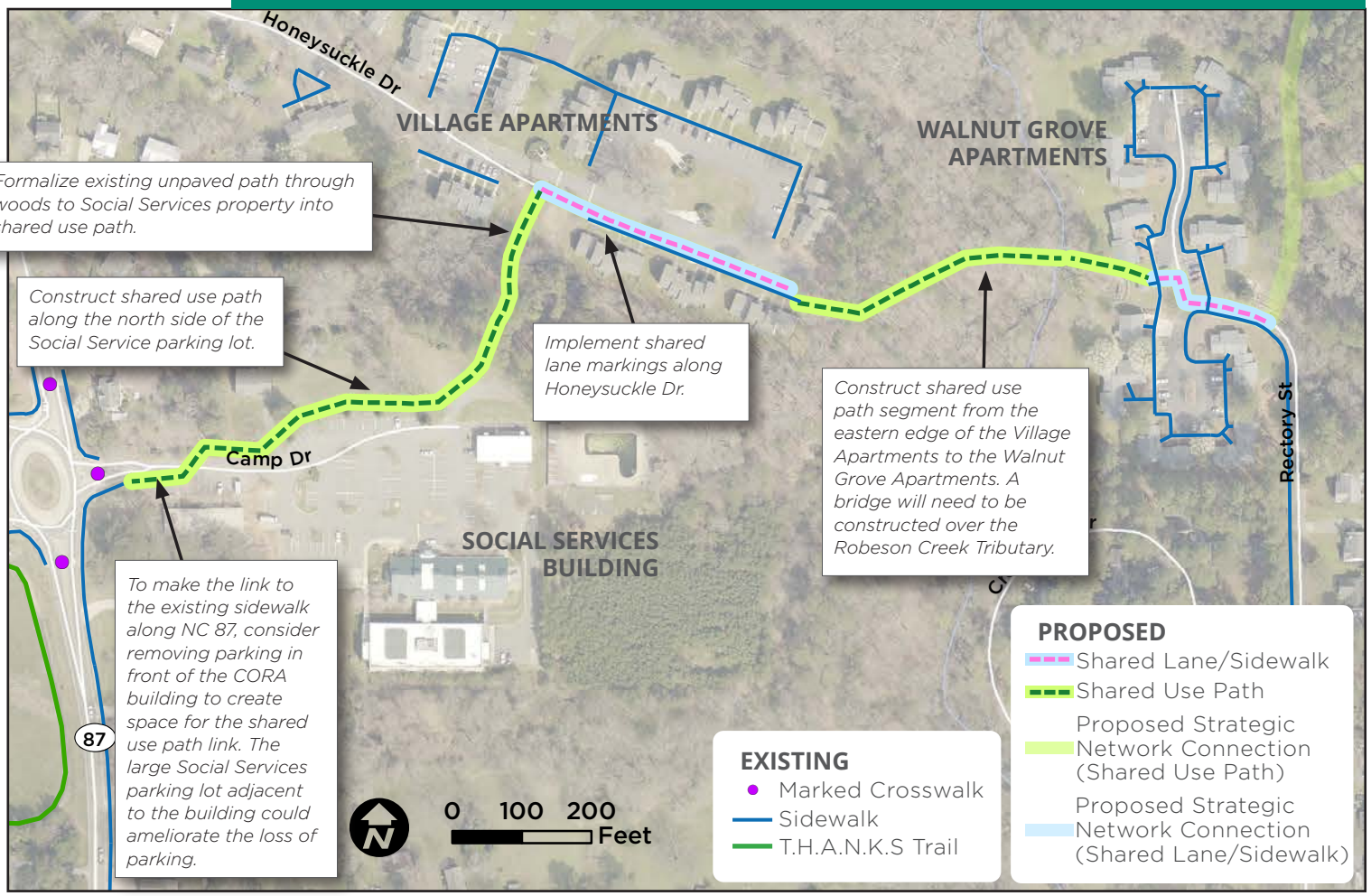
» Town CIP

COST ESTIMATE

» $748,000*

*Estimate is not based on an engineering design, and is for planning purposes only. Cost is based on 2019 Unit Prices, inflation not included. See Appendix E for further information on cost estimates. Estimated Construction Costs do not include special landscaping, lighting, green infrastructure, ROW acquisition, engineering design, permitting, or construction engineering and inspection. A 10% NCDOT administration fee required for Federally funded projects is assumed and included with this construction cost estimate.

VILLAGE APARTMENTS CONNECTOR



KIWANIS PARK CONNECTOR

Both the Kiwanis Park expansion as well as the Cedar Lane subdivision development in the near term create an excellent opportunity to efficiently improve bike/ped connectivity to the west of Credle St. Implementing this project can bring a large number of residents at the Walnut Grove Apartments and residences along Rectory St and further west within easy access to Kiwanis Park and beyond.

TYPE

» Shared use path; shared lane/sidewalk

TRIP GENERATORS

» Kiwanis Park

» Chatham Marketplace

» Downtown Pittsboro

POTENTIAL RIGHT-OF-WAY NEEDS

» Easement connecting from Rectory St to Cedar Lane subdivision access

PARTNERSHIPS

» Town of Pittsboro

» Walnut Grove apartments ownership

» Cedar Lane subdivision developers

IMPLEMENTATION

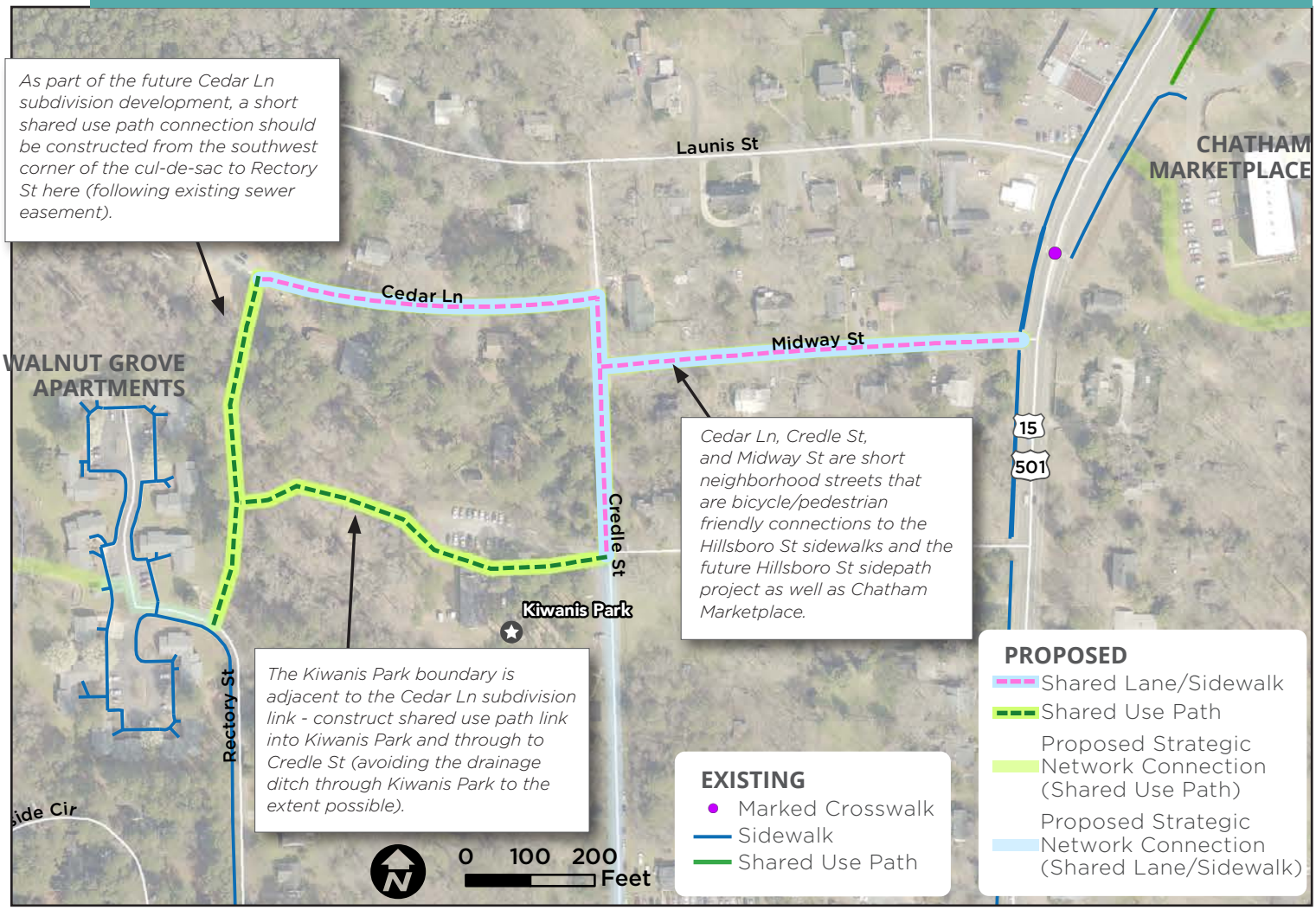
» Construct in conjunction with future Cedar Lane Subdivision development and Kiwanis Park expansion

COST ESTIMATE

» $309,000*

*Estimate is not based on an engineering design, and is for planning purposes only. Cost is based on 2019 Unit Prices, inflation not included. See Appendix E for further information on cost estimates. Estimated Construction Costs do not include special landscaping, lighting, green infrastructure, ROW acquisition, engineering design, permitting, or construction engineering and inspection. A 10% NCDOT administration fee required for Federally funded projects is assumed and included with this construction cost estimate.

KIWANIS PARK CONNECTOR



CHATHAM MARKETPLACE CONNECTOR

Chatham Marketplace is a very short distance from a large portion of the Pittsboro population. Shared use path links could significantly enhance access to the building. Currently, the existing sidewalks on Hillsboro St/US 15/501 stop at the driveway entrance and do not connect to the building.

TYPE

» Shared use path; shared lane/sidewalk

TRIP GENERATORS

» Chatham Marketplace

» Future Hillsboro St/US 15/501 sidepath link

» Downtown Pittsboro

» Kiwanis Park

» Adjacent residential neighborhoods

POTENTIAL RIGHT-OF-WAY NEEDS

» Each shared use path segment would need ROW acquisition

PARTNERSHIPS

» Town of Pittsboro

» Chatham Marketplace ownership

IMPLEMENTATION

» Town CIP

COST ESTIMATE

» $531,000*

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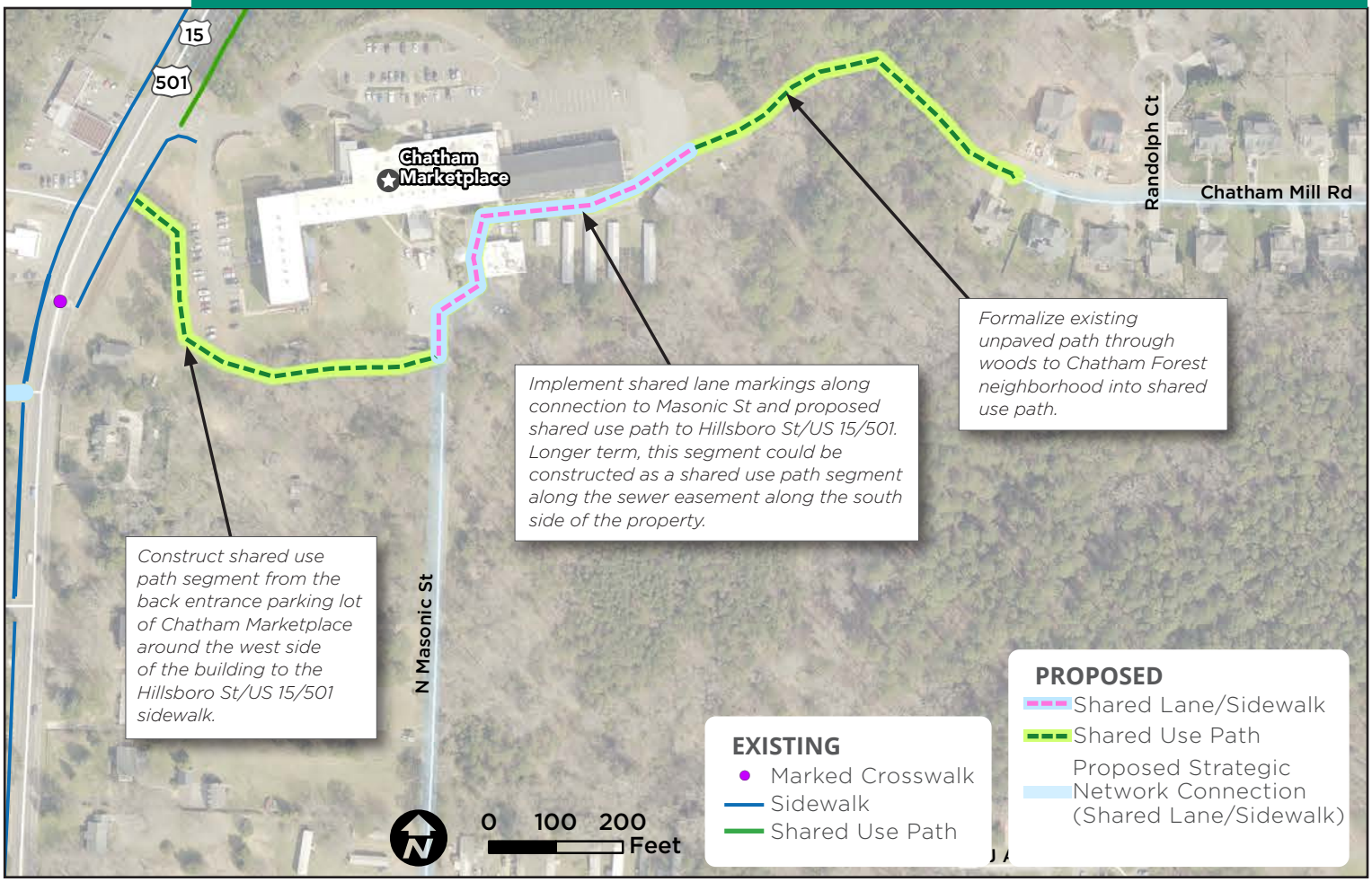
CHATHAM MARKETPLACE CONNECTOR



ROBESON CREEK GREENWAY EXTENSION

In conjunction with the future Roberts Run subdivision development, a short shared use path connection should be constructed to connect to the existing eastern terminus of the Robeson Creek Greenway and also serve as an extension of the Robeson Creek Greenway to the Chatham County Fairground.

TYPE

» Shared use path

TRIP GENERATORS

» Robeson Creek Greenway

» Chatham County Fairgrounds

» Roberts Run subdivision

POTENTIAL RIGHT-OF-WAY NEEDS

» None - shared use path easement as part of subdivision development has been secured

PARTNERSHIPS

» Town of Pittsboro

» Roberts Run subdivision developer

» Chatham County

IMPLEMENTATION

» Construct in conjunction with future Roberts Run Subdivision development and Kiwanis Park expansion

COST ESTIMATE

» $953,000*

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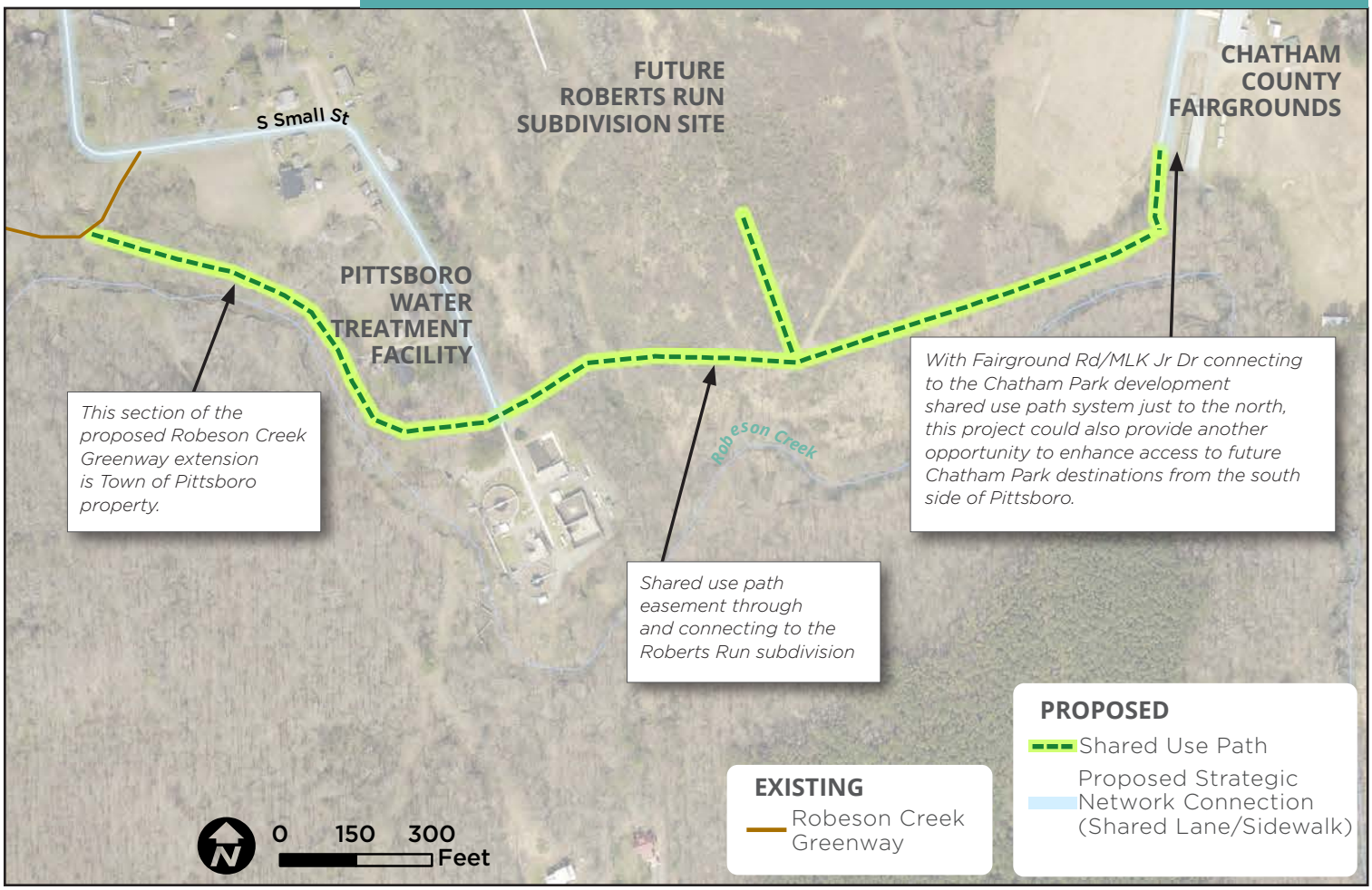
ROBESON CREEK GREENWAY EXTENSION



TOWN TO VILLAGE TRAIL

The proposed Town to Village Trail could serve as the downtown Pittsboro to Chatham Park Village Center connection. With Chatham Park's shared use path system connecting to the Town Hall site, the proposed project below utilizes the current Town Hall site and ROW along the north side of US 64B to bring the Chatham Park shared use path system into downtown Pittsboro and vice versa.

TYPE

» Shared use path

TRIP GENERATORS

» Chatham Park Village Center

» Downtown Pittsboro

» Adjacent residences

» Food Lion shopping center

» Town Hall

POTENTIAL RIGHT-OF-WAY NEEDS

» None

PARTNERSHIPS

» Town of Pittsboro

» Chatham Park

» NCDOT

IMPLEMENTATION

» STI Project - consider submitting in next route of STI project submittals (P7.0) due to coordination needed with NCDOT

COST ESTIMATE

» $905,000*

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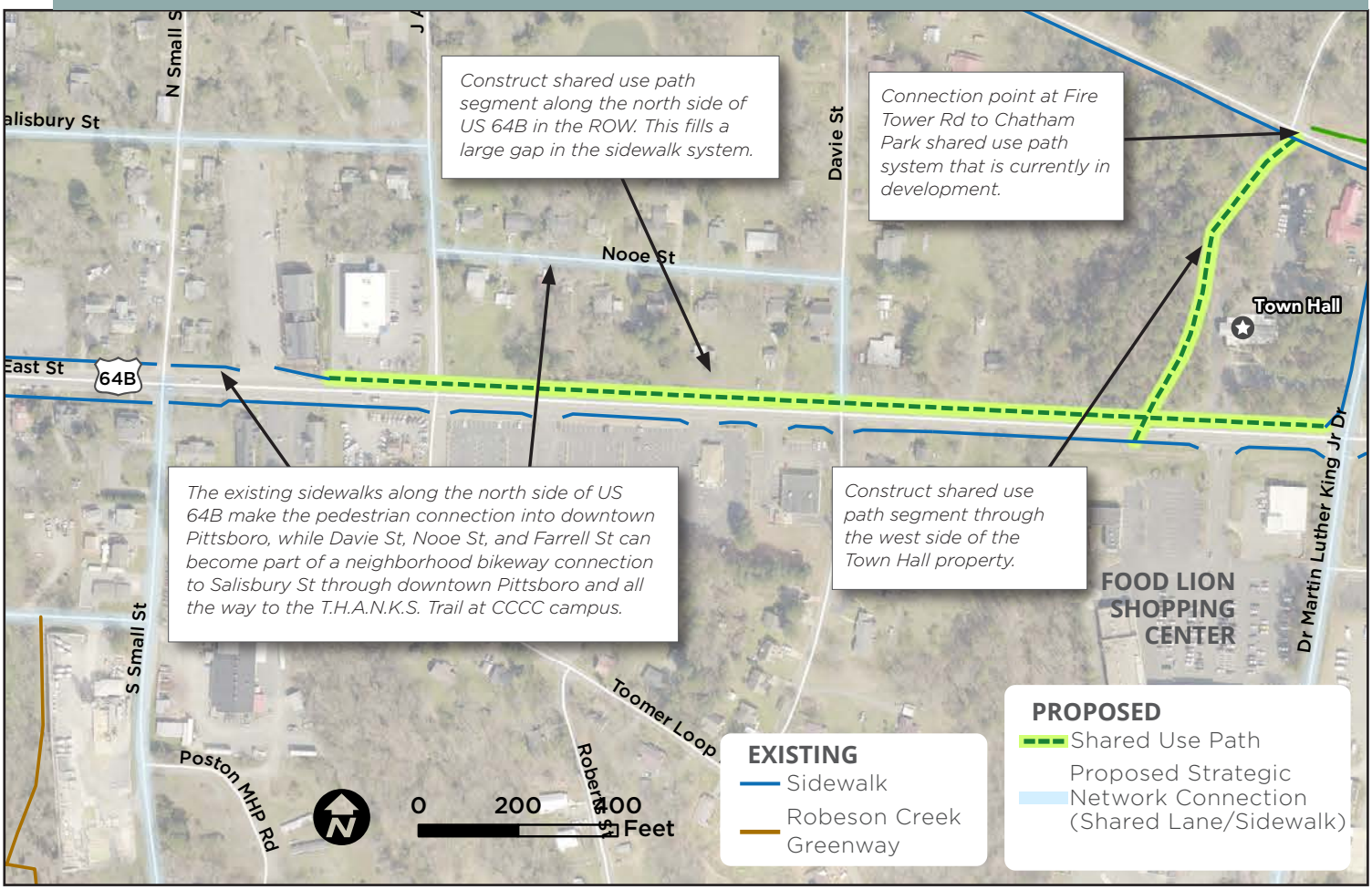
TOWN TO VILLAGE TRAIL



NC 87 TO CCCC SIDEWALK

This project fills a gap in the sidewalk network from the NC 87/US 64B intersection to the Central Carolina Community College campus, connecting to the T.H.A.N.K.S Trail and several businesses along the way.

TYPE

» Sidewalk

TRIP GENERATORS

» CCCC

» Businesses along US 64B

» Agriculture Extension Building

» Chatham Community Library

POTENTIAL RIGHT-OF-WAY NEEDS

» ROW acquisition likely needed along several of the properties where there roadway ROW is narrower

PARTNERSHIPS

» Town of Pittsboro

» NCDOT

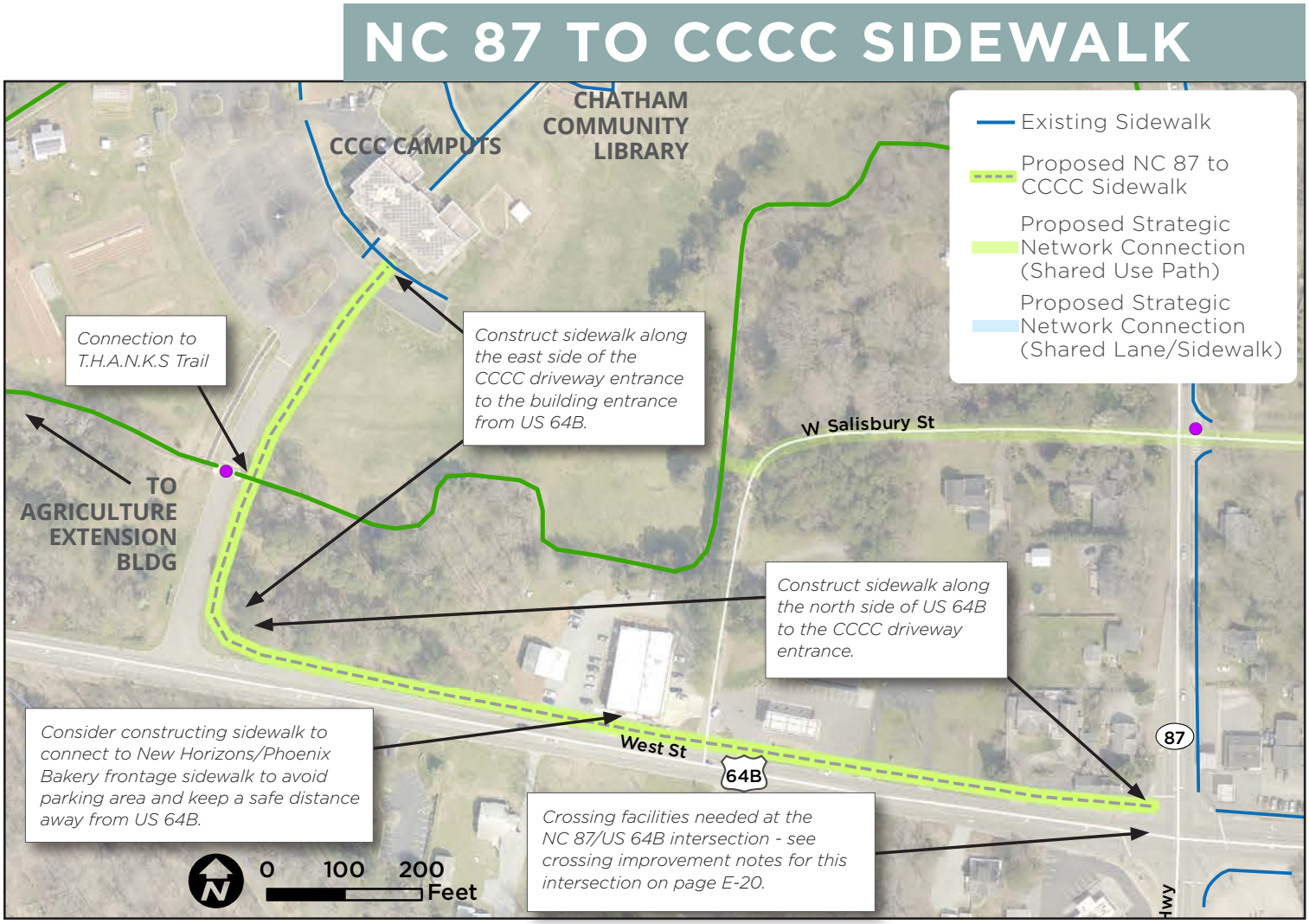
» CCCC

IMPLEMENTATION

» STI Project - this project has is been submitted in previous rounds of the STI process, but has not been funded

COST ESTIMATE

» TBD



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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **NORTHWOOD HS SIDEPATH**

DESCRIPTION:
750 FT ASPHALT SIDE PATH ALONG US 15-501 N FROM LOWES DRIVE TO BETWEEN US-64 EASBOUND RAMP AND US-64 OVERPASS.
400 FT TRAVEL LANE AND BIKEWAY MARKINGS ALONG US 15-501 N FROM US-64 EASTBOUND RAMP TO US-64 OVERPASS.
275 FT TRAVEL LANE AND BIKEWAY MARKINGS WITH CONCRETE BARRIER ALONG US 15-501 N US-64 OVERPASS.
2300 FT ASPHALT SIDE PATH ALONG US 15-501 N FROM N US-64 OVERPASS TO RUSSETT RUN.

TOTAL LENGTH:	**0.7 MILES**
EST. CONSTRUCTION COST:*	**$950,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$56,000.00	$56,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$9,000.00	$9,000.00
0003	0043000000-N	226	GRADING	1	LS	$169,000.00	$169,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	1,390	TON	$45.00	$62,550.00
0005	1275000000-E	600	PRIME COAT	1,310	GAL	$10.00	$13,100.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	390	TON	$170.00	$66,300.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	25	TON	$700.00	$17,500.00
0008	2605000000-N	848	CONCRETE CURB RAMP	4	EA	$2,500.00	$10,000.00
0009	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	1,250	LF	$35.00	$43,750.00
0010	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$40,000.00	$40,000.00
0011	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	3,850	LF	$2.00	$7,700.00
0012	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	675	LF	$2.25	$1,518.75
0013	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	2	EA	$250.00	$500.00
0014	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	3,450	LF	$1.50	$5,175.00
0015	8503000000-E	460	CONCRETE BARRIER RAIL	280	LF	$150.00	$42,000.00
0016			SAFETY RAIL	1,250	LF	$40.00	$50,000.00
0017			EROSION CONTROL ALLOWANCE	1	LS	$35,000.00	$35,000.00
0018			MINOR ITEMS (5%)	1	LS	$28,000.00	$28,000.00

CONSTRUCTION COST SUBTOTAL	$658,000.00
CONTINGENCY (30%)	$197,400.00
OPINION OF PROBABLE CONSTRUCTION COST	$855,400.00
NCDOT ADMINISTRATION FEE (10%)	$85,540.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$940,940.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
BASED ON 2019 UNIT PRICES, INFLATION NOT INCLUDED.
EXCLUDES SPECIAL LANDSCAPING, LIGHTING, AND GREEN INFRASTRUCTURE.
EXCLUDES ROW ACQUISITION, ENGINEERING DESIGN, PERMITTING, AND CONSTRUCTION ENGINEERING & INSPECTION.

COMPUTED BY CJA
DATE 3/25/2020

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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **US 64B & US 15/501 CROSSING IMPROVEMENTS**

DESCRIPTION:

US 64B / NC 87 INTERSECTION - PEDESTRIAN SIGNALS AND CROSSWALKS

US 64B / FAYETTEVILLE ST INTERSECTION - REFUGE ISLAND, CURB RAMPS, AND CROSSWALKS

US 64B / McCLENAHAN ST INTERSECTION - REFUGE ISLAND, CURB RAMPS, AND CROSSWALKS

US 64B / MASONIC ST INTERSECTION - REFUGE ISLAND, CURB RAMPS, AND CROSSWALKS

US 64B / SMALL ST INTERSECTION - REFUGE ISLAND, CURB RAMPS, AND CROSSWALKS

US 64B / MLK DR INTERSECTION - PEDESTRIAN SIGNALS, CURB RAMPS, AND CROSSWALKS

US 15/501 MIDBLOCK NEAR MIDWAY ST - RRFB AND RUMBLE STRIPS

US 15/501 / PITTSBORO ELEMENTARY SCHOOL RD INTERSECTION - PEDESTRIAN SIGNALS, CURB RAMPS, CROSSWALKS, AND PEDESTRIAN LANE

US 15/501 / CHATHAM ST INTERSECTION - RRFB, CURB BUMPOUTS, AND RAMPS

US 15/501 / SALISBURY ST INTERSECTION - ADA ACCESS ROUTE AND CROSSWALKS

TOTAL LENGTH:	**NA**
EST. CONSTRUCTION COST:*	**$570,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$56,000.00	$56,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$14,000.00	$14,000.00
0003	0043000000-N	226	GRADING	1	LS	$10,000.00	$10,000.00
0004	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	25	LF	$150.00	$3,750.00
0005	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	140	LF	$70.00	$9,800.00
0006	2591000000-E	848	4" CONCRETE SIDEWALK	27	SY	$175.00	$4,666.67
0007	2605000000-N	848	CONCRETE CURB RAMP	22	EA	$2,500.00	$55,000.00
0008	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	108	SY	$150.00	$16,200.00
0009	4025000000-E		CONTR FURN, ***SIGN (E)	162	SF	$20.00	$3,240.00
0010	4102000000-N	904	SIGN ERECTION, TYPE E	18	EA	$100.00	$1,800.00
0011	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$50,000.00	$50,000.00
0012	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	630	LF	$2.00	$1,260.00
0013	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	120	LF	$2.25	$270.00
0014	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	2,560	LF	$12.50	$32,000.00
0015	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	640	LF	$1.50	$960.00
0016	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	80	LF	$3.00	$240.00
0017	4915000000-E	1264	7' U-CHANNEL POSTS	18	EA	$100.00	$1,800.00
0018			PEDESTRIAN SIGNALS	1	LS	$100,000.00	$100,000.00
0019			RECTANGULAR RAPID-FLASHING BEACON (BOTH SIDES OF STREET)	2	EA	$10,000.00	$20,000.00
0020			MINOR ITEMS (5%)	1	LS	$16,000.00	$16,000.00

CONSTRUCTION COST SUBTOTAL	$397,000.00
CONTINGENCY (30%)	$119,100.00
OPINION OF PROBABLE CONSTRUCTION COST	$516,100.00
NCDOT ADMINISTRATION FEE (10%)	$51,610.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$567,710.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
BASED ON 2019 UNIT PRICES, INFLATION NOT INCLUDED.
EXCLUDES SPECIAL LANDSCAPING, LIGHTING, AND GREEN INFRASTRUCTURE.

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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **PITTSBORO ELEMENTARY SIDEWALK LINK**

DESCRIPTION: **620 FT ALONG PITTSBORO ELEM SCHOOL RD FROM FARRELL ST TO McCLENAHAN ST.**

TOTAL LENGTH:	**0.1 MILES**
EST. CONSTRUCTION COST:*	**$145,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$9,000.00	$9,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$2,000.00	$2,000.00
0003	0043000000-N	226	GRADING	1	LS	$8,000.00	$8,000.00
0004	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	150	LF	$70.00	$10,500.00
0005	2591000000-E	848	4" CONCRETE SIDEWALK	344	SY	$70.00	$24,111.11
0006	2605000000-N	848	CONCRETE CURB RAMP	2	EA	$2,500.00	$5,000.00
0007	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$5,000.00	$5,000.00
0008			UTILITY POLE RELOCATION	1	EA	$20,000.00	$20,000.00
0009			DRAINAGE ALLOWANCE	1	LS	$8,000.00	$8,000.00
0010			EROSION CONTROL ALLOWANCE	1	LS	$5,000.00	$5,000.00
0011			MINOR ITEMS (5%)	1	LS	$4,000.00	$4,000.00

CONSTRUCTION COST SUBTOTAL	$101,000.00
CONTINGENCY (30%)	$30,300.00
OPINION OF PROBABLE CONSTRUCTION COST	$131,300.00
NCDOT ADMINISTRATION FEE (10%)	$13,130.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$144,430.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
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EXCLUDES SPECIAL LANDSCAPING, LIGHTING, AND GREEN INFRASTRUCTURE.
EXCLUDES ROW ACQUISITION, ENGINEERING DESIGN, PERMITTING, AND CONSTRUCTION ENGINEERING & INSPECTION.

COMPUTED BY CJA
DATE 3/25/2020

alta ENGINEERING
NC License #P-1301

PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **VILLAGE APARTMENTS CONNECTOR**

DESCRIPTION:
880 FT ASPHALT SHARED USE PATH ALONG CAMP DR FROM 87 TO HONEYSUCKLE DR.
400 FT SHARED LANE MARKINGS ALONG HONEYSUCKLE DR.
540 FT ASPHALT SHARED USE PATH WITH PEDESTRIAN BRIDGE OVER FLOODPLAIN FROMFROM HONEYSUCKLE DR TO RECTORY ST.
190 FT SHARED LANE MARKINGS ALONG RECTORY ST.

TOTAL LENGTH:	**0.4 MILES**
EST. CONSTRUCTION COST:*	**$750,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$38,000.00	$38,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$5,000.00	$5,000.00
0003	0043000000-N	226	GRADING	1	LS	$78,000.00	$78,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	650	TON	$50.00	$32,500.00
0005	1275000000-E	600	PRIME COAT	550	GAL	$15.00	$8,250.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	180	TON	$190.00	$34,200.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	15	TON	$750.00	$11,250.00
0008	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	190	LF	$70.00	$13,300.00
0009	2605000000-N	848	CONCRETE CURB RAMP	4	EA	$2,500.00	$10,000.00
0010	4025000000-E		CONTR FURN, ***SIGN (E)	36	SF	$20.00	$720.00
0011	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	4	LF	$70.00	$280.00
0012	4102000000-N	904	SIGN ERECTION, TYPE E	4	EA	$100.00	$400.00
0013	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$10,000.00	$10,000.00
0014	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	8	EA	$250.00	$2,000.00
0015			PEDESTRIAN BRIDGE	70	LF	$3,000.00	$210,000.00
0016			DRAINAGE ALLOWANCE	1	LS	$13,000.00	$13,000.00
0017			EROSION CONTROL ALLOWANCE	1	LS	$32,000.00	$32,000.00
0018			MINOR ITEMS (5%)	1	LS	$23,000.00	$23,000.00

CONSTRUCTION COST SUBTOTAL	$523,000.00
CONTINGENCY (30%)	$156,900.00
OPINION OF PROBABLE CONSTRUCTION COST	$679,900.00
NCDOT ADMINISTRATION FEE (10%)	$67,990.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$747,890.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **KIWANIS PARK CONNECTOR**

DESCRIPTION: **1165 FT ASPHALT SHARED USE PATH FROM RECTORY ST TO CEDAR LN AND CREDLE ST.**

1580 FT SHARED LANE MARKINGS ALONG CEDAR LN, CREDLE ST FROM CEDAR LN TO LINDSEY ST, AND MIDWAY ST.

TOTAL LENGTH:	**0.5 MILES**
EST. CONSTRUCTION COST:*	**$310,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$19,000.00	$19,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$3,000.00	$3,000.00
0003	0043000000-N	226	GRADING	1	LS	$64,000.00	$64,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	530	TON	$55.00	$29,150.00
0005	1275000000-E	600	PRIME COAT	450	GAL	$17.50	$7,875.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	150	TON	$200.00	$30,000.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	10	TON	$800.00	$8,000.00
0008	4025000000-E		CONTR FURN, ***SIGN (E)	27	SF	$20.00	$540.00
0009	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	3	LF	$70.00	$210.00
0010	4102000000-N	904	SIGN ERECTION, TYPE E	3	EA	$100.00	$300.00
0011	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$10,000.00	$10,000.00
0012	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	12	EA	$250.00	$3,000.00
0013	4915000000-E	1264	7' U-CHANNEL POSTS	3	EA	$100.00	$300.00
0015			DRAINAGE ALLOWANCE	1	LS	$13,000.00	$13,000.00
0016			EROSION CONTROL ALLOWANCE	1	LS	$18,000.00	$18,000.00
0017			MINOR ITEMS (5%)	1	LS	$9,000.00	$9,000.00

CONSTRUCTION COST SUBTOTAL	$216,000.00
CONTINGENCY (30%)	$64,800.00
OPINION OF PROBABLE CONSTRUCTION COST	$280,800.00
NCDOT ADMINISTRATION FEE (10%)	$28,080.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$308,880.00**

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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **CHATHAM MARKETPLACE CONNECTOR**

DESCRIPTION: **460 FT ASPHALT SIDE PATH ALONG ALONG HILLSBORO ST FROM MIDWAY ST TO CHATHAM MARKETPLACE ENTRANCE.**

630 FT ASPHALT SHARED USE PATH ALONG HILLSBORO ST TO MASONIC ST .

510 FT SHARED LANE MARKINGS AT N MASONIC ST BEHIND CHATHAM MARKETPLACE .

630 FT ASPHALT SHARED USE PATH FROM CHATHAM MARKETPLACE TO CHATHAM MILL RD .

TOTAL LENGTH:	**0.4 MILES**
EST. CONSTRUCTION COST:*	**$540,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$33,000.00	$33,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$5,000.00	$5,000.00
0003	0043000000-N	226	GRADING	1	LS	$104,000.00	$104,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	790	TON	$50.00	$39,500.00
0005	1275000000-E	600	PRIME COAT	690	GAL	$15.00	$10,350.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	220	TON	$190.00	$41,800.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	15	TON	$750.00	$11,250.00
0008	2605000000-N	848	CONCRETE CURB RAMP	4	EA	$2,500.00	$10,000.00
0009	4025000000-E		CONTR FURN, ***SIGN (E)	18	SF	$20.00	$360.00
0010	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	2	LF	$70.00	$140.00
0011	4102000000-N	904	SIGN ERECTION, TYPE E	2	EA	$100.00	$200.00
0012	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$4,000.00	$4,000.00
0013	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	6	EA	$250.00	$1,500.00
0014	4915000000-E	1264	7' U-CHANNEL POSTS	2	EA	$100.00	$200.00
0015	5672000000-N	1515	RELOCATE FIRE HYDRANT	1	EA	$4,000.00	$4,000.00
0016			UTILITY POLE RELOCATION	2	EA	$20,000.00	$40,000.00
0017			DRAINAGE ALLOWANCE	1	LS	$15,000.00	$15,000.00
0018			EROSION CONTROL ALLOWANCE	1	LS	$34,000.00	$34,000.00
0019			MINOR ITEMS (5%)	1	LS	$16,000.00	$16,000.00

CONSTRUCTION COST SUBTOTAL	$371,000.00
CONTINGENCY (30%)	$111,300.00
OPINION OF PROBABLE CONSTRUCTION COST	$482,300.00
NCDOT ADMINISTRATION FEE (10%)	$48,230.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$530,530.00**

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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **ROBESON CREEK GREENWAY EXTENSION**

DESCRIPTION: **2780 FT ASPHALT SHARED USE PATH.**

INCLUDES PEDESTRIAN BRIDGE AND RETAINING WALL BETWEEN FLOODPLAIN AND LOTS 71452 AND 71454.

TOTAL LENGTH:	**0.5 MILES**
EST. CONSTRUCTION COST:*	**$960,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$49,000.00	$49,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$5,000.00	$5,000.00
0003	0043000000-N	226	GRADING	1	LS	$199,000.00	$199,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	1,210	TON	$45.00	$54,450.00
0005	1275000000-E	600	PRIME COAT	1,080	GAL	$10.00	$10,800.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	360	TON	$170.00	$61,200.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	25	TON	$700.00	$17,500.00
0008	8802040000-E	SP	CIP GRAVITY RETAINING WALLS	900	SF	$75.00	$67,500.00
0009			PEDESTRIAN BRIDGE	30	LF	$3,000.00	$90,000.00
0010			DRAINAGE ALLOWANCE	1	LS	$19,000.00	$19,000.00
0011			EROSION CONTROL ALLOWANCE	1	LS	$63,000.00	$63,000.00
0012			MINOR ITEMS (5%)	1	LS	$29,000.00	$29,000.00

CONSTRUCTION COST SUBTOTAL	$666,000.00
CONTINGENCY (30%)	$199,800.00
OPINION OF PROBABLE CONSTRUCTION COST	$865,800.00
NCDOT ADMINISTRATION FEE (10%)	$86,580.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$952,380.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
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PLANNING ESTIMATE

PITTSBORO BICYCLE & PEDESTRIAN PLAN

LOCATION: **TOWN TO VILLAGE TRAIL**

DESCRIPTION: **2020 FT ASPHALT SIDE PATH ALONG US 64B FROM N SMALL ST TO DR MARTIN LUTHER KING JR DR .**

2000 FT ASPHALT SHARED USE PATH FROM US 64B TO THOMPSON ST.

TOTAL LENGTH:	**0.8 MILES**
EST. CONSTRUCTION COST:*	**$910,000**

COUNTY: CHATHAM DIVISION: 8

ITEM NO. LINE. NO.	ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
			ROADWAY ITEMS				
0001	0000100000-N	800	MOBILIZATION	1	LS	$56,000.00	$56,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$9,000.00	$9,000.00
0003	0043000000-N	226	GRADING	1	LS	$181,000.00	$181,000.00
0004	1121000000-E	520	AGGREGATE BASE COURSE	1,790	TON	$40.00	$71,600.00
0005	1275000000-E	600	PRIME COAT	1,640	GAL	$12.50	$20,500.00
0006	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	510	TON	$150.00	$76,500.00
0007	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	35	TON	$675.00	$23,625.00
0008	2605000000-N	848	CONCRETE CURB RAMP	11	EA	$2,500.00	$27,500.00
0009	4399000000-N	1105	TEMPORARY TRAFFIC CONTROL	1	LS	$10,000.00	$10,000.00
0010			UTILITY POLE RELOCATION	2	EA	$20,000.00	$40,000.00
0011			DRAINAGE ALLOWANCE	1	LS	$22,000.00	$22,000.00
0012			EROSION CONTROL ALLOWANCE	1	LS	$68,000.00	$68,000.00
0013			MINOR ITEMS (5%)	1	LS	$27,000.00	$27,000.00

CONSTRUCTION COST SUBTOTAL	$633,000.00
CONTINGENCY (30%)	$189,900.00
OPINION OF PROBABLE CONSTRUCTION COST	$822,900.00
NCDOT ADMINISTRATION FEE (10%)	$82,290.00
OPINION OF TOTAL CONSTRUCTION COST (2019)	**$905,190.00**

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Comprehensive Network

The comprehensive network displayed on the following page was largely developed during past planning processes such as the 2009 Pedestrian Plan, 2011 Chatham County Bicycle Plan, and 2019 One Pittsboro Parks & Recreation System Master Plan. This comprehensive network should be built incrementally over time. These are long term recommendations that may be implemented in conjunction with future roadway projects, new development, and/or a myriad of potential public/private/non-profit sector partnerships. While longer term, they are an important vision of this plan, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating bicycle and pedestrian facilities. As progress is made on the infrastructure recommendations displayed in Chapter 3 and earlier in this Appendix, new projects should be selected from the comprehensive network map of recommendations.

REGIONAL TRAILS AS AN ECONOMIC DEVELOPMENT OPPORTUNITY FOR PITTSBORO

Pittsboro is uniquely positioned to implement several trails that can serve as regional connections or destinations in themselves: Chatham County Bike Routes, The Haw River Trail, The Pittsboro to Sanford Rail Trail, and the Town to Village Trail as proposed in this plan. There are several existing features (developing Chatham Park shared use path system, signed Chatham County Bike Routes, and Haw River bike/ped bridge to Bynum) from which to build, but regional connectivity and associated economic benefits will only come with connected/continuous, dedicated bicycle and pedestrian facilities. This type of impact can come in the form of increased property values and revenue from increased tourism (in addition to savings associated with health benefits of active living). A research group (Headwaters Economics) compiled 120 studies on the impacts of trails in a single library, searchable by type of benefit, use, year, and region. For more on this topic, please refer to this research available at: https://headwaterseconomics.org/economic-development/trails-pathways/trails-research/.

ROBESON CREEK GREENWAY A

Over time, the existing 1/2 mile Robeson Creek Greenway should be extended nine miles to the Robeson Creek Boat Ramp at the Haw River/Jordan Lake. In combination with the future Haw River Trail and future Town to Village Trail, the Robeson Creek Greenway could be part of a scenic trail loop in the eastern part of the Pittsboro ETJ.

HAW RIVER TRAIL B

The Haw River Trail is a developing regional trail that will eventually connect through the Pittsboro ETJ Haw River section. This space along the Haw River in the Pittsboro ETJ is protected for conservation. It will include an unpaved hiking trail in the future, with multiple planned access points.

PITTSBORO TO SANFORD RAIL TRAIL C

This former railroad corridor has long been inactive and abandoned. With the future water/sewer line that will connect Pittsboro to Sanford, this is an opportunity to include recreation access and a greenway trail on top of the water/sewer line as part of this project, saving significant resources by combining the two projects.

TOWN TO VILLAGE TRAIL D

A direct connection between downtown Pittsboro and the future Village Center of the Chatham Park development will connect a high concentration of businesses and residences in the two distinct sections of Pittsboro. It will provide Chatham Park residents with direct walking/biking access to downtown Pittsboro businesses and destinations and vice versa. This can also serve as the main walking/biking route for downtown Pittsboro residents and visitors to connect to Haw River access points via the future Chatham Park development access points.

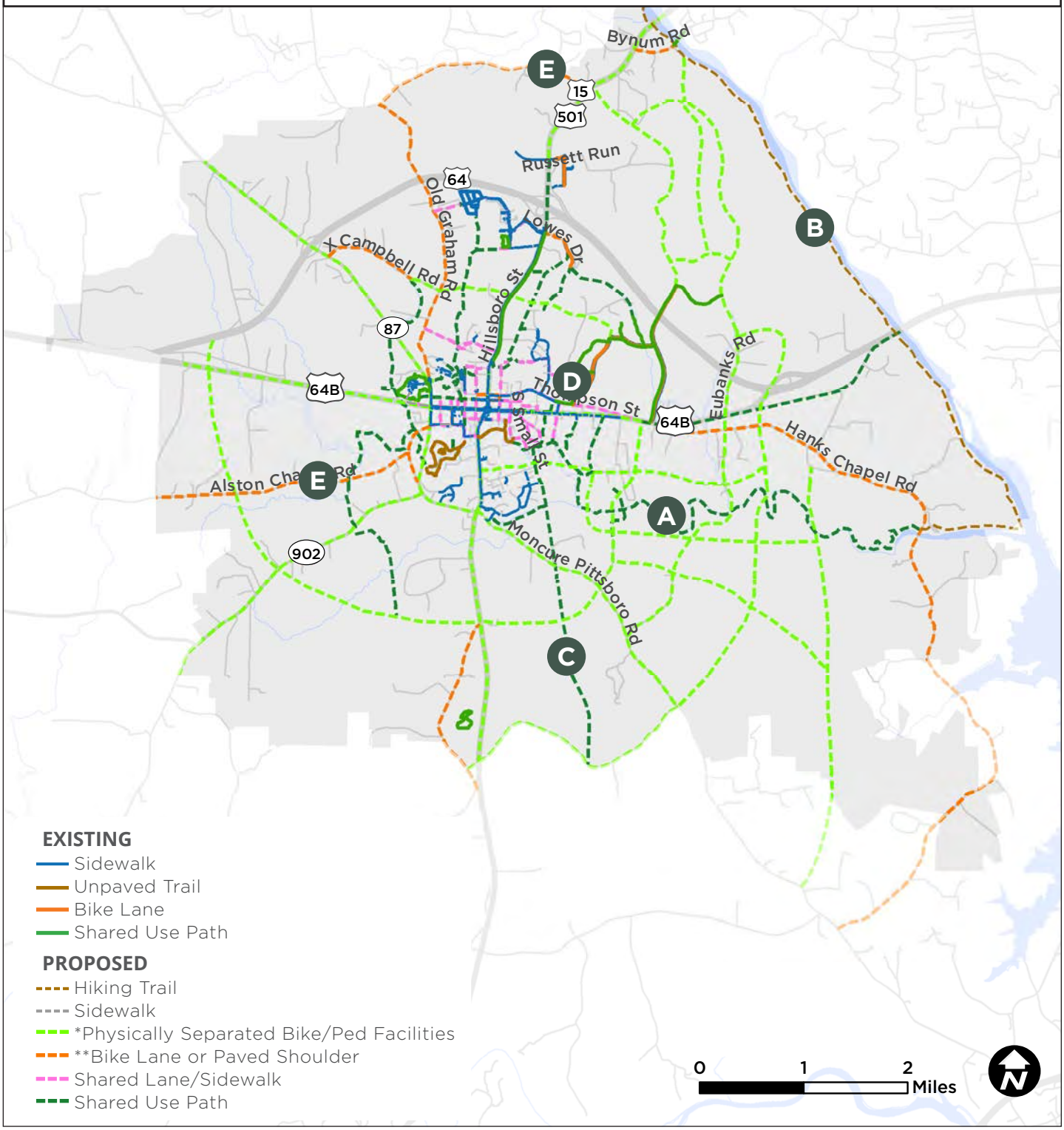
CHATHAM COUNTY BIKE ROUTES E

Chatham County Bike Route Loops A & B are signed through Pittsboro along Russell Chapel Church Rd, a short section of US 15/501, and Bynum Rd (part of Loop A), and Alston Chapel Rd, Old Goldston Rd, Pittsboro Elementary School Rd, Sanford Rd, Moncure Pittsboro Rd (part of Loop B). These mostly rural roads should have bicycle infrastructure such as paved shoulders/bike lanes with bicycle friendly rumble strips added to them during roadway improvement projects.

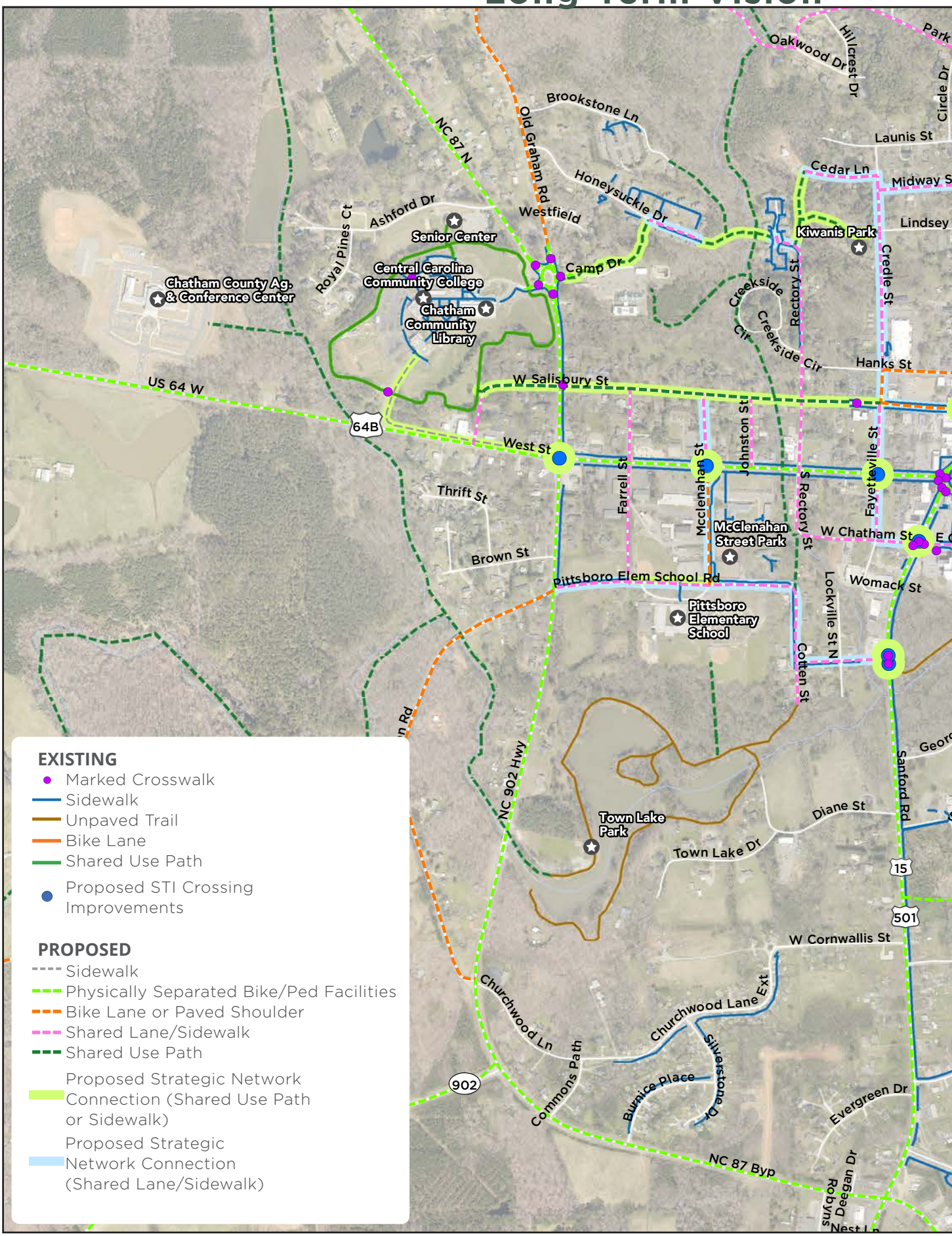
Long-Term Vision
Comprehensive Network

*For physically separated bike/ped facilities (from roadway): this refers to higher traffic volume/higher speed corridors where greater separation from motorist traffic is especially important. These roads include NC 87, US 64B, US 15/501, NC 902, Moncure-Pittsboro Rd, and future proposed collector and arterial roads. Solutions in the future should consider sidepath design, but should also consider a combination of separated bike lanes and sidewalks during the design process. If those design options are not feasible, paved shoulders with bicycle friendly rumble strips should be incorporated into the design.

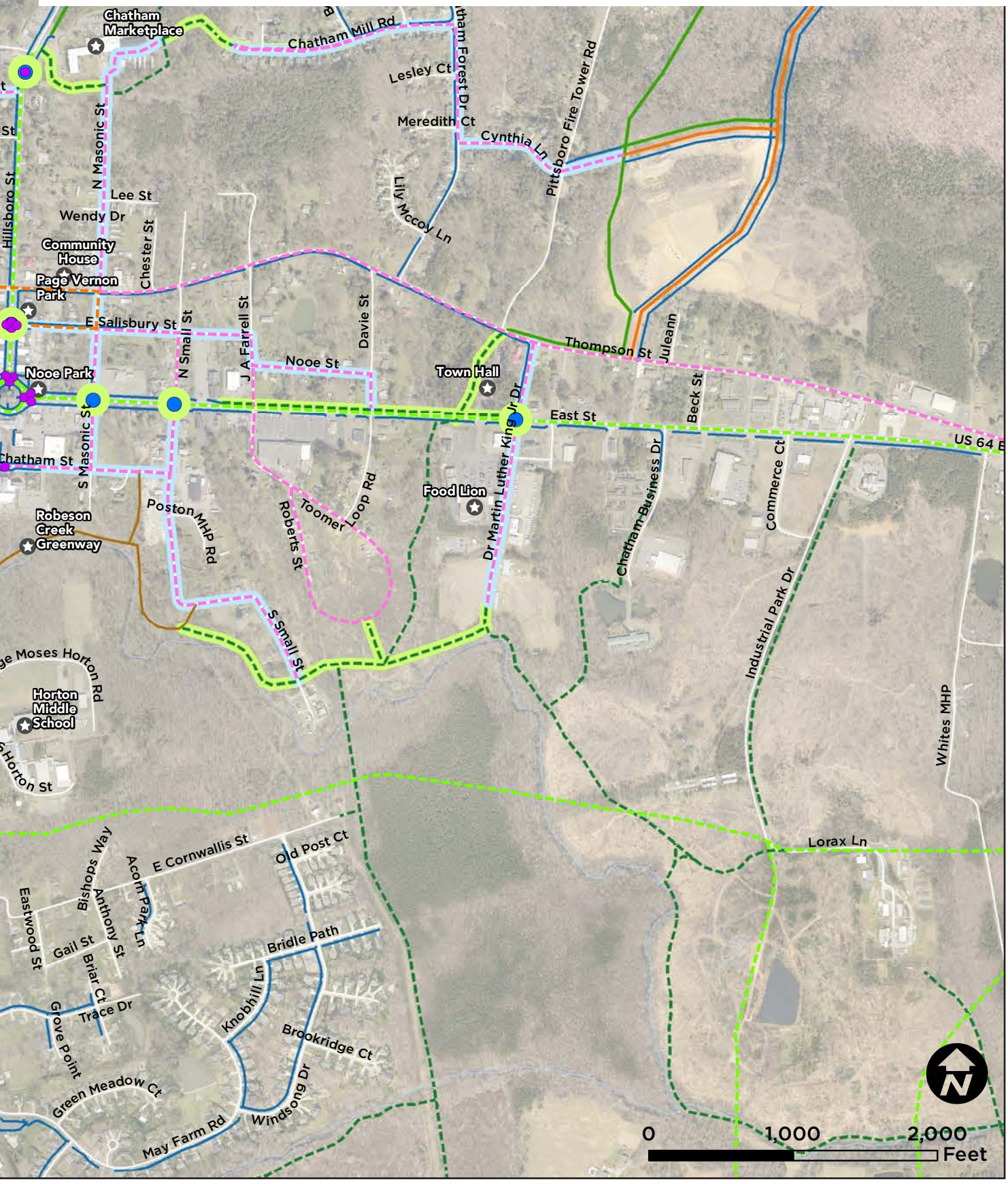
**For paved shoulder recommendations, most of these roadways are under 1,000 AADT with speed limits of 45-55 mph. The Small Town and Rural Multimodal Network Design Guide recommends at least 5' paved shoulder in these instances (http://ruraldesignguide.com/visually-separated/paved-shoulder).



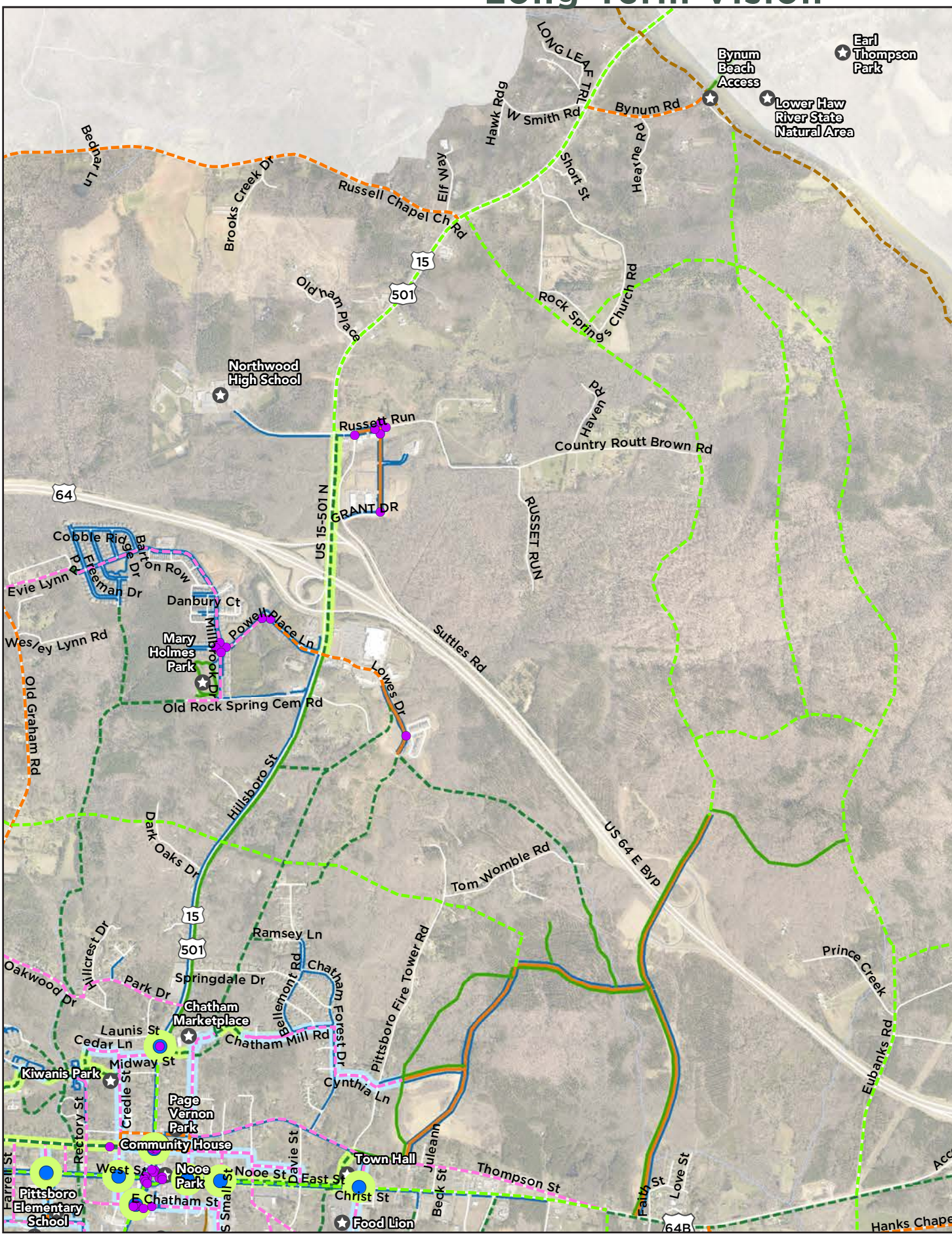
Long-Term Vision



Long-Term Vision
Comprehensive Network (Downtown Area)

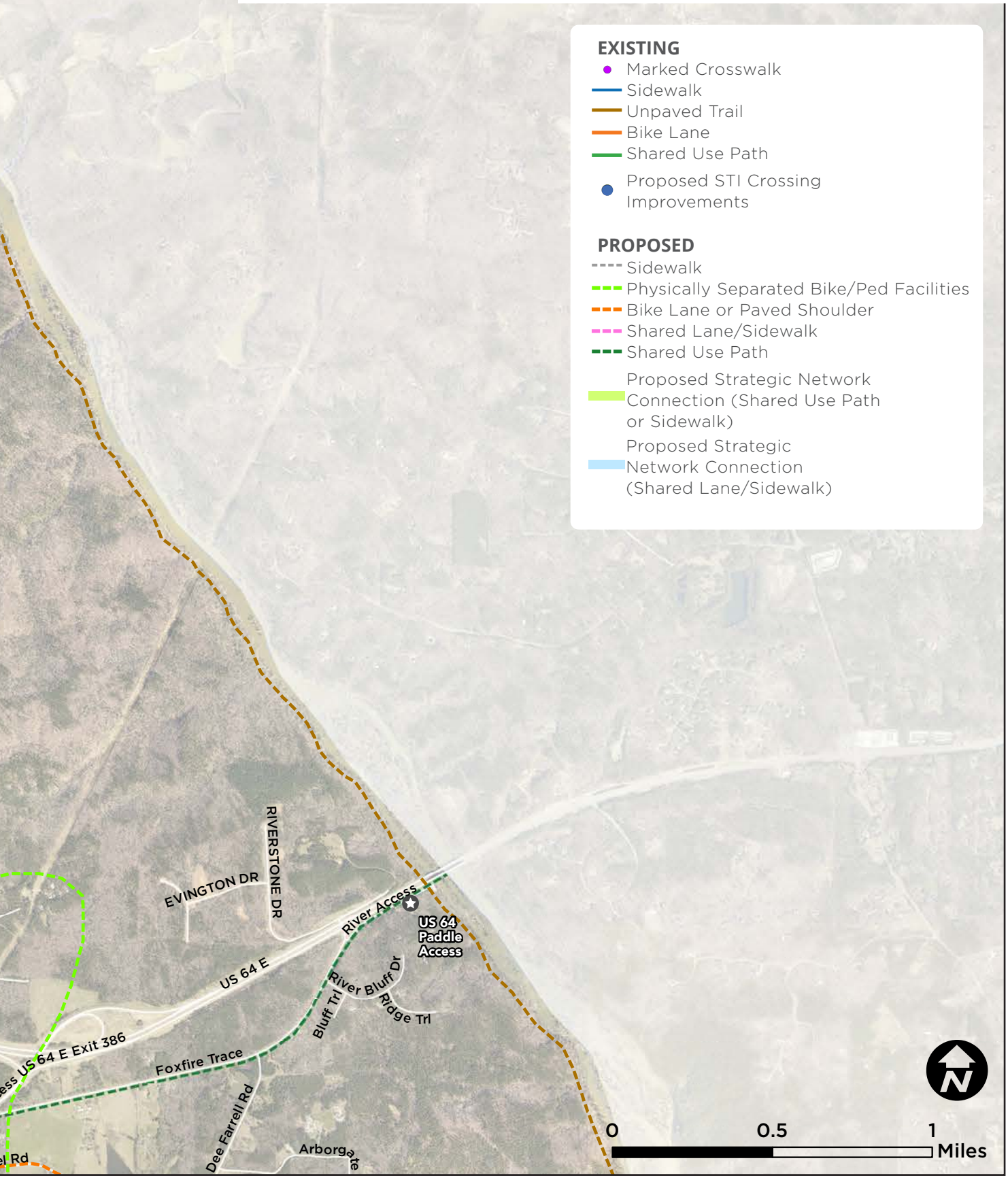


Long-Term Vision

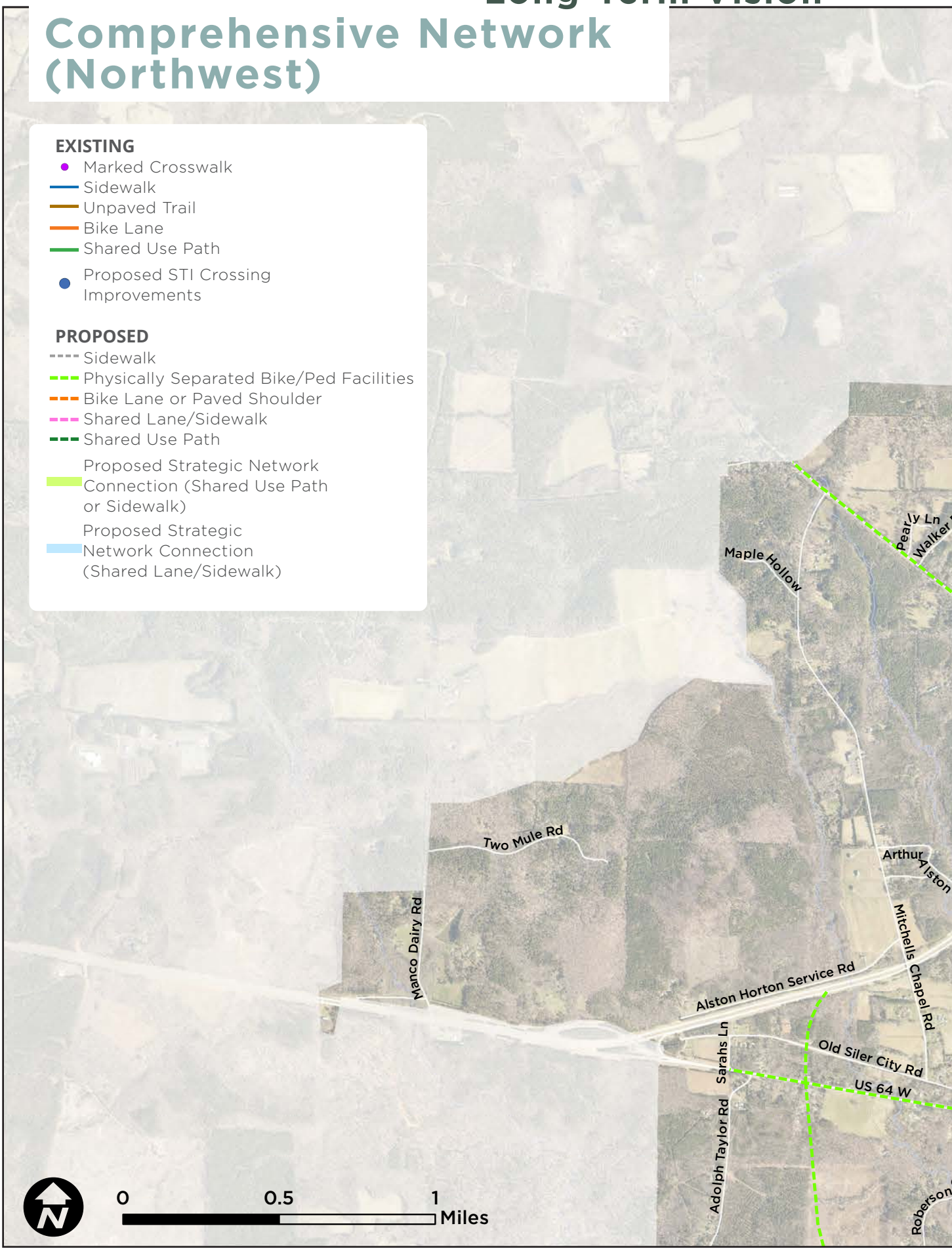


Long-Term Vision

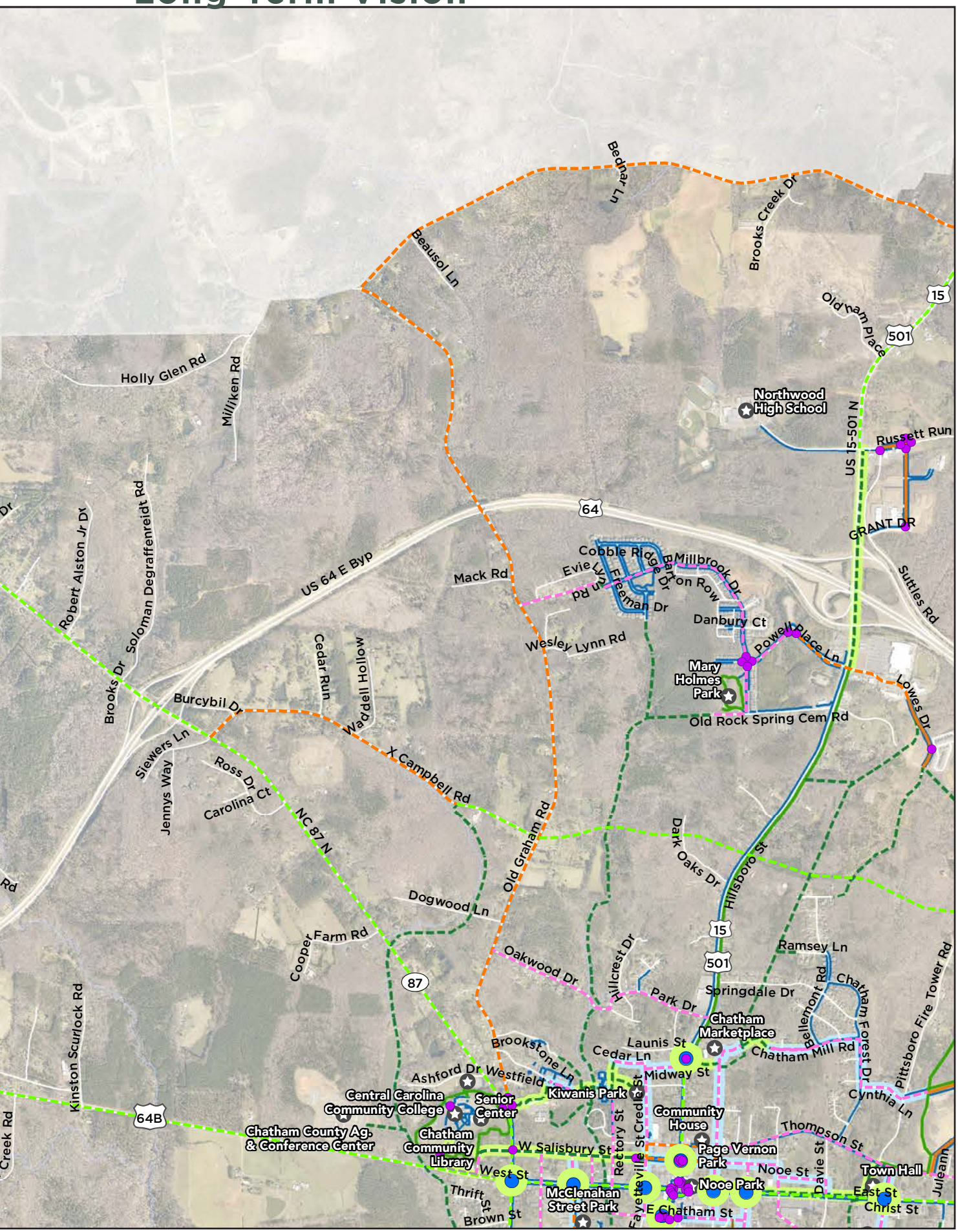
Comprehensive Network (Northeast)



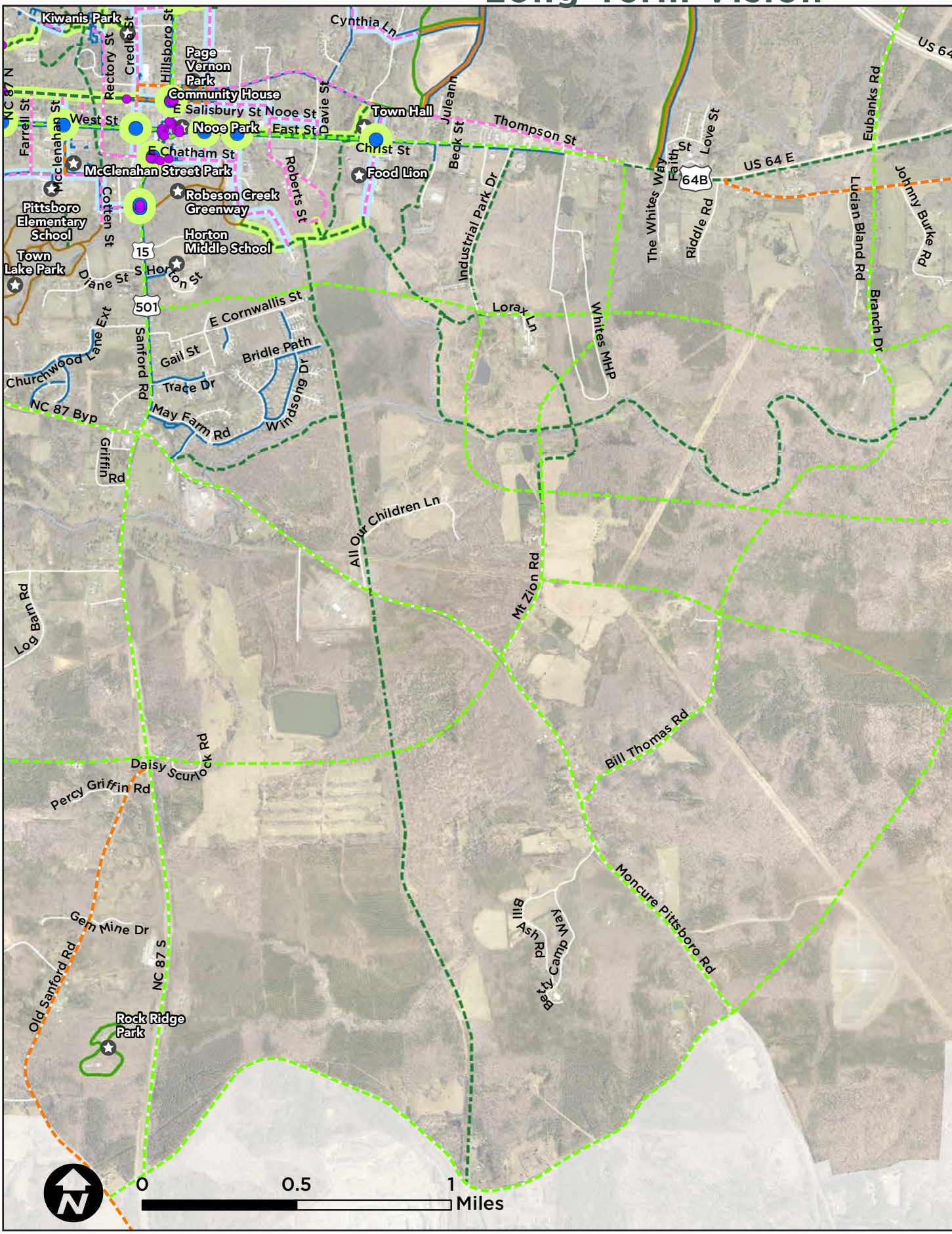
Comprehensive Network (Northwest)



Long-Term Vision

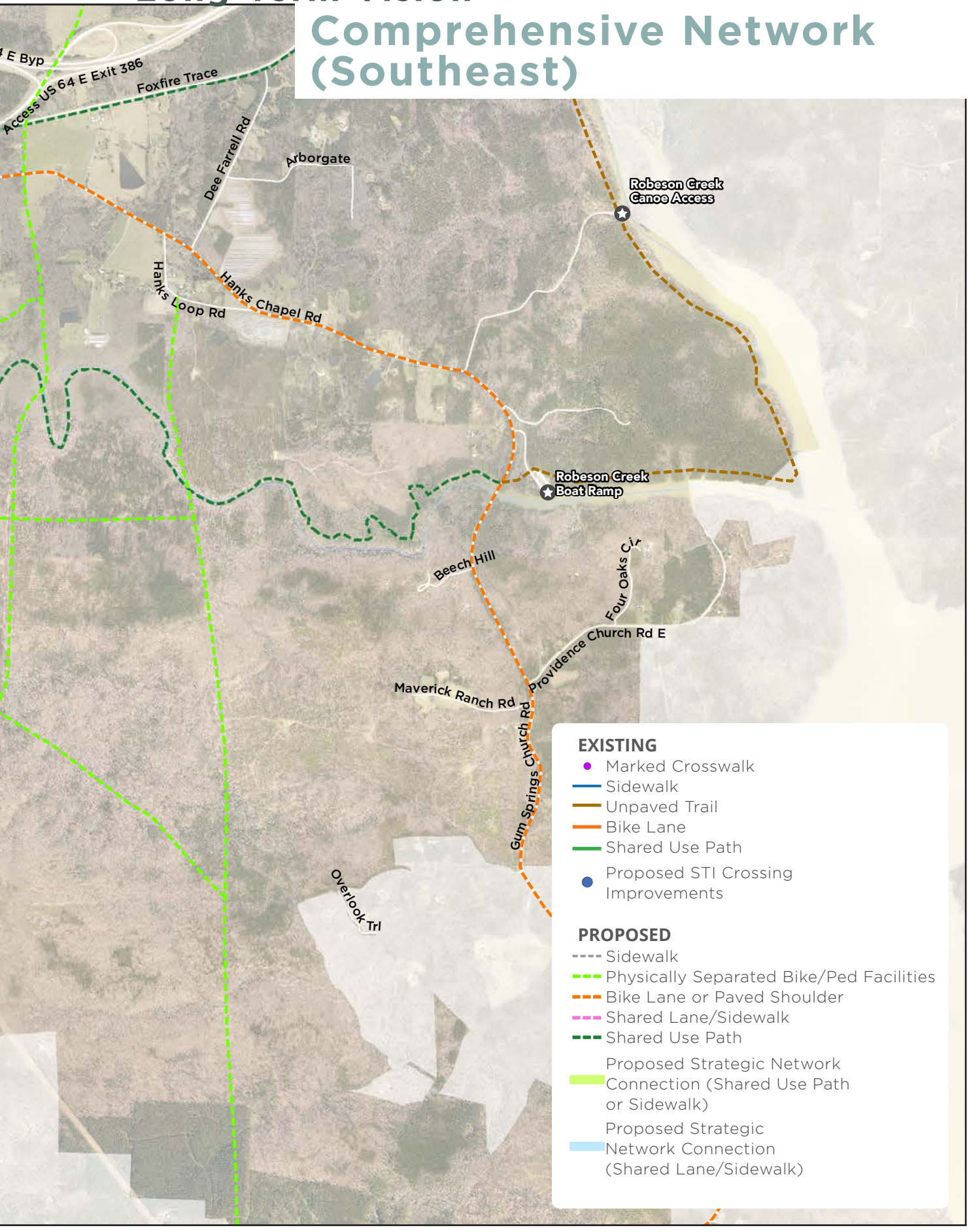


Long-Term Vision

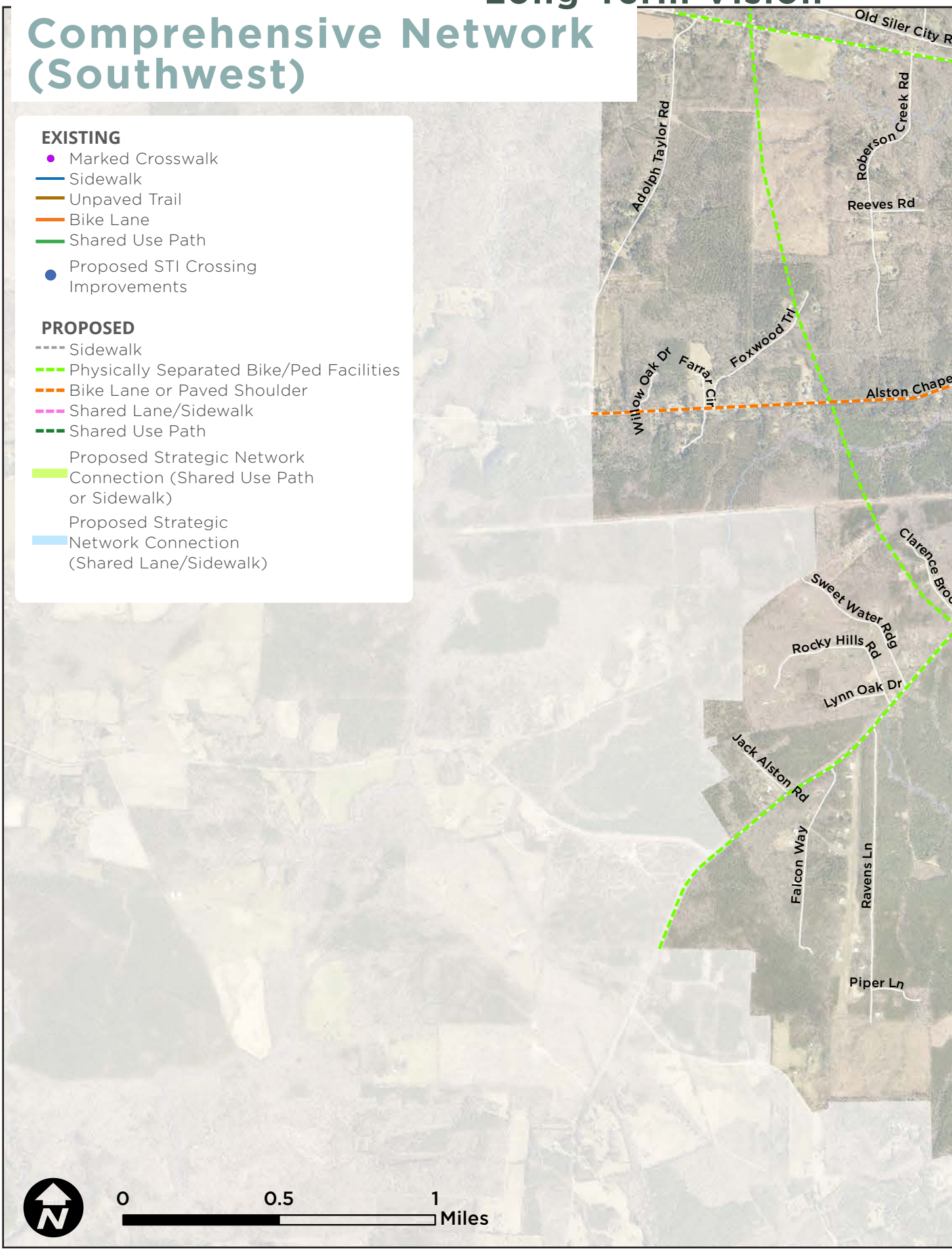


Long-Term Vision

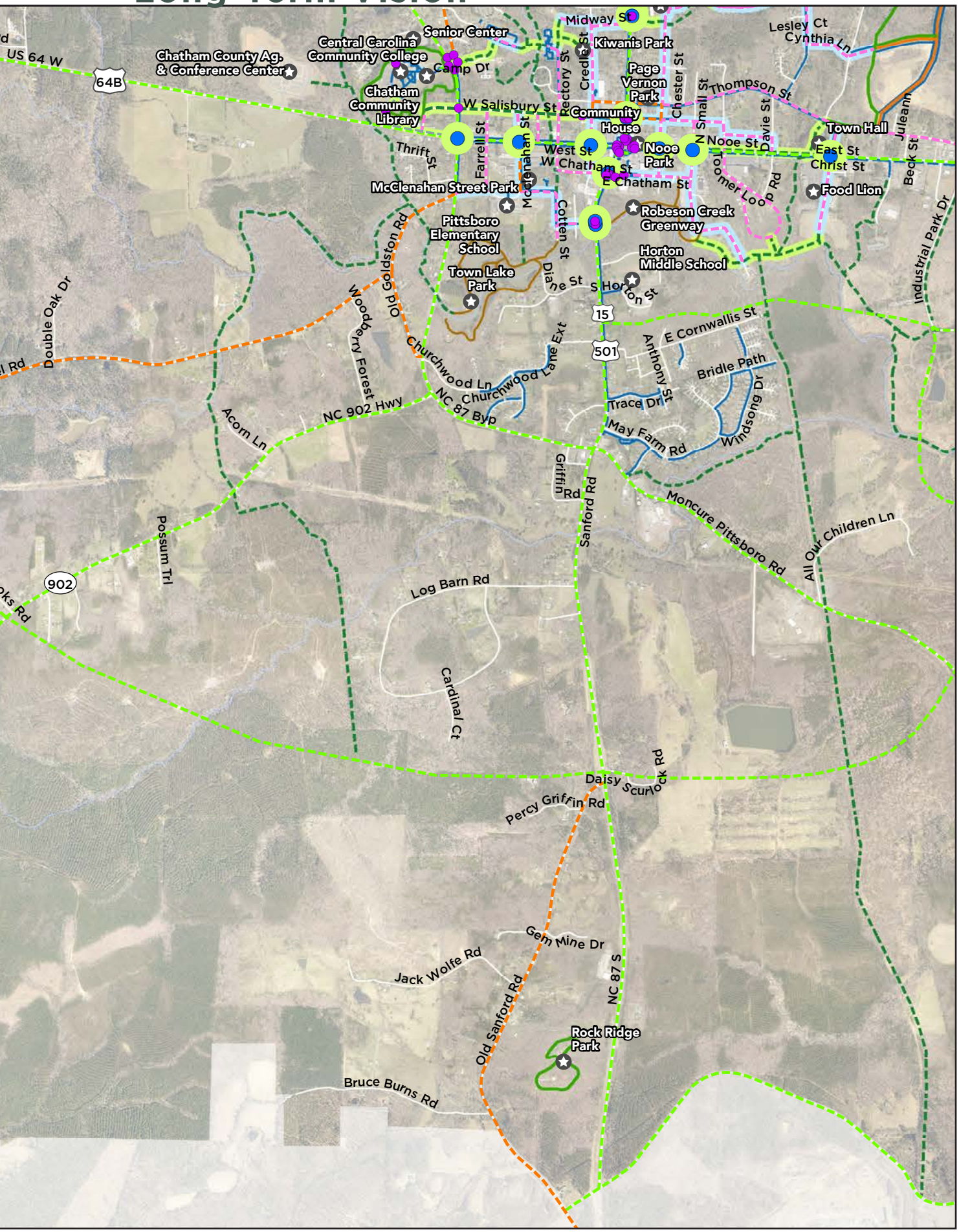
Comprehensive Network (Southeast)



Comprehensive Network (Southwest)



Long-Term Vision



PITTSBORO
BICYCLE & PEDESTRIAN PLAN

Prepared for the Town of Pittsboro, North Carolina & NCDOT
Prepared by Alta Planning + Design

2020