

5 THE NETWORK



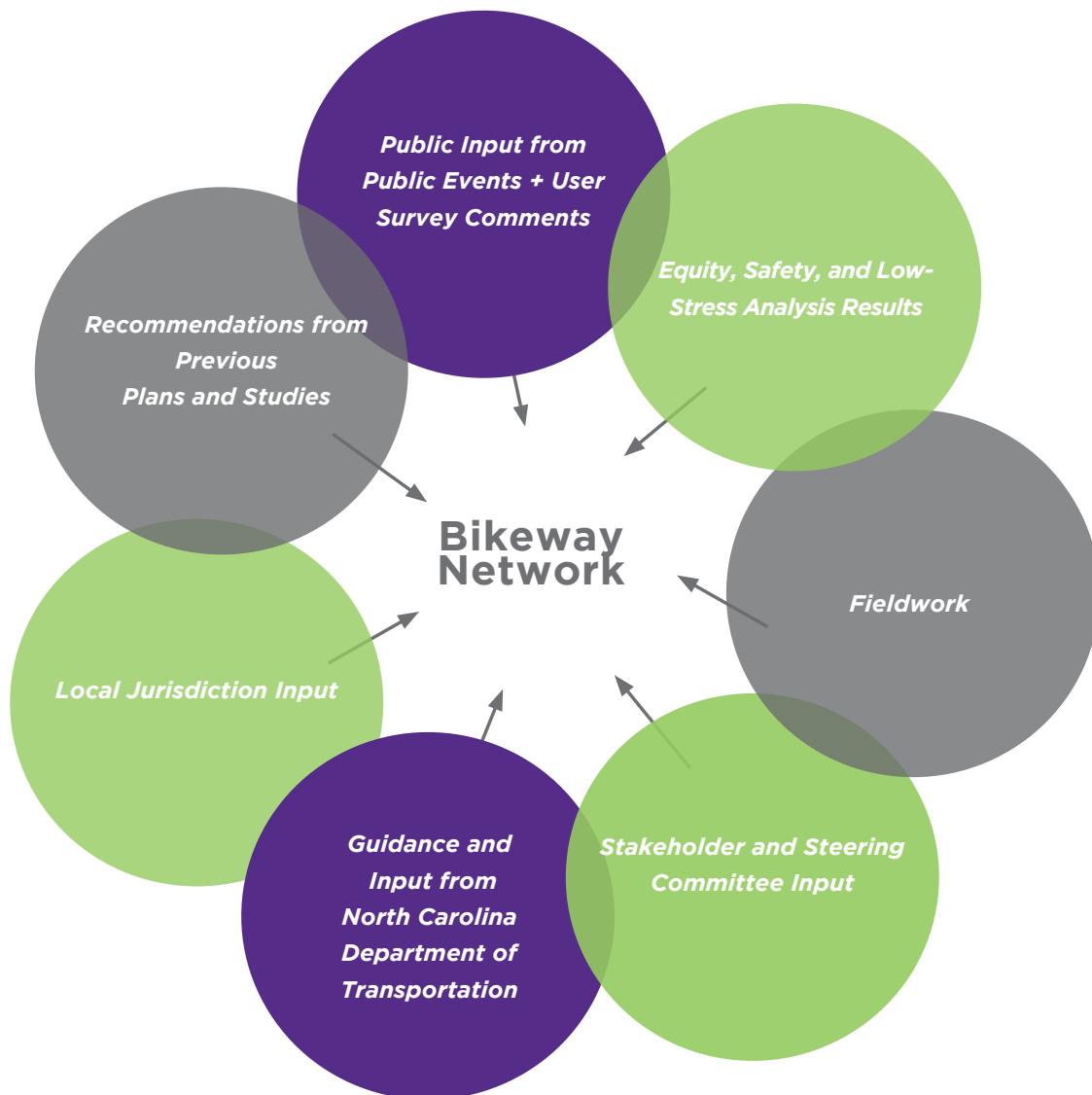
People on bikes in Carrboro



CARRBORO'S APPROACH

The proposed network seeks to:

- » Reflect our vision and goals
- » Address the needs of all ages and abilities in Carrboro
- » Balance the transportation system with safety as the #1 priority for all roadway users
- » Integrate seamlessly with future development and land uses



TYPES OF BIKEWAYS



Shared Use Path

Shared Use Paths are completely separated from motorized vehicular traffic and are constructed in their own corridor, often within an open-space area. Shared Use Paths can be paved and should be a minimum of 10' wide. Pavement widths of 12-, 14-, and even 16-feet are appropriate in high-use urban situations.



Private Connections

A private connection includes the development of a public bike facility on a privately owned street or land. The recommendations found here include shared use paths taking advantage of privately owned open space and shared use neighborways on privately owned residential streets. These facilities are often kept short to minimize impacts on private property but are critical components to a well-connected network.



Separated Bike Lanes

This updated Plan defines a separated bike lane as a bicycle facility that is physically separated from motor vehicle traffic within a street corridor. For this Plan, this includes cycle tracks and buffered bike lanes, in addition to the City's shared-use path and greenway network. The on-road physical separation can be achieved through parked cars, curbs, medians, bollards/traffic posts, planters, or marked buffered space between the bike lane and adjacent travel lane.



Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of people who bicycle. Bike lanes are almost always located on both sides of the road (except one way streets), and carry people who bicycle in the same direction as adjacent motor vehicle traffic. In some cases, climbing bicycle lanes (on uphill side) can be paired with shared-lane markings on the downhill section. The minimum width for a bike lane is 4 feet; five- and six-foot bike lanes are typical for collector and arterial roads.



Neighborways

In residential neighborhoods, neighborways—also known as bicycle boulevards—improve travel for people who bicycle while calming traffic and greening neighborhoods. Neighborways are shared by automobiles and bicycles, but at speeds that make travel more comfortable for people who bicycle. Typical treatments along neighborways may include mini-circles, chicanes, wayfinding signage, and shared-lane markings.



Advisory Bike Lane

An advisory bike lane defines a preferred space for people who bicycle and people who drive to operate on narrow streets that would otherwise be a shared roadway environment. Roads with advisory bike lanes accommodate low to moderate volumes of motor vehicle traffic and provide a prioritized space for people who bicycle with little or no widening of the paved roadway surface. A contraflow version allows people who bicycle to move against flow of motor vehicle traffic on one-way streets.



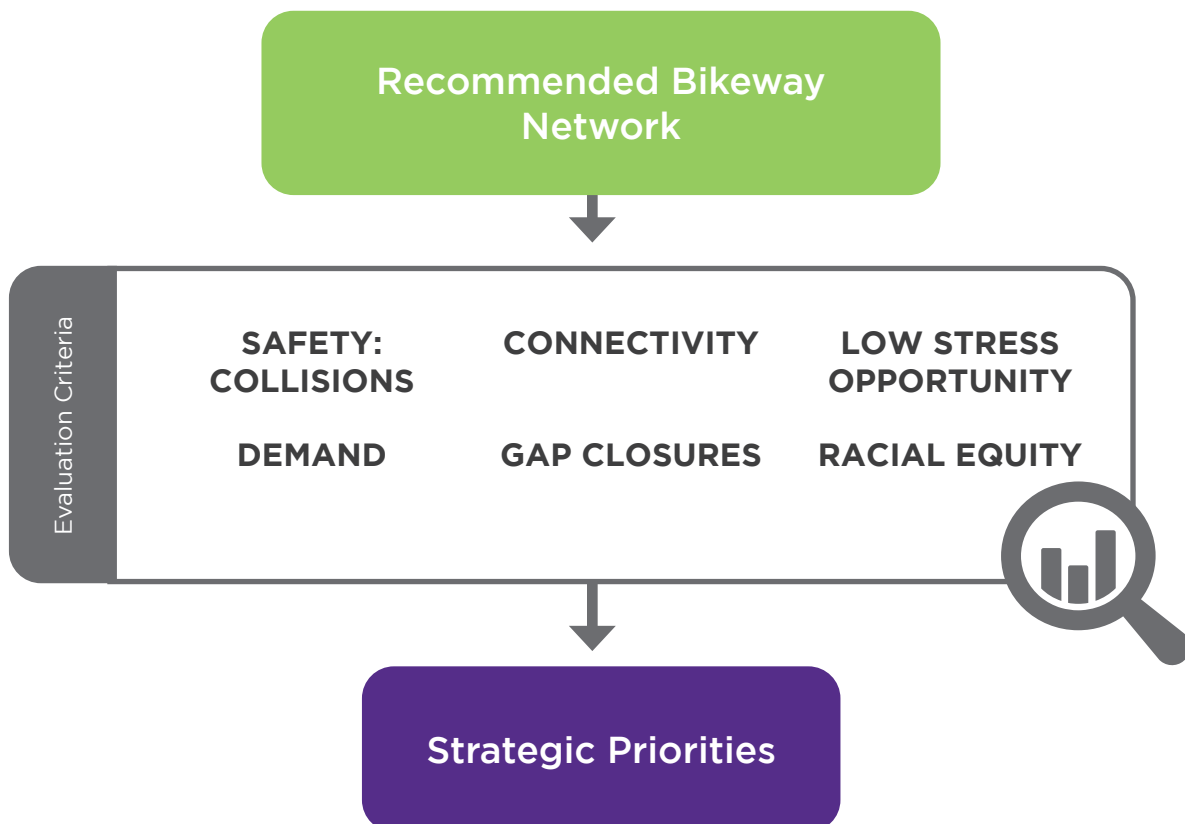
IDENTIFYING STRATEGIC PRIORITIES

This Plan is designed to serve as a short-term call to action document that identifies projects that provide critical connections yet are feasible and realistic to implement. Full implementation of the long term network will take many years and require a significant amount of investment.

The projects were selected using the evaluation criteria displayed in the graphic below and also through feedback from the public, the steering committee, and town staff.

There are 10 total strategic priorities that are recommended by this Plan. More details for five of the strategic projects start on page 50. These were selected to provide implementation techniques for a variety of facility types. They were also the most highlighted by the Steering Committee and general public. The additional five projects not described on the following pages are:

- » Claremont/Cobblestone Neighborway
- » Parkview Avenue Neighborway
- » Williams Street Neighborway
- » Elm Street/ Laurel Avenue Neighborway
- » West Carr Street Neighborway



Map 10: Existing, in Development, & Strategic Priorities

Attachment G-5 of 26

EXISTING BIKE NETWORK

- Bike Lanes
- Bike Lane One Side Only
- Sharrow
- Wide Shoulder
- Shared Use Path

STRATEGIC PRIORITY NETWORK RECOMMENDATIONS

- Separated Bike Lanes
- Bike Lanes
- Neighborway
- Shared Use Path
- Crossing Improvement

DEVELOPMENT STATUS

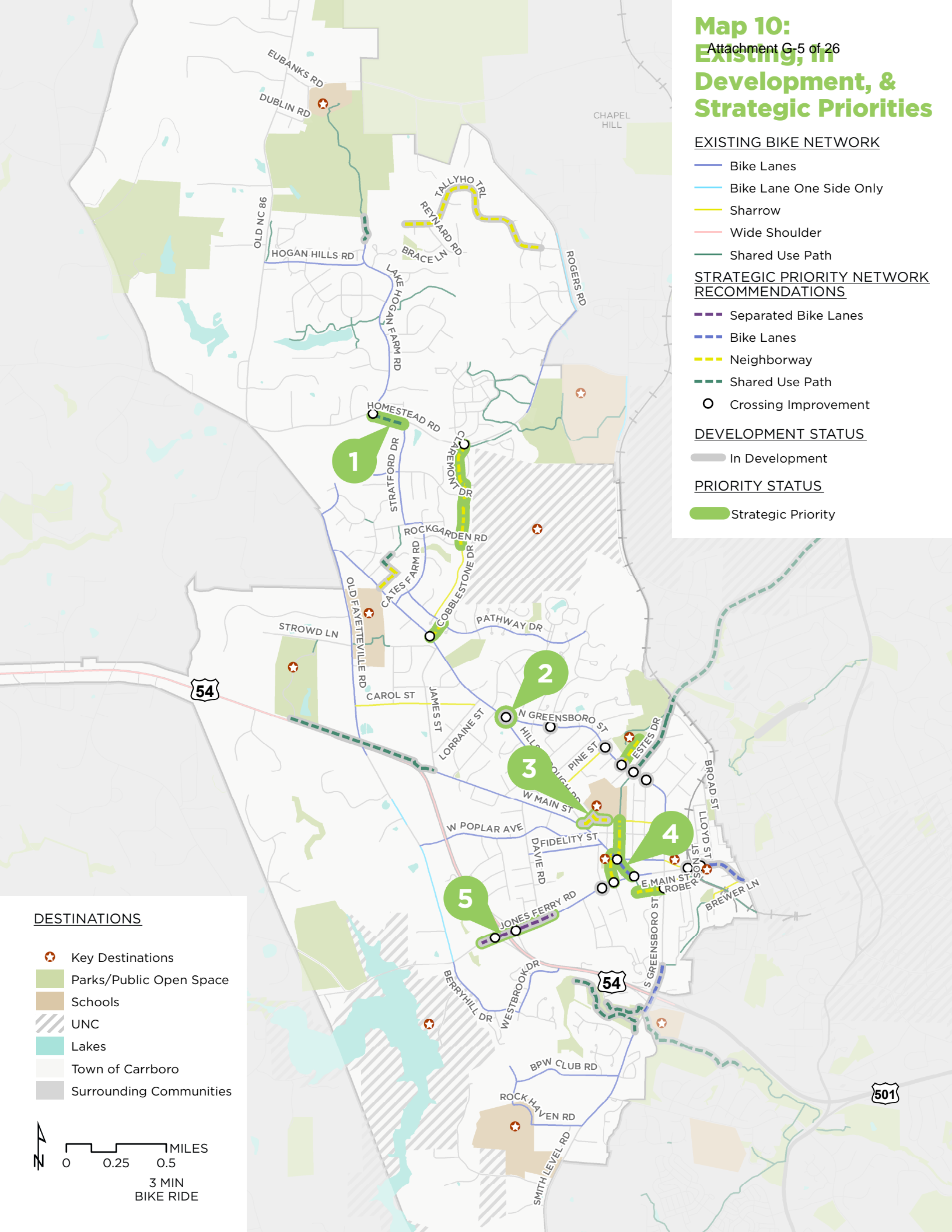
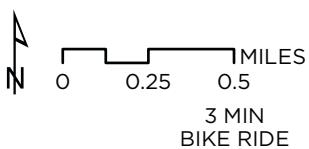
- In Development

PRIORITY STATUS

- Strategic Priority

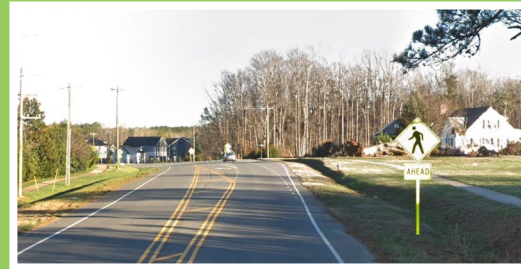
DESTINATIONS

- Key Destinations
- Parks/Public Open Space
- Schools
- UNC
- Lakes
- Town of Carrboro
- Surrounding Communities



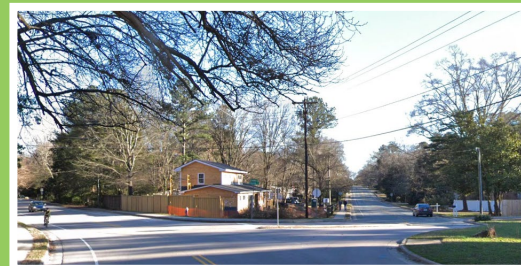
1 HOMESTEAD RD SIDEPAATH LINK pg. 52

This project will connect large residential hubs and fill a gap from north Carrboro to downtown by connecting bike lanes along Lake Hogan Farm Rd and Stratford Dr.



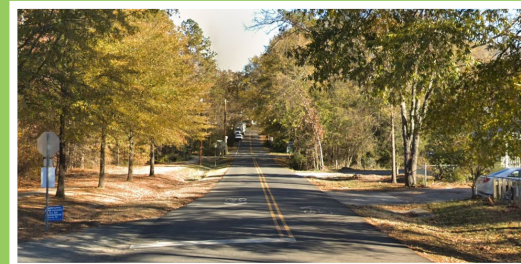
2 HILLSBOROUGH ST AND N GREENSBORO ST INTERSECTION IMPROVEMENTS pg. 54

This is a an unsignalized intersection along a critical bike route. Improving the intersection will increase safety and comfort for all users.



3 SHELTON ST CONTRAFLOW BIKE LANE pg. 56

The Shelton St contraflow bike lane will fill an important gap between the Hillsborough St bike lanes and Carrboro Elementary.



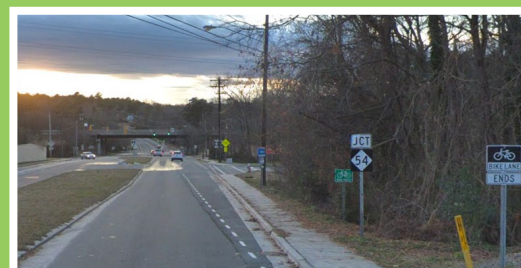
4 WEST MAIN ST BIKE LANES & INTERSECTION IMPROVEMENTS pg. 58

Intersection improvements and bike lanes on both sides of the street (filling gaps) will improve bike access to downtown along West Main St.



5 JONES FERRY RD SEPARATED BIKE LANES pg. 62

Separated bike lanes along Jones Ferry Rd will bring much-desired safety benefits to this heavily used commuter corridor.



1 - HOMESTEAD RD SIDEPATH LINK



FROM:

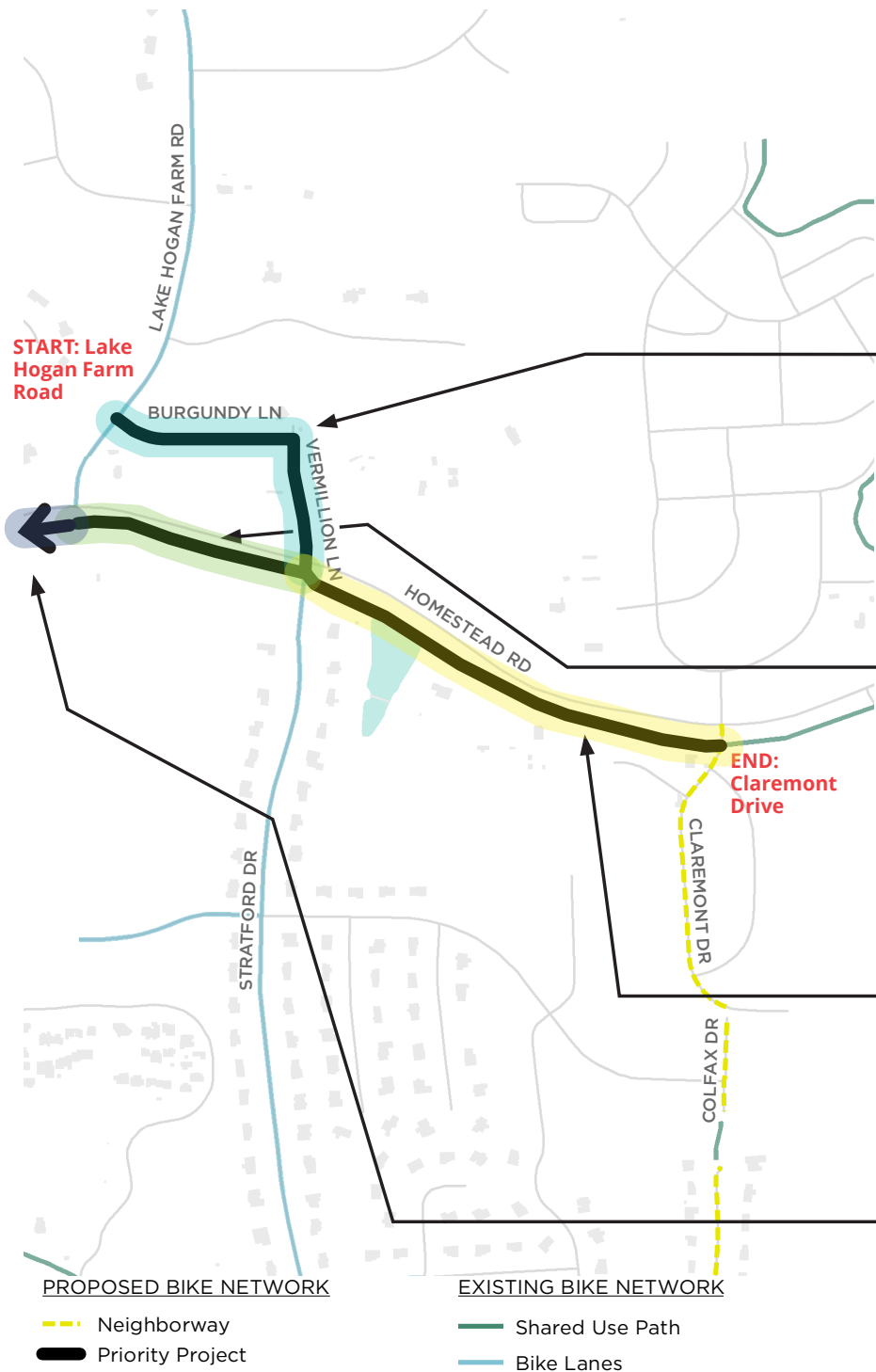
Lake Hogan Farm Road

TO:

Stratford Drive

LENGTH:

1,200 Feet



It is recommended that a corridor/alignment study be conducted. The study should consider completing this priority project in three phases:

PHASE 1: Implement **neighborway** treatments through Burgundy Ln and the short segment of Vermillion Ln. Construct a short **shared use path** segment from the southern terminus of Vermillion Ln to the Stratford Dr intersection, connecting the existing bike lanes on Lake Hogan Farm Rd to the Stratford Dr bike lanes. Coordination will be needed with the property owners between Vermillion Ln and Homestead Rd.

PHASE 2: Construct **sidepath** along south side of Homestead Rd from Lake Hogan Farm Rd to Stratford Dr.

PHASE 3: Construct a **sidepath** along the south side of Homestead Rd from the proposed phase 2 sidepath terminus at Stratford Dr to the recently constructed sidepath extending east from Claremont Dr. 1,500' east of Claremont Dr, the existing sidepath connects to the Claremont/Chapel Hill High School greenway.

LONG-TERM: Continue **sidepath** west to Old NC 86 and east to High School Road.

The recommendations are conceptual at this stage. While these ideas and design features represent best practices for bicycling, they don't represent actual design. Once a design process begins, input from the community, adjacent property owners, other internal departments, and NCDOT will likely lead to adjustments that will be made based on what is feasible, desirable, and realistic.

TRIP GENERATORS:

- Chapel Hill High School
- Smith Middle School
- Seawell Elementary School
- Carolina North Forest
- Claremont Greenway
- Adjacent neighborhoods

POTENTIAL PARTNERSHIPS:

- NCDOT
- Town of Carrboro
- Wexford Home Owners Association
- Burgundy Lane property owners
- Other adjacent property owners

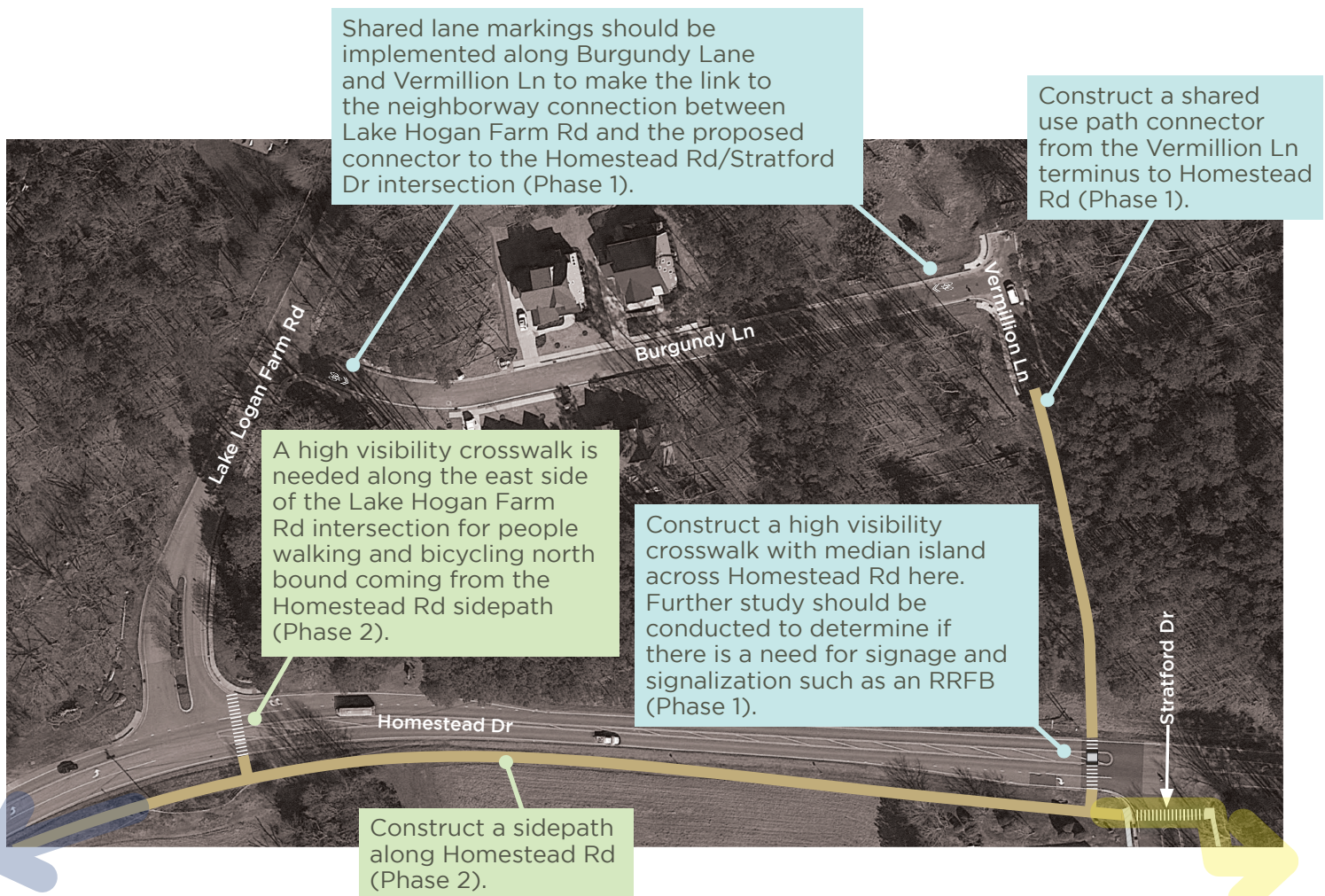
POTENTIAL ROW NEEDS:

- Additional ROW needed along Homestead Rd for sidepath construction as well as for the shared use path connector between Homestead Rd and Vermillion Ln.

OPINION OF TOTAL CONSTRUCTION COST (2019) FOR PHASE 1: \$168,740

OPINION OF TOTAL CONSTRUCTION COST (2019) FOR PHASE 2: \$367,510

PHASE 1 & 2: CONNECTING STRATFORD DR BIKE LANES TO LAKE HOGAN FARM RD BIKE LANES



2 - HILLSBOROUGH RD & N GREENSBORO ST INTERSECTION IMPROVEMENTS



The intersection at Hillsborough Road and North Greensboro Street is a key link in the network. However, in its current state, the intersection feels uncomfortable for many and lacks clear delineation of movement.

The recommended improvements will increase safety and comfort for all users by defining the space, slowing movement, and reducing confusion.

OPINION OF TOTAL CONSTRUCTION COST (2019):

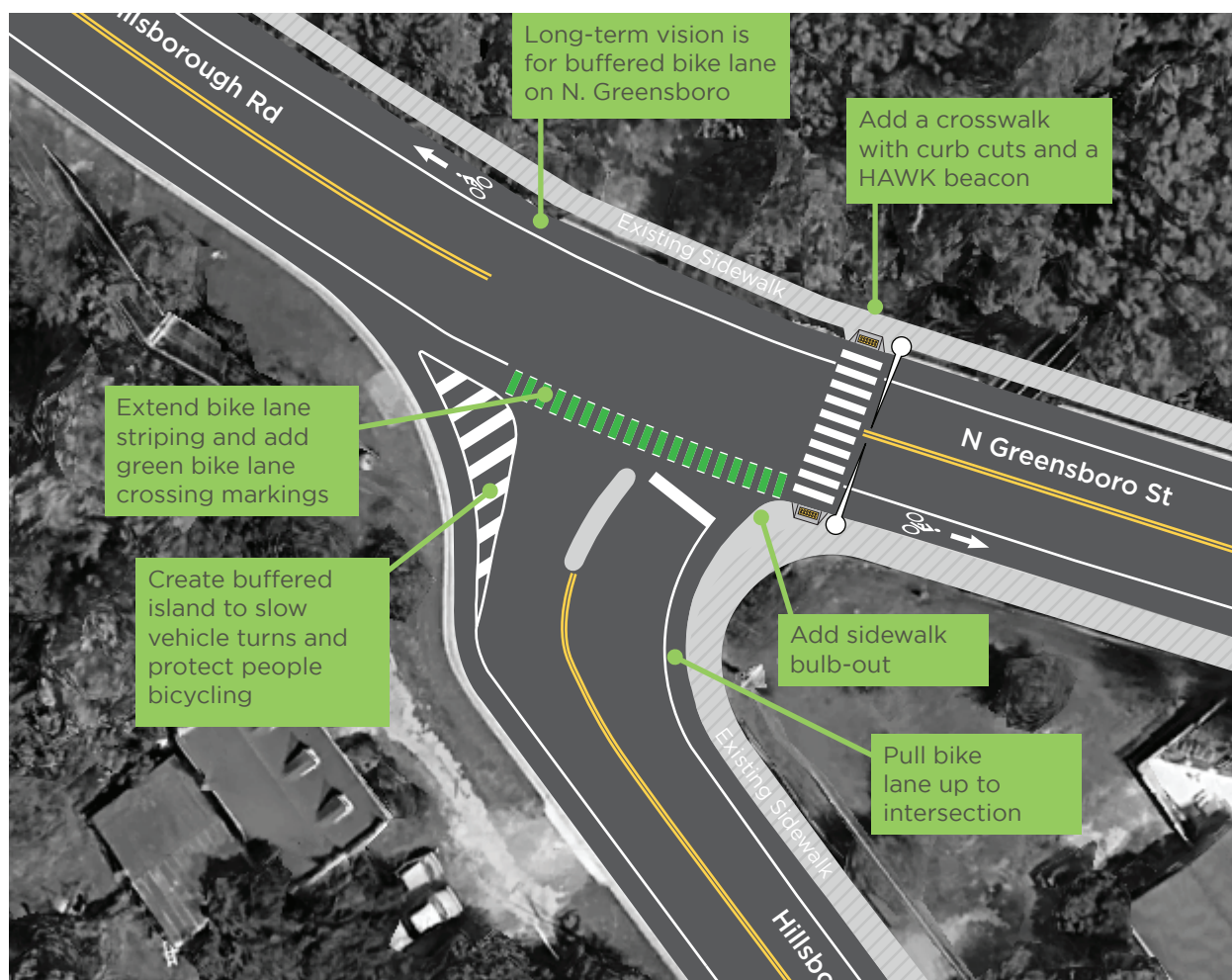
\$253,110*

TRIP GENERATORS:

- Carrboro Elementary
- Carrboro United Methodist Church
- Residences adjacent to the corridor
- Charles Herman Wilson Park
- Martin Luther King Jr. Park & Carrboro Community Garden
- Downtown Carrboro
- Adjacent property owners/neighborhood associations

POTENTIAL PARTNERSHIPS:

- Town of Carrboro
- Adjacent property owners/neighborhood associations



**Eliminating the HAWK beacon and the associated utility relocation would substantially reduce the project cost but would also reduce the potential safety impacts.*

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DESIGN GUIDANCE FOR COLORED BIKE LANES:

Colored pavement within a bicycle lane increases the visibility of the facility, identifies potential areas of conflict, and reinforces priority to people who bicycle in conflict areas and in areas with pressure for illegal parking. Color can be applied along the entire corridor or as a spot improvement at intersections.

Currently, NCDOT does not have Interim Approval for the application of green paint for bicycle lanes - but that likely will change. Carrboro does have this interim approval and can install green paint through encroachment agreements provided the Town include a copy of the approval letter as an exhibit.

The following required features and maintenance considerations are provided from the *NACTO Urban Bikeway Design Guide*.

REQUIRED FEATURES:

- The color green shall be used to minimize confusion with other standard traffic control markings.
- Color shall be applied to the road surface to delineate space, increase visibility, and emphasize proper vehicle priority.
- Normal white bike lane lines shall be provided along the edges of the colored lane to provide consistency with other facilities and to enhance nighttime visibility.

MAINTENANCE:

- Colored pavement requires varying levels of maintenance depending on materials.
- Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.
- Colored facilities should be maintained to be free of potholes, broken glass, and other debris.



3 - SHELTON ST CONTRAFLOW BIKE LANE



FROM:

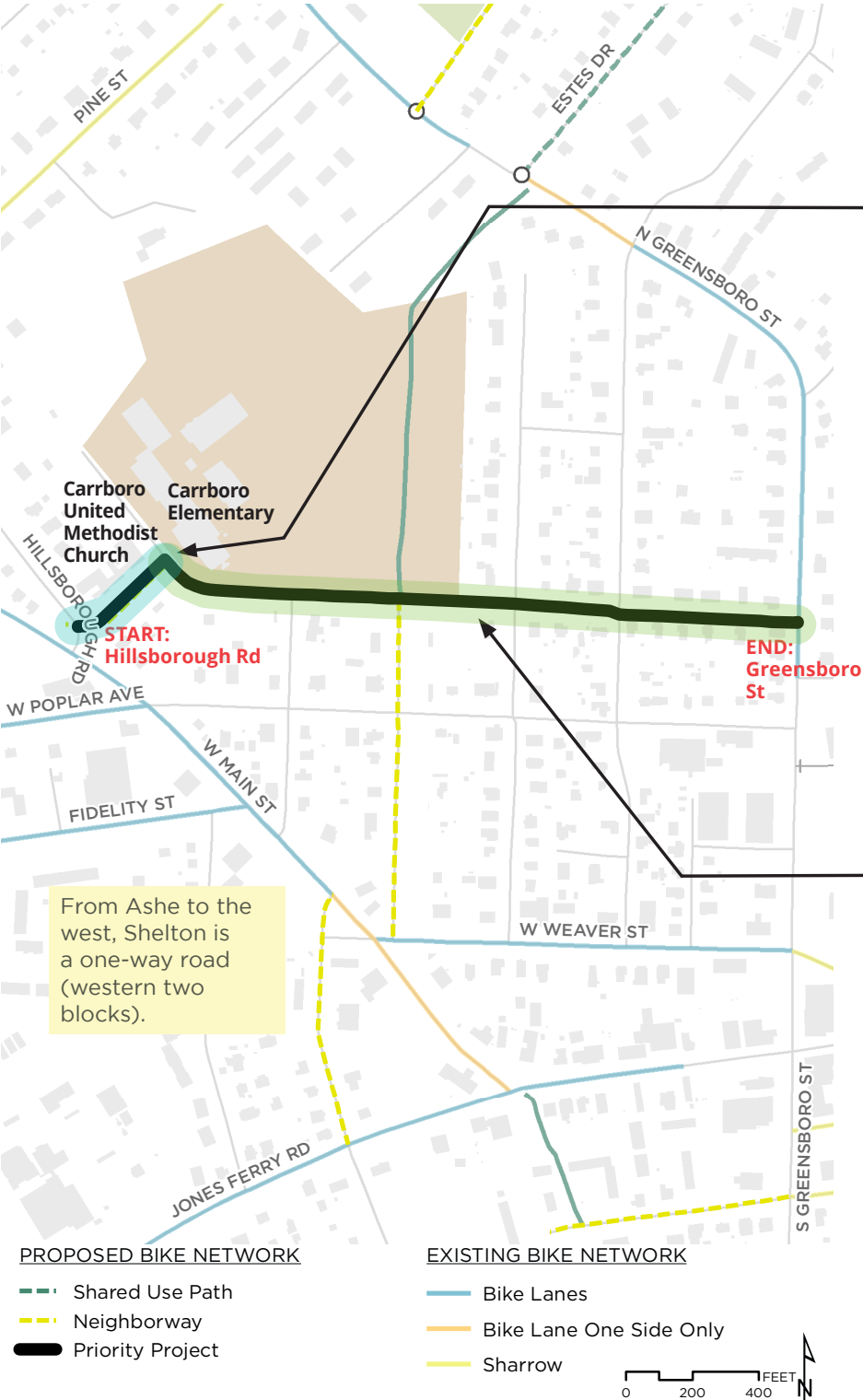
Hillsborough Road

TO:

N Greensboro Street

LENGTH:

2,300 Feet



PHASE 1: Shelton St from Hillsborough Rd to Carrboro Elementary should be reconfigured to include a **contraflow bike lane**. Ideally, parking would be removed on one side of the street to allow for the greatest separation between people on bikes and in cars. It is possible to keep parking on both sides of the street - see City of Durham example (Watts St) on the following page. Watts St in Durham has nearly the same pavement width as Shelton St and parking on both sides.

LONG-TERM: Consider implementing dedicated bicycle facilities along Shelton St from Carrboro Elementary to Greensboro St. Bus circulation, school pick-up/drop-off circulation, and the needs of residents along the corridor will need to be closely examined. Currently, shared lane markings are included along Shelton St from Ashe St to Greensboro St.

The Town of Carrboro, Carrboro Elementary, and residents along the corridor should meet to discuss options that balance all needs.

Options to consider include the following:

- Shared Use Path within existing pavement with one-way conversion
- Advisory Shoulders
- No change - keeping shared lane markings

The recommendations are conceptual at this stage. While these ideas and design features represent best practices for bicycling, they don't represent actual design. Once a design process begins, input from the community, adjacent property owners, other internal departments, and NCDOT will likely lead to adjustments that will be made based on what is feasible, desirable, and realistic.

TRIP GENERATORS:

- Carrboro Elementary
- Carrboro United Methodist Church
- Residences adjacent to the corridor
- Businesses along Greensboro St as well as Hillsborough Rd and Main St

POTENTIAL PARTNERSHIPS:

- Carrboro Elementary
- Carrboro United Methodist Church
- Town of Carrboro
- Adjacent property owners/neighborhood associations

POTENTIAL ROW NEEDS:

- None (unless option to construct shared use path outside of the existing Shelton St pavement width is selected)

OPINION OF TOTAL CONSTRUCTION COST (2019) PHASE 1: \$24,310

CONTRAFLOW BIKE LANE DESIGN CONSIDERATIONS:

Several requirements and options for contraflow bike lane signage are shown below. See the NACTO Urban Bikeway Design Guide for further design considerations for contraflow bike lanes - <https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/contra-flow-bike-lanes/>.



A "ONE WAY" sign (MUTCD R6-1, R6-2) with "EXCEPT BIKES" plaque shall be posted along the facility and at intersecting streets, alleys, and driveways informing drivers to expect two-way traffic.



A "DO NOT ENTER" sign (MUTCD R5-1) with "EXCEPT BIKES" plaque should be posted along the facility to only permit use by bicycles.



Warning signage, such as a modified "TWO WAY" sign (MUTCD W6-3) may be posted along the facility to inform people in cars to expect two-way traffic.

The short section of Shelton St from Hillsborough Rd to Carrboro Elementary has nearly the same pavement width (slightly more) and parking configuration of an existing contraflow bike lane in Durham, NC (Street view of Watts St pictured to the right and below). See the NACTO Urban Bikeway Design Guide for further design considerations for contraflow bike lanes - <https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/contra-flow-bike-lanes/>.



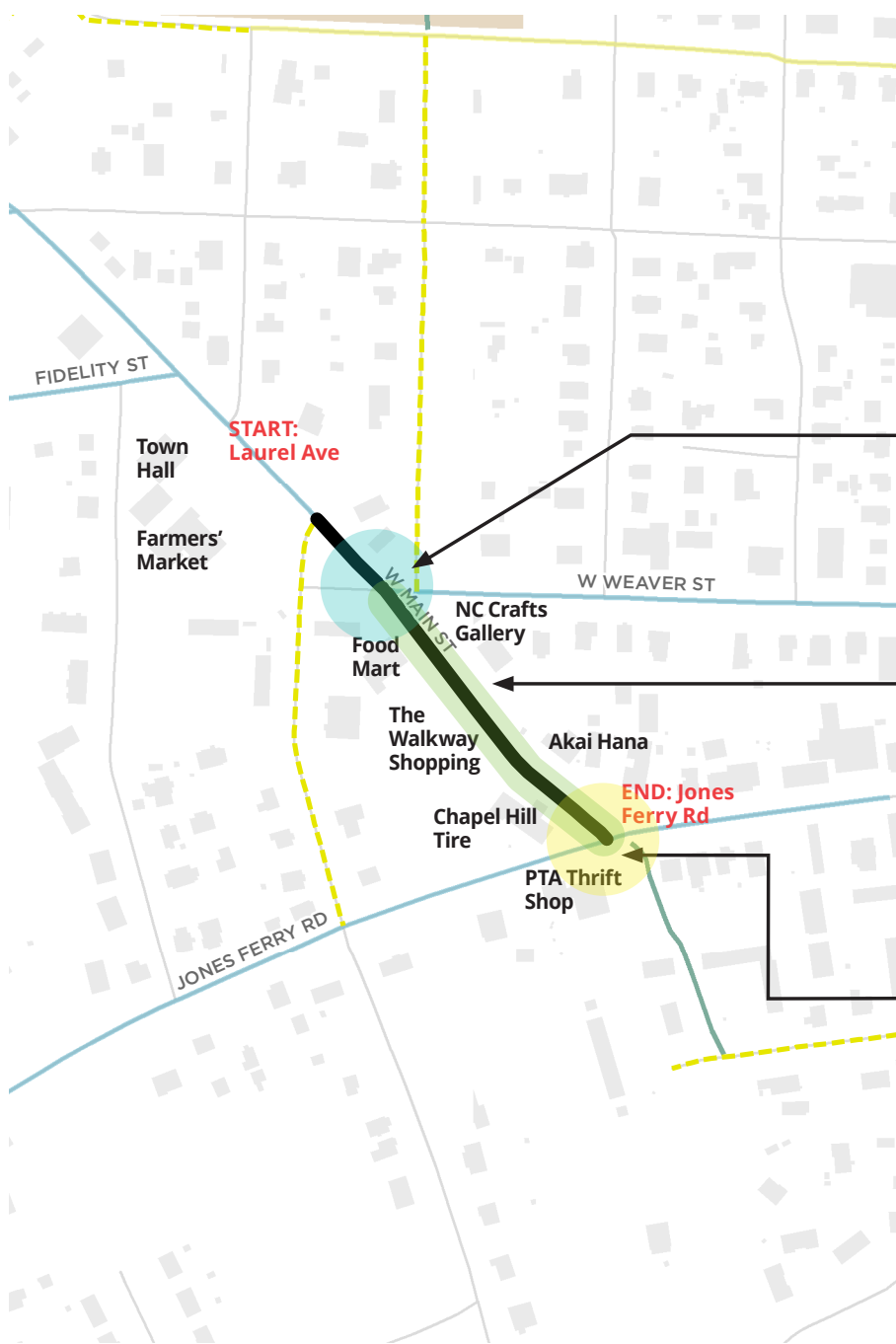
4 - W MAIN ST BIKE LANES & INTERSECTION IMPROVEMENTS



FROM:
Laurel Avenue

TO:
Jones Ferry Road

LENGTH:
800 Feet



PHASE 1: Fill in bike lane gaps, improve intersections, and develop a consistent southbound bike lane from Laurel Ave to Jones Ferry Rd. With an existing pavement width of 35'-43', this can be accomplished within the existing curbs.

The Weaver St, Laurel Ave, and Main St intersection should be improved to better delineate spaces and create room for a **southbound bike lane** from Laurel Ave to Jones Ferry Rd (detail on following page).

A LONG-TERM VISION includes restricting vehicular left turn movements from Main St to Weaver St. The space currently used for a dedicated turn lane could be used for a **separated bike lane** between Laurel Ave and Jones Ferry Rd.

The Jones Ferry Rd and Main St intersection should be improved as a **protected intersection**. This would also require curb modification (helping alleviate current accessibility issues on the south side of the intersection). In the short term, conflict markings should be painted through the intersection).

The recommendations are conceptual at this stage. While these ideas and design features represent best practices for bicycling, they don't represent actual design. Once a design process begins, input from the community, adjacent property owners, other internal departments, and NCDOT will likely lead to adjustments that will be made based on what is feasible, desirable, and realistic.

PROPOSED BIKE NETWORK

- Neighborway
- Priority Project

EXISTING BIKE NETWORK

- Shared Use Path
- Bike Lanes
- Sharrow



TRIP GENERATORS:

- Town Hall
- Farmers' Market
- Downtown Carrboro
- Businesses and residences along/near the corridor

POTENTIAL ROW NEEDS:

- None (for short term recommendations) - Long term recommendations may require additional ROW at the intersections

POTENTIAL PARTNERSHIPS:

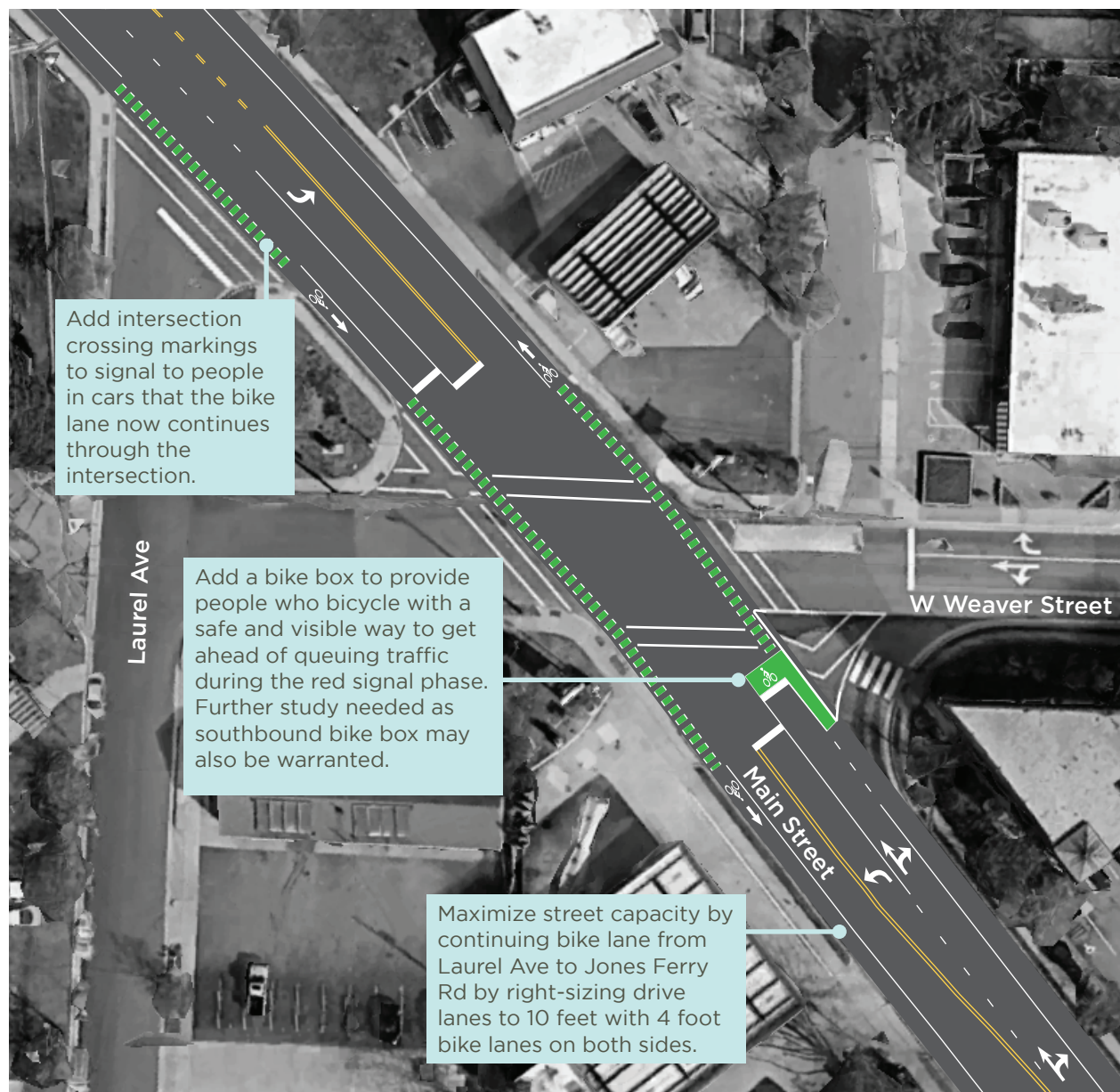
- NCDOT
- Businesses along the corridor
- Town of Carrboro

OPINION OF TOTAL CONSTRUCTION COST (2019) PHASE I: \$145,860

ADDITIONAL NOTES

- NCDOT does not have interim approval for application of green paint. The Town of Carrboro does have this interim approval and can install green paint and bike boxes through encroachment with the approval letter as an exhibit.

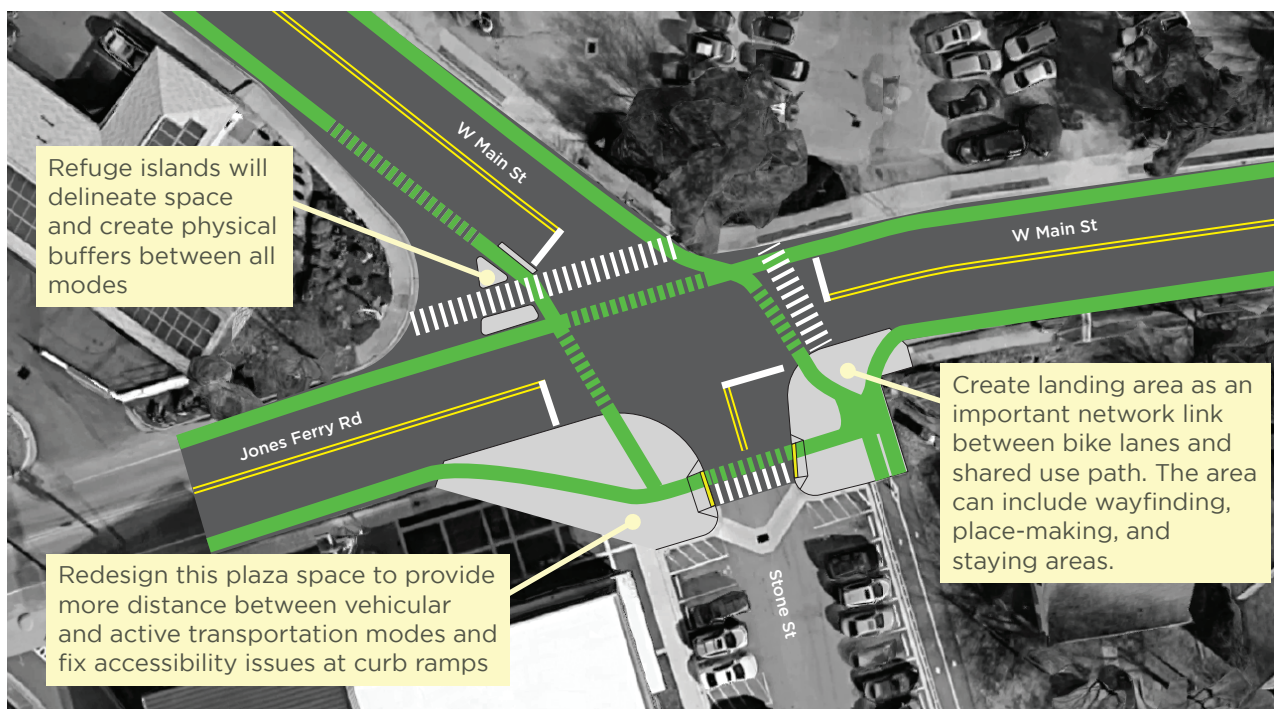
PHASE 1 CONCEPT: COMPLETE BIKE LANE AND INTERSECTION IMPROVEMENTS



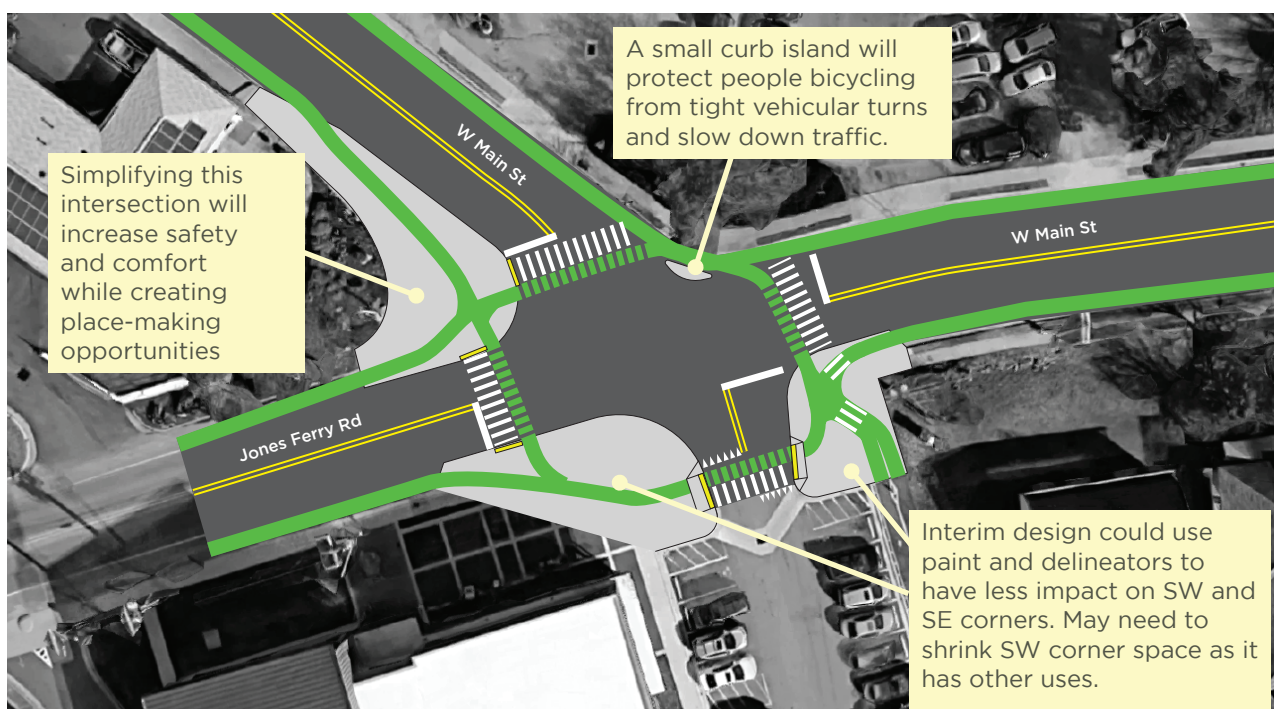
DESIGN OPTIONS AND CONSIDERATIONS:

The following graphics express long-term concepts for a Main St and Jones Ferry Rd protected intersection. This project would require a heavy reworking of the existing curbs, including the recently completed area in front of the PTA Thrift Store.

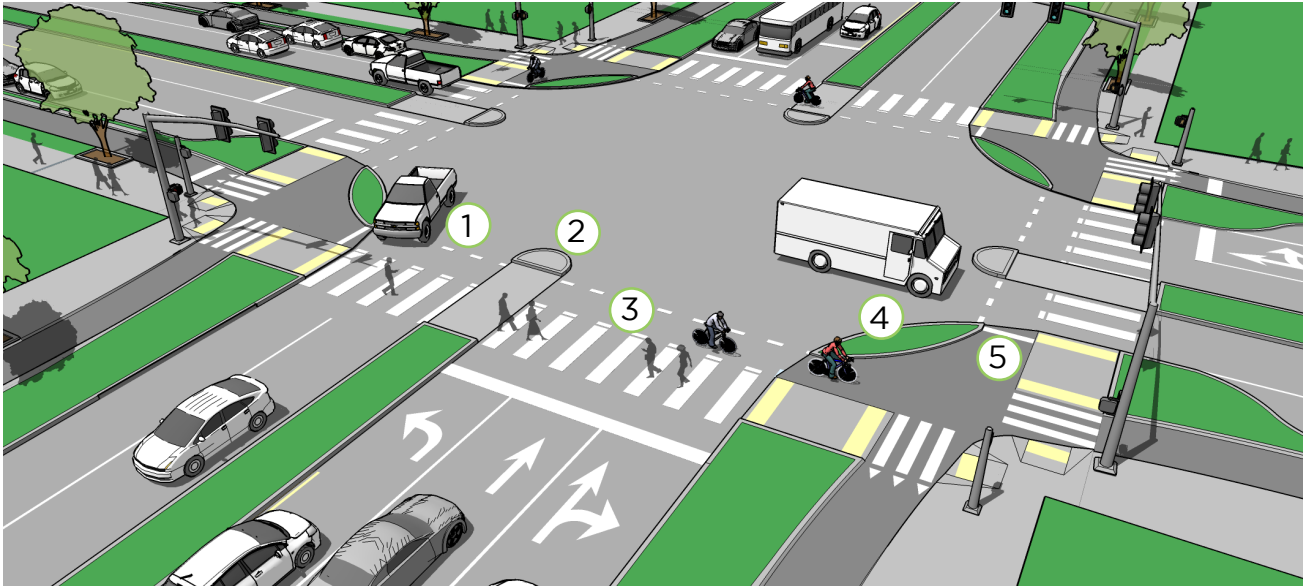
DESIGN ALTERNATIVE 1:



DESIGN ALTERNATIVE 2:



PROTECTED INTERSECTION DESIGN GUIDANCE



- 1 Setback bicycle crossing of 20ft allows for one passenger car to queue while yielding. A larger setback is desired in high speed areas (>35 mph). Small setback distance is possible in slow-speed, space constrained conditions.
- 2 If a permissive left turn is allowed, a median island extending into the intersection should be used to channelize and direct left turning motor vehicles.
- 3 Corner safety island with a 15-20ft corner radius slows motor vehicle speeds. Larger radius designs may be possible when paired with a deeper setback or a protected signal phase.
- 4 Intersection crossing markings should be used to identify the bicycle crossing. Consider green pavement to highlight the crossing area.
- 5 A forward stop bar should indicate the area for people bicycling to wait at a red signal.



Salt Lake City, UT - These protected intersections are used to improve safety and circulation at intersections where two separated bicycle lanes cross.

FURTHER CONSIDERATIONS

Colored pavement may be used within the corner refuge area to clarify use by people bicycling and discourage use by people walking or driving.

Intersection approaches with high volumes of right turning vehicles should provide a dedicated right turn only lane paired with a protected signal phase to separate the right turn movements from through bicycle movements (Stanek, 2015).

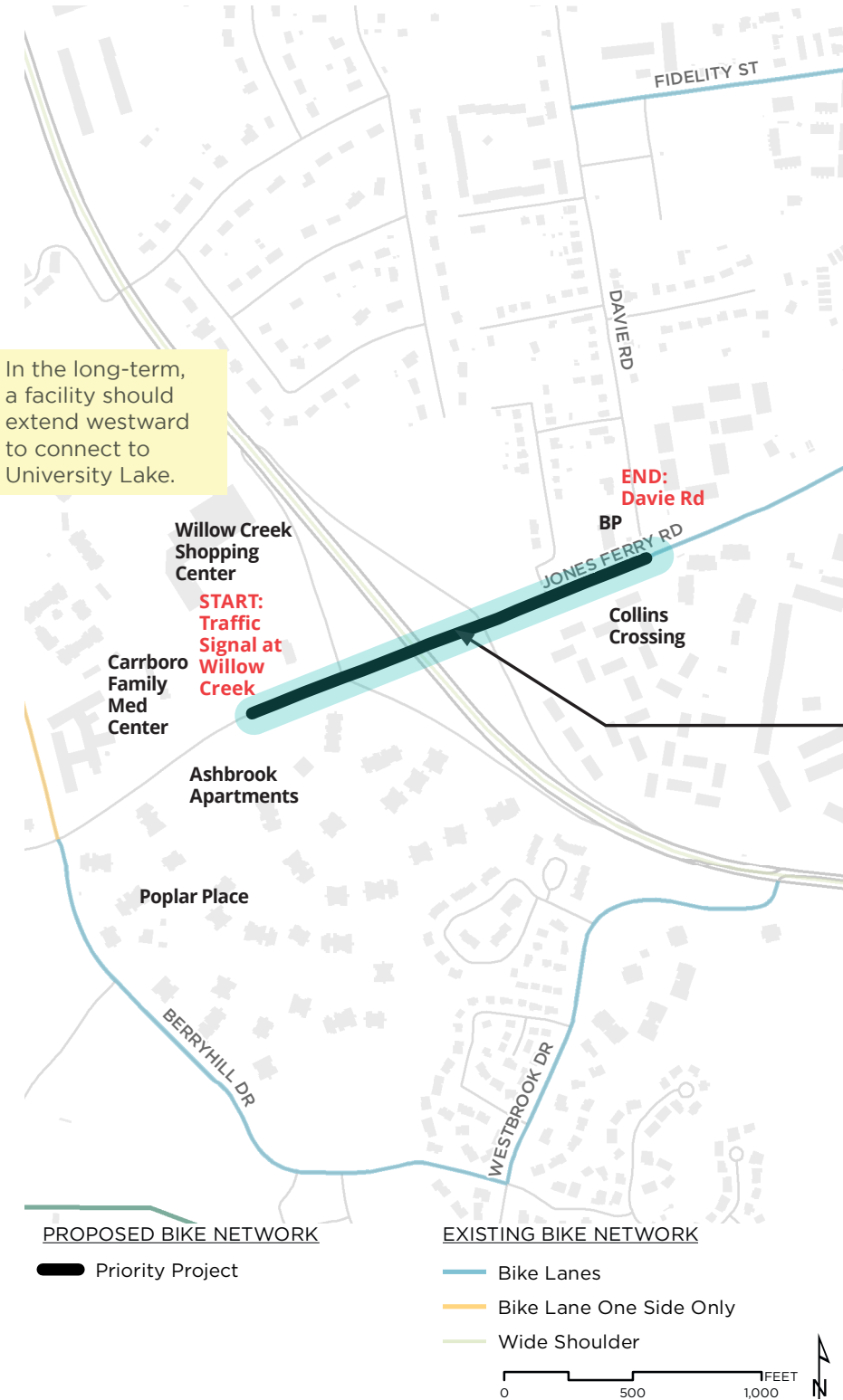
5 - JONES FERRY RD SEPARATED BIKE LANES



FROM:
Traffic Signal at Willow Creek

TO:
Davie Road

LENGTH:
1,600 Feet



Jones Ferry Rd, from the traffic light at Willow Creek to Davie Rd, currently has a buffered bike lane along the uphill (eastbound) side (implemented in 2016), and no bicycle facilities along the downhill (westbound) side. The Town is working with NCDOT Division 7 and the IMD Division to develop a pilot project with three test treatments which would create a protected bike lane using the buffer on the eastbound side. The proposed treatments are standard delineator posts, zebra bumps, and thermoplastic rumble strips.

PHASE 1: Given the relatively high traffic volumes (8,300-12,000 AADT) and 35 mph speed limit through this section, **separated bike lanes** are recommended along both sides of Jones Ferry Rd.

For the downhill (westbound) portion, this would require eliminating the far right turn lane to create space for a buffered bike lane (and physical barrier such as flexible bollards).

For the uphill section (eastbound), a physical barrier should be constructed in the existing buffer space (such as flexible bollards).

A capacity analysis will be needed for the westbound direction.

LONG-TERM: Consider constructing a landscaped median to improve safety, green infrastructure, and aesthetics in the separated bike lane buffer space.

The recommendations are conceptual at this stage. While these ideas and design features represent best practices for bicycling, they don't represent actual design. Once a design process begins, input from the community, adjacent property owners, other internal departments, and NCDOT will likely lead to adjustments that will be made based on what is feasible, desirable, and realistic.

TRIP GENERATORS:

- Willow Creek Shopping Center (Food Lion)
- Adjacent residential areas
- Downtown Carrboro

POTENTIAL PARTNERSHIPS:

- NCDOT
- Town of Carrboro
- Businesses and apartment complex owners along corridor

POTENTIAL ROW NEEDS:

- None

OPINION OF TOTAL CONSTRUCTION COST (2019) PHASE I: \$111,540

EXISTING



PHASE 1: FLEXIBLE BOLLARD SEPARATED BIKE LANE



PHASE 2: LANDSCAPED MEDIAN PROTECTED BIKE LANE



THE LONG TERM NETWORK

The proposed long term bike network was developed with the goal of creating a system of well-connected, low-stress facilities for people of all ages and abilities. This network is intended to identify roadways in need of bicycling improvements so that as roadway and development projects occur, these bicycle facilities should be implemented.

In addition, once the strategic priority projects are implemented, projects from the long-term system will be selected as the next to implement.

The visual facility legend to the right highlights each facility type and the total mileage recommended in the proposed network.

The Town should remain flexible to opportunities as well as constraints that may require adjustments to this long-term network. Additional projects may require refining with further local conversations and coordination with NCDOT and Chapel Hill Transit. These include the N Greensboro St/ Hillsborough Rd buffered (or separated) bike lanes, E Main St separated bike lanes, and consideration of a Rail with Trail route to Hillsborough, among other potential projects.

NCDOT will have corridor studies and roadway projects in the future as well. The Town should remain coordinated with NCDOT to communicate its desires and take advantage of any opportunities to advance bikeways.

Separated Bike Lanes



Private Connections



Shared Use Path



Bike Lanes



Neighborhood



Map 11: Long-Term Network

Attachment G-20 of 26

EXISTING BIKE NETWORK

- Bike Lanes
- Bike Lane One Side Only
- Sharrow
- Wide Shoulder
- Shared Use Path

LONG-TERM BIKE NETWORK

- Separated Bike Lanes
- Bike Lanes
- Neighborway
- Private Connection
- Shared Use Path
- Crossing Improvement

DEVELOPMENT STATUS

- In Development

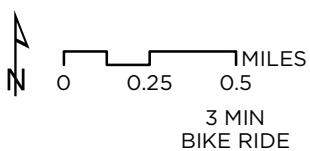
A shared use path or wide shoulders could be considered for bike facilities along Old NC 86.

As of Nov 2020, Bike Lanes are in development but the long-term vision is for separated bike lanes.

As of Nov 2020, Bike Lanes are in development but a SUP may be explored at a later timeframe.

DESTINATIONS

- Key Destinations
- Parks/Public Open Space
- Schools
- UNC
- Lakes
- Town of Carrboro
- Surrounding Communities



A shared use path or wide shoulders could also be considered for bike facilities along Smith Level.

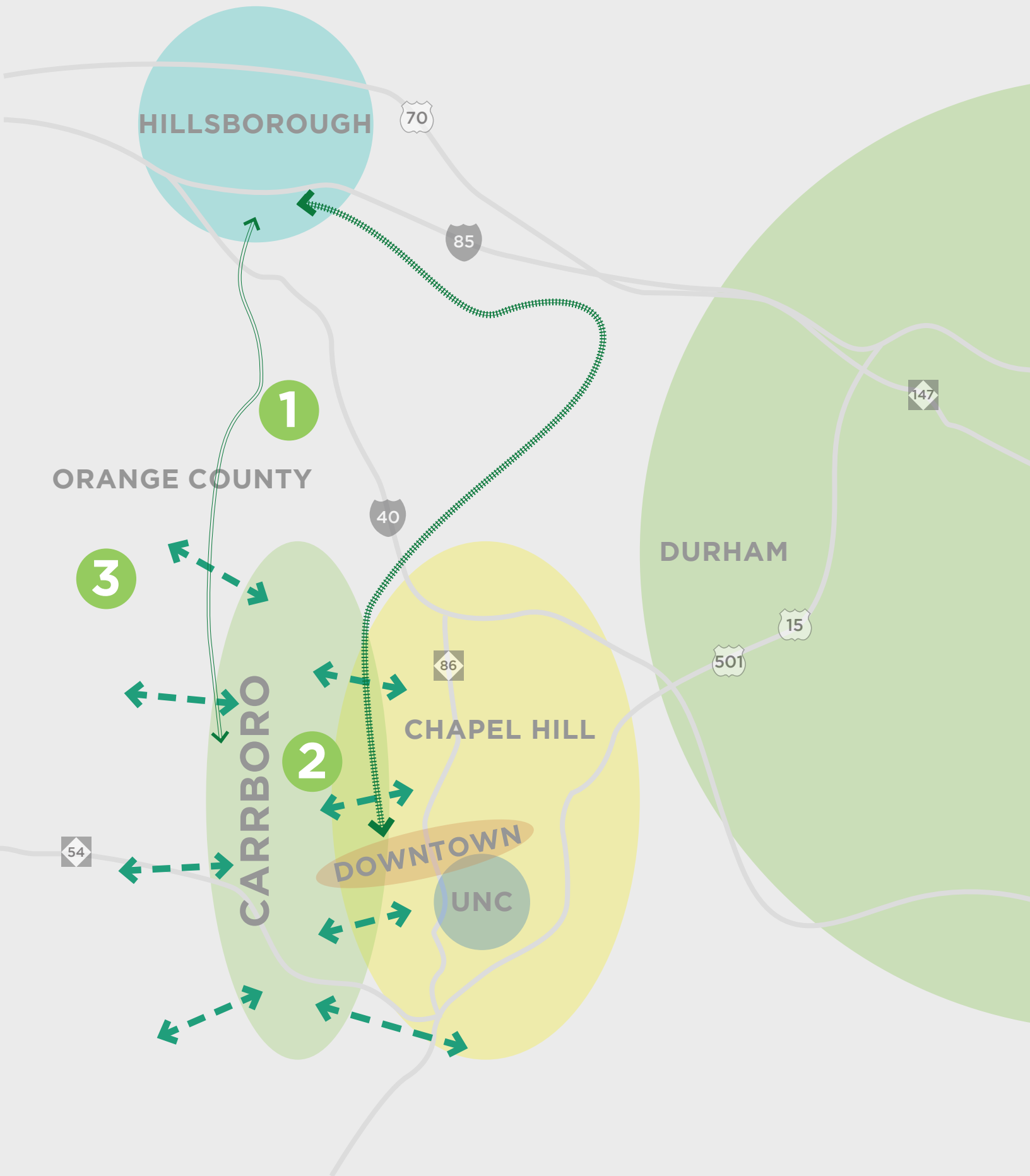


REGIONAL CONNECTIVITY

There are numerous opportunities for increasing regional bicycle connectivity that would benefit people getting to and from Carrboro. Carrboro has a deep connection to its neighboring communities. Many neighborhoods, commercial areas, attractions, and institutions overlap between multiple

jurisdictions. The projects and categories below highlight areas of opportunity where the Town of Carrboro can leverage its partnerships to develop bicycle facilities that increase livability and economic vitality for not only Carrboro residents, but for the region.

<div><div>1</div><div>CHAPEL HILL TO HILLSBOROUGH RAIL TRAIL A 10.2-mile rail corridor from downtown Carrboro northward towards Hillsborough could be a landmark project for the region by linking Carrboro, Chapel Hill, Hillsborough, and Durham. The State University Railroad corridor is currently used infrequently and with very slow-speed trains. A feasibility study managed through the DCHC MPO is recommended to pursue the possibilities.</div></div>	<div><div>PARTNERSHIPS</div><div><ul style="list-style-type: none">• University Railroad (Norfolk Southern)• Town of Carrboro• Town of Chapel Hill• Town of Hillsborough• NCDOT• UNC - Chapel Hill• Orange County</div></div>
<div><div>2</div><div>CHAPEL HILL AND UNC CONNECTIONS UNC-Chapel Hill and its institutions are large employers of many Carrboro residents. In addition, Carrboro and Chapel Hill residents commonly utilize services, recreation, and shopping across the “border” given the adjacent proximity. There are numerous key corridors linking Carrboro and Chapel Hill including Main St, Rosemary St, Estes Dr, Homestead Rd, Morgan Creek Greenway, and the Libba Cotton Bikeway. These all represent vital connections between the two communities. Ensuring continuity amongst bicycle facilities is paramount in ensuring a safe and comfortable regional network for regular users.</div></div>	<div><div>PARTNERSHIPS</div><div><ul style="list-style-type: none">• Town of Carrboro• Town of Chapel Hill• UNC - Chapel Hill• NCDOT</div></div>
<div><div>3</div><div>ORANGE COUNTY CONNECTIONS Orange County has always been a popular recreational riding region with one of the first state bike routes established for the county. There are currently 206 miles of bicycle routes throughout Orange County, connecting communities and rural landscapes. Today, the communities of Carrboro, Chapel Hill, Hillsborough, and Mebane have expanded their bike networks. Thoughtfully tying these networks together into the future will help reduce future congestion and increase livability in this growing area.</div></div>	<div><div>PARTNERSHIPS</div><div><ul style="list-style-type: none">• Town of Carrboro• Town of Chapel Hill• Orange County• Adjacent property owners• NCDOT</div></div>





LONG TERM NETWORK - OTHER PROJECTS OF INTEREST

In addition to the long-term network shown on page 65, there are other projects of interest, while not shown on that map, warrant additional discussion. These projects are ones that the Town is still interested in finding an appropriate route to implementation, but additional work is needed in clearing administrative hurdles, design review & approval, or identifying community consensus. Showing these as lines on a map fails to acknowledge the underlying complexities and work needed to make these projects a reality.

Bolin Creek Greenway

Carrboro adopted a Greenways Master Plan in 2006, that first identified the Bolin Creek Corridor as a potential alignment for greenway development. This is a multi-phase project of which sections 1A and 1B have been completed. Phase 2 as identified in that plan should still be considered for potential bicycle transportation projects. Consideration of other alignments in that plan were not discussed as part of this planning process, because as of October 2020, direction has yet to be determined by the Carrboro Town Council.

Buffered/Separated Bike Lanes

Throughout the development of this Plan, there was a significant interest in separated bicycle lanes, in particular along N Greensboro Street and Hillsborough Road. These facilities are of utmost important in providing safe routes for people on bikes of all ages and abilities, and the Town is fully supportive of them, but there are implementation hurdles worth acknowledging. There are

currently no separated bicycle lanes on NCDOT maintained facilities. This means that there are no design standards in place to facilitate efficient review and approval of any proposed design for separated bicycle lanes on their facilities.

Carrboro is currently working with NCDOT to develop a pilot project for the Jones Ferry Road corridor, which would place physical separation in the buffer space that already exists. The implementation process for future separated bike lanes on NCDOT facilities will be better refined based on the information gathered and lessons learned from that project. The Town fully acknowledges the importance of these facilities in developing a true “8 to 80” bicycle network and is committed to identifying funding and routes to implementation whether that be through the State Transportation Improvement Program (STIP), the NCDOT complete streets process, Highway Safety Improvement Program (HISP), or other sources.

Rail Trails

The current Libba Cotten bikeway is a key piece of bicycle infrastructure in Carrboro. There has been significant interest received in extending that route along the rail corridor to points further north; In particular to use that as part of a route to Hillsborough or the Campus to Campus Connector. The Libba Cotten is a unique section of rail with trail in that it exists through an agreement between the University of North Carolina (who owns the rail spur) & the Town of Carrboro (who built and maintains the

trail). The implementation for the Libba Cotten included an extensive discussion of liability, one that would likely need to be held again if another rail trail is to be considered. To extend the trail further would require developing a separate agreement with Norfolk Southern, the owner of the ROW along its alignment north of East Main Street in downtown.

NCDOT Complete Streets Policy

A large amount of feedback has been received on the need to incorporate separated bicycle facilities for the purposes of taking advantage of the current NCDOT Complete Streets Policy. As of November 2020, this is the current understanding and applicability of that policy:

1. The policy applies to approved an programmed highway projects within the STIP, either those without a finalized environmental review or those submitted to prioritization.
2. NCDOT may use highway funds to construct bike-ped projects provided they are shown in a local or MPO plan
3. NCDOT will not fund independent bike-ped projects, rather they will be built alongside highway projects.

The fact that these bike-ped projects are built alongside a highway project should not be overlooked. While this provides a route to implementation, it may be coupled with additional motor vehicle infrastructure that increase capacity (lanes, turn bays, wider intersections) that is contrary to Carrboro's vision of developing an "8 to 80" bicycle network.

Town Development Projects

The Town of Carrboro is committed to improving bicycle infrastructure as part of public development projects. The

following projects highlight the Town's past and future commitment:

- » **Town Commons** - Completed in 2018, the upgraded space which is utilized by the Carrboro Farmer's Market included a bicycle Fix-It Station.
- » **MLK Park** - Completed in 2020, the design of this park was modified, based on substantial community input to include a bicycle pump-track. The Town continues to look for ways to make this site more bicycle friendly.
- » **The 203 Project** - Located along S Greensboro street, this is the future site of the Orange County Southern Branch Library, Town Recreation and Parks offices, and other community services. The Town is committed to incorporating on-site improvements to create a bicycle friendly community hub. More information can be found at: www.the203project.org.



N. Greensboro Street and Hillsborough Road represent opportunities for enhancing the current bicycle lane to a buffered bike lane or separated bike lane. Given the curb-to-curb constraints, changes within existing pavement may be the only alternative that is feasible, and would still provide benefit to people on bikes.



DESIGN GUIDE RESOURCES

Overview

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 2018.

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):

- 2009 NC Supplement to 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

North Carolina Department of Transportation (NCDOT):

- WalkBikeNC: Statewide Pedestrian & Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Complete Streets, including the Complete Streets Planning and Design Guidelines
- 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

NCDOT Bicycle and Pedestrian Policies

<https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx>

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

- Achieving Multimodal Networks (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/
- Separated Bike Lane Planning and Design Guide (2015)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm
- Incorporating On-Road Bicycle Networks into Resurfacing Projects (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/
- Small Town and Rural Multimodal Networks Design Guide (2017)
Main Guide:
<http://ruralsdesignguide.com/>

Section specific to side paths:
<http://ruralsdesignguide.com/physically-separated/sidepath>

