2050 GOLDSBORO

BICYCLE, PEDESTRIAN and GREENWAY PLAN

ADOPTED BY THE GOLDSBORO MPO ON OCTOBER 15, 2024

Acknowledgments

Thank you to the local community members and stakeholders who provided time and input during this study. Special thanks to those who participated as part of the project Steering Committee, listed below.

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Main Chapters

Appendix

CHAPTER 1

Introduction

This chapter summarizes the overall bike, pedestrian, and greenway planning process and existing conditions of the Goldsboro Metropolitan Planning Organization.

WHY THIS PLAN?

In 2015, the Goldsboro Metropolitan Planning Organization (MPO) released their first regional plan promoting active transportation, titled *Goldsboro MPO Bicycle, Pedestrian and Greenway Plan*. While acknowledging that previous planning effort and others, this 2024 plan aims to further progress the area's bike, pedestrian, and greenway network through updated infrastructure, policy, and program recommendations.

PLANNING PROCESS

To provide recommendations relevant to the MPO's unique context, the team reviewed existing conditions remotely and in the field, consulted the public, and reviewed previous plans, programs, and policies. Ultimately, this document identifies opportunities and challenges for Goldsboro's existing and future active transportation facilities. To synthesize our findings, specific projects are prioritized for implementation.

This planning process was guided by a steering committee (see acknowledgments page) that met three times over the course of the project. This planning process was completed concurrently with the Goldsboro 2050 MPO Metropolitan Transportation Plan (MTP) process. The MTP includes recommendations for all modes of transportation such as automobiles and transit. The bicycle, pedestrian, and greenway recommendations from this planning process helped inform the MTP recommendations.

TIMELINE

APRIL – JULY 2024

Project Kickoff + Existing Conditions

JULY – SEPTEMBER 2024

Draft Study Development

JUNE – SEPTEMBER 2024

Public Outreach

SEPTEMBER – OCTOBER 2024

Final Study Development

OCTOBER 2024 ONWARD

Implementation

VISION

Goldsboro's convenient network of sidewalks, bikeways, and greenways is a regional attraction that brings people of all ages and abilities together; safely connects them to where they want to go; encourages a healthy, active lifestyle; highlights the local history, culture, and environment; and promotes the local economy.

GOALS

Enhance Mobility

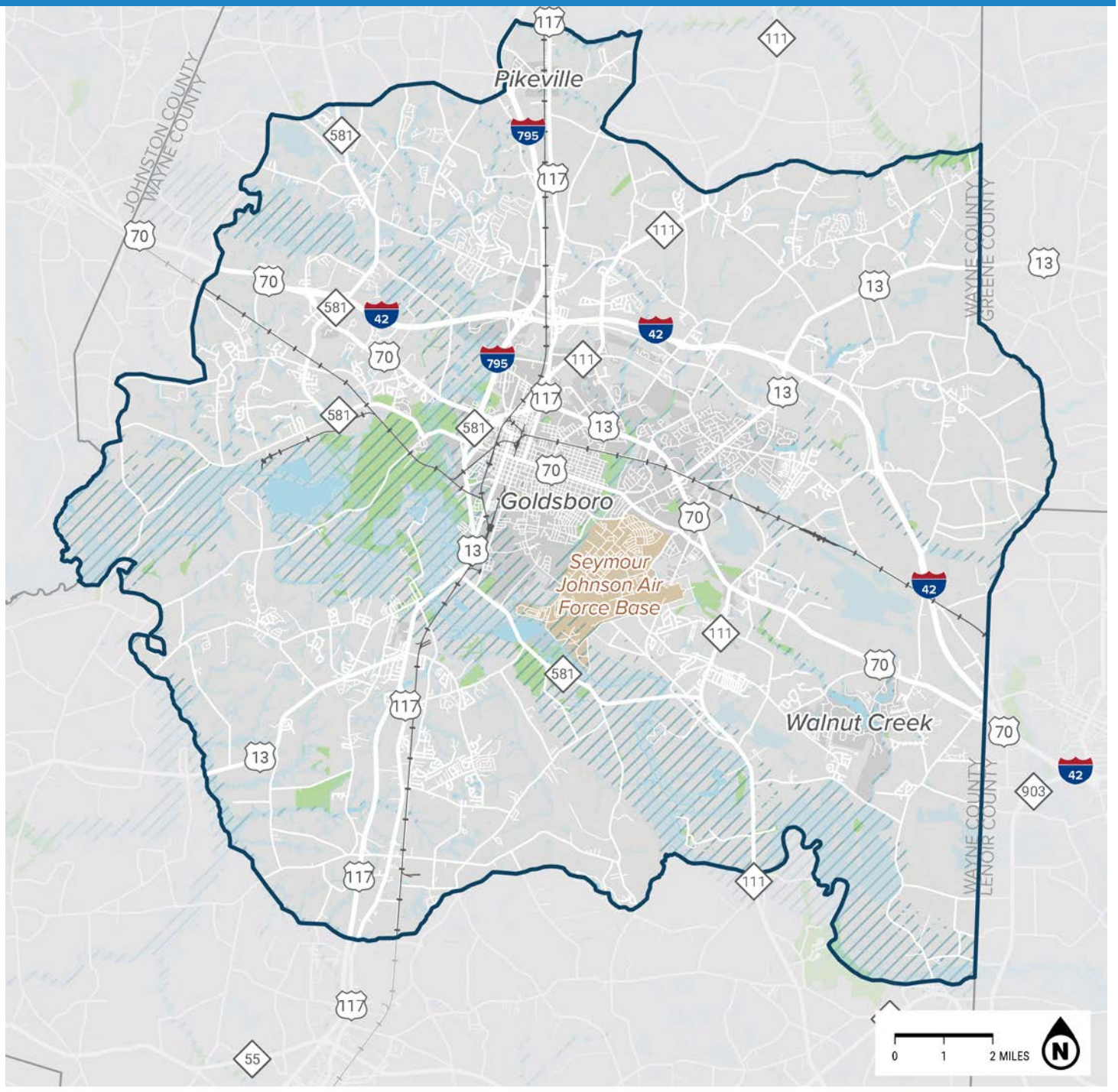
Prioritize Safety

Improve Health

Advance Environmental Stewardship

Strengthen Economy

STUDY AREA: GOLDSBORO MPO



LEGEND

- Goldsboro MPO Boundary
- Railroads
- Seymour Johnson AFB
- Parks & Managed Lands
- Water Body
- Wetland
- 100-Year Floodplain
- Municipal Boundaries
- County Boundaries

The Goldsboro MPO boundary is entirely within Wayne County (but does not include the whole county). Three incorporated communities are within the boundary: the City of Goldsboro, the Town of Pikeville, and the Village of Walnut Creek.

WHY STRIVE FOR WALKABLE AND BIKEABLE?

Economic Opportunities

Investment in walking, biking, and trails often yields returns through economic revitalization, recreational tourism, increased property values, small business opportunities, and construction jobs. Many employers also consider quality of life factors, including amenities like trails, when choosing where to locate.

$1.00 INVESTED → **$1.72** RETURNED

According to a 2018 study of four trails in North Carolina, every $1.00 spent on initial trail construction led to $1.72 per year earned from local business revenue, sales tax revenue, and benefits related to health and transportation—demonstrating how trails can boost local economies.[1]

$14.6 billion/year

in consumer spending is generated by the outdoor recreation industry in North Carolina, which is also responsible for 147,000 local jobs.[2]

1. Evaluating the Economic Contribution of Shared Use Paths in NC; ITRE, Alta, and NCDOT, 2018.
2. Outdoor Recreation Roundtable, The Economic Impact of Outdoor Recreation, 2023.
3. NACTO, City Limits: Setting Safe Speed Limits on Urban Streets, 2020.

Safety and Equity

Dedicated infrastructure for walking and biking (such as trails), can help prevent crashes and save lives. Well-connected facilities can also reduce burdens on low-income populations, who are more likely to walk or bike for transportation.

20%

of all road fatalities in the US from 2015 to 2020 were pedestrians and bicyclists, despite these groups making up only 11% of all road users.[3]

15%

of households in Goldsboro do not have access to a vehicle.[4]

22%

of household income is spent on transportation in households making less than $30,000 per year; almost all of this spending goes to the purchase and maintenance of personal vehicles.[5]

4. Goldsboro MPO, Goldsboro Urban Area 2045 Metropolitan Transportation Plan, 2019.
5. The High Cost of Transportation in the US. Institute for Transportation & Development Policy, 2019.

Health and Quality of Life

Trails can improve health and well-being by providing opportunities for people to exercise, socialize, and spend time in nature. Physical activity and exposure to nature and green spaces have been shown to have mental and physical health benefits.

44%

of adults in Wayne County don't have adequate access to locations for physical activity, compared with 27% for the state of North Carolina.[6]

25%

of adults in Wayne County are physically inactive, compared with 22% for the state of North Carolina.[6]

29%

lower risk of all-cause mortality for people who engage in moderate activity (i.e., brisk walking) for at least 2.5 hours a week.[7]

Environmental Stewardship

Trails can serve as a tool for conserving open space. Additionally, decreasing reliance on automobiles for transportation will lead to improved air quality.

Preserving land for green space and trails (instead of more intensive development) can have the following benefits:

- **Improving air quality**
- **Linking and protecting plant and animal habitats**
- **Reducing flood damage and soil erosion**
- **Maintaining cleaner drinking water sources and reducing the cost of water treatment[8]**

1.57 million

vehicle miles eliminated in 2022 from a comprehensive study of six greenways in North Carolina.[9] Eliminated car trips, and their corresponding vehicle miles eliminated, were identified from survey participants who used active transportation and indicated they would drive to their destination, or a comparable one, in the absence of the trail.

6. County Health Rankings, North Carolina: Data by County, 2024, https://www.countyhealthrankings.org/app/north-carolina/2023/overview.
7. Recommended physical activity and all cause and cause specific mortality in US adults: prospective cohort study. Zhao, et al., 2020.

8. North Carolina Department of Parks and Recreation, North Carolina Trails Program Annual Report 2020-2021.
9. ITRE, The Economic Impact of Completing Six Key Links of the Carolina Thread Trail, 2022.

WHO LIVES IN THE GREATER GOLDSBORO AREA?

The Goldsboro MPO boundary is entirely within Wayne County (but does not include the whole county). Three incorporated communities are within the boundary: the City of Goldsboro, the Town of Pikeville, and the Village of Walnut Creek.

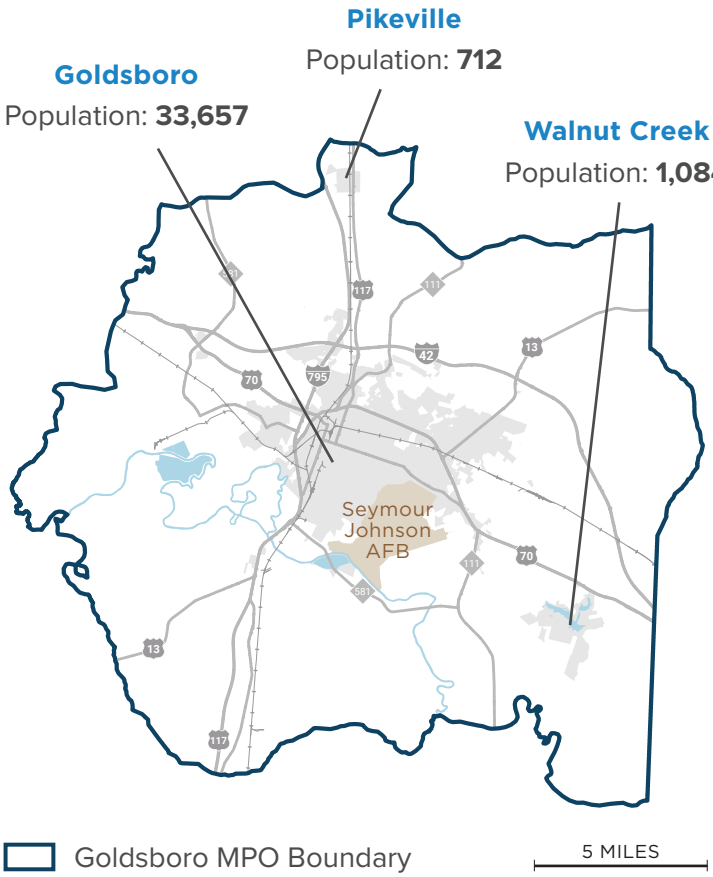
The graphics on this page and the summary table on the next page explore the populations of these communities.

Key Takeaways

- Compared to Pikeville, Walnut Creek, and the state, Goldsboro has the lowest median age, lowest education rate, and highest poverty rate.
- Walnut Creek's population has significantly higher incomes than the other MPO communities and the state, and its population is significantly older and more educated.
- All three communities in the MPO have a higher percentage of veterans than the state, likely due to proximity to Seymour Johnson Air Force Base.
- Of the MPO communities, Goldsboro has the highest percentage of people who commute by walking, highest percentage of households without a vehicle, and highest percentage who work in Wayne County.

Seymour Johnson Air Force Base (AFB)

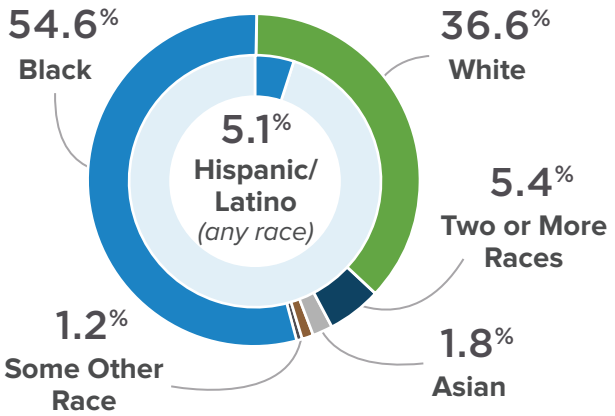
Seymour Johnson Air Force Base (AFB) is within the City of Goldsboro. Approximately 4,000 active duty officers, enlisted members, and families reside and serve at the base.



Source: 2020 Decennial Census

Race and Ethnicity: City of Goldsboro

Outer ring = race; inner ring = ethnicity



Less than 1%:
American Indian and Alaska Native (0.2%);
Native Hawaiian and Other Pacific Islander (0.2%)

Source: 2022 American Community Survey 5-Year Estimates

DEMOGRAPHIC SUMMARY

	Goldsboro	Pikeville	Walnut Creek	North Carolina
Median Household Income	**$44,196** ± 2,034	**$65,417** ± 22,148	**$149,875** ± 55,764	**$66,186**
Median Age	**36.7 years** ± 1.7	**39.0 years** ± 10.7	**44.2 years** ± 5.9	**39.1 years**
Poverty Rate	**20.9%** ± 3.1	**15.3%** ± 10.0	**5.7%** ± 5.5	**13.3%**
Bachelor's Degree or Higher	**21.4%** ± 2.4	**26.1%** ± 10.8	**69.8%** ± 7.3	**35.9%**
Veterans	**13.5%** ± 1.6	**14.0%** ± 7.0	**16.7%** ± 5.8	**7.5%**
Language Other than English Spoken at Home	**8.2%** ± 1.5	**1.4%** ± 1.9	**7.0%** ± 5.0	**12.7%**
Commute Mode: Drive Alone	**80.9%** ± 3.4	**71.8%** ± 16.6	**82.0%** ± 11.8	**75.2%**
Commute Mode: Walk	**1.5%** ± 0.9	**0%** ± 11.0	**0%** ± 6.5	**1.6%**
Commute Mode: Bike	**0.4%** ± 0.5	**0%** ± 11.0	**0%** ± 6.5	**0.1%**
Work in Wayne County	**83.1%** ± 3.1	**57.8%** ± 13.4	**73.3%** ± 10.9	**N/A**
Population without Access to a Personal Vehicle	**14.4%** ± 2.4	**0%** ± 14.0	**0.5%** ± 0.9	**5.4%**

Source: 2022 American Community Survey 5-Year Estimates

See the Goldsboro 2050 MTP for further information on demographics.

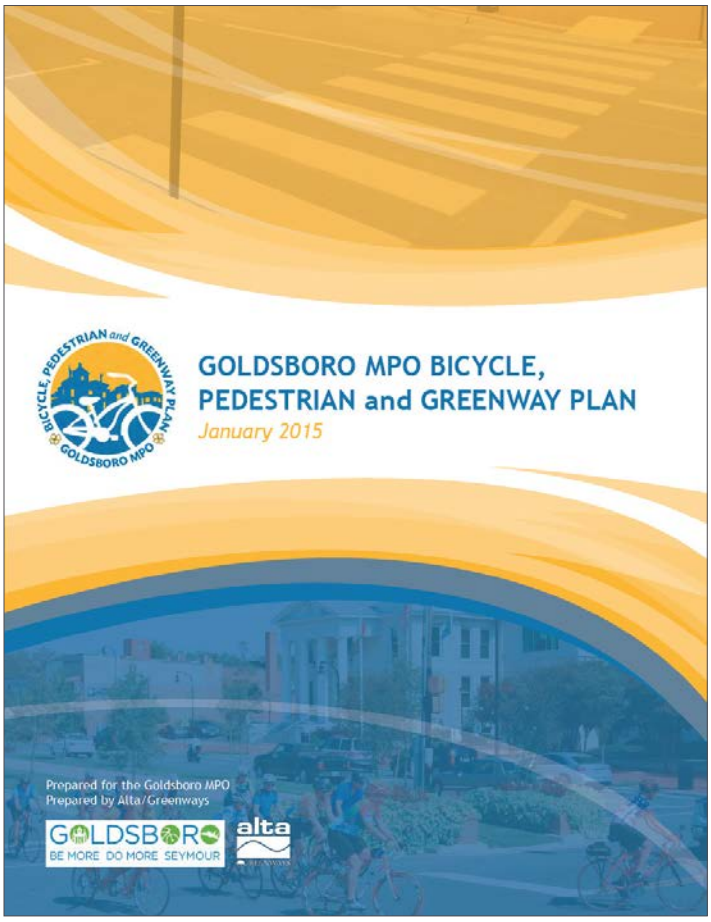
PLAN REVIEW

This planning process builds upon prior planning efforts and also examines existing policies and programs. Below is a list of key plans, policies, and programs reviewed. See Appendices B, H, and I for further detail.

Plans Reviewed

Local Plans

- Goldsboro MPO Bicycle, Pedestrian and Greenway Plan, Goldsboro MPO, 2015
- Goldsboro Urban Area 2045 Metropolitan Transportation Plan, Goldsboro MPO, 2019
- City of Goldsboro Strategic Plan, City of Goldsboro, 2023
- 2021-2024 Strategic Plan, Wayne County Health Department, 2021-2024
- Goldsboro Community Floodprint, City of Goldsboro, 2023
- City of Goldsboro Trail Development Plan, City of Goldsboro, 2021
- Ash Street Corridor Study, City of Goldsboro, 2023
- Goldsboro ADA Report, City of Goldsboro, 2021

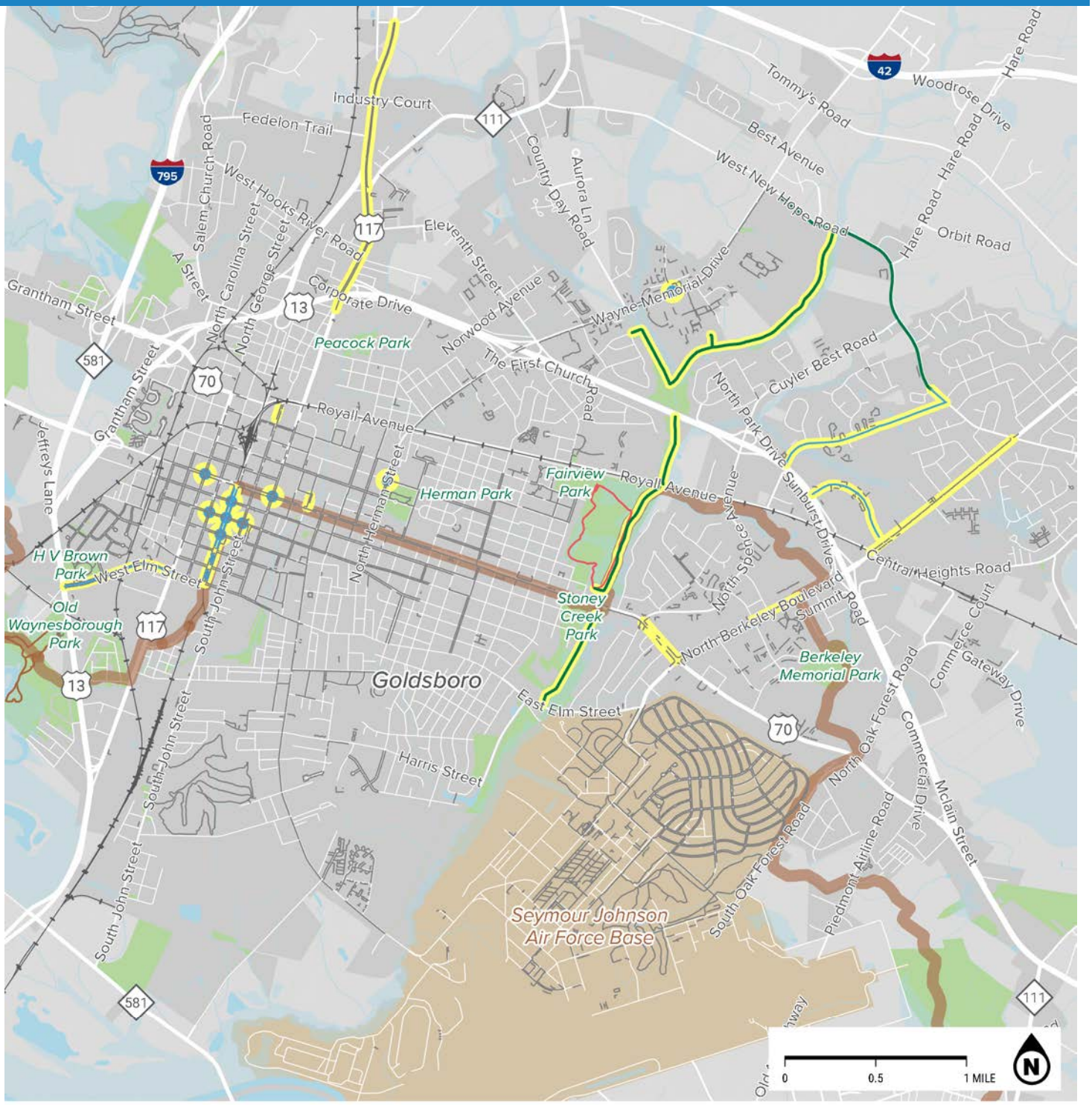


This 2024 bicycle, pedestrian, and greenway plan for the Goldsboro MPO serves as an update to the 2015 plan.

State/Regional Plans

- Walk Bike NC, NCDOT, 2013
- Eastern Carolina Regional Trails Plan, North Carolina Division of Parks and Recreation, 2022
- NC Great Trails State Plan, NCDOT, 2022

FACILITIES AND PROJECTS COMPLETED SINCE THE 2015 PLAN



LEGEND

- Railroads
- Seymour Johnson AFB
- Parks & Managed Lands
- Water Body
- Wetland
- Municipal Boundaries

EXISTING FACILITIES

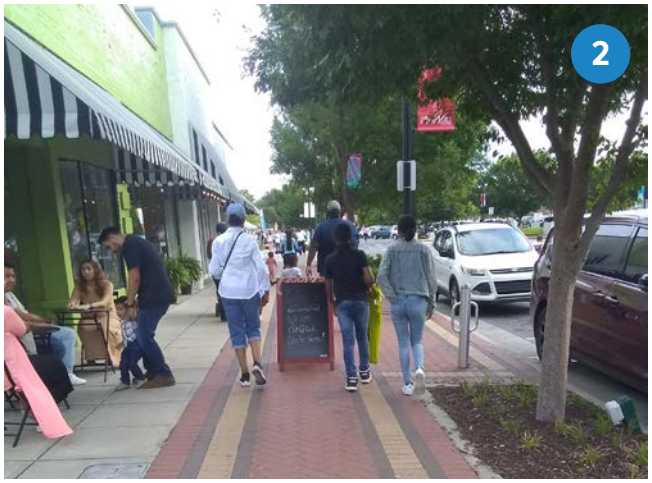
- Sidewalks
- Bike Lanes
- Hiking Trails

- Crossing Improvements
- Projects Completed Since 2015
- Mountains-To-Sea Trail Alignment

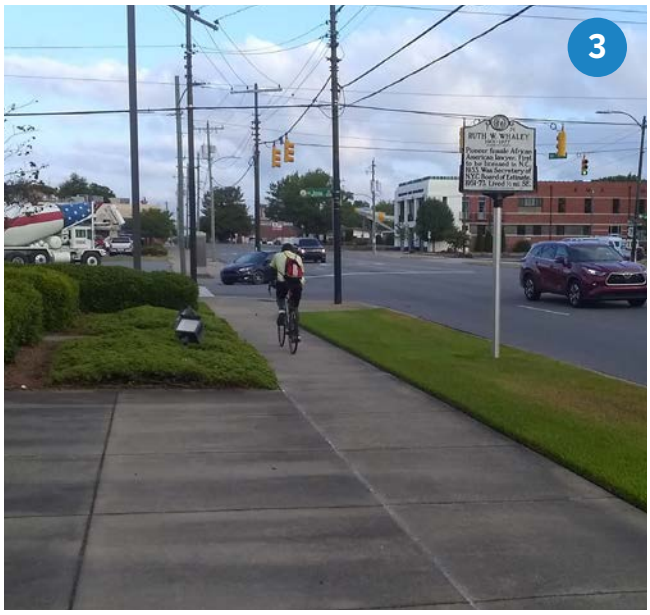
OPPORTUNITIES AND CHALLENGES

The project team conducted fieldwork in July 2024 to assess opportunities and challenges for walking and biking in the Goldsboro MPO. The numbered images and table entries on the pages that follow correspond to the numbers on the maps on pages 19 and 21.

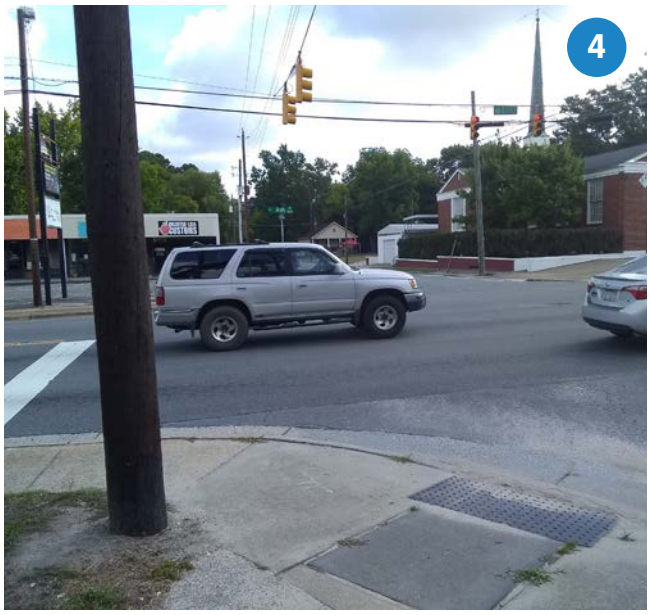
The buffered bike lanes along Elm Street were created during the last planning process in 2015 during a resurfacing project. Elm Street (above left) and Center Street (above right) are two of the four bike lanes that currently exist in Goldsboro but are disconnected.



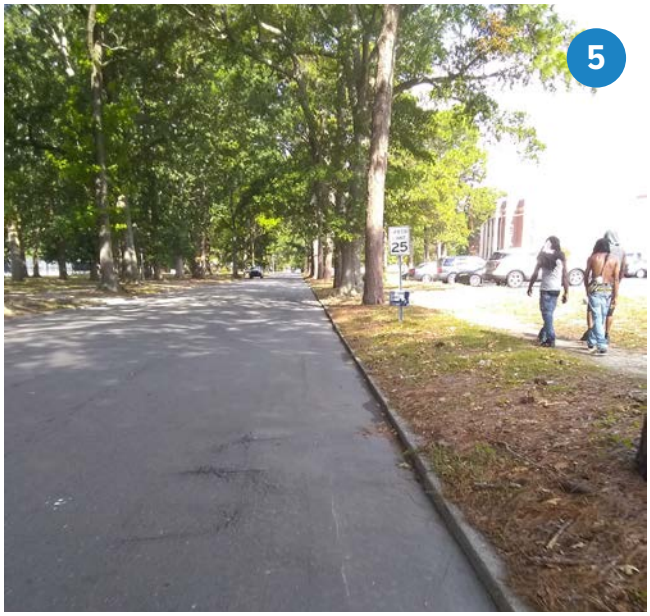
Center Street in downtown Goldsboro, pictured above, has an excellent walking network with high-visibility crosswalks and Americans with Disabilities Act (ADA) design. Bike lanes are also included. This is where some of the highest volumes of pedestrian activity are found in Goldsboro. The Center Street corridor is also designated as part of the Mountains-to-Sea Trail (MST). MST symbols are engraved in the sidewalk brick pavers along Center Street.



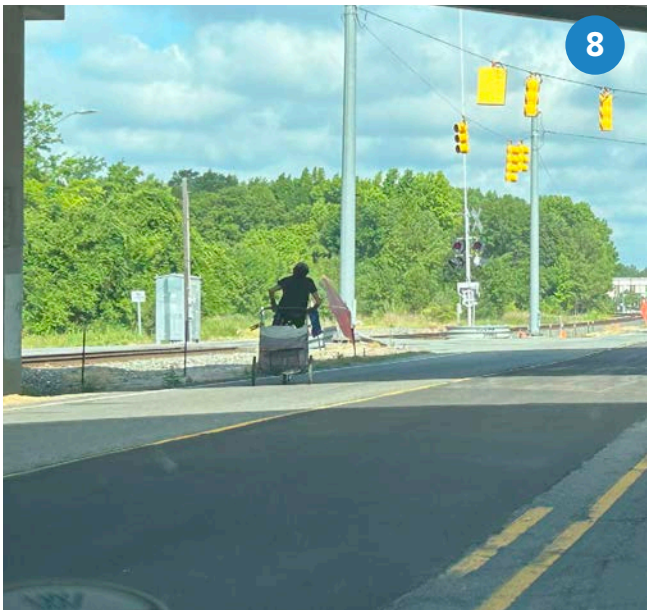
Many bicyclists ride on the sidewalks as a safety precaution on high-traffic volume or high-speed streets like Ash Street, pictured above.



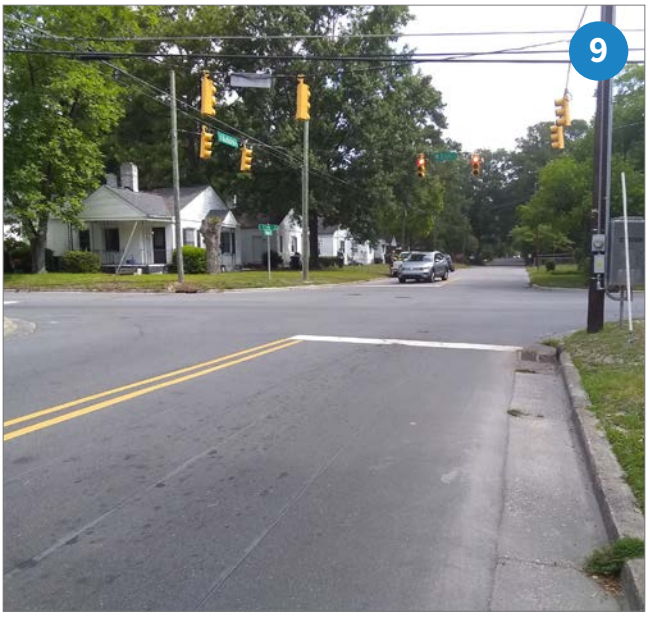
Many intersections along Ash Street lack pedestrian crossing facilities. The Slocumb Street/ Ash Street intersection, pictured above, does not have pedestrian signals or marked crosswalks.



Low-traffic volume, low-speed neighborhood streets such as Beech Street (above left) and Mulberry Street (above right) provide east-west connectivity options for bicyclists and pedestrians in Goldsboro. Mulberry Street has signage for bikes that includes distance information to downtown as well as Stoney Creek Park.

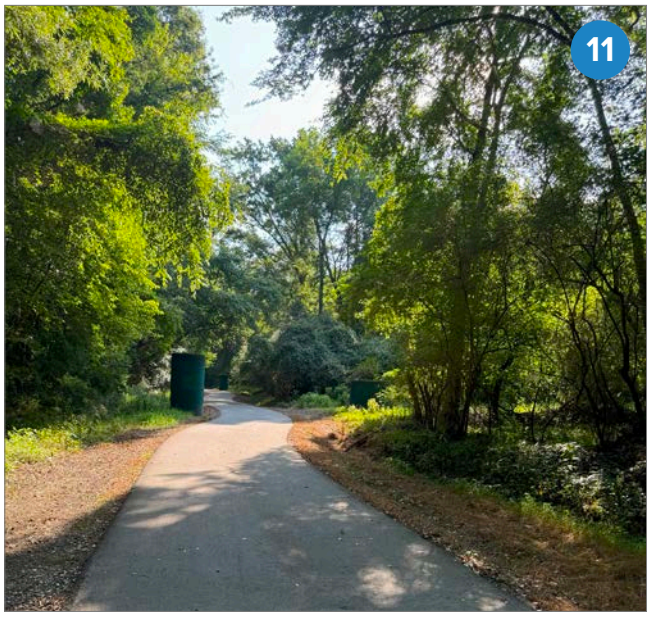


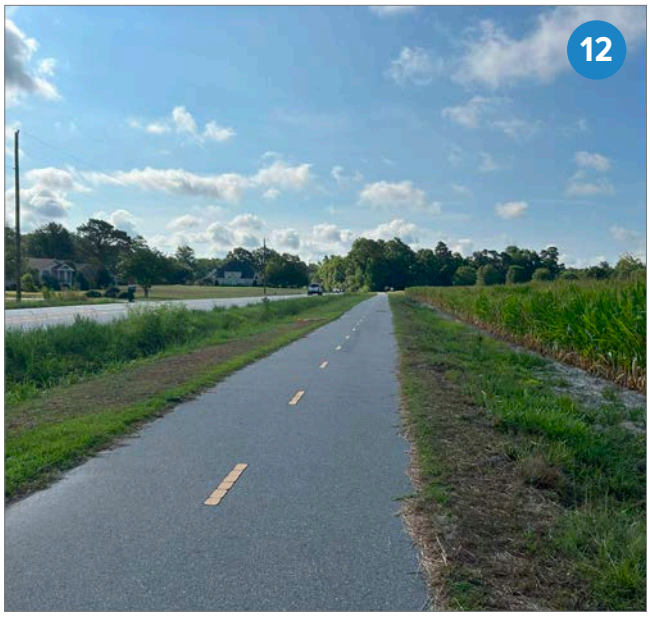
Sidewalks are lacking along N Jefferson Avenue (above left) leading to Royall Avenue near the train tracks. "Paper paths" or "desire paths" are evident here and along Royall Avenue (above right image shows the Royall Avenue undercrossing of US 70 with a pedestrian pulling a cart in road) due to the lack of walking and biking facilities.



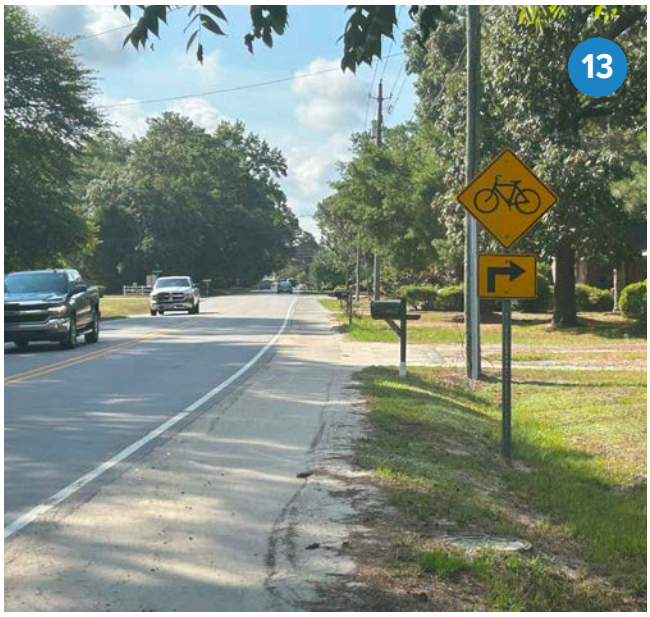
Similar to each intersection along Elm Street east of Slocumb Street, sidewalks are missing and no pedestrian signals or crosswalks exist. Outside of Center Street in the downtown area, many intersections lack crosswalk and pedestrian signals.

The Stoney Creek Greenway north and south of Royall Avenue remains disconnected due to the railroad tracks that parallel Royall Avenue; 1,800 feet to the north, the Stoney Creek Greenway is also blocked from connecting to the Reedy Branch Greenway by US 70.

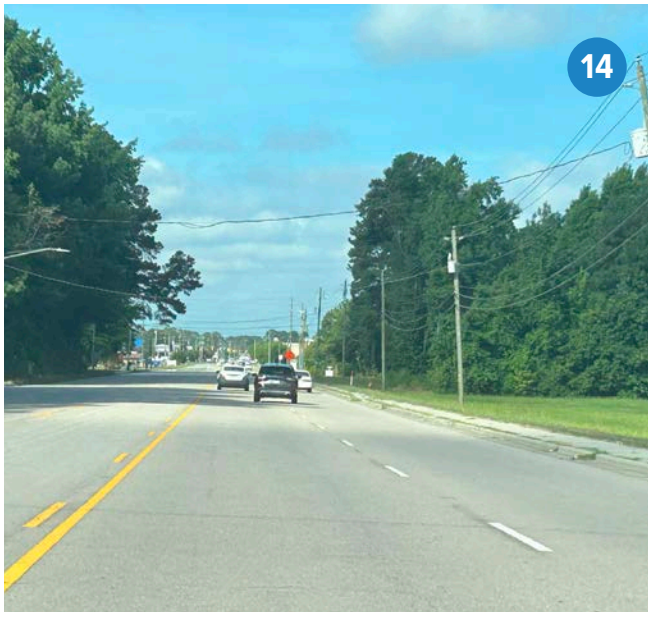




The Goldsboro greenway network consists of a few segments that are key building blocks. The Stoney Creek Greenway (above left) runs north/south along Stoney Creek just east of the downtown neighborhoods. The New Hope Road sidepath (above right) runs along New Hope Road and connects to the Reedy Branch Greenway behind Wayne Community College and the hospital.



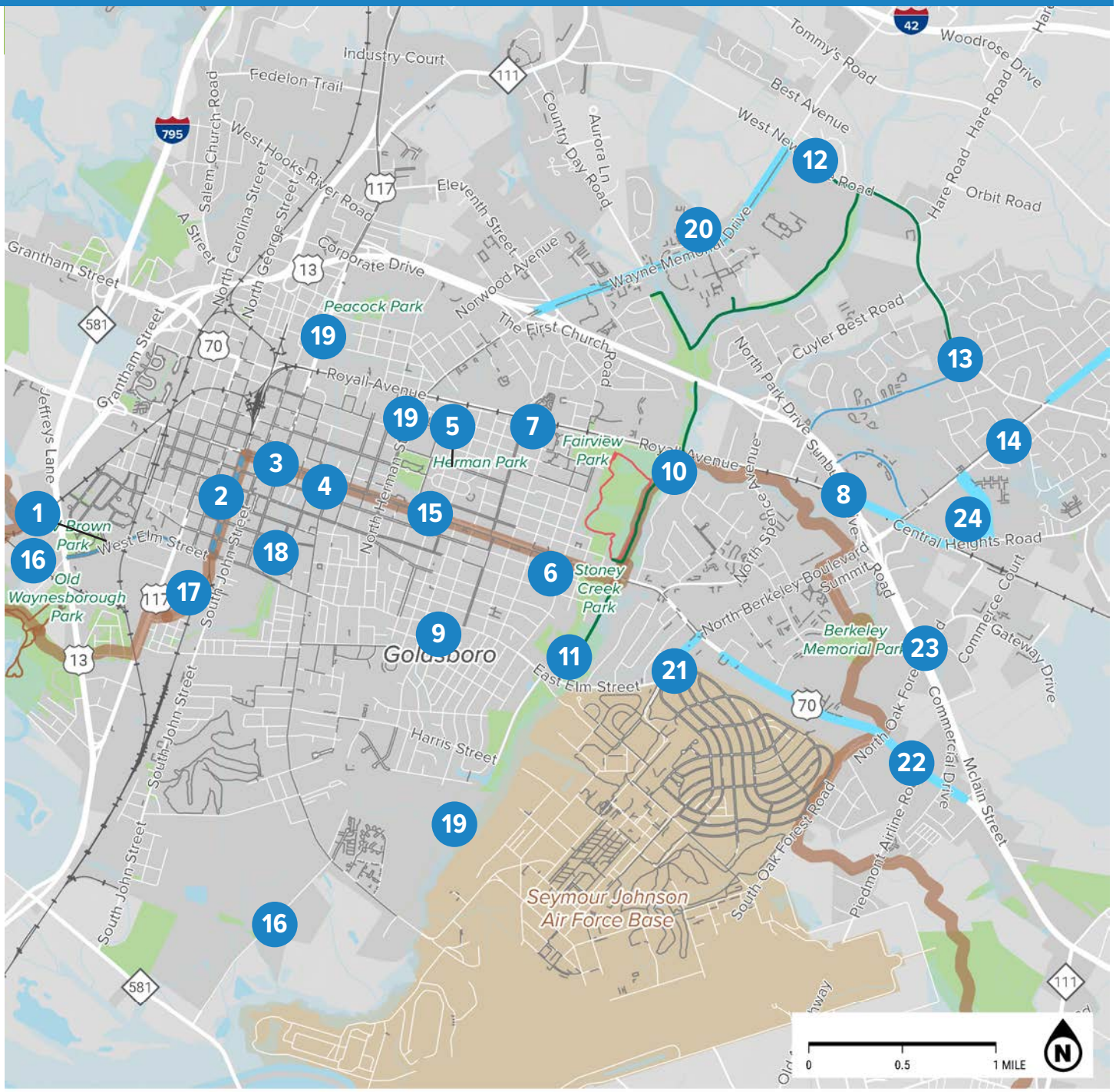
Sand/debris covers the short bike lane along New Hope Road that connects the New Hope Road sidepath to the Harding Drive bike lanes.



Berkeley Boulevard is a high-traffic volume, high-speed corridor with five lanes. Some of the existing sidewalks have no buffer, and some sections do not have sidewalk at all.

Map ID	Additional Opportunities and Challenges Notes
15	Ash St Corridor Study – In 2023, the Goldsboro MPO completed a corridor study of Ash St, analyzing the section of Ash St from George St to Berkeley Blvd. While this project is not funded at this time, recommendations included reconfiguring the roadway to three lanes, including bicycle facilities and improved bike/ped crossing facilities.
16	MST: City of Goldsboro Trail Development Plan – This study, completed in 2021, details strategic options for routing the MST through the heart of Goldsboro and Wayne County. The Center St sidewalks and Ash St sidewalks are currently designated as part of the official route. The MST through Goldsboro is also proposed to connect through Old Waynesborough Park and the Stoney Creek Greenway.
17	Railroad spur that is no longer active – Potential opportunity to enhance connectivity between Old Waynesborough Park and downtown Goldsboro.
18	Goldsboro Community Floodprint – This study proposes the rehabilitation of the Big Ditch that runs north/south through the heart of the city. Potential opportunity for greenway development along the corridor including floodplain buyout properties owned by the City of Goldsboro along the corridor.
19	In addition to Royall Ave, Elm St, and Ash St – Williams St, Wayne Memorial Dr, and Berkeley Blvd have gaps in their sidewalk connections.
19	The City of Goldsboro owns property and easements along Stoney Creek – Potential opportunities for connecting the Stoney Creek Greenway to the southern neighborhoods of Goldsboro as well as the Seymour Johnson AFB entrance at Slocumb St.
20	Funded STIP project (U-6204) along Wayne Memorial Dr from Country Day Rd to New Hope Rd is an access management improvement project.
21	Funded STIP project (EB-5850) – Sidewalks will be constructed along the east side of Berkeley Blvd from Elm St to Ash St, filling the sidewalk gap that leads to the Seymour Johnson AFB gate existing sidewalks.
22	Funded STIP project (U-4407) along Ash St from Berkeley Blvd to US 70 includes widening the road to four lanes. The design of this project is currently under development and should include bicycle and pedestrian facilities.
23	Funded STIP project (U-6110) includes improving the US 70/N Oak Forest Rd intersection.
24	Funded STIP project (U-5724) includes realignment of Central Heights Rd at Berkeley Blvd. Sidewalks will be constructed on the north side of Royall Ave from N Park Dr to Berkeley Blvd. Sidewalks will be constructed along the north side of Central Heights Rd from Berkeley Blvd to Fallin Blvd (new road). Lastly, sidewalks will be constructed on both sides of the new road (Fallin Blvd) from Central Heights Rd to Berkeley Blvd.

GOLDSBORO: OPPORTUNITIES AND CHALLENGES



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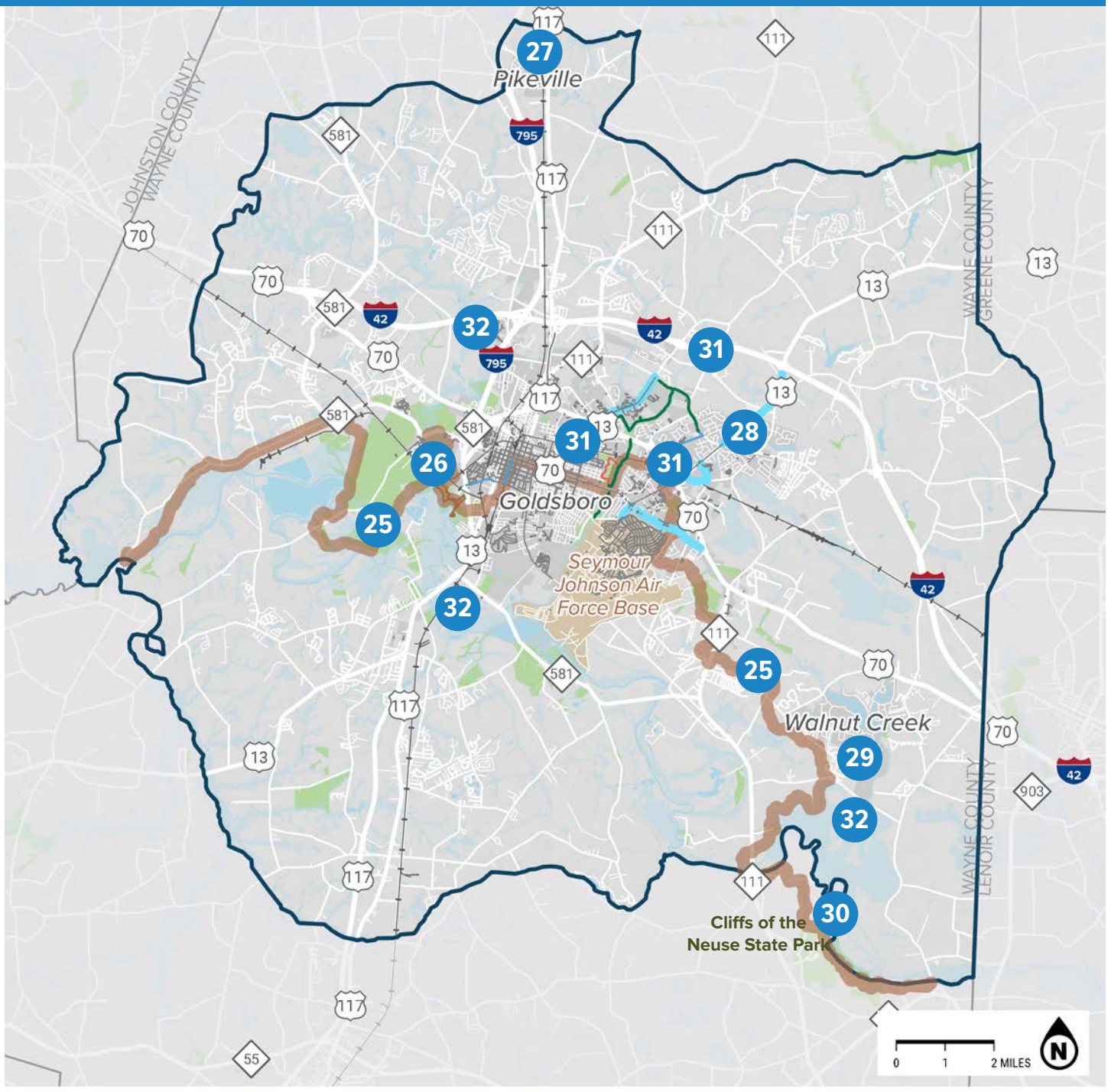
- Hiking Trails
- Mountain Bike Trails
- Shared Use Paths

- Projects in Development
- Mountains-To-Sea Trail Alignment

Map ID	Additional Opportunities and Challenges Notes
25	MST: City of Goldsboro Trail Development Plan – This study, completed in 2021, details strategic options for routing the MST through the heart of Goldsboro and Wayne County. Beyond the core of Goldsboro, several options for connecting through Wayne County west of Goldsboro, as well as to the southeast to Cliffs of the Neuse State Park are detailed.
26	Railroad spur adjacent to Old Waynesborough Park that is currently not being used.
27	Pikeville's walking path in Dees Memorial Park provides a recreational loop and also connects to Pikeville's downtown sidewalk network. However, sidewalk gaps and intersections without pedestrian crossings are found along Main St and Goldsboro St.
28	STIP project (U-3609B) along US 13/Berkeley Blvd from New Hope Rd to Saulston Rd includes widening the roadway. The design includes a curb and gutter section with sidewalk on one side (south of US 70 bypass) and another section that includes 4-foot paved shoulders on both sides (north of US 70 bypass).
29	The Village of Walnut Creek is a small community surrounding Lake Wackena and the Walnut Creek Country Club. No bicycle and pedestrian facilities are found here.
30	Cliffs of the Neuse State Park – Key regional destination that could be connected by the Mountains-to-Sea Trail or bike/ped facilities along connecting roadways.
31	I-42, US 13/70, and the railroad corridors serve as barriers to walking and biking connectivity across the study area.
32	The Neuse River and its tributaries can serve as both barriers and opportunities to walking and biking connectivity. While bridges are needed to cross these corridors, protected lands—such as the Cliffs of the Neuse State Park to the southeast and the state-owned land along the Neuse River just west of downtown Goldsboro—adjacent to these corridors can serve as trail opportunities.

GOLDSBORO MPO: OPPORTUNITIES AND CHALLENGES



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BICYCLE LEVEL OF TRAFFIC STRESS (BLTS) ANALYSIS

Overview of Process

The bicycle level of traffic stress (BLTS) analysis estimates the level of comfort for people biking on a given roadway segment. BLTS helps to identify where "gaps" or deficiencies in a bike network exist, and provides a measure of how likely different types of riders, based on ability and comfort level, are to use the facility. BLTS is determined by characteristics of a given roadway segment that affect a bicyclist's perception of safety and comfort, including posted speed limit, number of travel lanes, and the presence and character of bicycle lanes. The combination of this criteria classifies a road segment into one of four levels of traffic stress:

- BLTS 1 represents roadways where bicyclists of all ages and abilities would feel comfortable riding. These roadways are generally characterized by low volumes, low speeds, no more than two travel lanes, and traffic control measures at intersections. These roadways may have bicycle facilities; separated shared-use paths for bicycles also fall into this category.

- BLTS 2 represents slightly less comfortable roadways, where most adults would feel comfortable riding.

- BLTS 3 represents moderately uncomfortable roadways, where most experienced bicyclists would feel comfortable riding.

- BLTS 4 represents high-stress roadways where only strong and fearless bicyclists would feel comfortable riding. These roadways are generally characterized by high volumes, high speeds, several travel lanes, and complex transitions approaching and crossing intersections.

BLTS Analysis Findings

Most of the neighborhood streets within the downtown grid received a BLTS score of 1 because of their low speed limits and lower number of lanes (see the map on the next page). Pockets of streets scoring a 2 include a neighborhood to the east of South John Street and an area south of West Ash Street and west of Center Street. Many of the remaining streets within the downtown area received a score of 3, despite their low speed limit, due to their number of lanes. Roadways scoring 4 include divided highways, including the interstates, as well as high-traffic arterials such as Royall Avenue, Ash Street, and Elm Street, as well as the US 70 bypass.

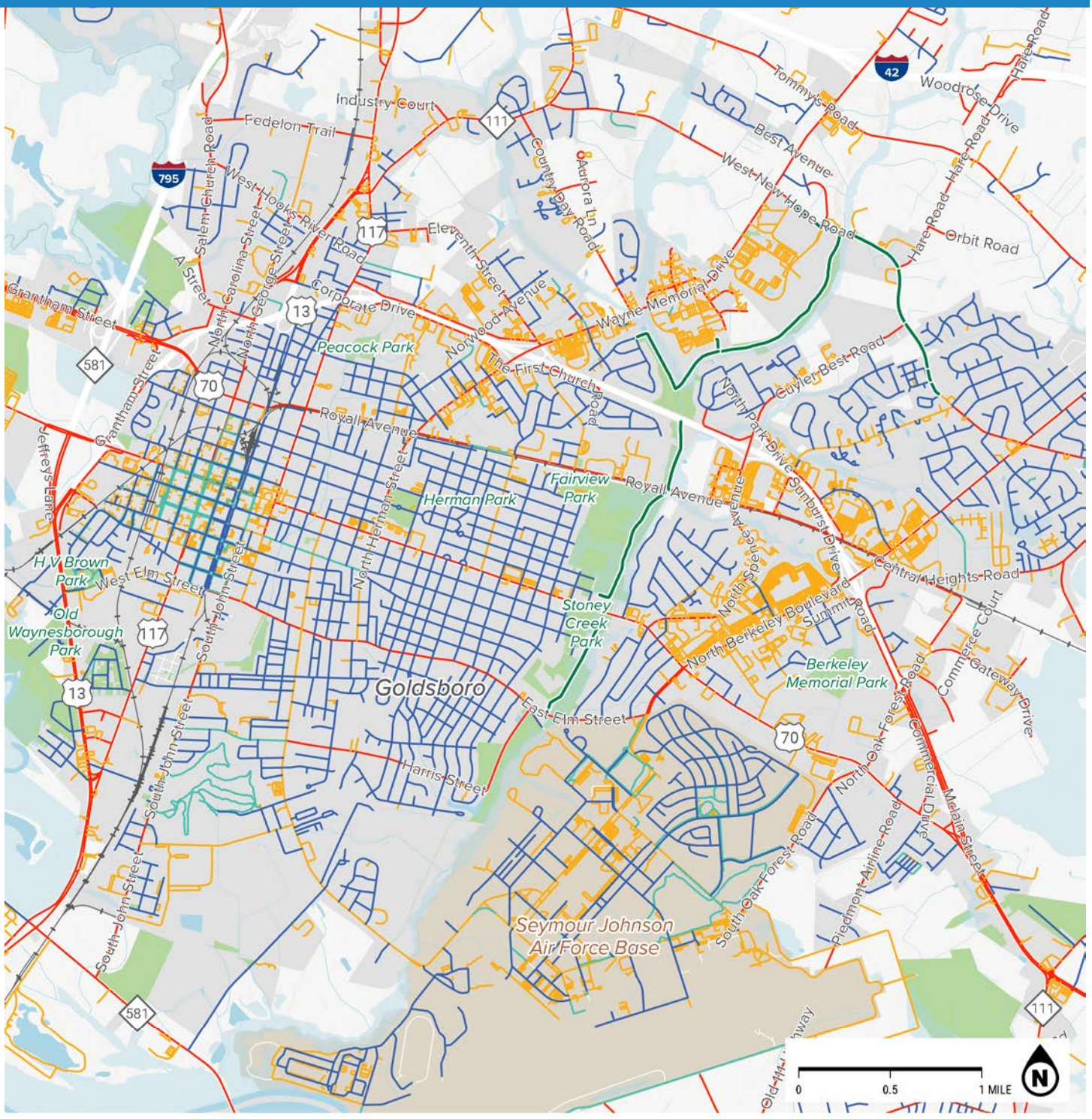
For more details on the BLTS analysis, see the methodology appendix, Appendix G.

Criteria for Bicycle Level of Traffic Stress in Mixed Traffic

Prevailing Speed or Speed Limit (mph)	Street Width		
	2-3 Lanes	4-5 Lanes	6+ Lanes
≤ 25	BLTS 1 or 21	BLTS 3	BLTS 4
30	BLTS 2 or 3[1]	BLTS 4	BLTS 4
≥ 35	BLTS 4	BLTS 4	BLTS 4

1. Lower value is assigned to streets without marked centerlines or classified as residential with fewer than 3 lanes. Residential roadways are identified based on the Open Street Map 'highway' tag.

GOLDSBORO: BICYCLE LEVEL OF TRAFFIC STRESS



LEGEND

- Shared Use Paths
- Railroads
- Seymour Johnson AFB
- Parks & Managed Lands
- Water Body
- Wetland
- Municipal Boundaries

BIKE LEVEL OF TRAFFIC STRESS (BLTS) SCORE

- 4: Higher Stress
- 3
- 2
- 1: Lower Stress

HIGH INJURY NETWORK (HIN) ANALYSIS

Crash Data and the HIN

The Goldsboro MPO high injury network (HIN) displays where the most severe crashes occurred in the region from 2017 to 2023 (inclusive). The analysis includes all crashes involving a bicycle or pedestrian as well as any motor-vehicle crash where a person was killed or severely injured. To prioritize safety improvements that will benefit people walking and biking, crashes were weighted accordingly:

- Bicyclist or pedestrian serious injury or fatality: 4
- Bicyclist or pedestrian minor injury: 2
- Motorist severely injured or killed (no pedestrian or bicyclist involved): 1

For more details on the analysis, see the methodology appendix, Appendix H.

HIN Findings

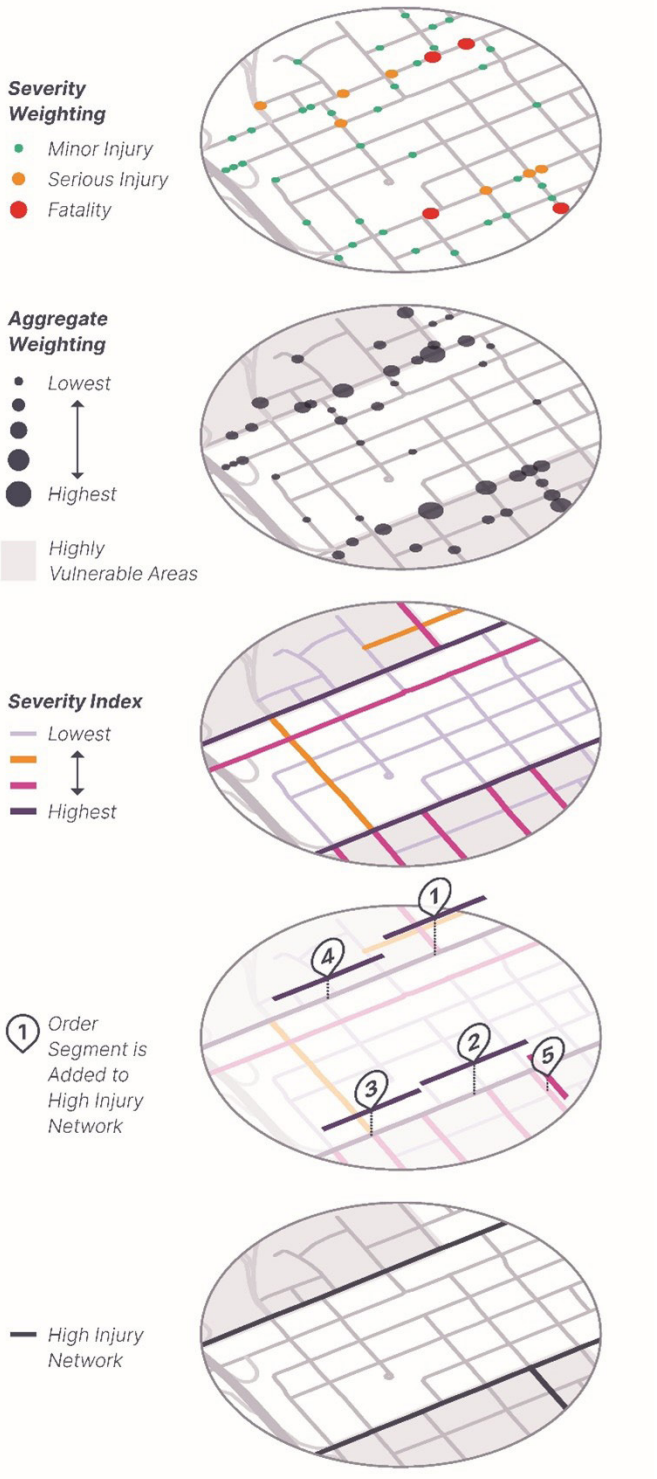
Over half (55%) of crashes occurred on the HIN, which accounts for only 5.5% of centerline miles in the Goldsboro region. The longest HIN corridor is Ash Street/US 70; Royall Avenue and North Berkeley Boulevard are also prominent HIN corridors.

The segment with the highest crash rate was East Ash Street between North Center Street and North Daisy Street in downtown Goldsboro. This is a four- to five-lane arterial with high commercial activity, indicating a high potential for people walking and biking. Despite the presence of sidewalks on both sides of the street, crosswalks are not available at every crossing. In May 2022, a pedestrian was walking in the roadway after dark and was fatally struck by a vehicle. Four other minor injury crashes involving pedestrians have occurred on this segment as well, two of which were at intersections and two of which were mid-block.

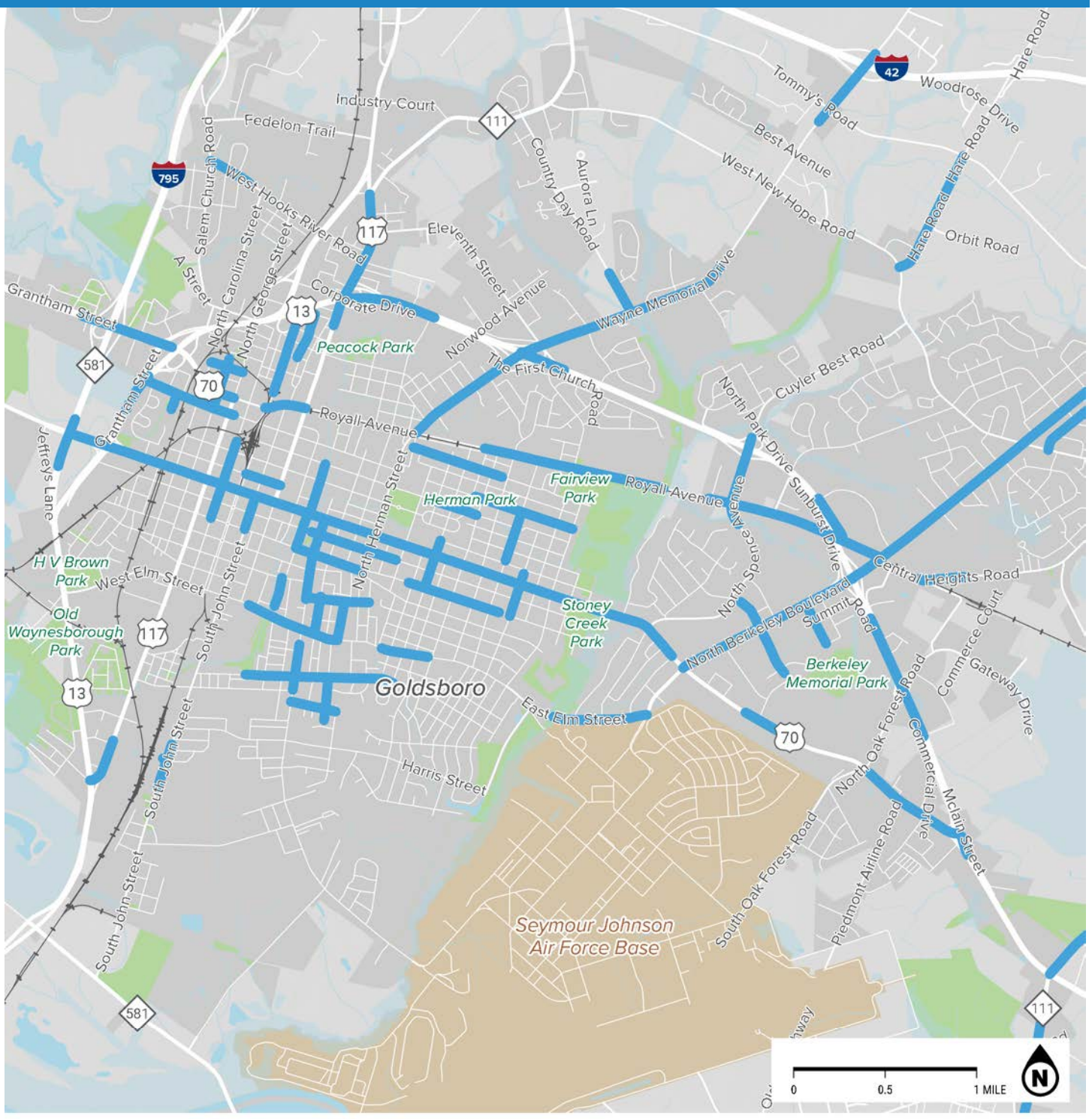
North Berkeley Boulevard also has many segments on the HIN. The highest-crash segment also had a crash after dark that involved a pedestrian walking in the roadway.

While most HIN segments are in the city of Goldsboro, which has higher rates of pedestrian activity, isolated segments are also found throughout the region, including a segment of US 117 south of Pikeville.

Developing the HIN



GOLDSBORO: HIGH INJURY NETWORK



LEGEND

- High Injury Network
- Railroads
- Seymour Johnson AFB
- Parks & Managed Lands
- Water Body
- Wetland
- Municipal Boundaries

PUBLIC INSIGHT

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

- Online and hard copy survey (see summary on following pages)
- Project fliers
- Two in-person public outreach events
- Online interactive map
- Three steering committee meetings
- Seven project partner interviews

Project Partner Interview Summary

The project team conducted seven interviews with several different individuals that had unique insight into walking and biking opportunities and challenges. These individuals included:

- June Joyner-Bynum – Black Girls Do Bike, Goldsboro Chapter (July 15, 2024)
- Steve Yetman and Ramon Muckle – City of Rocky Mount, Engineering (July 17, 2024)
- Denise Evans and Aldon Cox – Seymour Johnson AFB (July 17, 2024)
- Krystal Fuller and Johnny Holland – Mayors Committee for Persons with Disabilities (July 17, 2024)
- Felicia Brown – Goldsboro Parks and Recreation (July 30, 2024)
- Ben Jones – Friends of the Mountains-to-Sea Trail (August 6, 2024)
- Nicole Lofton – Black Girls Do Bike, Goldsboro Chapter (August 12, 2024)

Key themes from the project partner interviews included the following:

- Two existing groups of bicyclists regularly ride in Goldsboro for recreational, adventure, or long-distance rides: Black Girls Do Bike and Seyboro Cyclists.
- The City of Rocky Mount Residential Traffic Management Policy has been implemented and fine-tuned over the past decade. It can serve as a model policy for the City of Goldsboro.
- Walking and biking connectivity is desired to Seymour Johnson Air Force Base, especially in the following areas: along Berkeley Boulevard, Elm Street, and Slocumb Street, and at the Bryan Multi-Sport Complex.
- Numerous instances of ADA upgrades are needed throughout Goldsboro, especially downtown outside Center Street, Ash Street, Wayne Memorial Drive, and other locations. ADA needs to be incorporated into every project possible.
- Extending the Stoney Creek Greenway south of Elm Street to Slocumb Street is a key opportunity. City already owns the easements, just needs funding. Other gaps in the greenway network across Royall Avenue, especially, will be challenging due to the need to cross over (or under) the railroad tracks. Greenways needed as linear parks to connect park system.
- Several opportunities for strategically building out the MST through Goldsboro were identified in the 2021 City of Goldsboro Trail Development Plan, and should be incorporated into this planning process.
- Key needs in the network include Royall Avenue, filling the gaps in the existing

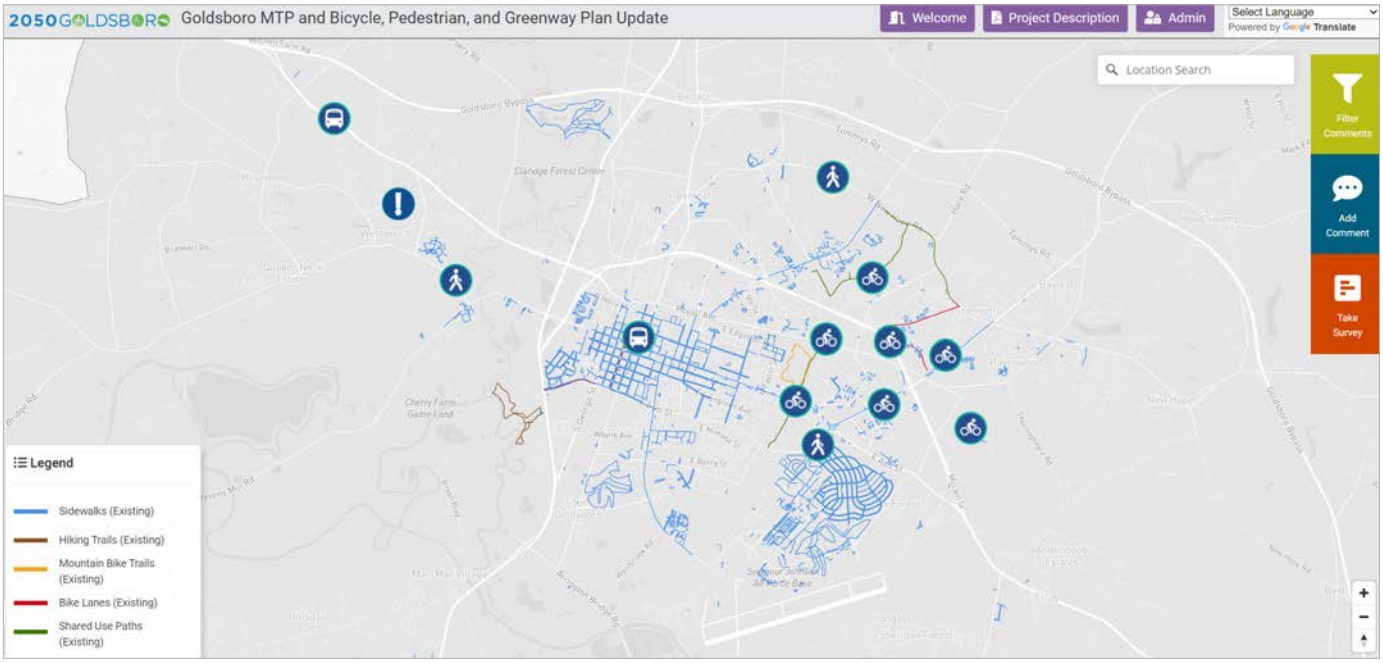
greenways, Ash Street, Berkeley Boulevard, and Spence Avenue. Consider using the unused railroad spur that connects to the southern terminus of Center Street for trail connectivity.

- Consider offering bike tours to prospective residents through tourism program.

Input Map Summary

Ten comments were received via the online interactive map. These included the following:

- Lots of wide open space to build a multiuse looped trail on state property (Old Smithfield Road).
- Need to complete gap in Stoney Creek Greenway across Ash Street.
- Need to complete gap in Stoney Creek Greenway across Royall Avenue and the train tracks.
- Need to complete the sidewalk gap along Berkeley Boulevard from the Seymour Johnson Air Force Base Gate to Ash Street.
- Bike facilities needed along Berkeley Boulevard.
- Build a greenway loop around the business park at North Oak Forest Road and Gateway Drive. Partner with future development and businesses to add onto the greenway system.
- Add a greenway along North Park Drive to connect the bike lanes on Harding Drive and Parkway Drive.
- Build a greenway from Berkeley Boulevard to Harding Drive along electric transmission right-of-way (ROW) and loop back toward YMCA. Also, cross Berkeley Boulevard at new NCDOT intersection being built and connect over to the business park.
- Connect Reedy Branch Greenway to Harding Drive along electric ROW.
- Extend New Hope Road sidepath along New Hope Road west of Wayne Memorial Drive.



Above: Screenshot of the online interactive map that was used for this planning process.

Survey Responses

The survey received 81 responses. Top answers are summarized below.

How would you rate *walking* conditions in the region?

POOR 73%

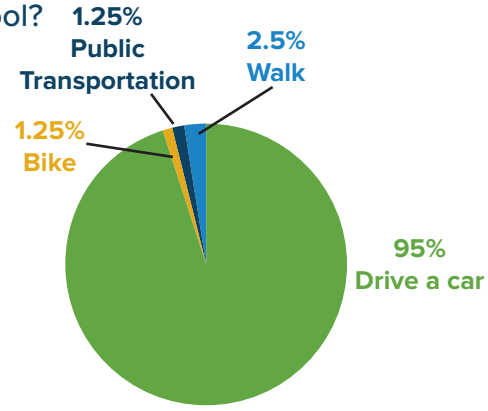
2% said excellent
25% said fair

How would you rate *biking* conditions in the region?

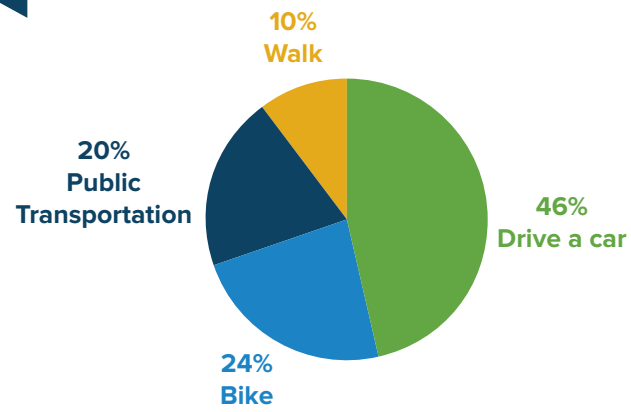
POOR 74%

4% said excellent
22% said fair

How do you currently travel to work/ school?



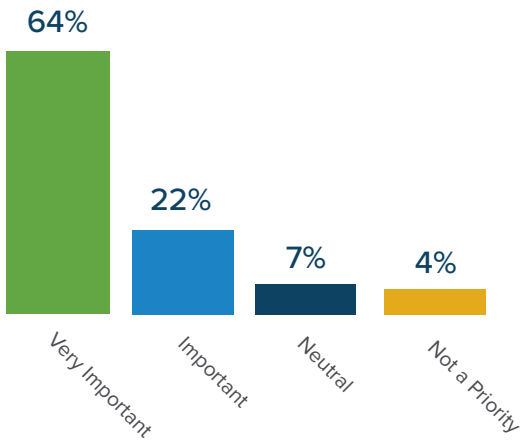
How would you prefer to travel to work/ school?



What destinations would you most like to reach by walking or biking but currently cannot?

- Parks and recreation centers, recreation generally (52%)
- Schools and libraries (44%)
- Entertainment, dining, and shopping (44%)

How important to you is the goal of improving the safety, comfort, and accessibility of walking and biking in greater Goldsboro?



> "I haven't been able to even get a job due to living off of Glenn Dr in Goldsboro and having zero ability to drive. ***A bicycle path or walkway could change people's lives out here.***"
>
> — *Goldsboro resident*

Which of the following *pedestrian* improvements are most important to you?*

- **70%** Sidewalks
- **40%** Greenways and trails
- **27%** Closing gaps in the pedestrian network to improve connectivity
- **23%** Crosswalks
- **14%** Pedestrian signals

Which of the following *bicycle* improvements are most important to you?*

- **53%** Off-street trails and greenways
- **49%** Protected bicycle facilities
- **42%** Closing gaps in the bicycle network to improve connectivity
- **21%** On-street bicycle facilities
- **6%** Bicycle parking
- **4%** Better directional signage along trails

What barriers exist that discourage you from walking or biking more?*

80% Lack of sidewalks, greenways, or bike lanes

73% Vehicle speeds or driver behavior

67% Personal safety concerns (crime, etc.)

What would encourage you to walk or bike more often?

1. More sidewalks (69%)
2. More greenways and paved trails for walking and biking (65%)
3. More crosswalks and pedestrian crossing signals (47%)
4. Creating a more pleasant experience with shade trees, benches, and public art, etc. (47%)
5. More bike lanes or shared lanes (38%)

**Respondents could choose more than one answer to the question, so answers add up to more than 100%.*

CHAPTER 2

Network Recommendations

Creating a fully connected walking and biking network will take strategic, incremental efforts over time. This chapter summarizes an overall strategy for these efforts.

NETWORK RECOMMENDATIONS

The proposed bicycle and pedestrian network reflects this plan's vision and goals, which—at their core—are to provide a connected, low-stress network that is safe and comfortable for people of all ages and abilities. A connected network of sidewalks, bike boulevards, separated bike lanes and intersections, and shared use paths, aim to achieve this vision. These facility types are introduced to the right and on the pages that follow, and further detail on design guidance can be found in Appendix D.

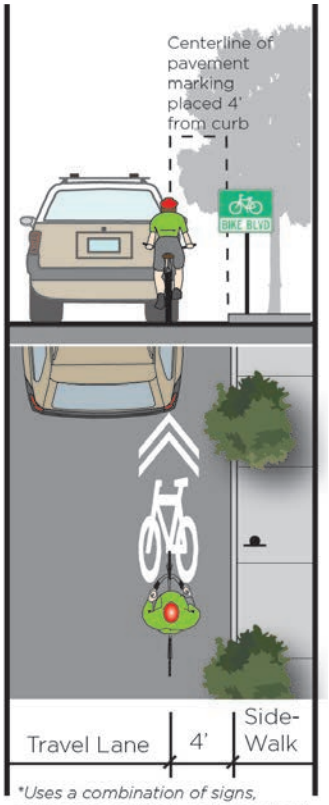
The following key inputs informed the walking and biking network recommendations:

WALKING AND BIKING FACILITY CONTINUUM

The continuum below demonstrates different facility types from least separated (lower traffic volume/speed scenarios) to most separated (higher traffic volume scenarios). These, and other, facility types are further detailed in the resources referenced in Appendix D: Design Guidance, and are built into

Least separated (lower traffic volume/speed scenarios)

Shared Lanes with Sidewalk (Bike Boulevard)



**Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.*

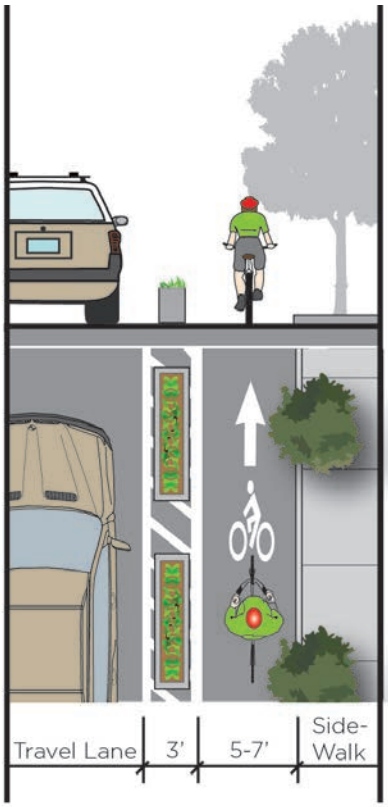
Bicycle Lane with Sidewalk

Buffered Bicycle Lane with Sidewalk

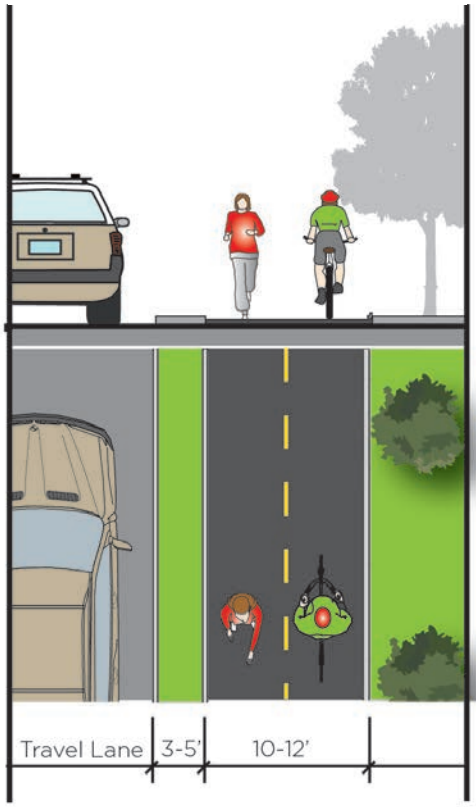
the network recommendations that follow in this chapter. The next two pages also summarize key considerations for selecting the appropriate bicycle facility, emphasizing the importance of achieving physical separation from motor vehicles.

Most separated (higher traffic volume/speed scenarios)

Separated Bicycle Lane with Sidewalk



Shared Use Path: Sidepath



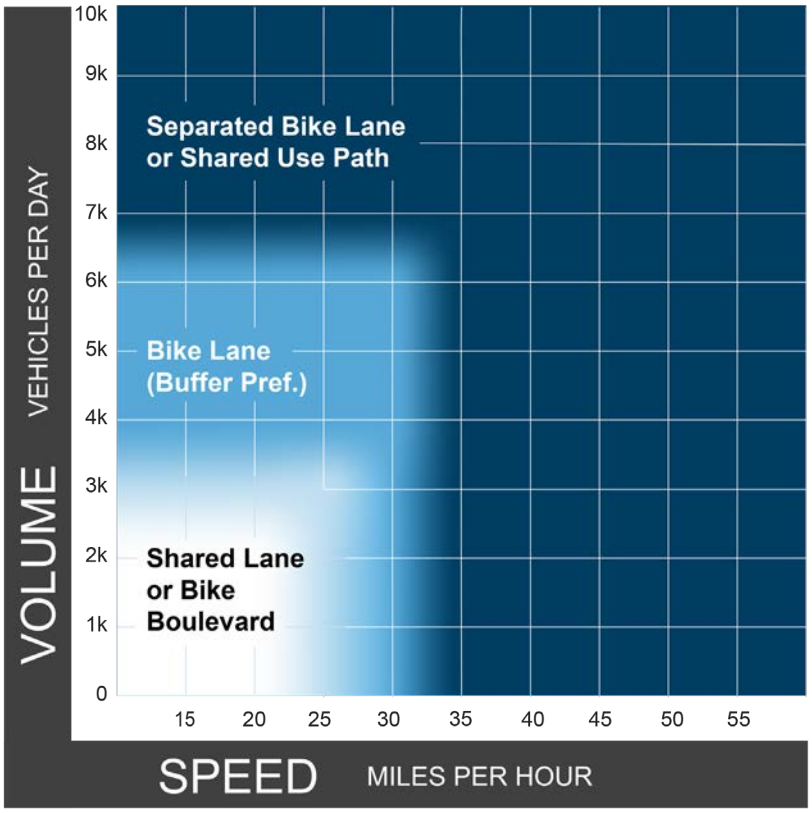
Shared Use Path: Greenway

BICYCLE FACILITY SELECTION

As outlined in the Federal Highway Administration's (FHWA's) *Bikeway Selection Guide*, different types of bikeways are better suited for different roadways based on considerations such as how fast and how frequently vehicles use the road and the roadway width. The bikeways summarized on the previous pages and detailed in Appendix D are part of the recommended network design "toolbox." The proposed bikeway facility types are meant to provide a variety of options to serve all ages and abilities of bicyclists.

The FHWA chart to the right can guide recommendations for the preferred type of bikeway given roadway speeds and volumes. The chart is used by first identifying the daily traffic volume and travel speeds on the existing or proposed roadway, and then locating the facility types indicated by those key variables. Streets with higher speeds and volumes should have more separated or protected bikeway facilities.

The FHWA *Bikeway Selection Guide*, and the associated chart, are meant to be a starting point to select a bikeway facility type in addition to the results of the existing conditions analysis, public input, and professional judgment.



The Preferred Bikeway Types chart shown above from the FHWA Bikeway Selection Guide is a great resource when selecting the appropriate facility for varying roadway contexts.

Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speeds rather than posted speed.

Choosing an All Ages and Abilities Bikeway Type

Stemming from NACTO's *Designing for All ages and Abilities,* this chart provides detailed guidance in choosing a bikeway design that can create an all ages and abilities bicycling environment based on a street's basic design and motor vehicle traffic conditions such as vehicle speed and volume. This chart should be applied as part of a flexible, results-oriented design process on each street, alongside robust analysis of local bicycling conditions. Users of this guidance should recognize that, in some cases, a bicycle facility may fall short of the all ages and abilities criteria but still substantively reduce traffic stress. Jurisdictions should not use an inability to meet the all ages and abilities criteria as a reason to avoid implementing a bikeway, and should not prohibit the construction of facilities that do not meet the criteria.

CONTEXTUAL GUIDANCE FOR SELECTING ALL AGES AND ABILITIES BIKEWAYS

Roadway Context				All Ages and Abilities Bicycle Facility
Target Motor Vehicle Speed	**Target Max. Motor Vehicle Volume (ADT)**	**Motor Vehicle Lanes**	**Key Operational Considerations**	
Any	Any	Any	Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts	Separated Bicycle Lane
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	Shared Street
≤ 20 mph	≤ 1,000 - 2,000	No centerline, or single lane one-way	<50 motor vehicles per hour in the peak direction at peak hour	Bicycle Boulevard
≤ 25 mph	≤ 500 - 1,500	No centerline, or single lane one-way	<50 motor vehicles per hour in the peak direction at peak hour	Bicycle Boulevard
	≤ 1,500 - 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	Conventional or Buffered Bicycle Lane, or Separated Bicycle Lane
	≤ 3,000 - 6,000			Buffered or Separated Bicycle Lane
	> 6,000			Separated Bicycle Lane
	Any	Multiple lanes per direction		
> 26 mph	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	Separated Bicycle Lane, or Reduce Speed
		Multiple lanes per direction		Separated Bicycle Lane, or Reduce to Single Lane & Reduce Speed
	> 6,000	Any	Any	Separated Bicycle Lane, or Shared Use Path
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Shared Use Path with Separate Walkway or Separated Bicycle Lane
			Low Pedestrian volume	Shared-Use Path or Separated Bicycle Lane

National Association of City Transportation Officials (NACTO) Designing for All Ages and Abilities

PRIORITY PROJECTS

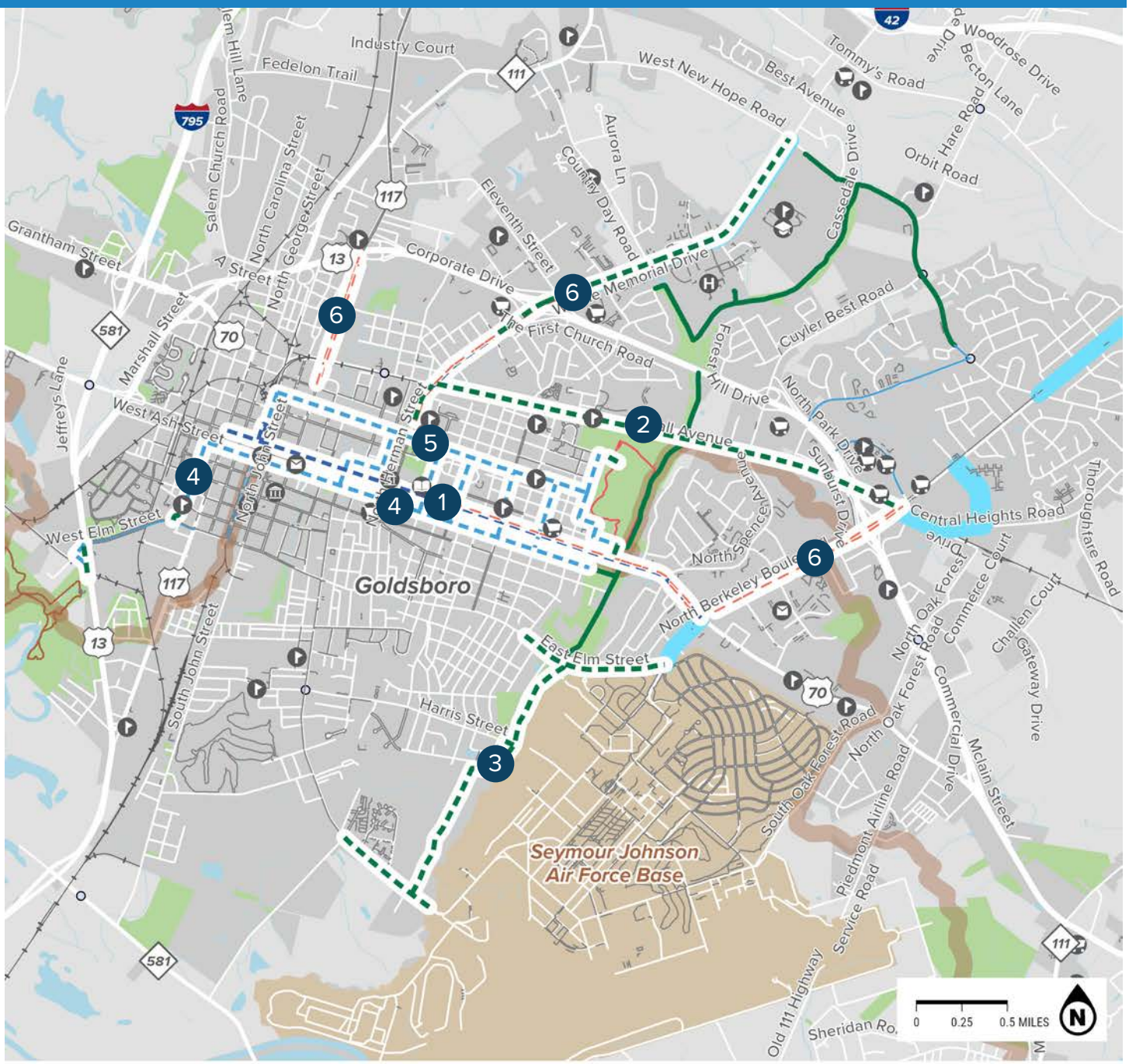
Project Identification Process

The six priority projects identified below and described in greater detail on the following pages were selected because they ***fill gaps in the network, address or provide an alternative to a higher crash corridor, connect key destinations, are consistent with previous plans, and were supported by the steering committee, project partners, and by public comment***.

While these projects were selected as top priorities, they also represent a diversity of project types (e.g., separated bike lanes, sidepaths, greenways, intersection improvements, bike boulevards, and sidewalk gaps) and are geographically spread across Goldsboro. A summary of additional strategic recommendations follow these priority project sheets, and implementation of these additional projects should also be pursued in the near term, or as opportunities arise.

Project Number	Project Name	Project Extents and Brief Description	Corridor Length	Planning-Level Cost Estimate
1	Ash St Reconfiguration	Lane reallocation on Ash St between George St and Berkeley Blvd, including bike lanes, sidewalks, and intersection improvements.	Ash St: 2.84 miles	$37.7M
2	Royall Ave Sidepath	Sidepath on the north side of Royall Ave from Wayne Memorial Dr to Berkeley Blvd.	2.64 miles	$11.4M
3	Stoney Creek Greenway Extension	Extension of Stoney Creek Greenway within public ROW south to the terminus of S Slocumb St. Includes sidepath connections along Elm St and S Slocumb St.	2.12 miles of greenway, 0.68 miles of bike boulevards	$14.4M
4	Mulberry St Bike Boulevard	Bike boulevard connection running mainly on Mulberry St from Old Waynesborough Park and downtown Goldsboro to Stoney Creek Park.	3.42 miles	4a - $0.42M 4b - $1.6M
5	Beech St Bike Boulevard	Bike boulevard on Beech St from Center St/downtown Goldsboro to Fairview Park and the Stoney Creek Greenway.	2.31 miles	$0.69M
6	William St, Herman St/ Wayne Memorial Dr, and Berkeley Blvd gaps	Completing sidewalk gaps on Wayne Memorial Ave from Royall Ave to New Hope Rd; William St from Holly St to US 13; Berkeley Blvd from the Ash St to US 70.	4.05 miles (approx. total)	6a - $13.2M 6b - $4.5M 6c - $3.7M

PRIORITY PROJECTS



LEGEND

- Government
- Grocery
- Library
- Hospital
- Post Office
- College or University
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails

- Mountains-To-Sea Trail
- Projects in Development
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

Project 1: Ash St Reconfiguration

Project Description

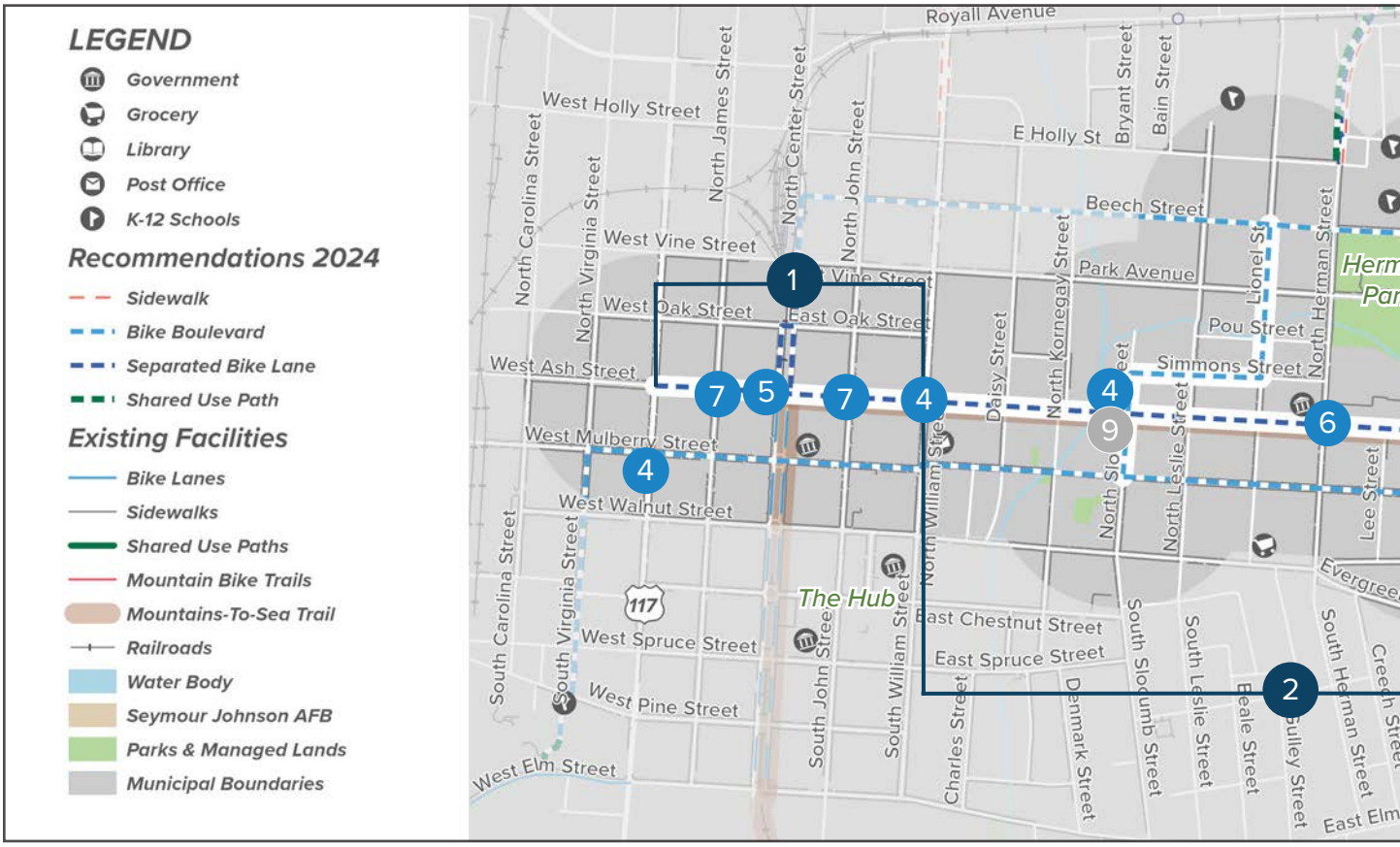
As detailed in the 2023 Ash Street corridor study, a 2.8-mile roadway reconfiguration on Ash Street (George Street to Berkeley Boulevard), including separated bike lanes, sidewalks, and upgrading 14 intersections—including creating or retrofitting eight roundabouts—is recommended. This project includes five bike boulevard connections to Beech Street and Mulberry Street via improved intersections on Ash Street. (See project sheets 4 and 5 for Beech Street and Mulberry Street bike boulevards details.)

Relevant Plans or Studies

- 2023 Ash St Corridor Study
- 2015 Goldsboro Bicycle, Pedestrian, and Greenway Plan
- 2021 City of Goldsboro Trail Development Plan

Map Notes

1. Proposed: two travel lanes, 8' sidewalks including 2' to 6' landscaped buffer where feasible, buffered bike lanes, 8' shared use path at roundabouts. 11'5" median where possible.
2. Proposed: two travel lanes, 5' to 8' sidewalks including 2' landscaped buffer where feasible, on-street bike lanes, 8' shared use path at roundabouts. 10' median where possible.
3. Proposed: two to four travel lanes, 5' to 8' sidewalks including buffer where feasible, buffered bike lanes in single lane sections, 8' shared use path at roundabouts. 12' to 16' median where possible.
4. Proposed roundabout.
5. Proposed retrofit of existing roundabout.
6. Proposed multilane roundabout.
7. Proposed traffic signal.
8. Create a connection between the two segments of the Stoney Creek Greenway that are north and south of Ash St. This will require creating an Ash St bike/ped crossing—either a rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon—exact location to be determined, which will need further discussion with adjacent landowners for direct connection, or could be installed at the Durant St intersection.



9 Upon the completion of this project as well as the recommended Mulberry St and Beech St bike boulevards (see project sheets 4 and 5), create short north/south bike boulevard connections linking Ash St to these bike boulevards and improving north/south connectivity.

Key Destinations

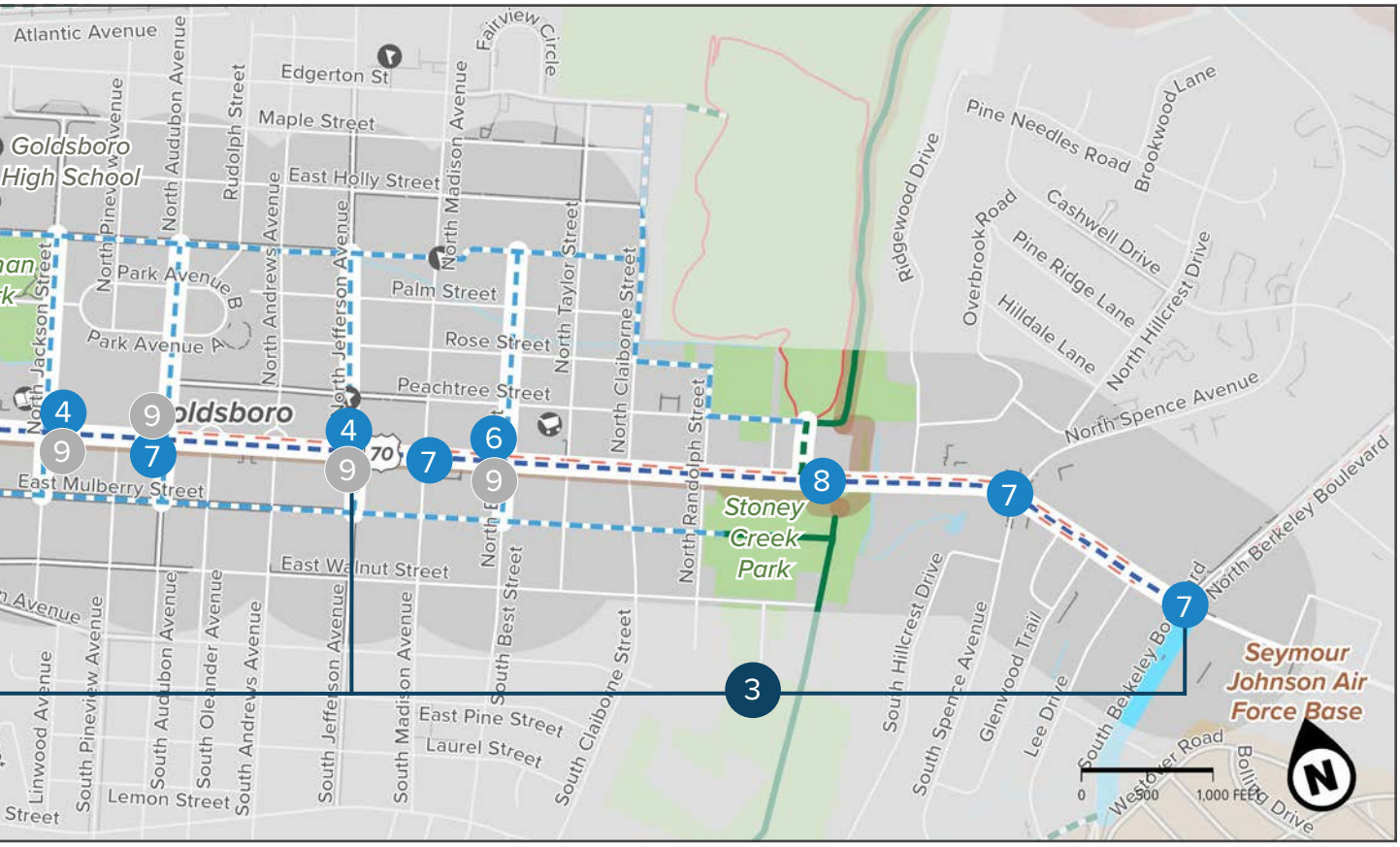
Ash St is designated as the MST through Goldsboro and these improvements would serve as the east/west spine of the MST through the City. Additional destinations include various downtown destinations, including the Wayne County Museum, City Hall, shops, and dining; Wayne County Public Library, Herman Park, Goldsboro High School, various grocery/dollar stores, Stoney Creek Park and Stoney Creek Greenway.

Funding

This project would likely score well on a Federal Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant application. The City of Goldsboro should reach out to NCDOT Integrated Mobility Division for potential assistance submitting a grant application in fall 2024.

Planning Level Cost Estimate

$37.7M - The City of Goldsboro completed a feasibility study (Ash Street Corridor Study) in 2023 for this project along Ash St. Details for this cost estimate can be found in that feasibility study, including costs broken down by section.



Project 2: Royall Ave Sidepath

Project Description

Shared use path (sdepath) on the north side of Royall Ave from Wayne Memorial Dr to Berkeley Blvd.

Relevant Plans or Studies

- 2015 Goldsboro Bicycle, Pedestrian, and Greenway Plan

Map Notes

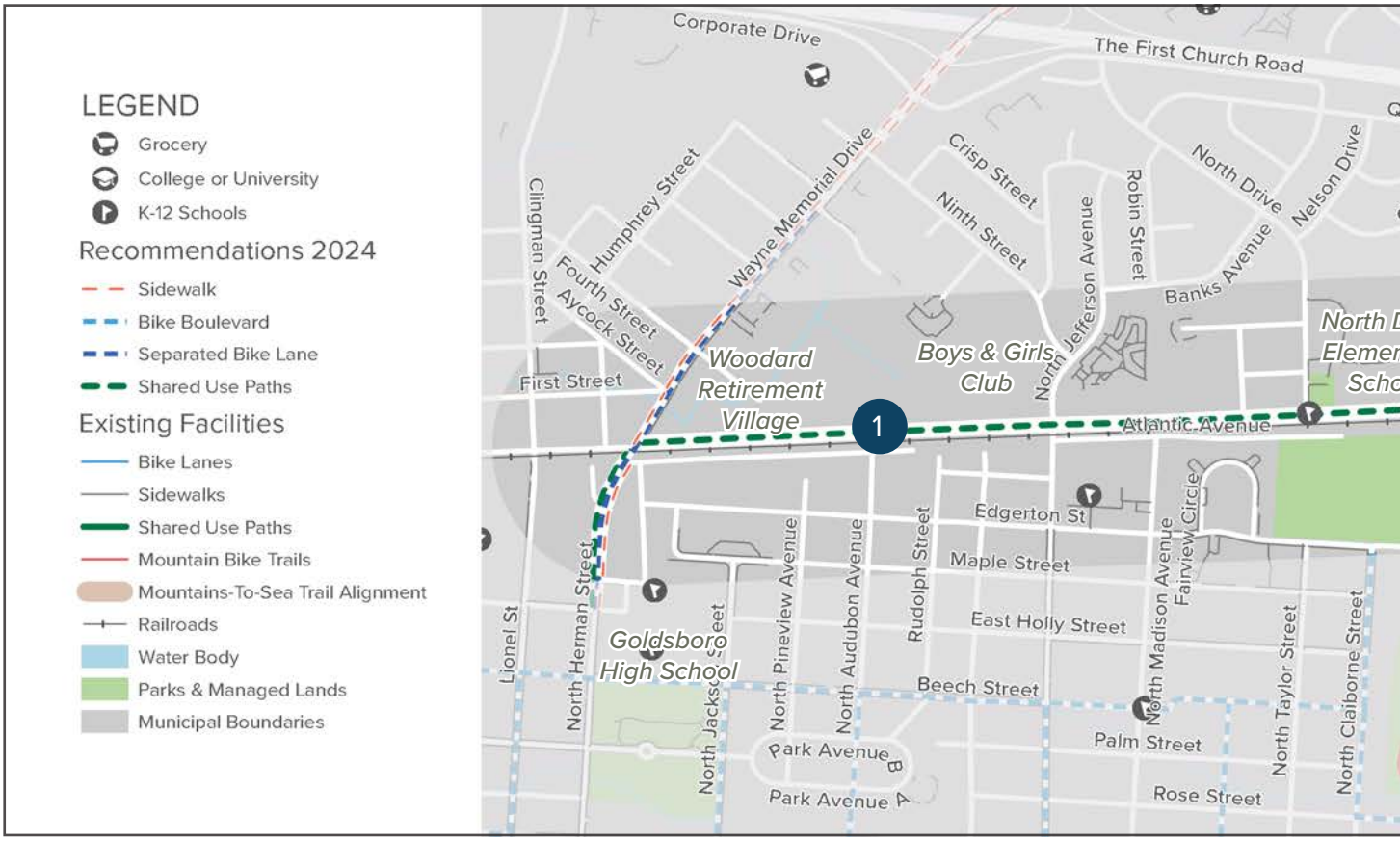
1. Construct a sidepath on the north side of Royall Ave. The south side of the roadway is directly adjacent to an active rail line, which greatly limits available right-of-way. Additionally, most destinations that people will want to access on foot or by biking are on the north side of the roadway. Crossing improvements would be needed at the Jefferson Ave, Spence Ave, and Berkeley Blvd intersections.

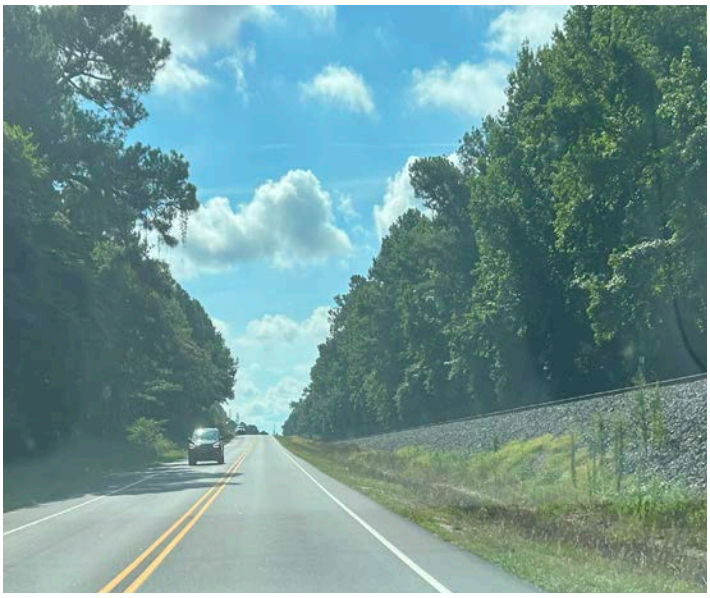
Key Destinations

Woodard Retirement Village, Boys & Girls Club of Wayne County, churches, apartments, restaurants and shopping, North Drive Elementary School, Stoney Creek Greenway, hotels.

Funding

Due to the cost of this project, the City of Goldsboro should submit this project for funding through the State Transportation Improvement Program (STIP), or build sections of this project in phases (i.e., Wayne Memorial Dr to Jefferson Ave; Jefferson Ave to North Dr; North Dr to the Stoney Creek Greenway; the Stoney Creek Greenway to Spence Ave; and Spence Ave to Berkeley Blvd).

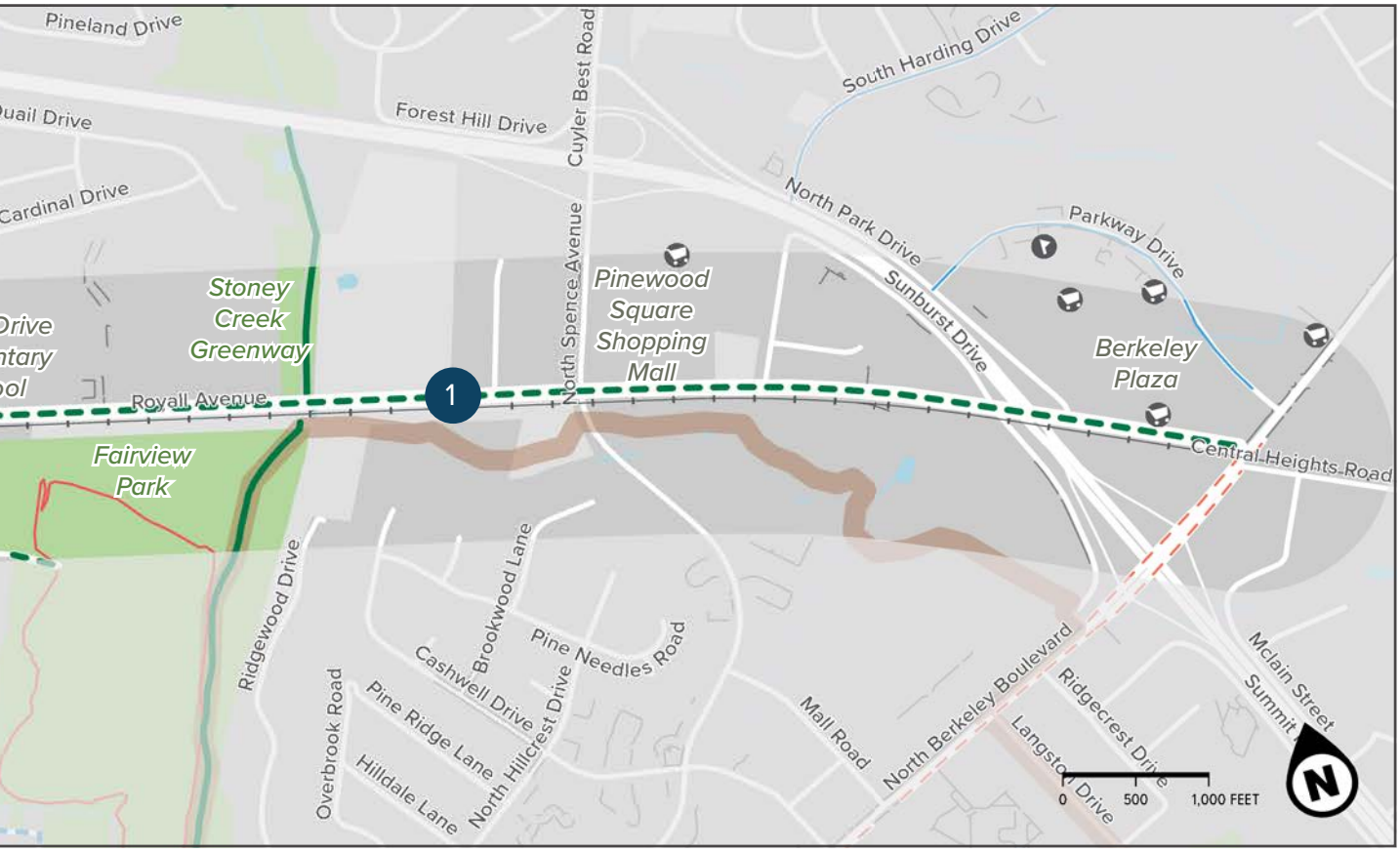


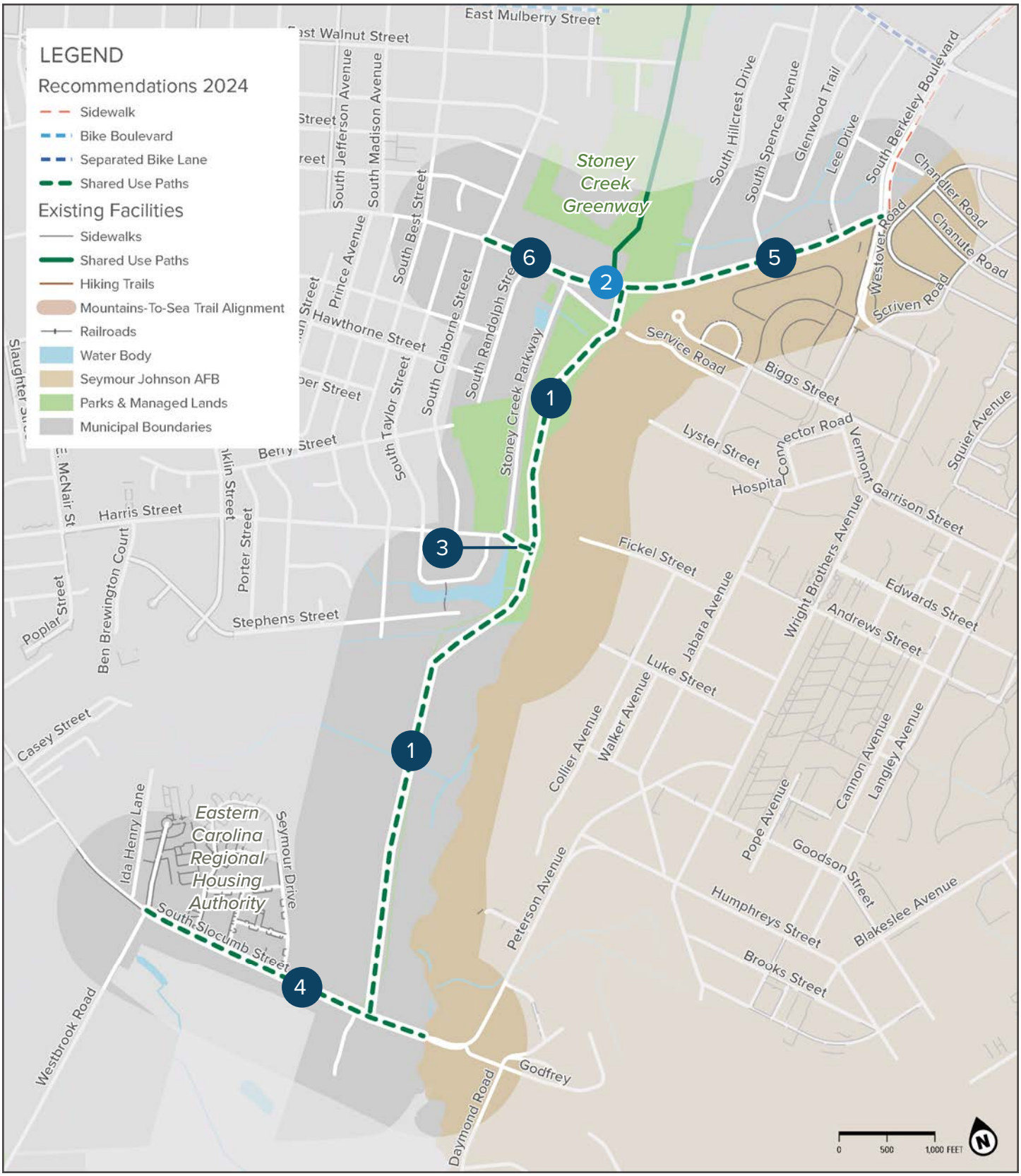


Looking east on Royall Ave. The rail line is visible in the right part of the photo, showing how space for a shared use path is constrained on the south side of the road.

Planning Level Cost Estimate

$11.4M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.




LEGEND
Recommendations 2024
Sidewalk
Bike Boulevard
Separated Bike Lane
Shared Use Paths
Existing Facilities
Sidewalks
Shared Use Paths
Hiking Trails
Mountains-To-Sea Trail Alignment
Railroads
Water Body
Seymour Johnson AFB
Parks & Managed Lands
Municipal Boundaries
East Mulberry Street
East Walnut Street
Stoney Creek Greenway
South Hillcrest Drive
South Spence Avenue
Glenwood Trail
Lee Drive
South Berkeley Boulevard
Chandler Road
Chanute Road
Scriven Road
Westover Road
South Jefferson Avenue
South Madison Avenue
South Best Street
Prince Avenue
Hawthorne Street
South Claiborne Street
South Randolph Street
Stoney Creek Parkway
Service Road
Biggs Street
Lyster Street
Connector Road
Hospital
Vermont Garrison Street
Squier Avenue
Berry Street
South Taylor Street
Harris Street
Porter Street
Poplar Street
Ben Brewington Court
Stephens Street
Fickel Street
Jabara Avenue
Wright Brothers Avenue
Edwards Street
Andrews Street
Luke Street
Collier Avenue
Walker Avenue
Casey Street
Eastern Carolina Regional Housing Authority
Ida Henry Lane
Seymour Drive
South Slocumb Street
Cannon Avenue
Langley Avenue
Pope Avenue
Goodson Street
Peterson Avenue
Humphreys Street
Blakeslee Avenue
Brooks Street
Westbrook Road
Godfrey
Daymond Road
1
2
3
4
5
6
0
500
1,000 FEET
N

Project 3: Stoney Creek Greenway Extension

Project Description

Extension of existing Stoney Creek Greenway to Slocumb St with sidepath connections to Seymour Johnson AFB and adjacent neighborhoods.

Relevant Plans or Studies

- 2015 Goldsboro Bicycle, Pedestrian, and Greenway Plan
- 2021 City of Goldsboro Trail Development Plan

Map Notes

1. Construct the proposed greenway within the utility corridor (already owned by the City of Goldsboro).
2. Construct a crossing (RRFB) at Stoney Creek Greenway crossing of Elm St.
3. Construct a greenway spur connection to the east end of Harris St.
4. Construct a sidepath along South Slocumb St from Seymour Johnson AFB gate to Day Cir.
5. Add a sidepath along Elm St to Berkeley Blvd. The current roadway configuration is a four- to five-lane cross section with traffic volumes between 5,500 and 10,500 annual average daily traffic (AADT). Consider reducing the lanes to two or three lanes, creating space for protected bike lanes or a shared use path within the existing roadway pavement.
6. Construct a sidepath to Claiborne St connecting the neighborhood to the west along Elm St.

Key Destinations

Stoney Creek Park (via Greenway), Seymour Johnson Air Force Base (S Berkeley Blvd/Wright Brothers Ave entrance and S Slocumb St/Peterson Ave entrance), multiple residential neighborhoods.

Funding

Because the City of Goldsboro holds ownership/ easements for the greenway corridor along Stoney Creek and has set aside part of the funding for this project, consider funding this project through the Goldsboro Capital Improvements Program (CIP) budget or consider pursuing Great Trails State Program funding since this corridor also falls along the Great Trails State network. This corridor is also part of the MST, consider working with Friends of the MST to identify funding opportunities.

Above: The current southern terminus of the Stoney Creek Greenway at Elm St.

Planning Level Cost Estimate

$14.4M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.

Project 4a: Mulberry St Bike Boulevard

Project Description

Implement a bike boulevard including traffic calming and shared lane markings on Mulberry St starting at the intersection with Center St and continuing to Stoney Creek Park.

Relevant Plans or Studies

- 2015 Goldsboro MPO Bike, Pedestrian, and Greenway Plan

Map Notes

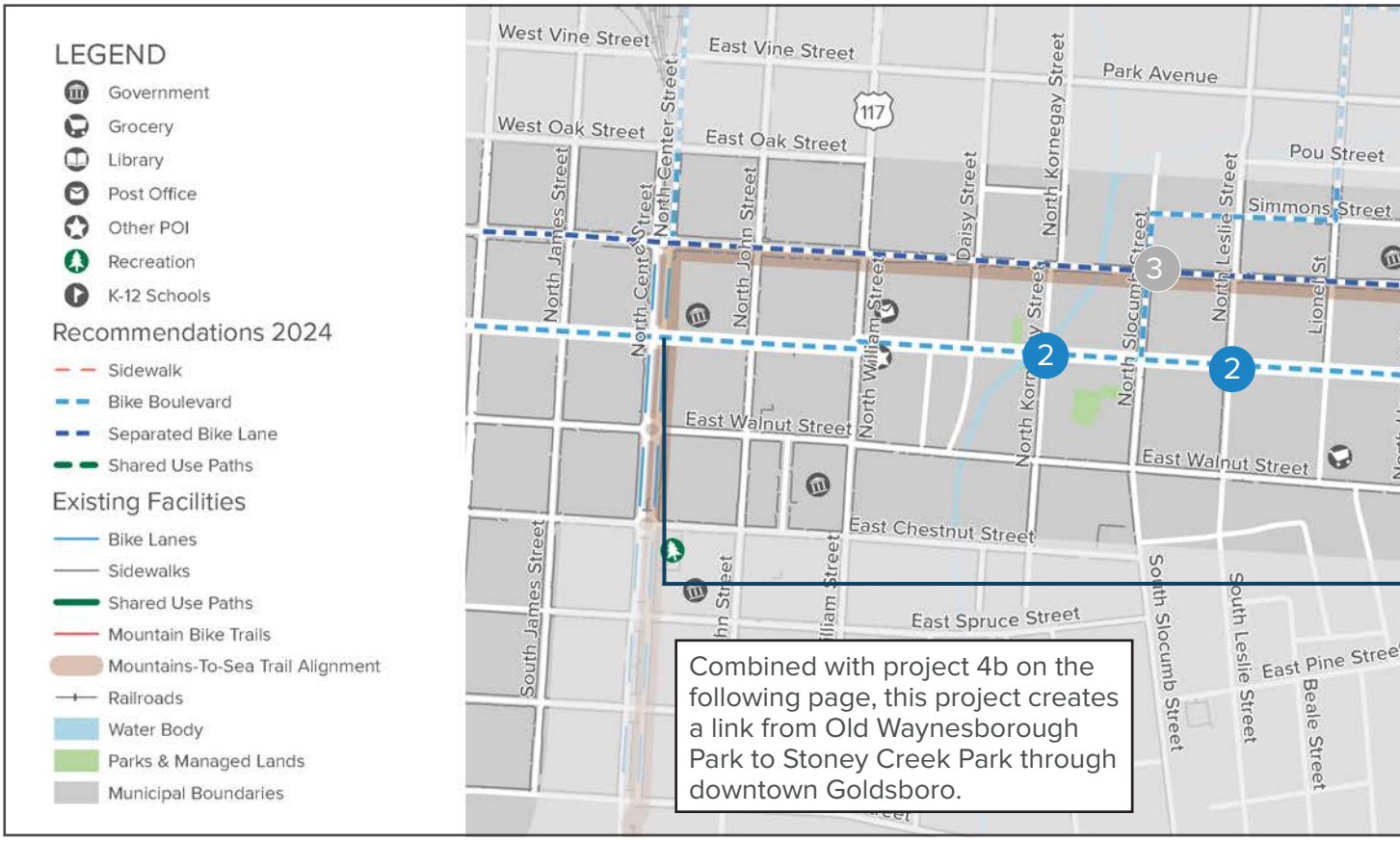
1. Mulberry St from Center St to Stoney Creek Park already has bike boulevard wayfinding signage installed. Add shared lane markings to the pavement to complement the bike route signage.
2. Install a neighborhood traffic circle at the Kornegay St, Leslie St, Jackson St, Audubon Ave, Jefferson Ave, Best St, and Claiborne St to keep traffic speeds at appropriate safe speeds.
3. When the Ash St project is completed (see project sheet 1), implement short bike boulevard connections to Ash St as well as the Beech St Bike Boulevard to improve north/south connectivity.

Key Destinations

Downtown Goldsboro destinations, including City Hall and various shopping and dining attractions, USPS, Piggly Wiggly grocery store (via Lionel St), Stoney Creek Park.

Funding

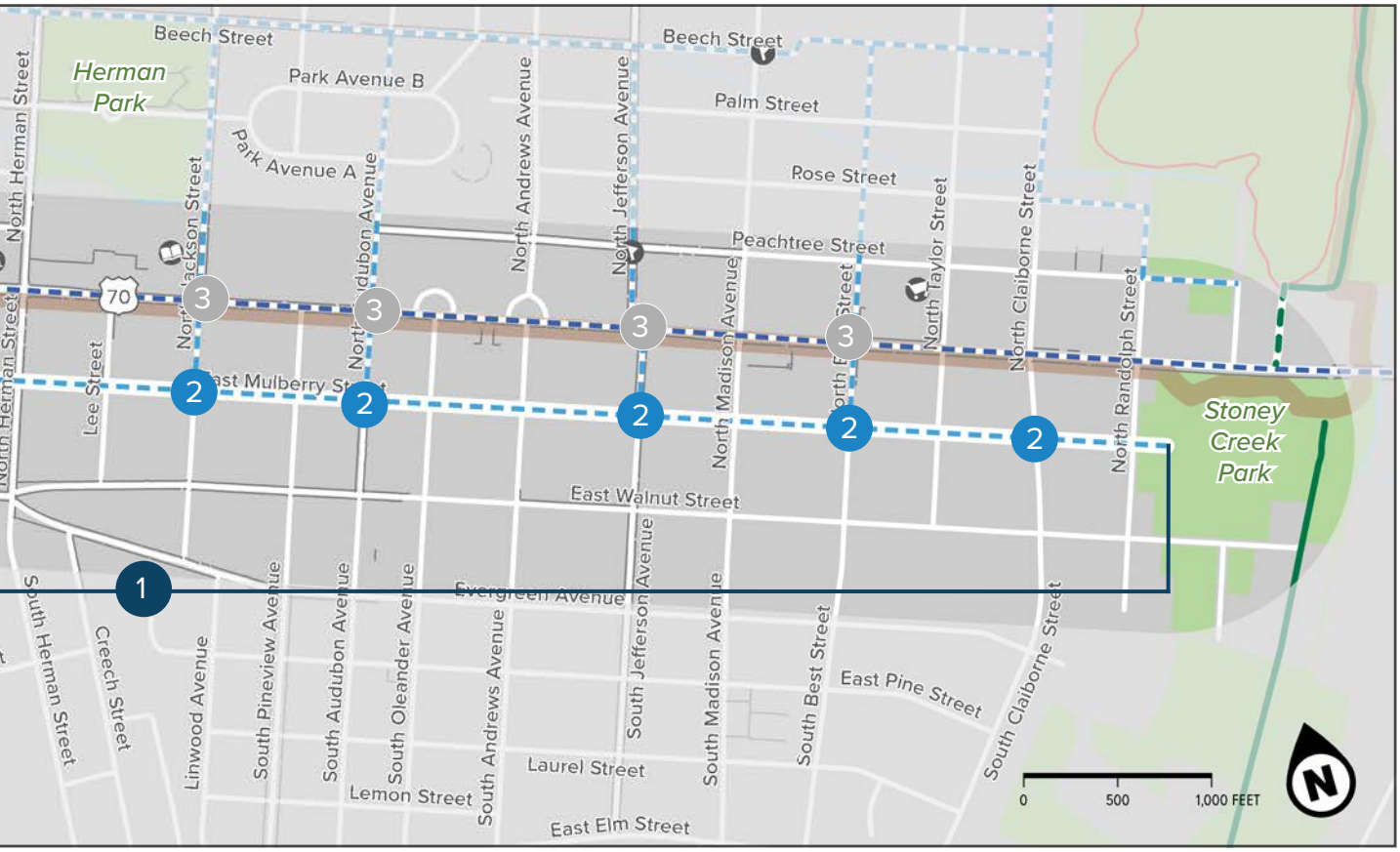
Because Mulberry St is a City street, consider funding this through the Goldsboro CIP or Tourism office.

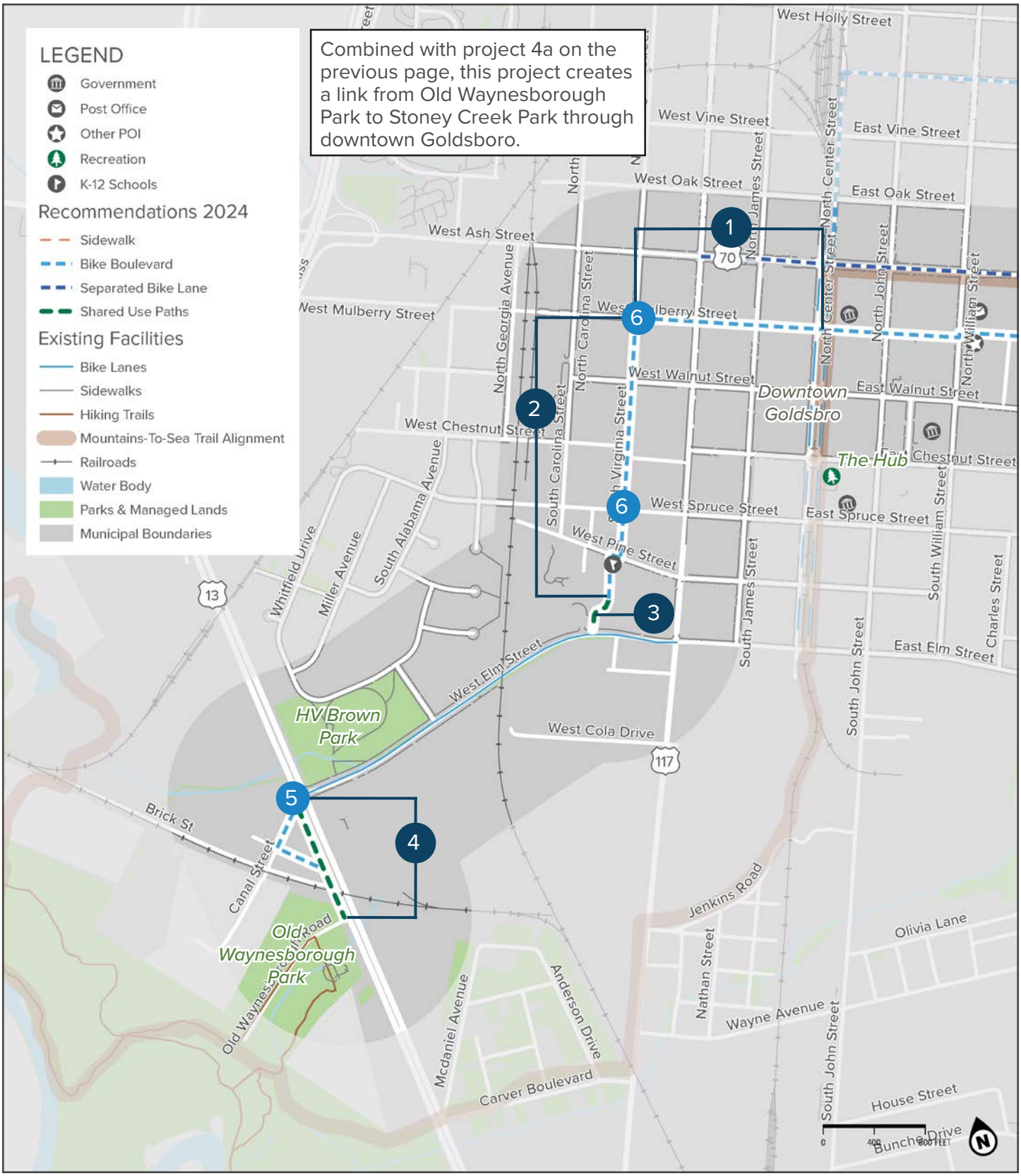


Above: Existing bike route signage on Mulberry St

Planning Level Cost Estimate

$0.42M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.




LEGEND
Government
Post Office
Other POI
Recreation
K-12 Schools
Recommendations 2024
Sidewalk
Bike Boulevard
Separated Bike Lane
Shared Use Paths
Existing Facilities
Bike Lanes
Sidewalks
Hiking Trails
Mountains-To-Sea Trail Alignment
Railroads
Water Body
Parks & Managed Lands
Municipal Boundaries
Combined with project 4a on the previous page, this project creates a link from Old Waynesborough Park to Stoney Creek Park through downtown Goldsboro.
1
2
3
4
5
6
6
West Holly Street
West Vine Street
East Vine Street
West Oak Street
East Oak Street
West Ash Street
West Mulberry Street
West Walnut Street
East Walnut Street
Downtown Goldsboro
West Chestnut Street
East Chestnut Street
The Hub
West Spruce Street
East Spruce Street
West Pine Street
West Elm Street
East Elm Street
West Cola Drive
HV Brown Park
Old Waynesborough Park
Brick St
Canal Street
Jenkins Road
Olivia Lane
Wayne Avenue
Carver Boulevard
House Street
Bunchen Drive
North Georgia Avenue
North Carolina Street
South Carolina Street
South Virginia Street
North James Street
North Center Street
North John Street
North William Street
South James Street
South John Street
South William Street
Charles Street
Whitfield Drive
Miller Avenue
South Alabama Avenue
Mcdaniel Avenue
Anderson Drive
Nathan Street
Old Waynesborough Road
70
13
117
0
400
800 FEET
N

Project 4b: Mulberry St Bike Boulevard

Project Description

Implement a bike boulevard including traffic calming along Mulberry St and Virginia St, with short segments of shared use paths to make the links to Elm St and Old Waynesborough Park.

Relevant Plans or Studies

- 2015 Goldsboro Bicycle, Pedestrian, and Greenway Plan
- 2021 City of Goldsboro Trail Development Plan

Map Notes

1. Proposed bike boulevard (wayfinding signage and shared lane markings) on W Mulberry St from Center St to Virginia St.
2. Proposed bike boulevard (wayfinding signage and shared lane markings) on Virginia St south of W Mulberry St to terminus/School Street Early Learning Center.
3. Construct a short shared use path spur cutting through School Street Early Learning Center parcel to connect Virginia St bike boulevard to existing W Elm St bike lanes.
4. Short sidepath connection from W Elm/Canal St intersection with US 117 to the entrance of Old Waynesborough Park (or consider adding shared lane markings along Canal St and Brick St to US 13/117 and a short sidepath connection to Old Waynesborough Park).
5. Construct a crossing at the US 117/Elm St intersection, including high-visibility crosswalks with pedestrian signals and through bike lanes.
6. Install a neighborhood traffic circle at the Virginia St/Mulberry St intersection as well as the Virginia St/Spruce St intersection.

Key Destinations

Old Waynesborough Park, HV Brown Park, School St Early Learning Center, destinations around Center St including City Hall and various shopping and dining destinations.

Funding

Because Mulberry St and Virginia St are City streets, consider funding those sections through the Goldsboro CIP or Tourism office; for the shared use path construction, consider pursuing Great Trails State funding since this corridor also falls along the Great Trails State network. This corridor is also part of the MST, consider working with Friends of the MST to identify funding opportunities. Coordination with NCDOT for crossing improvements at the Elm St/US 13/117 intersection will be needed.

Map of trails within Old Waynesborough Park.

Planning Level Cost Estimate

$1.6M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.

Project 5: Beech St Bike Boulevard

Project Description

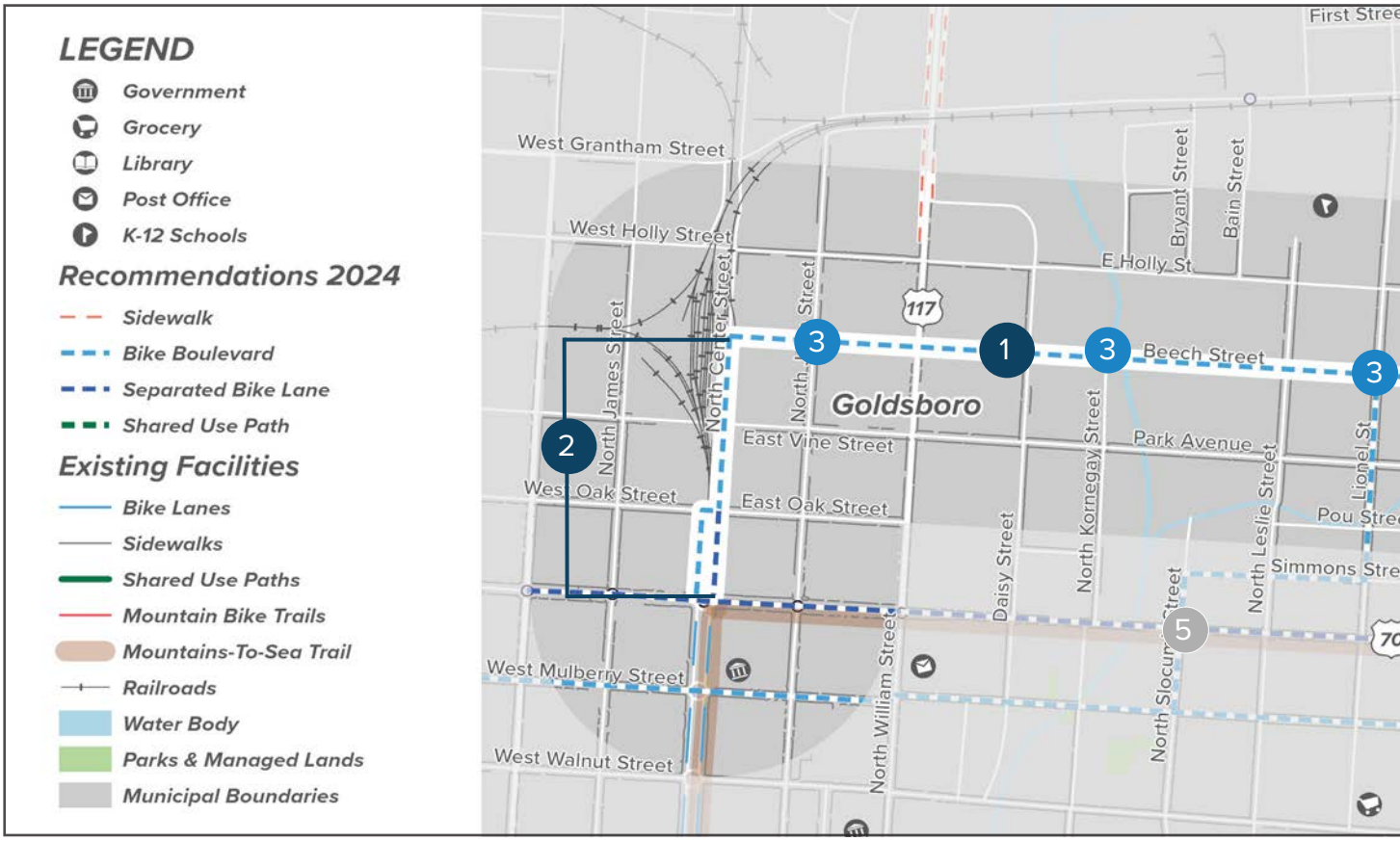
Implement a bike boulevard including traffic calming and shared lane markings on primarily Beech St from downtown Goldsboro to the Stoney Creek Greenway. This connection will also use parts of Center St, Claiborne St, Rose St, Randolph St, and Peachtree St, and Edgerton St.

Relevant Plans or Studies

- 2015 Goldsboro MPO Bike, Pedestrian, and Greenway Plan

Map Notes

1. Stripe shared lane markings and install wayfinding signage along Center Street (Ash St to Beech St), Beech St (Center St to Claiborne St), Claiborne St (Edgerton St to Rose St), Rose St (Claiborne St to Randolph St), Randolph St (Rose St to Peachtree St), and Peachtree St (Randolph St to the Stoney Creek Greenway trailhead).
2. Center St from Beech St to Ash St splits at Oak St. Southbound bicycle traffic on Center St will need to cross the railroad tracks at Oak St to continue traveling south on Center St west of the railroad tracks. The northbound section of Center St from Ash St to Oak St has extra pavement width—a buffered bike lane should be striped along this section.
3. Along Beech St, install a neighborhood traffic circle at the John St, Kornegay St, Lionel St, Jackson St, Audubon Ave, Madison Ave, and Claiborne St intersections to keep traffic speeds at appropriate safe speeds. Also install neighborhood traffic circles at the Claiborne St/Rose St and Randolph St/Peachtree St intersections.



4 Construct a short trail spur to connect the eastern terminus of Edgerton St to the existing mountain bike trails.

5 When the Ash St project is completed (see project sheet 1), implement short bike boulevard connections to Ash St as well as the Mulberry St Bike Boulevard to improve north/south connectivity.

Key Destinations

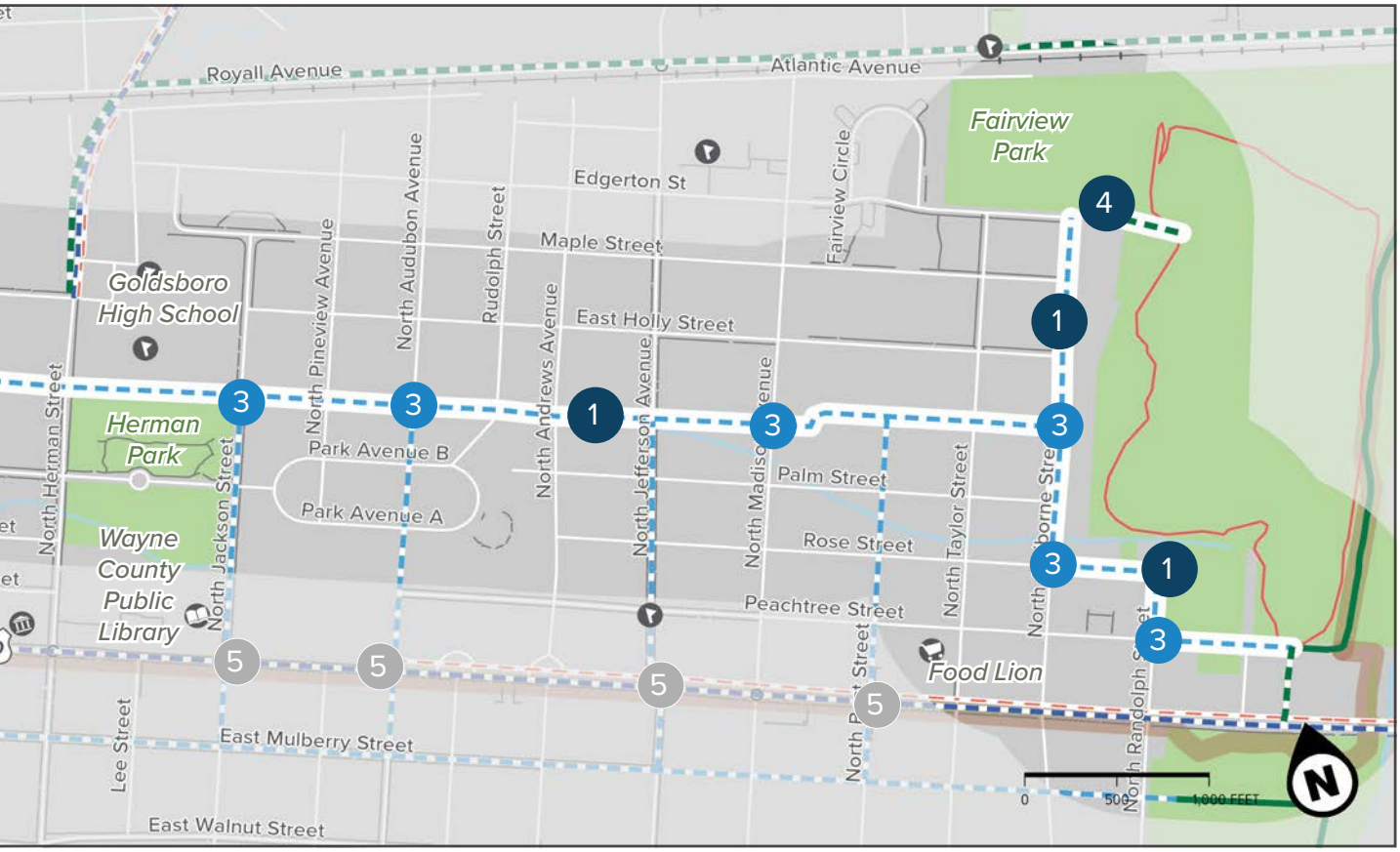
Downtown Goldsboro destinations accessible via Center St, Herman Park, Goldsboro High School and Wayne School of Engineering, Fairview Homes apartment complex, Fairview Park, Stoney Creek Greenway and mountain bike trails.

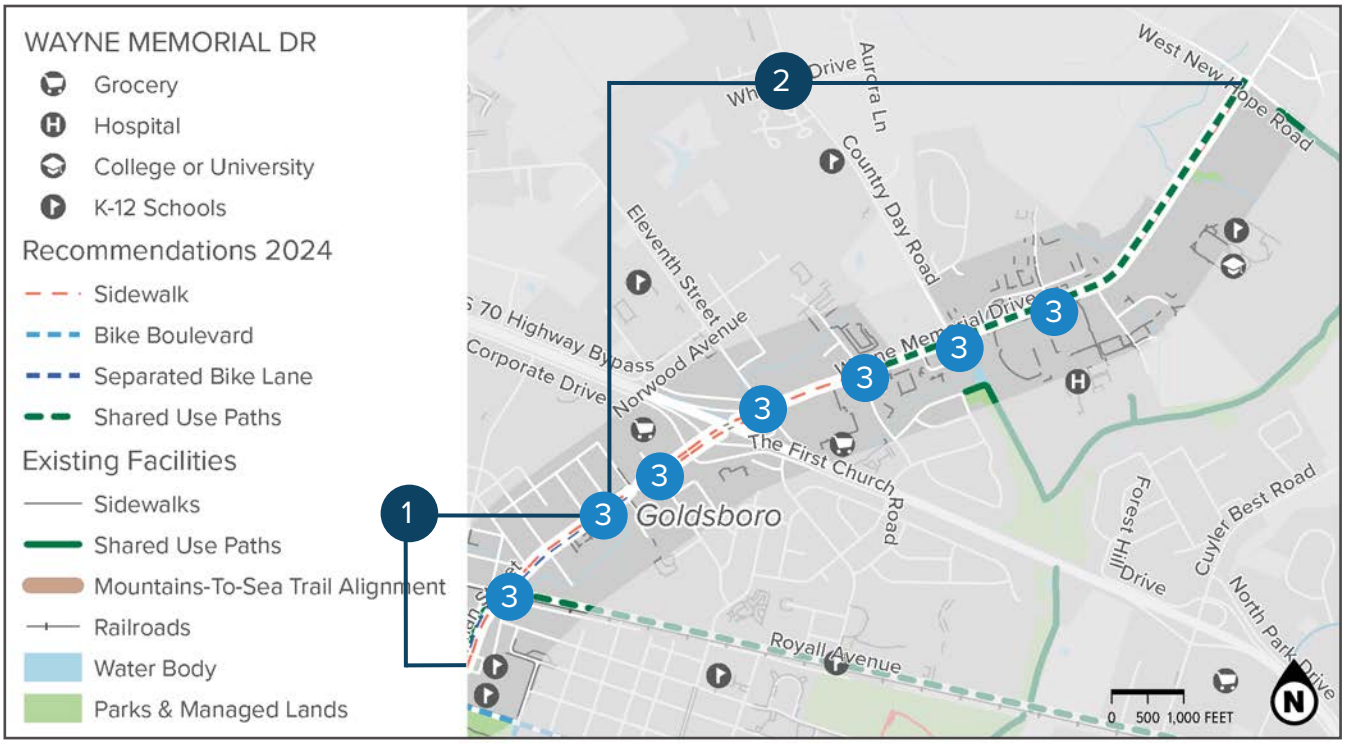
Funding

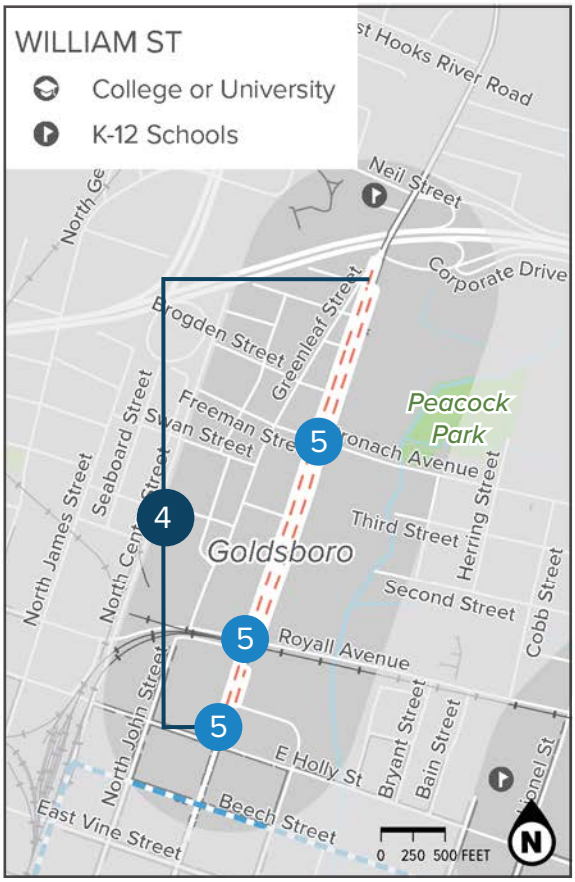
Because all streets along this project corridor are City streets, consider funding this through the Goldsboro CIP or Tourism office.

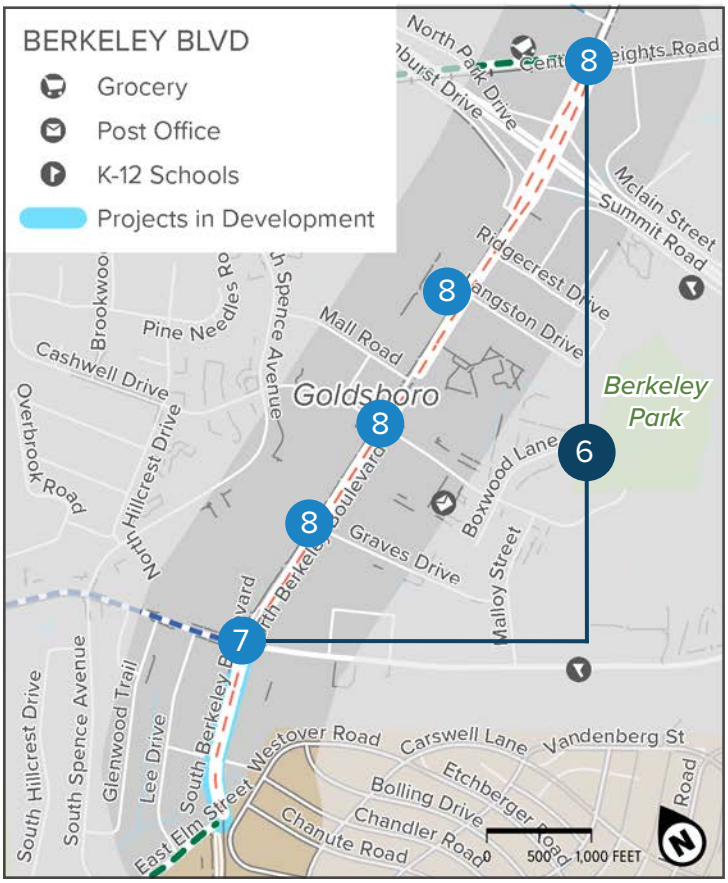
Planning Level Cost Estimate

$0.69M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.




WAYNE MEMORIAL DR
Grocery
Hospital
College or University
K-12 Schools
Recommendations 2024
Sidewalk
Bike Boulevard
Separated Bike Lane
Shared Use Paths
Existing Facilities
Sidewalks
Shared Use Paths
Mountains-To-Sea Trail Alignment
Railroads
Water Body
Parks & Managed Lands
Goldsboro
Aurora Ln
Country Day Road
Eleventh Street
Norwood Avenue
Corporate Drive
The First Church Road
Forest Hill Drive
Cuyler Best Road
North Park Drive
Royall Avenue
West New Hope Road
0 500 1,000 FEET


WILLIAM ST
College or University
K-12 Schools
Goldsboro
Peacock Park
Neil Street
Corporate Drive
Brogden Street
Greenleaf Street
Freeman Street
Swan Street
Third Street
Herring Street
Second Street
Cobb Street
Royall Avenue
E Holly St
Bryant Street
Bain Street
Beech Street
East Vine Street
North James Street
Seaboard Street
North John Street
0 250 500 FEET


BERKELEY BLVD
Grocery
Post Office
K-12 Schools
Projects in Development
Goldsboro
Berkeley Park
Mall Road
Ridgecrest Drive
Mclain Street
Summit Road
Pine Needles Road
Cashwell Drive
Overbrook Road
Hillcrest Drive
South Spence Avenue
Boxwood Lane
Graves Drive
Malloy Street
Westover Road
Carswell Lane
Vandenberg St
Etchberger Road
Bolling Drive
Chandler Road
Chanute Road
East Elm Street
South Hillcrest Drive
Glenwood Trail
Lee Drive
0 500 1,000 FEET

Project 6: Arterial Sidewalk Gaps

Project Description

Fill sidewalk gaps on Wayne Memorial Ave, William St, and Berkeley Blvd.

Project Extents

Wayne Memorial Ave/Herman St from Holly St to New Hope Rd; William St from Holly St to US 13; Berkeley Blvd from Ash St to US 70.

Relevant Recent Plans or Studies

- 2015 Goldsboro MPO Bike, Pedestrian, and Greenway Plan

Map Notes

1. Between Holly St and 7th St, traffic volumes are 11,000 AADT, and the road has five lanes. The road should be reconfigured from five lanes to three, using the outside lanes for separated bike lanes. Construct sidewalks where missing on both sides of the road.
2. Northeast of 7th St, traffic volumes are higher at 19,000 AADT. Construct a sidepath along the north side of the road, and fill the sidewalk gaps on the south/east side of the road to New Hope Rd.
3. Construct pedestrian crossings on all legs of the following intersections: Royall Ave, 9th St, 11th St, Lockhaven Dr, Memorial Commons, Country Day Dr, and Hospital Rd. Construct a crosswalk (RRFB or pedestrian hybrid beacon) at the 7th St intersection.
4. Complete the sidewalk gaps on William St between Holly St and US 13. Additionally, from Royall Ave to US 13, traffic volumes are 6,700 AADT and the road has four lanes. Reconfigure the road from four lanes to three lanes. The roadway pavement width does not have space to add bike lanes, even with a reduction to three lanes—add buffer striping with any additional pavement width to create additional buffer between the travel lanes and sidewalks.
5. Construct pedestrian crossings on all legs of the following intersections: Holly St, Royall Ave, Stronach Ave.
6. Complete the sidewalk gaps on Berkeley Blvd between Ash St and Royall Ave.
7. Improve existing signalized crossing at Berkeley Blvd and Ash St (see project sheet 1).
8. Construct pedestrian crossings on all legs of the following intersections: Graves Dr, Cashwell Dr, Langston Dr, and Royall Ave/Central Heights Rd.

Key Destinations

Wayne Memorial Dr: UNC Health Wayne, other medical destinations along Waye Memorial Dr, Wayne Community College, multiple grocery stores

William St: Downtown Goldsboro, Peacock Park, commercial/employment destinations and restaurants

Berkeley Blvd: Seymour Johnson AFB (Wright Brothers Ave gate), numerous commercial destinations (including Eastgate shopping center)

Planning Level Cost Estimate

6a - $13.2M; 6b - $4.5M; 6c - $3.7M - see Appendix F for more detail - note that estimate is not based on engineering design and is for planning purposes only. Potential ROW acquisition and utility coordination costs are unknown and not included in the estimate.

The Mountains-to-Sea Trail and Strategic Greenways

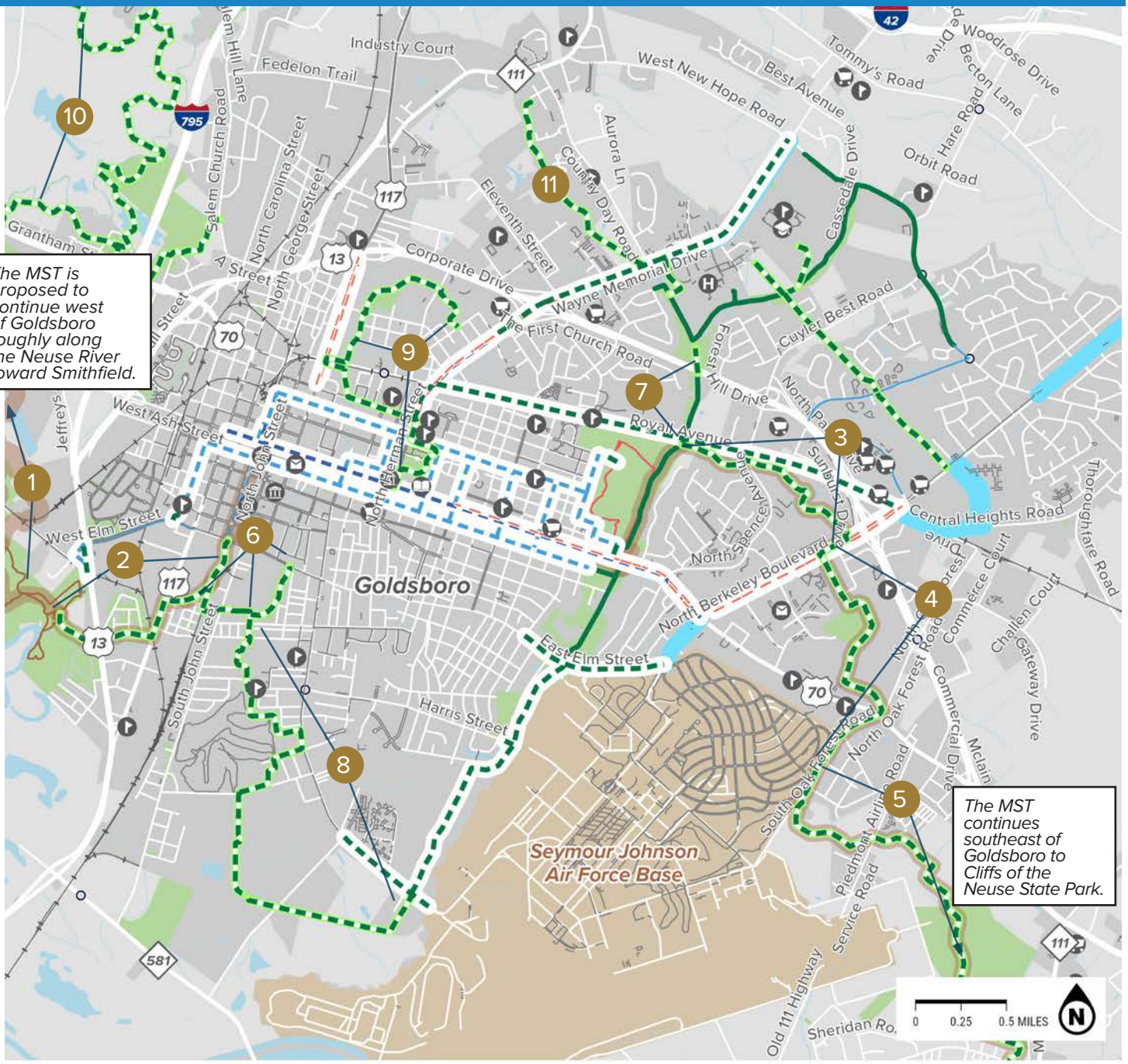
In 2021, the Friends of the Mountains-to-Sea Trail worked with the City of Goldsboro to create a plan for the MST through Goldsboro, along with additional ideas for local trails and greenways (the plan is called the 2021 City of Goldsboro Trail Development Plan). These proposed greenways are incorporated into the recommendations in this chapter and are recommended to form the backbone of the Goldsboro MPO greenway system. Key elements of the proposed MST spine through Goldsboro include the following (see the 2021 City of Goldsboro Trail Development Plan for further detail):

MAP ID	Recommendation Notes
1	Coming from the west toward Goldsboro, opportunities for the MST include potentially using Duke Energy property (HF Lee Plant), as well as large sections of state-owned land (NCDHHS and NCDA) leading toward Old Waynesborough Park.
2	From Old Waynesborough Park to downtown Goldsboro, the proposed MST route could potentially use Old Waynesborough Park land to connect to City of Goldsboro-owned floodplain buyout properties, crossing to the east side of US 13 to the S George St corridor. The S George St corridor connects to the north to an old railroad spur that is no longer used but is still owned by the North Carolina Railroad Company as well as CSX. The City should acquire this property or an easement to use these unused railroad corridor spurs to complete the connection from Old Waynesborough Park to Center St.
3	After connecting through Goldsboro via Center St, Ash St, and the Stoney Creek Greenway, the proposed MST route continues east from the Stoney Creek Greenway (bike/ped bridge would be needed to cross Stoney Creek) and follows along the railroad tracks through open space that makes up the back end of several private parcels. This could connect the Stoney Creek Greenway to the Berkeley Mall and the Berkeley Blvd corridor.
4	East of the Berkeley Blvd corridor, the Langston Dr right-of-way connects to Berkeley Park and could serve as the MST connection to Berkeley Park. Further to the south and east, agreements with several landowners would be needed to make the connection to the Bryan Multi-Sport Complex at the northeast corner of Seymour Johnson AFB.
5	From the Bryan Multi-Sport Complex to the Cliffs of the Neuse State Park, an off-road route is proposed based on the landscape/environmental opportunities and challenges and the landowners that would need to be engaged.

In addition to the proposed MST spine, several key local greenways are recommended to provide as much citywide connectivity as possible. These recommendations include the following (see the 2021 City of Goldsboro Trail Development Plan for further detail):

6	A greenway connection from the Elmwood Terrace Apartments using City of Goldsboro floodplain buyout property to the south that could provide connectivity toward Old Waynesborough Park as well as Dillard Middle School and the W.A. Foster Recreation Center. With the acquisition of one vacant parcel at the northern terminus of Olivia Ln (at the Sycamore St intersection), City of Goldsboro-owned land could be used to create a greenway link from Elmwood Terrace Apartments to the W.A. Foster Recreation Center.
7	Stoney Creek Greenway and Reedy Branch Greenway Gaps – In addition to the lack of connection at Ash St for the Stoney Creek Greenway, Royall Ave and the existing railroad tracks parallel to Royall Ave provide a challenging gap to overcome. Similarly, US 13/17 provides a challenge in connecting the Stoney Creek Greenway to the Reedy Branch Greenway. These are key gaps in the network that will require high-cost bridge or tunnel structures to finish these important connections.
8	A southern Goldsboro greenway loop connecting along the edge of the golf course toward Stoney Creek and the southwestern edge of Seymour Johnson AFB.
9	Greenway connecting from Ash St through Herman Park, Goldsboro High School, Wayne School of Engineering, Woodcrest Terrace, and Peacock Park.
10	Greenway roughly along the Little River corridor, largely using state land (NCFS).
11	Greenway extending from the Reedy Branch Greenway up Howell Branch.

THE MST AND STRATEGIC GREENWAYS



LEGEND

- Government
- Grocery
- Library
- Hospital
- Post Office
- College or University
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails

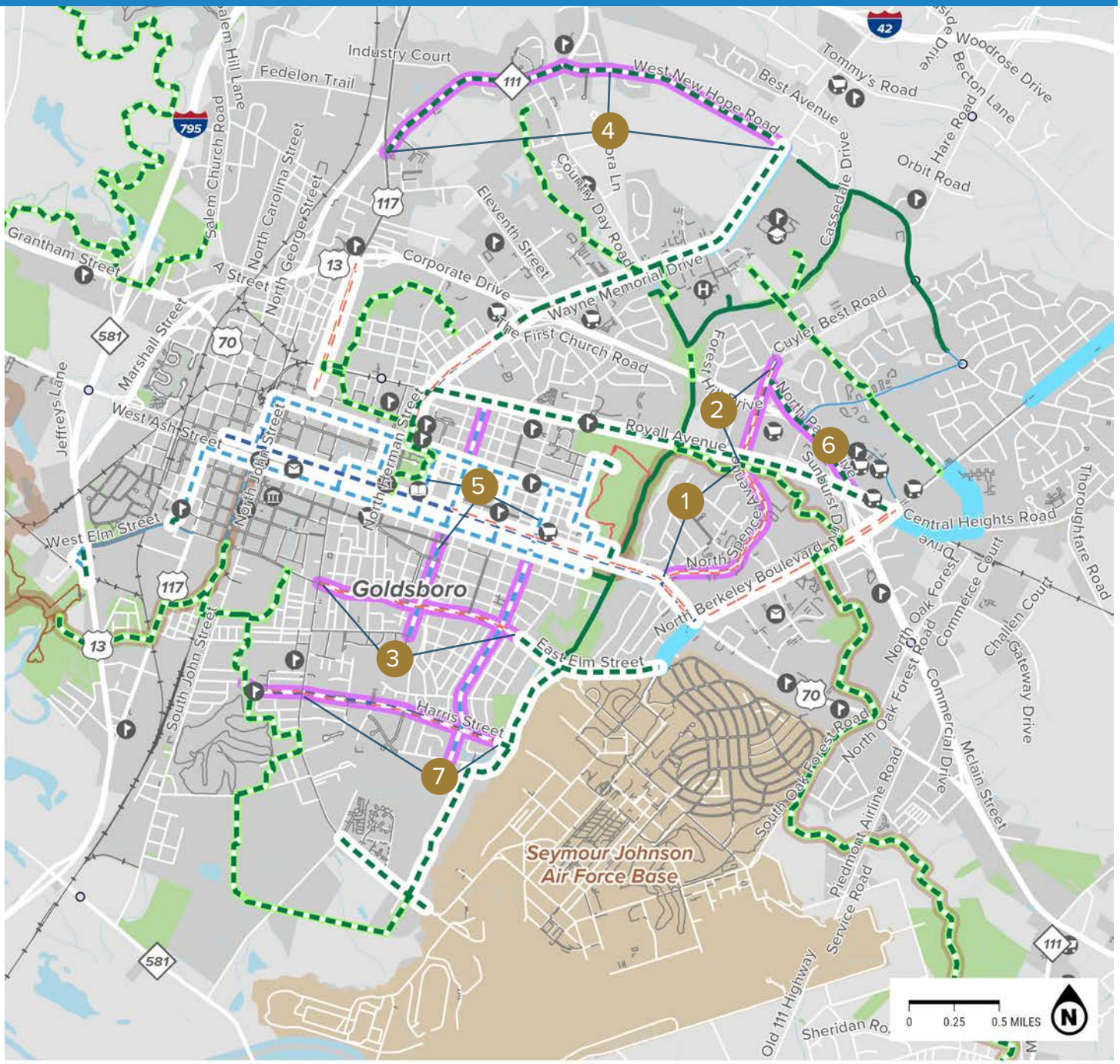
- Mountains-To-Sea Trail
- Projects in Development
- Strategic Greenways
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

Additional Strategic Projects

In addition to the priority projects and strategic greenway projects outlined above, the following projects fill key gaps in the network and should be completed when development, roadway projects, or funding opportunities allow.

Map ID	Recommendation Notes
1	Spence Ave (Ash St to Royall Ave) – This section of Spence Ave is a five-lane road with traffic volumes of 12,000 to 17,500 AADT. For most of this corridor, there are no sidewalks and no bicycle infrastructure to serve the adjacent businesses and residences. A corridor study should be completed to analyze a potential road reconfiguration from five lanes to three, replacing the outside travel lanes with separated bike lanes. Additionally, sidewalks should be constructed along both sides of the corridor (or as an alternative to bike lanes and sidewalks, sidepaths, should be constructed along both sides of the corridor). Pedestrian crossings should be installed on all legs of the signalized intersections (Cashwell Dr, Mall Rd, and Royall Ave), and a mid-block crossing (pedestrian hybrid beacon or RRFB) location should be identified around the mid-point between Cashwell Dr and Ash St.
2	Spence Ave (Royall Ave to Chafin Rd) – This section of Spence Ave also lacks bicycle and pedestrian facilities. Traffic volumes are 19,000 AADT south of US 13/US 70 and drop to 9,400 AADT north of US 13/US 70. If the road cannot be reconfigured from five lanes to three to create space for separated bike lanes (and construct sidewalks), consider constructing sidepaths on both sides of the corridor. A sidewalk should be constructed on the opposite side of the road as well.
3	Elm St – The existing sidewalk along Elm St ends at Slocumb St, and Elm St east of George St lacks bicycle facilities. Consider several options for improving bike/ped connectivity along this corridor: 1) modifying the curb, constructing separated bike lanes, and filling in the sidewalk gaps; or 2) filling in the sidewalk gaps on one side of the road and constructing a sidepath along the other side. Elm St between John St and Slocumb St is narrower; consider constructing bike lanes by modifying the existing curb. West of John St and east of Slocumb St, consider restriping the three lane cross section to two lanes and stripe buffered bike lanes.
4	New Hope Rd sidepath continued – Currently, the sidepath along New Hope Rd ends just east of the Wayne Memorial Dr intersection. This sidepath should be continued to the west to Patetown Rd and continued along Patetown Rd to the new Williams St sidewalks.
5	Additional bike boulevard projects – Once the Mulberry St and Beech St bike boulevard projects are implemented, additional opportunities to expand network connectivity include north/south connectors along streets such as Best St, Audubon Ave, and Jackson St.
6	N Park Dr – This corridor from Royall Ave to Spence Ave currently does not have bike/ped facilities, but it connects numerous businesses and two streets with existing bike lanes (Harding Dr and Parkway Dr). A sidepath should be constructed along this corridor.
7	Harris St – East of Porter St to Stoney Creek Parkway, Harris St widens to three lanes, and traffic volumes are 5,000 AADT. No bike/ped facilities are found along this corridor, and this road serves as a collector street for multiple neighborhoods. The pavement width is approximately 42'. Consider restriping the corridor to two lanes and striping buffered bike lanes during the next resurfacing. West of Porter St to Slocumb St, Harris St narrows to two lanes, and the existing pavement width is not wide enough to stripe bike lanes (no sidewalks exist as well). Construct bike lanes/sidewalks or a sidepath along this section.

ADDITIONAL STRATEGIC PROJECTS



LEGEND

- Government
- Grocery
- Library
- Hospital
- Post Office
- College or University
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails

- Mountains-To-Sea Trail
- Projects in Development
- Strategic Greenways
- Additional Strategic Projects
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

Comprehensive Network

In addition to the priority projects and additional strategic projects outlined above, the comprehensive network represents additional needs around the region, much of which may be incrementally built when development or funding opportunities arise. The comprehensive network is the long-term vision for the Goldsboro MPO, and below are several key components. Zoom-in maps of the comprehensive network can be found in Appendix A.

Projects with Development

Several subdivisions outside the downtown Goldsboro core are disconnected, especially beyond Royall Ave and further north and east. As development continues in and around Goldsboro, each new development project should be required to construct bike/ped infrastructure recommended in this plan. This will help fill in gaps over time in the overall network. In locations where future development may not directly connect to an existing walking or biking facility, local jurisdictions should work to fill any remaining missing links.

Projects with New Roadway Construction

Furthermore, as the Goldsboro area continues to grow, several roads are funded or proposed to be widened or for new construction. These are opportunities to incorporate sidepaths early into the roadway development process. This is typically significantly cheaper than retrofitting roads with complete streets infrastructure. Future roadway widening projects such as Berkeley Blvd to the northeast should include sidepaths as part of the project.

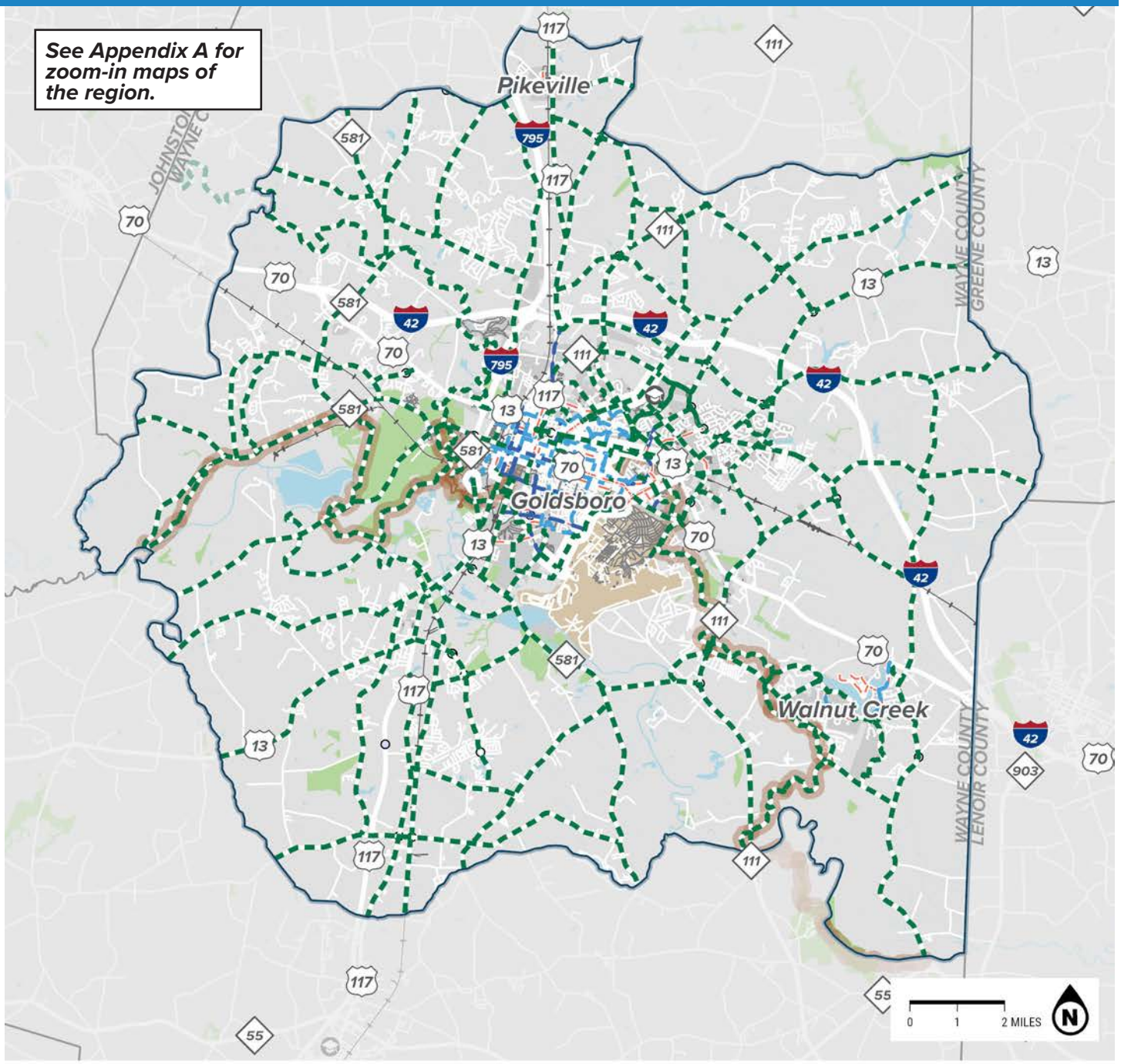
Watershed Trails

Continue to work with developers, homeowners associations, individual landowners, and others on incorporating greenways into site planning and development that occurs along riparian corridors. These corridors tend to be areas with the most intact habitat cores, and should be preserved for not only transportation and recreation, but for the critical foundation of the environmental economy they serve. These can be paved or unpaved trails depending on the specific project and context. The Stoney Creek Greenway and Reedy Branch Greenways are excellent examples of these types of trails.

Mountains-to-Sea Trail

Coordinate with the Friends of the Mountains-to-Sea Trail, City of Goldsboro, Wayne County, NCDOT, and Village of Walnut Creek in conducting corridor studies for the proposed MST alignments detailed earlier in this chapter and in the 2021 City of Goldsboro Trail Development Plan.

COMPREHENSIVE NETWORK



LEGEND

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails
- Mountains-To-Sea Trail
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

CHAPTER 3

Policy and Program Recommendations

Policy and Program recommendations that are complementary to infrastructure recommendations are summarized in this chapter, with additional detail found in Appendix C and J.

POLICY RECOMMENDATIONS

Overview

One of the most cost-effective implementation strategies for Wayne County, Goldsboro, Pikeville, and Walnut Creek is to establish land development regulations and street design policies that promote walkable and bikeable new development and capital projects. As part of a comprehensive approach to developing recommendations for a more walkable and bikeable Goldsboro area, the City of Goldsboro, Wayne County, Town of Pikeville, and Village of Walnut Creek ordinances, development standards and policies were reviewed to identify general issues and opportunities impacting the walking and biking environment.

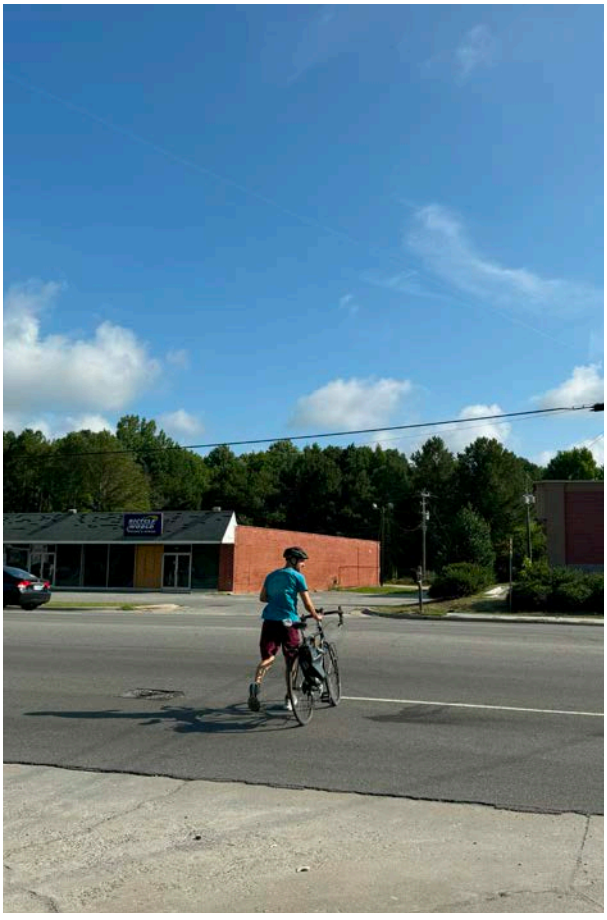
These policies were analyzed through the lens of the project vision and goals, specifically, the vision of making the Goldsboro area an attractive regional destination where a convenient network of sidewalks, bikeways, and greenways brings people of all ages and abilities together and safely connects them to where they want to go.

Documents Reviewed

- City of Goldsboro Unified Development Ordinance
- Walnut Creek, NC Code of Ordinances
- Code of Ordinances of Wayne County, NC
- Town of Pikeville Code of Ordinances

Policy Guidance

Key policy items, including greenway requirements, the sidewalk fee in leiu program, and traffic calming policy, are described in additional detail on the following pages in this chapter as key policy improvements needed for Goldsboro jurisdictions. Additional policy considerations are detailed in a series of tables in Appendix C for each Goldsboro MPO jurisdiction.



A bicyclist crosses Ash Street in an effort to connect to the northern segment of the Stoney Creek Greenway from Stoney Creek Park and the southern segment of the Stoney Creek Greenway.

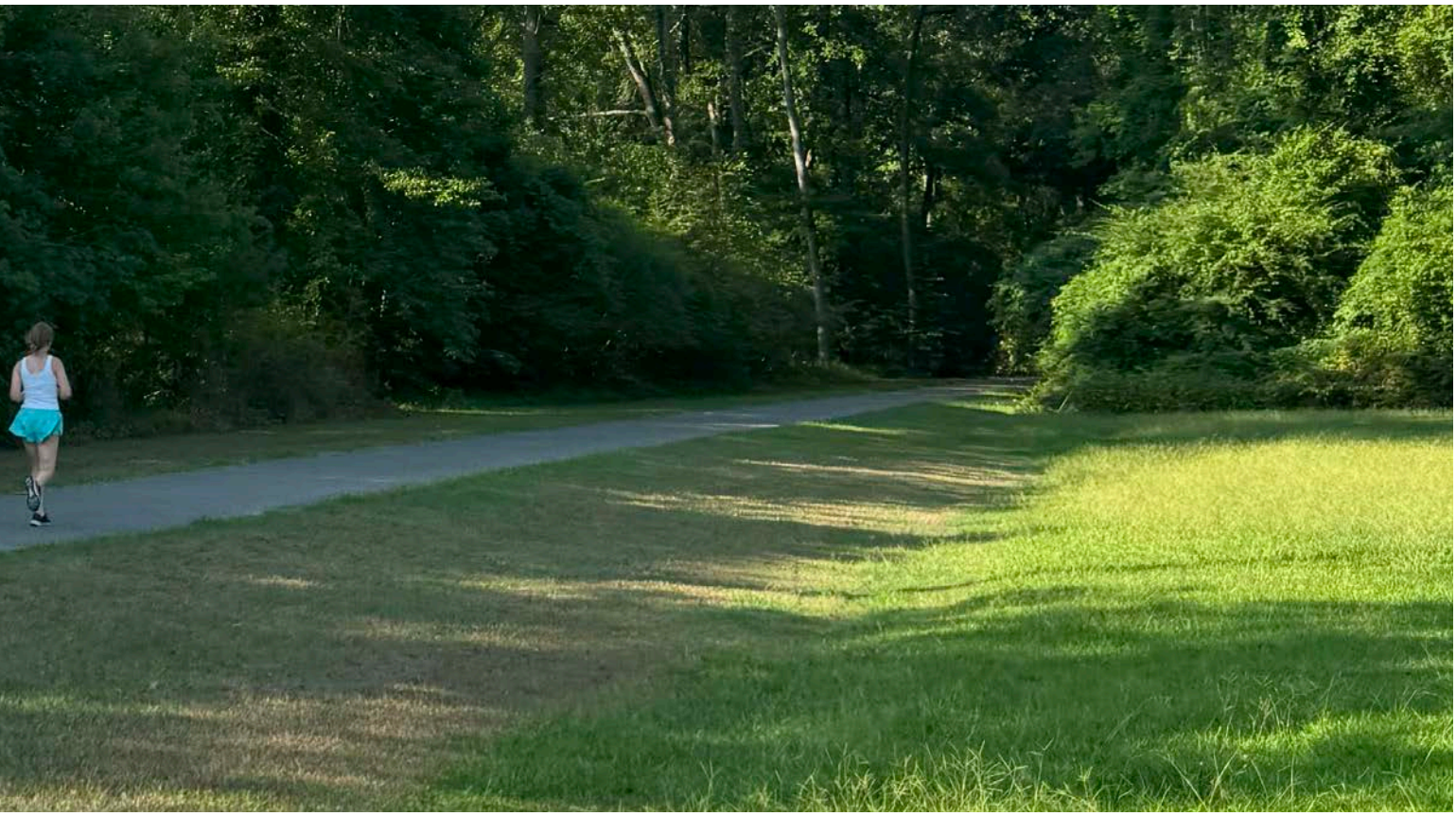
Greenway Policy Guidance

While the City of Goldsboro is the only MPO jurisdiction with sidewalk requirements, no jurisdiction in the MPO has greenway set-aside or construction requirements.

The continued growth of the Goldsboro area offers the opportunity to establish policy and ordinance language that requires developers to contribute to the development and expansion of the local and MPO greenway system. Jurisdictions with greenway set-aside or construction requirements have been able to expand their greenway system more effectively and rapidly. In addition, the quality of life benefits that greenways provide yield economic benefits for both the developer and the local government.

Goldsboro MPO jurisdictions should consider requirements for reservation of ROW for greenway, dedication of easement or greenway for public use, or construction of greenway in new developments where a greenway or trail is shown in this plan (or other adopted plan) or where a property connects to an existing or proposed greenway. This should be considered for both new residential and commercial development. Design standards for greenways should also be incorporated into the appropriate section of local jurisdiction regulations or other engineering standards. Goldsboro MPO jurisdictions should strive for consistency in their respective land use, subdivision, zoning, or unified development ordinances related to the requirement to set aside and construct greenway trails.

Below: Goldsboro's Stoney Creek Greenway



Utility and Sewer Easements and Provision of Public Access within the ROW

With new development often comes expansion of services such as water, sewer, electrical, and gas. Goldsboro jurisdictions should work with utility providers to make it standard practice to allow public access for greenways within those ROW corridors. For example, Mecklenburg County works with its sewer and water utility providers to include agreements for future greenway development in new utility easements. This requires that utility easements include provisions for recreational use when established. Memoranda of understanding (MOUs) can also provide for joint use of easements for maintenance and access by utility providers and the greenway jurisdiction/agency. It is much easier to build this into expansion of systems as opposed to retroactively seeking public access to utility easements.

Sidewalk Fee in Lieu Program

The City of Goldsboro should consider eliminating its Fee in Lieu program for sidewalks that allows developers to pay a minimal fee in place of constructing sidewalks. Sidewalks (and bicycle and greenway facilities) should be constructed as roadway and site development takes place.

Traffic Calming Policy Guidance

Excessive speeding tends to happen on local streets with long, straight, and wide cross sections. Safe speeds on local streets are a priority of the City of Goldsboro. In addition to signing appropriate speeds to a given street, street design plays a key role in creating safe motor vehicle speeds. There are three general types of speed reduction measures:

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

The City should develop a traffic calming policy aimed to minimize automobile speeds on local streets where excessive speeding is observed.

During this planning process, the project team reviewed the City of Rocky Mount's Residential Traffic Management (RTM) process that has been successfully implemented over the past several years. The City of Rocky Mount's RTM process can serve as a model for the City of Goldsboro.

MODEL POLICY:

Rocky Mount, NC

In 2021, the City of Rocky Mount, NC, adopted a Residential Traffic Management Policy that delineated various traffic calming options and a formal process in which local residents could request traffic calming features to be implemented on their street. Examples include lower speed limit signage, speed radar signs, speed bumps, and traffic circles. The policy established a Traffic Calming Scoring System that sets evaluation criteria for new traffic calming investments.

See the following page for key elements of the City of Rocky Mount RTM process.

In the City of Rocky Mount, speed cushions have been implemented to strategically calm traffic.

Residential Traffic Management (RTM) Process: How It Works

INITIAL REQUEST
Resident or homeowners association representative submits RTM Request Form.

PRELIMINARY REVIEW
Rocky Mount Public Works Department and Rocky Mount Police Department review the request.

FOR NCDOT-MAINTAINED STREETS

FORMAL REQUEST
City forwards formal request to the NCDOT Division 4 Office and notifies the neighborhood representative.

FOR CITY-MAINTAINED STREETS

REQUEST ACCEPTED
City notifies neighborhood representative of receipt and schedules data collection.

DATA COLLECTION
City completes data collection and review.

REVIEW OF RESULTS
City schedules meeting with neighborhood representative to review results.

ALTERNATIVE SELECTION
If the study results confirm speeding or other traffic safety concerns, alternatives are identified. The City works with the neighborhood representative to select a preferred traffic calming alternative.

NEIGHBORHOOD COORDINATION
The neighborhood representative is responsible for coordinating with the residents in the study area, including circulating a petition in support of the alternative if required.

IMPLEMENTATION
When the necessary community support is secured, the City proceeds with required approvals and installation.

EVALUATION
The City may conduct a follow-up study to evaluate the impact of the traffic calming measure. If additional action is warranted, the City will consult the neighborhood representative.

Community-led actions *City-led actions*

PROGRAM RECOMMENDATIONS

Overview

Community walking- and biking-related programs are complementary to infrastructure and policy efforts, helping to create a culture of active transportation and recreation. Programs offer opportunities for residents and visitors to invest time and perspective in their community, ultimately strengthening connections and community roots.

The 2015 *Bike, Pedestrian, and Greenway Goldsboro MPO Plan* recommended the City of Goldsboro to implement various programs categorized under four main themes: Education, Encouragement, Enforcement, and Evaluation. Several of these general program recommendations have seen progress and are highlighted on this page and the following pages.

Furthermore, Appendix J summarizes all previous program recommendations from the 2015 plan and provides status updates.

Progress Since 2015

Wayfinding Signage Program

Status: In Progress

Walking and biking wayfinding signage can enhance resident and visitor orientation by directing pedestrians, bicyclists, and motorists to popular destinations around town. The City of Goldsboro has updated its general wayfinding signage, mostly geared toward motorists, throughout the city, and bicycle wayfinding signage has been installed on Mulberry Street. The bicycle wayfinding signage highlights the corridor as a safer alternative to Ash Street and provides destination information between downtown and Stoney Creek Park. Additional bicycle route or bicycle boulevard wayfinding is recommended on corridors such as Beech Street (see Priority Projects in Chapter 2).

Bike route wayfinding signage installed on Mulberry Street.

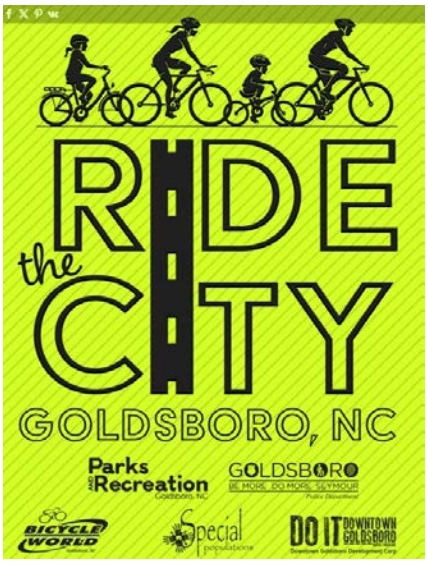
Walk and Bike to School Days

Status: In Progress

The purpose of Walk and Bike to School Days is to provide a general sense of encouragement for children to actively travel to school. These events aim to engage, educate, and motivate students to participate in physical activity and safety. In May 2021, Goldsboro residents participated in the National Bike to School Day, sponsored by the Walk, Bike, & Roll to School national organization. Local schools should continue participating in this program on an annual basis.

Above: On May 1, 2021, local children bike to school. Image source: Goldsboro Daily News

Right: The City of Goldsboro Parks and Recreation Department hosts the annual Ride the City event that offers several different routes and distances for participants. This type of program encourages a culture of active transportation and recreation.



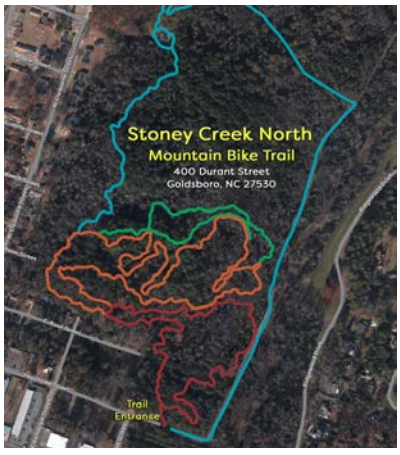
Walking and Bicycling Maps and Tours

Status: In Progress

This program intends to encourage walking and biking by providing easily digestible maps of on-road bicycle facilities, sidewalks, trails, and routes for reaching destinations by foot or by bike. Visit Goldsboro has a list of recreational trails and parks. The City of Goldsboro website has some information on the Stoney Creek Park, including operational hours, a map, and facilities.

Opportunities to share more information exist around bike/pedestrian infrastructure and facility maps. The updated sidewalk, greenway, bicycle facility, and trail data from this planning process could be used to create an online interactive map of places where people can walk and bike.

Additionally, Goldsboro Travel and Tourism offers tours by car for prospective residents visiting the area. This program could be expanded to also offer bike tours of the area and partner with local cycling groups such as Black Girls Do Bike and the Seyboro Cyclists.



Stoney Creek Trail Map, City of Goldsboro website.

In addition to the existing programmatic efforts highlighted on the previous pages, several organizations in the Goldsboro area contribute programmatically to enhancing the walking and biking culture in the community. These organizations include:

- Black Girls Do Bike: Goldsboro Chapter
- Youth Bicycle Education, The Boys & Girls Club of Wayne County
- Bicycle World, local bike shop in Goldsboro
- Seyboro Cyclists
- Physical activity and health programs, GoWayneGo
- Friends of the Greenway Group (FGG), Friends of Wayne County Greenways
- Bike Rodeo, Goldsboro Police Department
- Free bicycles, free bike helmets (NCDOT bike helmet program), Kriquette's Kidz
- Self-guided historic downtown walking tour, the Downtown Goldsboro Development Corporation

Seyboro Cyclists

BOYS & GIRLS CLUBS OF WAYNE COUNTY

Above: Kriquette's Kidz' Two Wheelers for Tommy program facilitates the purchase of bicycles and helmets for kids in Goldsboro.

Priority Program Recommendations

In addition to the programs and organizations already existing in Goldsboro, two key programs are also recommended for the Goldsboro MPO and local jurisdiction to purse, and these are detailed on the following page. See Appendix J for additional detail on other program considerations.

Form a Bicycle and Pedestrian Advisory Committee (BPAC)

Leadership from the Goldsboro MPO and staff from the local jurisdictions and members of this project's steering committee should become the Bicycle and Pedestrian Advisory Committee (BPAC) for guiding the implementation of this plan (often called an Active Transportation Advisory Committee or Trails Committee). The BPAC should focus on implementation of this plan.

The BPAC should have representation from active pedestrians and bicyclists and should champion the recommendations of this plan. The BPAC 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 local jurisdiction staff in community outreach, marketing, and educational activities related to bicycle and pedestrian projects.

The BPAC should be prepared to:

- Meet with local jurisdiction staff and evaluate progress of the plan's implementation and offer input regarding pedestrian, bicycle, and trail-related issues.
- Assist local jurisdiction staff in applying for grants and organizing pedestrian- and bicycle-related events and educational activities.
- Build upon current levels of local support for pedestrian and bicycle issues and advocate for local project funding.

Refer to the Best Practices for Bicycle and Pedestrian Advisory Committees from the League of American Bicyclists and the Alliance for Walking and Biking for more information.

Apply for Safe Streets for All (SS4A) Program Funding

The Safe Streets for All (SS4A) grant program is administered through the USDOT and provides funding for planning and implementation initiatives geared toward preventing roadway deaths and serious injuries. SS4A action plans are geared toward the Safe System Approach as illustrated in the graphic below.

Below: Safe System Approach summary graphic created by the USDOT.

The SS4A grant program is funded through 2026. The Goldsboro MPO should consider applying for the next round of funding when the next notice of funding opportunity is released, likely in 2025.

For further information, a helpful summary can be found on NCDOT's website. The direct link to the USDOT overview of the program can be found here: https://www.transportation.gov/grants/SS4A.

CHAPTER 4

Implementation

This chapter summarizes key partners and action steps for implementing the recommendations in this plan.

FRAMEWORK FOR IMPLEMENTATION

This organizational framework provides an overview of implementation recommendations, roles, and responsibilities for key partners, stakeholder agencies, and organizations.

LEAD AGENCY

Goldsboro MPO

- Coordinate with NCDOT and MPO jurisdictions on pedestrian, bicycle, and greenway project funding and development.
- Coordinate with local partners, such as community leaders and local/regional nonprofits, to involve them in project development tasks as needed.
- Assist MPO jurisdictions and landowners (and a local land trust, if necessary) to secure bicycle, pedestrian, and trail easements and ROW along planned routes where needed.
- Assist MPO jurisdictions on updating requirements in their respective unified development ordinances, specifically policies related to pedestrian, bicycle, and greenway facility development, access, and connectivity.

PARTNERS

NCDOT Integrated Mobility Division (IMD)

Administer bicycle and pedestrian programs and grants and provide regional technical assistance; support partners with interpretation of the Statewide Complete Streets policy.

NCDOT Division 4

Construct and maintain pedestrian and bicycle facilities on NCDOT-owned roadways in the Goldsboro area (except in cases where a municipality takes responsibility through an encroachment agreement).

Wayne County

Support local jurisdictions with planning and GIS for pedestrian and bicycle facilities.

Municipalities (Goldsboro, Pikeville, and Walnut Creek)

Support walkability and bikeablility in the Goldsboro area by passing a resolution in support of this plan, allocating and pursuing funding for projects and maintenance, updating local ordinances, and communicating with the local community to share progress, build support, and understand needs.

Wayne County Public Schools

Stay involved in project planning (especially for projects near schools) by working with NCDOT and other partners on project design, alignment, and ROW; generally, leverage relationships with the local community to support projects that improve walking and biking in the Goldsboro area.

Nonprofits, Developers, and Consultants

- Advocate for adoption of this plan and voice support for projects as needed in letters of support for project grant applications and other funding sources.
- Advocate for the health, safety, and economic benefits of creating walkable and bikeable neighborhoods.
- Promote safe walking, bicycling, and driving behaviors.
- Planning consultants should provide guidance on project funding, delivery, and development.
- Developers should recognize the quality of life benefits of this plan and market walkability and bikeability as key selling points to prospective residents.

PRIORITY ACTION STEPS

1 Strategically and proactively fund and build the priority projects.

Six priority projects were developed from this planning process and previous processes (see Chapter 2). Each priority project has a project sheet that summarizes key elements, opportunities, and challenges to implementation, and estimated project costs. Additional strategic projects are described in Chapter 2.

2 Use the comprehensive network of recommendations to build other projects incrementally over time.

As Goldsboro and the MPO region continues to grow, new development and roadway projects should incorporate facilities recommended in the overall network. As progress is made on the priority projects, new priorities should be selected from the additional strategic projects and comprehensive recommendations found in Chapter 2 and Appendix A.

3 Implement new policies and programs that support and encourage walking and bicycling.

As new facilities are built, the policy and program recommendations provide parallel efforts for fostering a thoroughly walkable and bikeable environment for people of all ages and abilities in the greater Goldsboro area. These recommendations are provided in Chapter 3 and are key complementary efforts.

ACTION STEPS TABLE

This table outlines administrative, infrastructure, funding, policy, and program action steps, including time frames and short term "low hanging fruit" activities for the next one to three years.

Action	Details	Lead	Support	Time Frame
ADMINISTRATIVE ACTION STEPS				
Adopt this plan as the MPO's Bicycle, Pedestrian, and Greenway Plan and pass resolutions of support in local communities.	Adoption signals intent to implement the plan over time; it does not commit funding. The Goldsboro MPO can provide a plan summary presentation and plan materials to be used in presentations by local staff.	Local jurisdictions and Goldsboro MPO	Goldsboro Planning Department, project consultants, steering committee	Q4 2024
Designate staff time to lead implementation of this plan.	With adoption of this plan, MPO leadership should recognize that plan implementation will require staff time, particularly during potential grant funding cycles. Goldsboro's Planning Director should be consulted regarding additional staff time required, including grant writing or consulting services, if needed.	Goldsboro Planning Director (MPO Director)	Goldsboro City Manager and City Council	With plan adoption
Communicate this plan's recommended projects to key implementation partners.	The purpose of this step is to 1) initially communicate about this plan's top projects through meetings and presentations, 2) network with potential project partners, and 3) encourage and solicit participation in the BPAC (see below). Possible groups to receive a presentation/coordination meeting include: NCDOT Division 4, Wayne County, Pikeville, Walnut Creek, and others listed in the Framework for Implementation.	Goldsboro Planning Director (MPO Director)	NCDOT Division 4, Wayne County, Pikeville, Walnut Creek, and others listed in the Framework for Implementation	To keep momentum from this planning process, meet and present to partners in Q4 2024 and Q1 2025
Form a Bicycle and Pedestrian Advisory Committee (BPAC).	Goldsboro's BPAC should be made up of representatives from the groups outlined in this plan's Framework for Implementation (and can be a continuation of this plan's steering committee). Area residents should also be invited and selected to serve on the BPAC. Coordination between key project partners through the BPAC will provide a level of accountability for implementing recommendations. BPAC meetings and member activities should be designed to supplement and support the efforts of the planning and engineering departments, rather than creating an additional burden on limited City/MPO staff time.	Goldsboro Planning Director (MPO Director)	Goldsboro Planning Department	To keep momentum from this planning process, begin organizing and inviting members by Q1 2025

Action	Details	Lead	Support	Time Frame
Hold regular BPAC Meetings.	The Goldsboro Planning Director, or appointed staff/BPAC Chair, should organize BPAC meetings quarterly or another agreed upon frequency. Meetings should be used as a venue for coordinating implementation of top projects, and for enlisting help and assigning tasks among the committee members to make progress. Meetings should occasionally feature special presentations from local and regional partners, or include on-site tours of upcoming or recently completed project corridors.	BPAC Chair	BPAC, local jurisdictions	First BPAC Meeting by Q1 2025; ongoing
Track plan progress and share updates.	Consider tracking progress toward plan goals using selected measures from the FHWA Guidebook for Developing Pedestrian and Bicycle Performance Measures	Goldsboro Planning Department	BPAC, local jurisdictions	Ongoing annually
Update this plan.	This plan should be updated by 2030 (about five years from adoption). If many projects and programs have been completed by then, a new set of priorities should be established. If not, a new implementation strategy should be established, potentially reassigning project priorities.	Goldsboro Planning Director (MPO Director)	BPAC, local jurisdictions	2030
INFRASTRUCTURE AND FUNDING ACTION STEPS				
Incorporate projects into NCDOT's prioritization process.	The City of Goldsboro, Goldsboro MPO, and NCDOT Division 4 should coordinate to fund recommendations from this plan over time. Use this plan's priority project sheets and maps to communicate project details and to submit projects for funding. Projects that have secured public ROW and have design completed (or at least underway) will be more competitive. The state should be prepared to incorporate the recommendations of this plan into projects in the STIP.	BPAC	Goldsboro Planning Department, local jurisdictions, NCDOT Division 4	2024 onward

Action	Details	Lead	Support	Time Frame
Seek multiple funding sources and facility development options.	It will be necessary to consider many different sources of funding that together will support plan implementation. Funding sources can be used for a variety of activities, including programs, planning, design, implementation, and maintenance. The priority project sheets in Chapter 2 provide potential funding ideas and Appendix D outlines the potential funding opportunities from the federal, state, and local government levels as well as from the private and nonprofit sectors.	BPAC	Local jurisdictions	Initiate in Q4 2024, and have a working strategy underway by mid-2025; ongoing
Develop a long-term funding strategy.	To allow continued development of the project recommendations, capital funds for pedestrian and bicycle facility construction should be set aside every year. Funding for an ongoing maintenance program should also be included in the local jurisdictions' operating budgets. Local funding can also be matched to outside funding sources, such as federal, state, and private funds. Cross-jurisdictional projects lend themselves well to collaboration on funding, as coordinated multijurisdictional projects are often looked upon more favorably by outside funding sources (such as RAISE grants) than single-jurisdiction applications.	BPAC	Local jurisdictions	Initiate in Q4 2024, and have a working strategy underway by mid-2025
Begin recommended projects.	Dedicate funding, seek proposals, and hire a contractor for a site survey, construction documents, and permitting. Confirm that the project can be designed completely within existing public ROW, and secure easements if needed. When design is complete, select a phase of the project to be constructed first, based on costs and funding available at that stage. Send the project out to bid (if not being constructed in house), select a contractor, and begin work. If needed, focus on funding pre-construction activities first (design and ROW) to make projects more competitive for outside funding.	Goldsboro Planning Department, local jurisdictions	NCDOT, consultants, contractors	May depend on steps above, grant program funding success, and availability of local matches

Action	Details	Lead	Support	Time Frame
POLICY AND PROGRAM ACTION STEPS				
Verify that this plan's recommendations are implemented as part of new development.	Local jurisdictions should update their respective Unified Development Ordinances with the recommendations from Chapter 3 and Appendix C. Specifically policies related to pedestrian and bicycle facility development, access, and connectivity.	Local jurisdictions	Goldsboro City Council, Pikeville Town Council, Walnut Creek Village Council, developers	2024 onward
Launch new programs.	BPAC members should coordinate to launch new programs to support walking and bicycling, as described in the previous chapter of this plan. BPAC members could also be called upon for program involvement.	BPAC	Local jurisdictions, NCDOT, Wayne County schools, and others	2025 onward
Conduct communications and outreach campaigns related to walking and bicycling.	BPAC should publicly announce their successes as progress is made. This could be achieved partly through social media, and by establishing a section on the MPO webpage dedicated to bike/ped education and project updates. Also, the BPAC should provide regular (annual) reports to local jurisdictions on implementation progress.	BPAC	Local jurisdiction website and social media managers, local media	2025 onward

KEY IMPLEMENTATION RESOURCES:

Appendices A through F provide additional implementation resources that should be referenced regularly during the implementation process.

Appendix A: Comprehensive Network Maps

Outside of the priority and strategic network recomendations projects, the comprehensive network recommendations maps provide a series of zoomed in maps for the long-term network across the MPO. These recommendations should be referenced as opportunities arise.

Appendix B: ADA Compliance and Intersection Improvements

Appendix B references the City of Goldsboro ADA Transition Plan and also includes a recommendation summary table completed for key intersections.

Appendix C: Policy Recommendations Tables

This resource includes detailed recommendations for updates to local jurisdictions' codes of ordinances or unified development ordinances that will encourage walkable and bikeable development in the Goldsboro MPO area.

Appendix D: Design Guidance

Appendix D includes references to design resources that detail guidance and best practices for bicycle and pedestrian infrastructure design.

Appendix E: Funding Resources

Appendix E lists numerous federal, state, local, and private/non-profit funding opportunities for bicycle and pedestrian projects and programs.

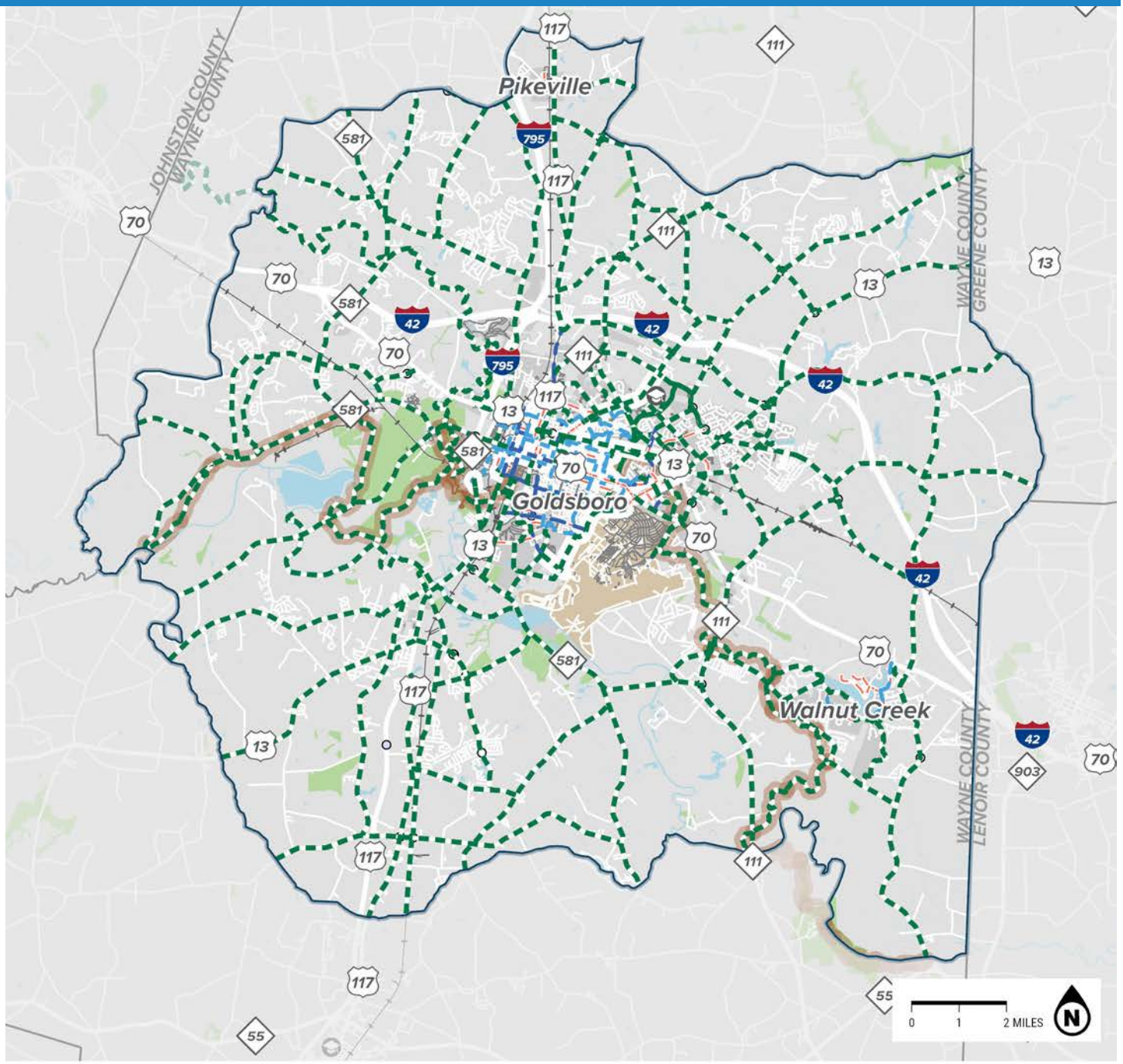
Appendix F: Planning-Level Cost Estimates

This appendix provides cost estimates for each priority project described in this plan. These estimates, along with the project sheets, can be used in grant applications and will be helpful resources when the design phase begins.

APPENDIX A

Comprehensive Network Maps

COMPREHENSIVE NETWORK: GOLDSBORO MPO



LEGEND

RECOMMENDATIONS 2024

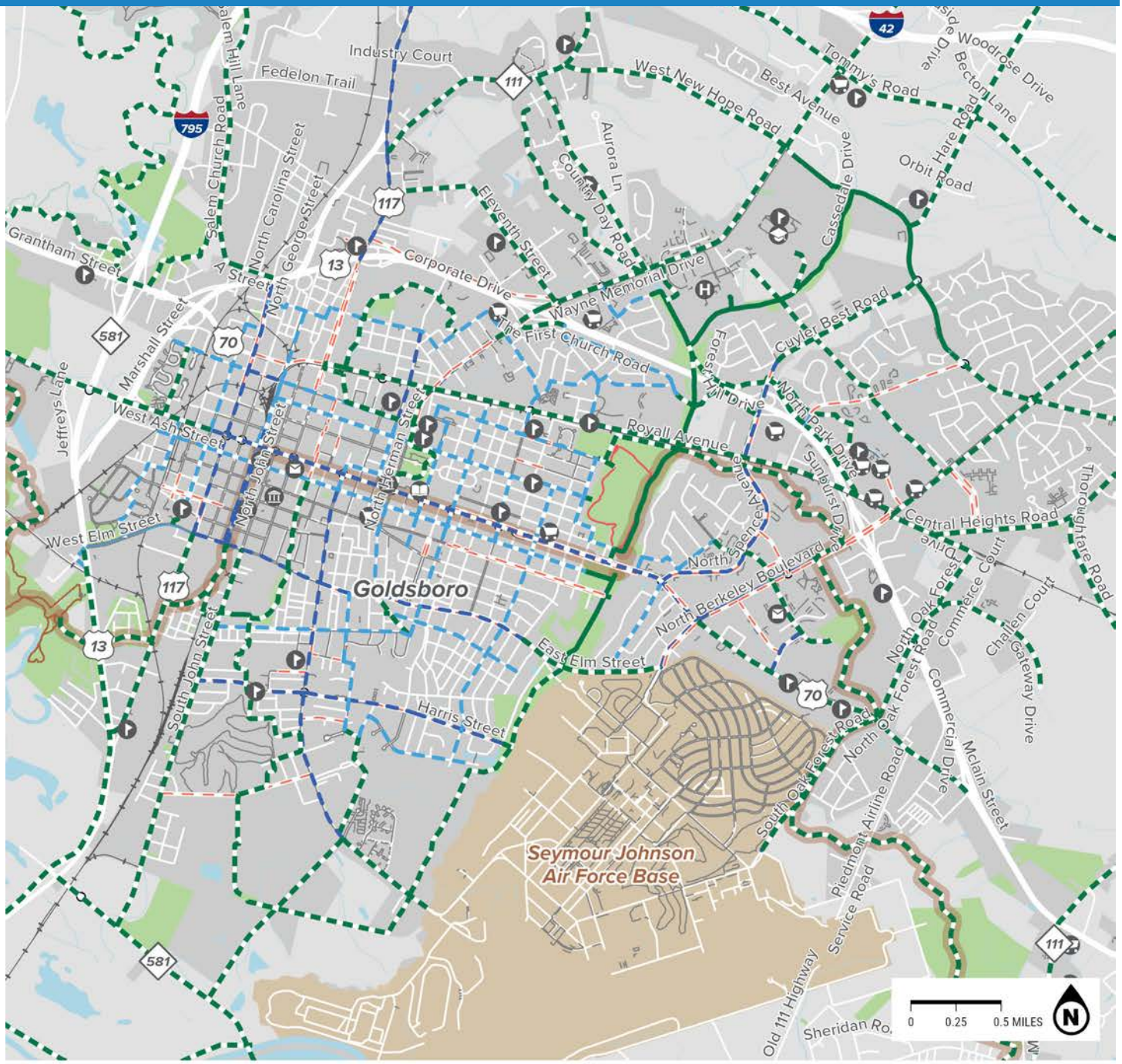
- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails

- Mountains-To-Sea Trail
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: GOLDSBORO



LEGEND

- Government
- Grocery
- Library
- Hospital
- Post Office
- College or University
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails

- Mountains-To-Sea Trail
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: GOLDSBORO DOWNTOWN

LEGEND

- Government
- Grocery
- Library
- Post Office
- K-12 Schools

RECOMMENDATIONS 2024

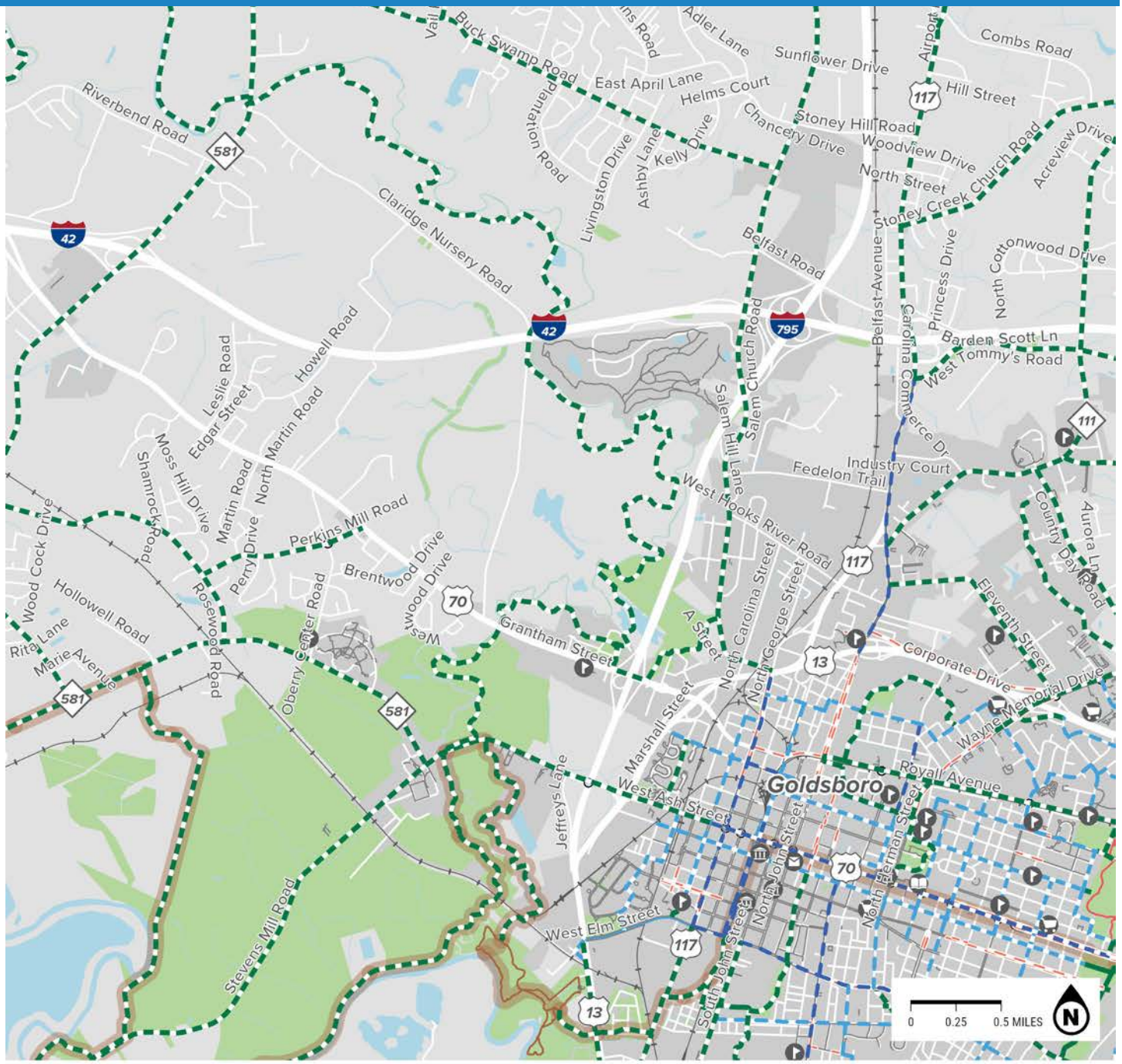
- Sidewalk
- Bike Boulevard
- Separated Bike Lane
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths

- Mountains-To-Sea Trail
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: GOLDSBORO NORTHWEST



LEGEND

- Government
- Grocery
- Library
- Post Office
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
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- Shared Use Path

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- Mountains-To-Sea Trail
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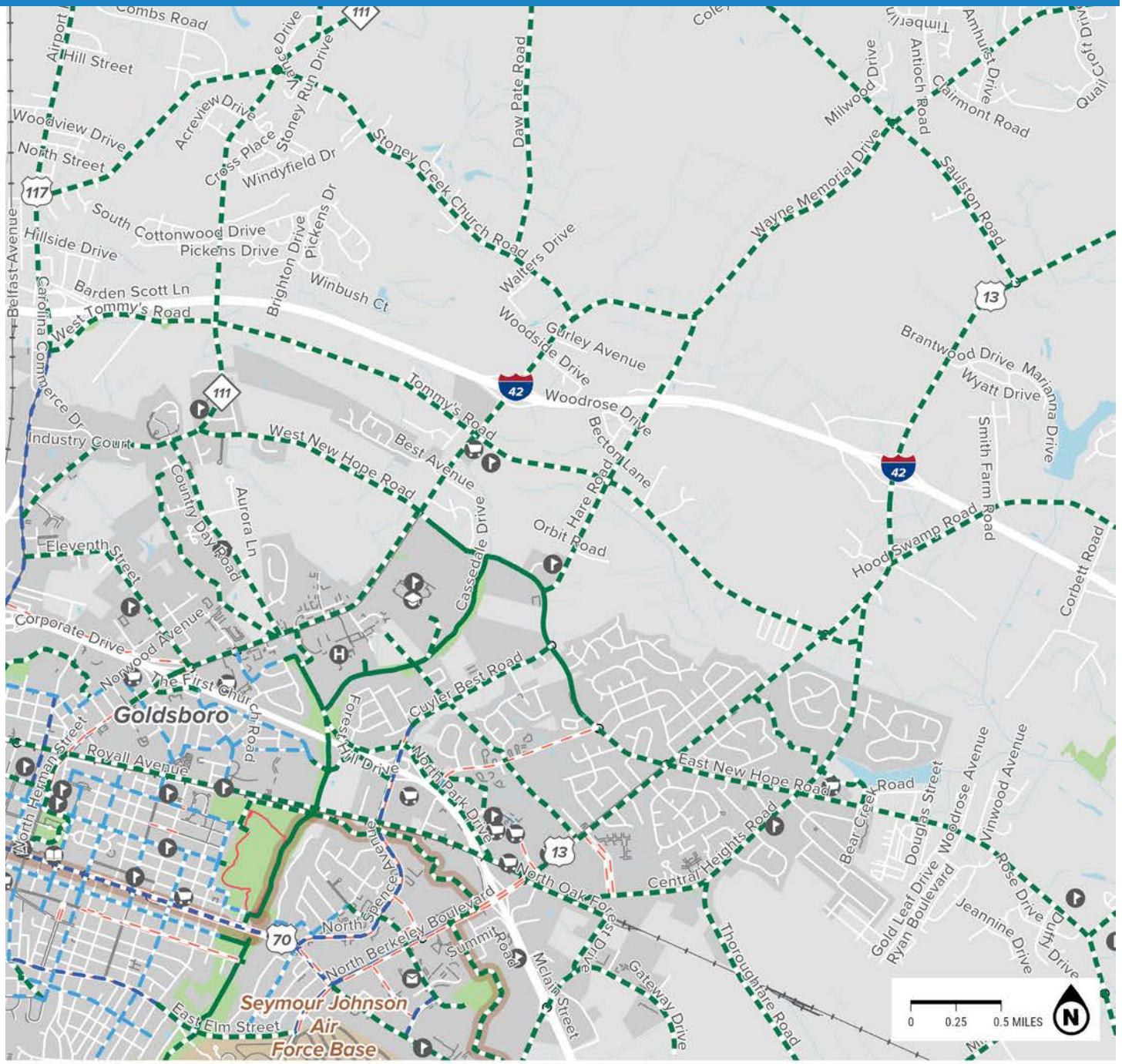
COMPREHENSIVE NETWORK: GOLDSBORO NORTHEAST



LEGEND

- Government
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- Library
- Hospital
- Post Office
- College or University
- K-12 Schools

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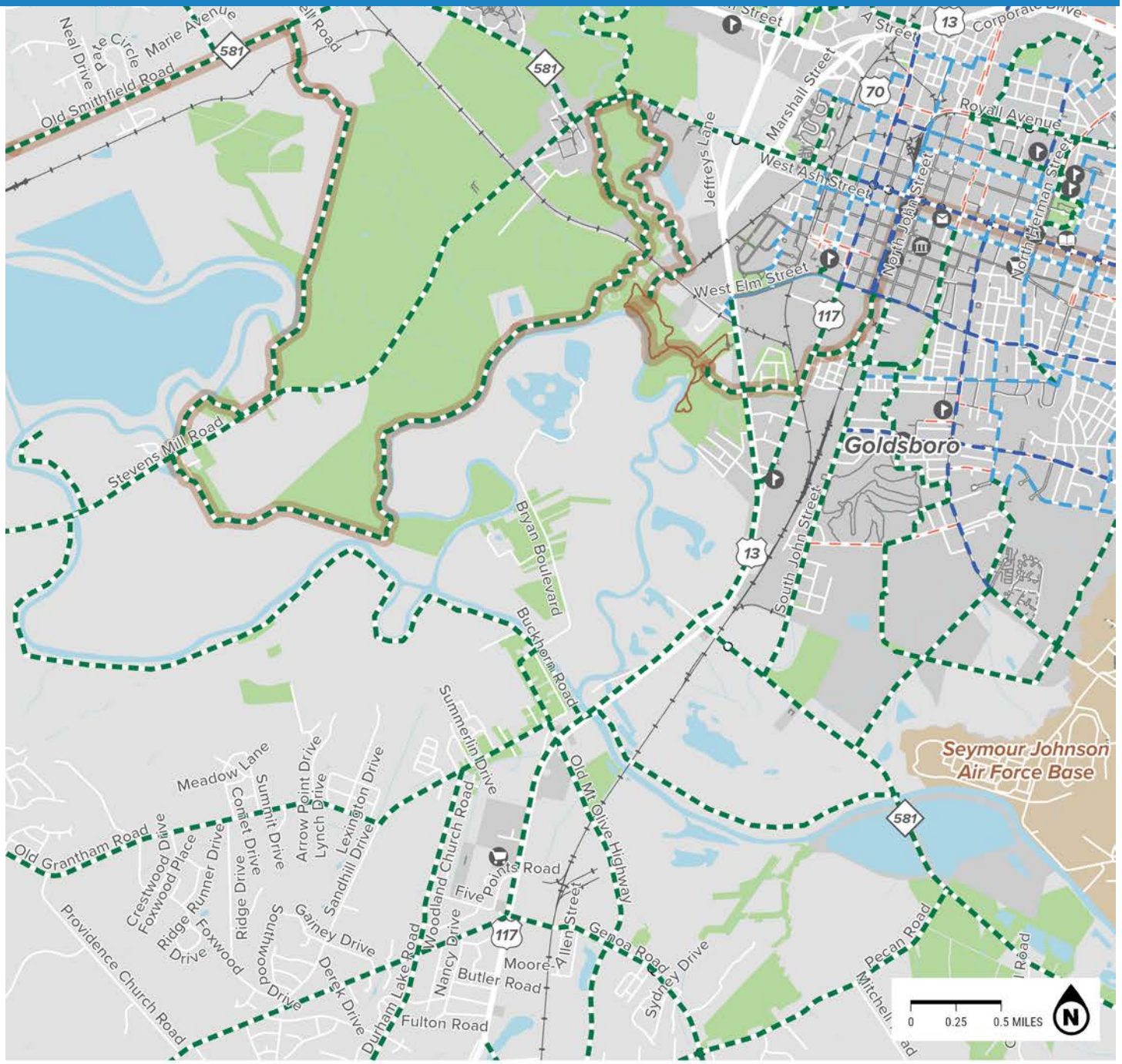
COMPREHENSIVE NETWORK: GOLDSBORO SOUTHWEST



LEGEND

- Government
- Grocery
- Library
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RECOMMENDATIONS 2024

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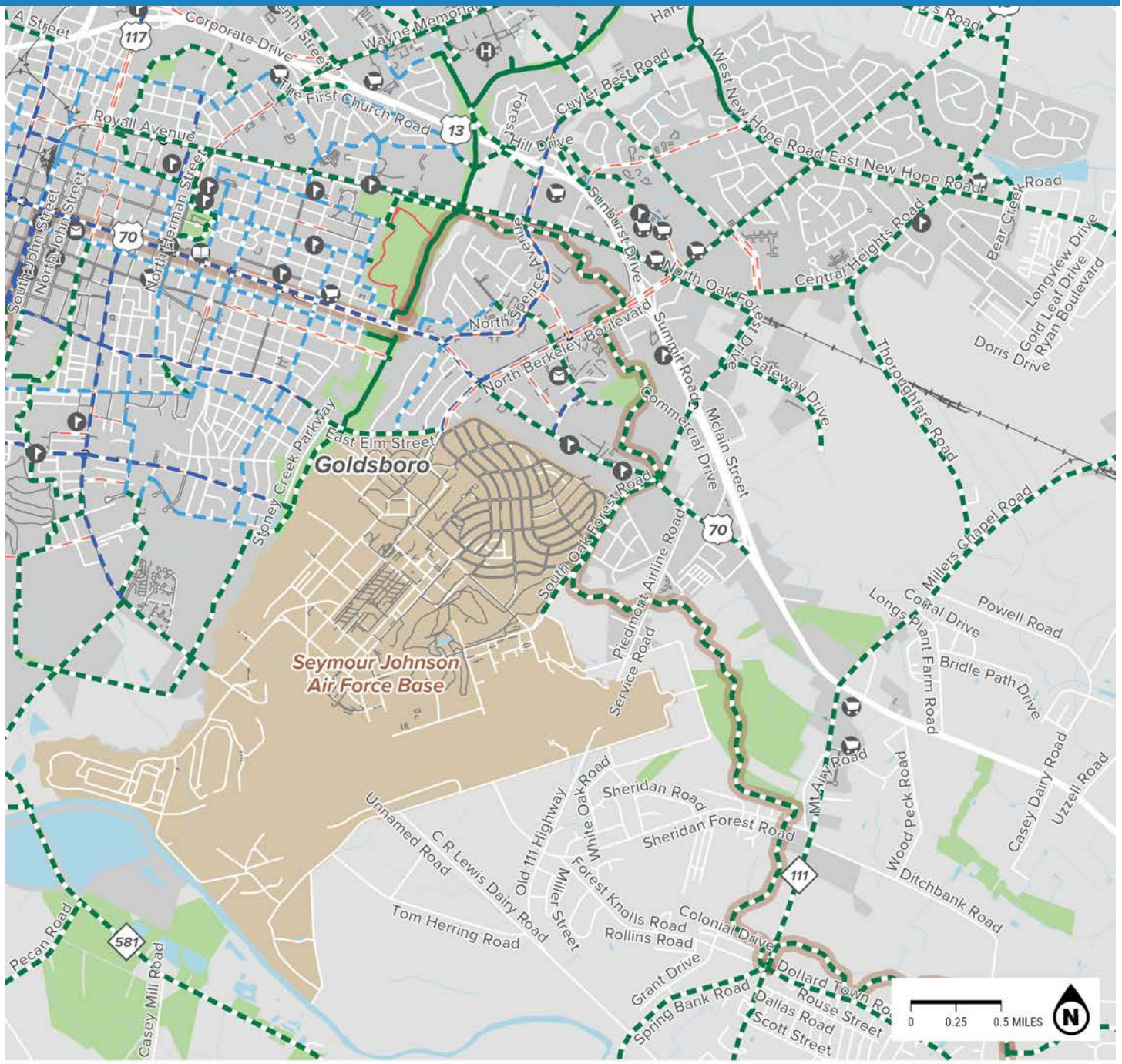
COMPREHENSIVE NETWORK: GOLDSBORO SOUTHEAST



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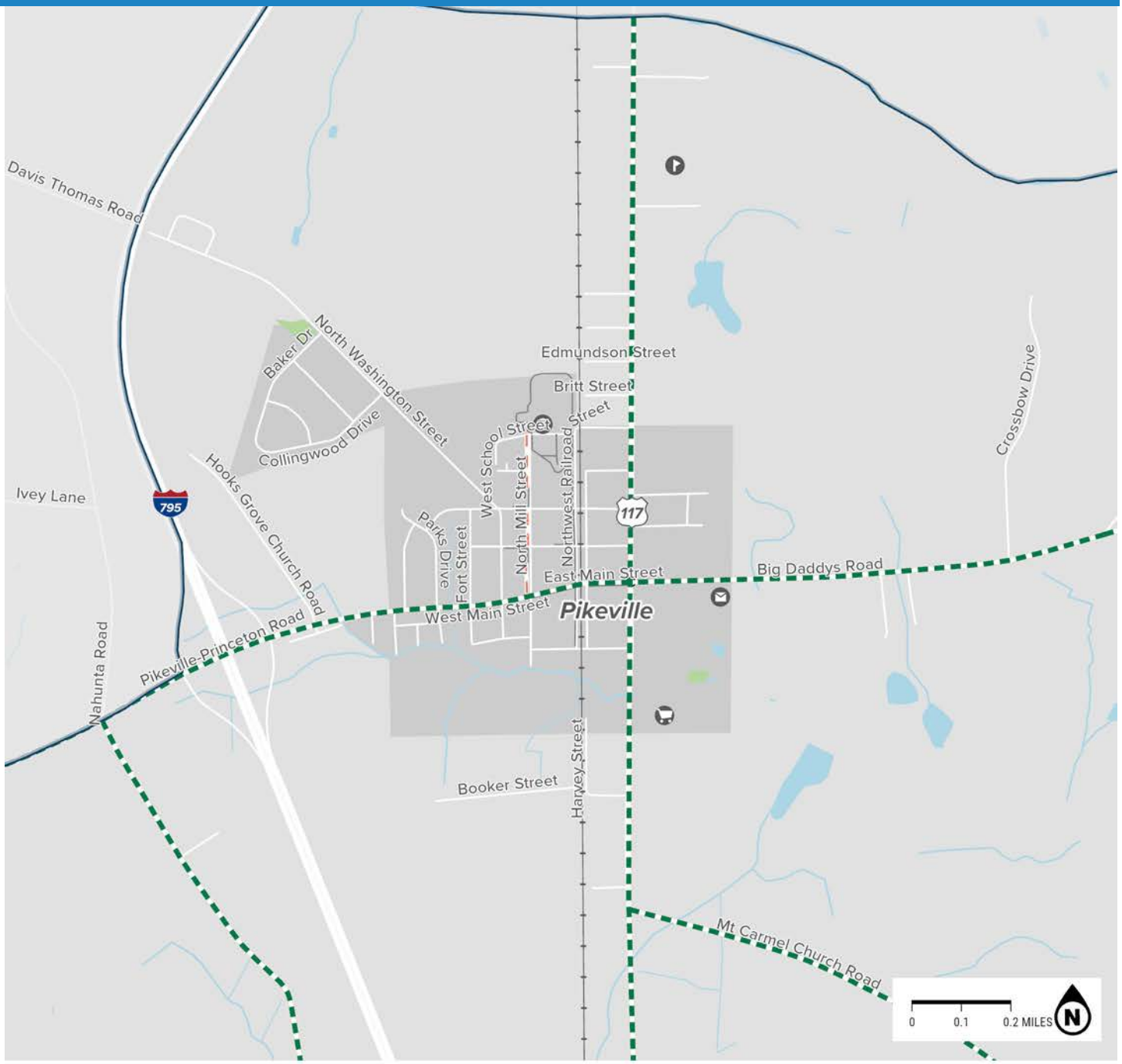
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: PIKEVILLE



LEGEND

- Government
- Grocery
- Post Office
- K-12 Schools

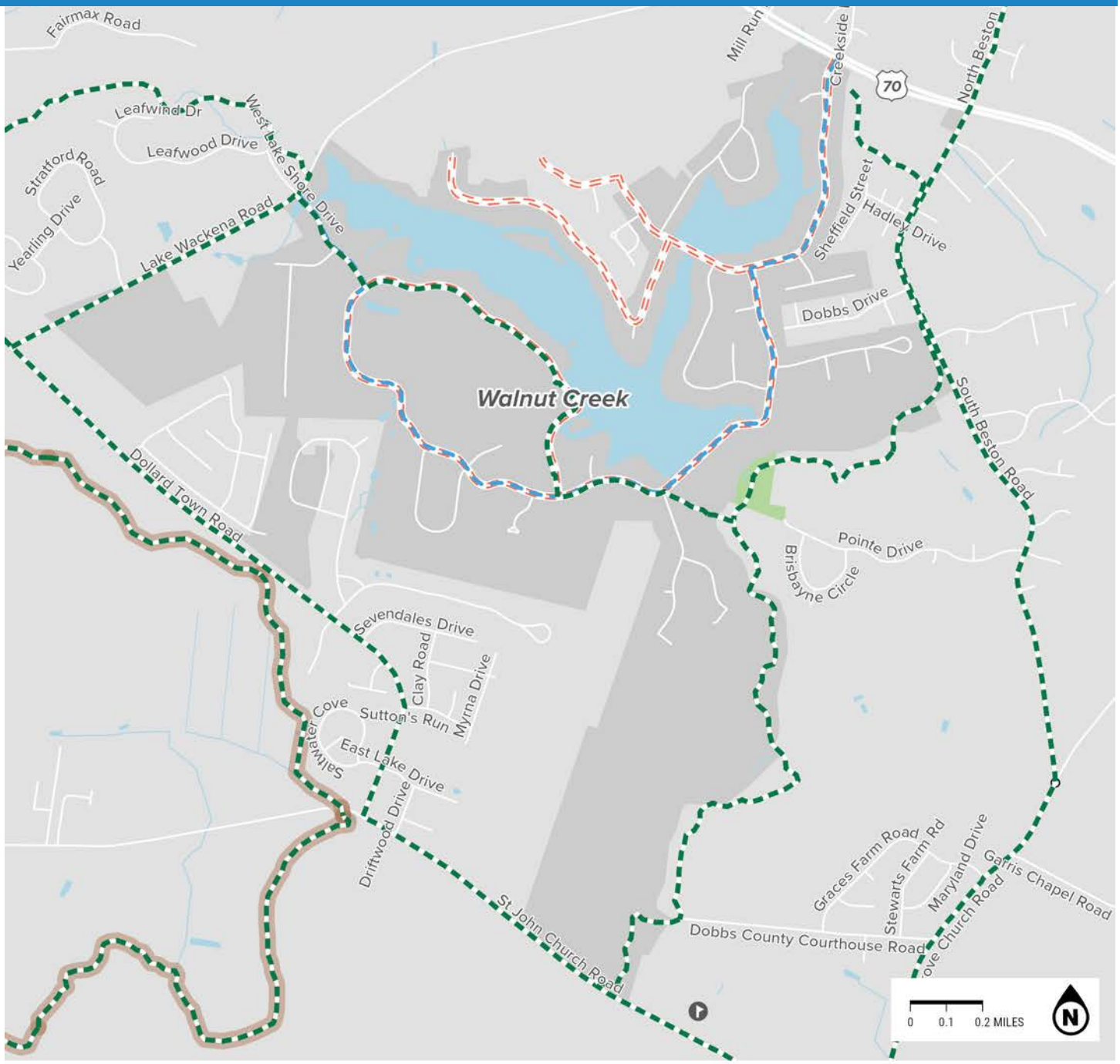
RECOMMENDATIONS 2024

- Sidewalk
- Shared Use Path

EXISTING FACILITIES

- Sidewalks
- Railroads
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: WALNUT CREEK



LEGEND

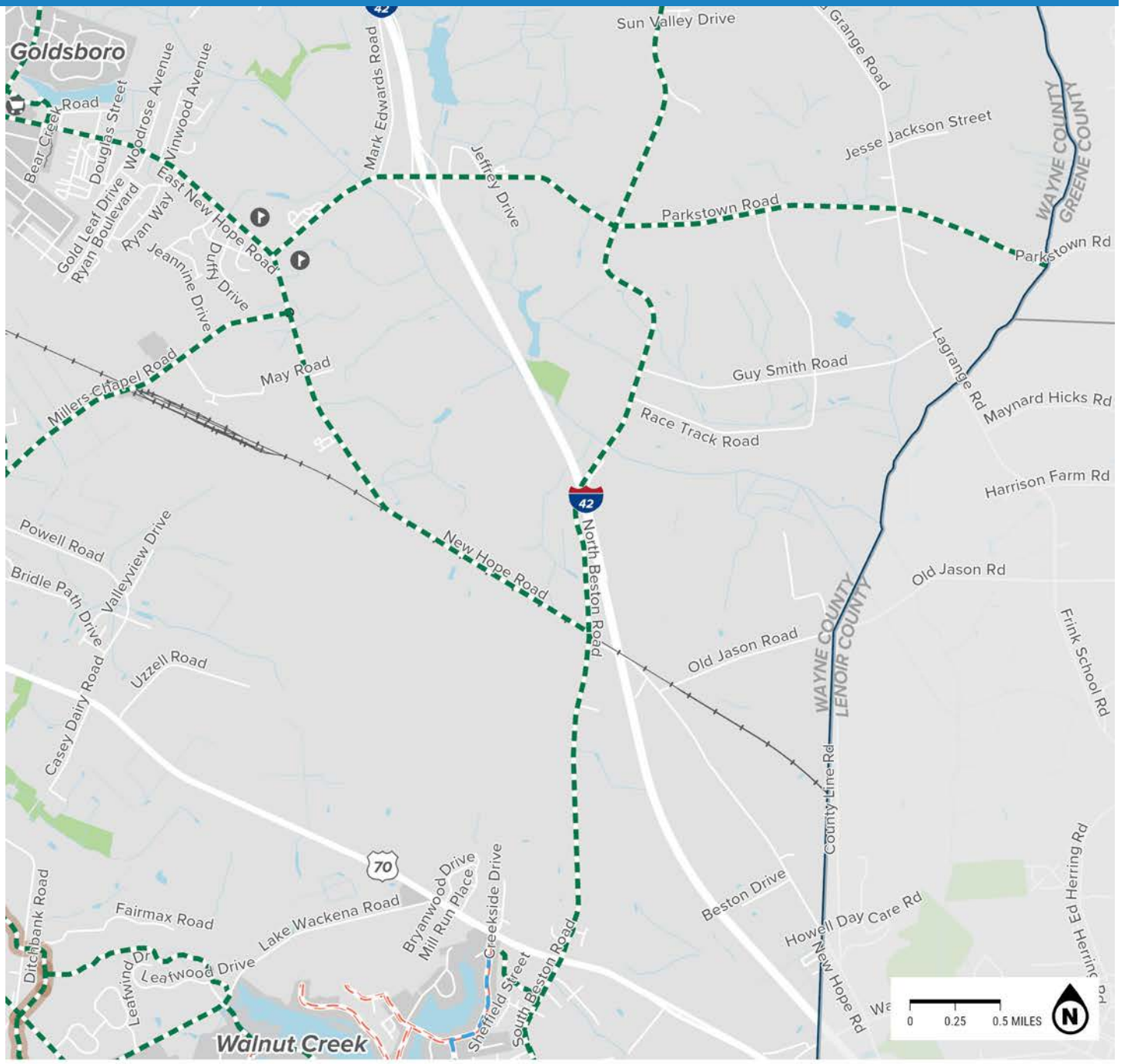
- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Shared Use Path

- Mountains-To-Sea Trail
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO EAST



LEGEND

- Grocery
- K-12 Schools

RECOMMENDATIONS 2024

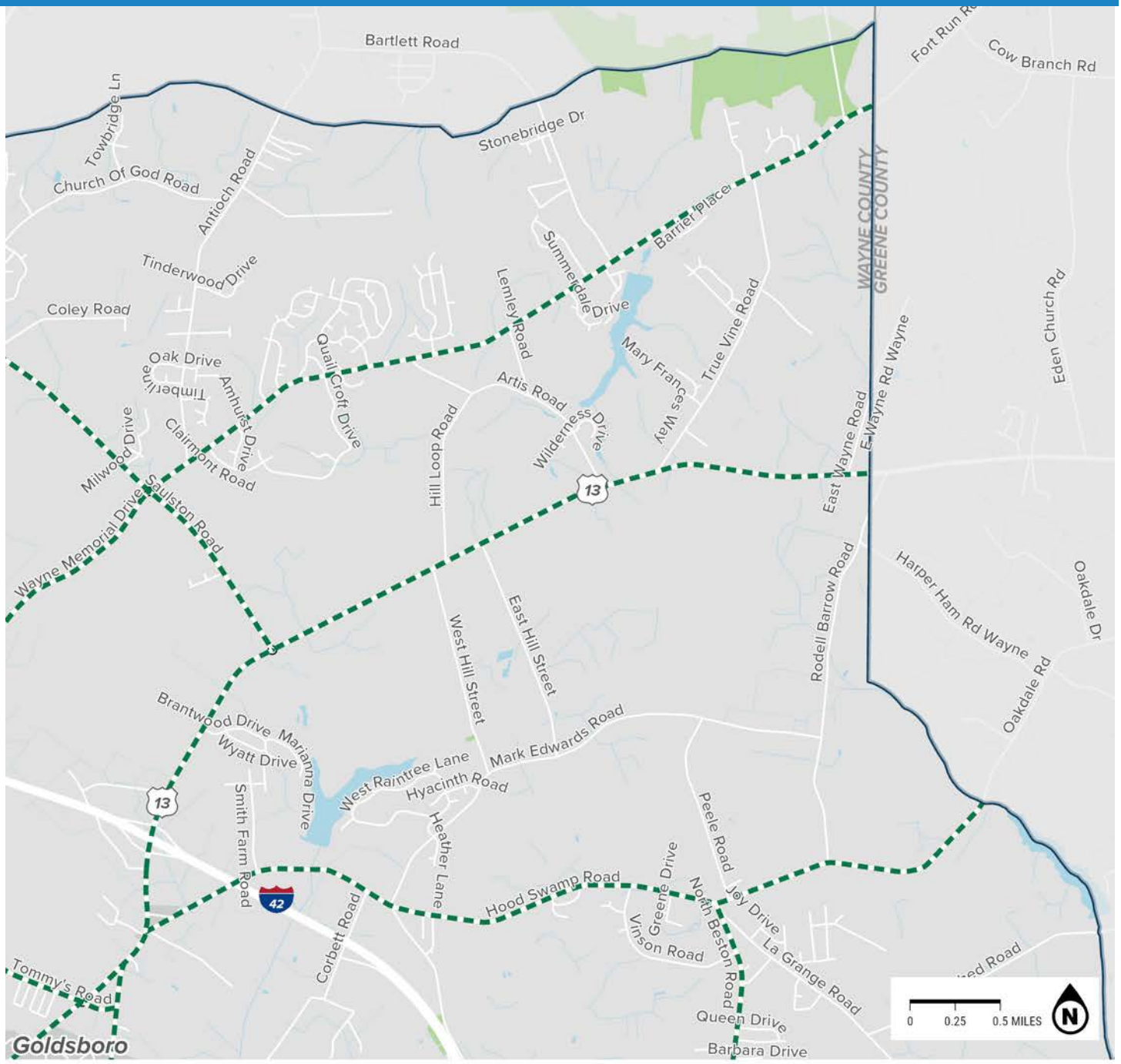
- Sidewalk
- Bike Boulevard
- Shared Use Path

EXISTING FACILITIES

- Sidewalks

- Mountains-To-Sea Trail
- Railroads
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO NORTHEAST



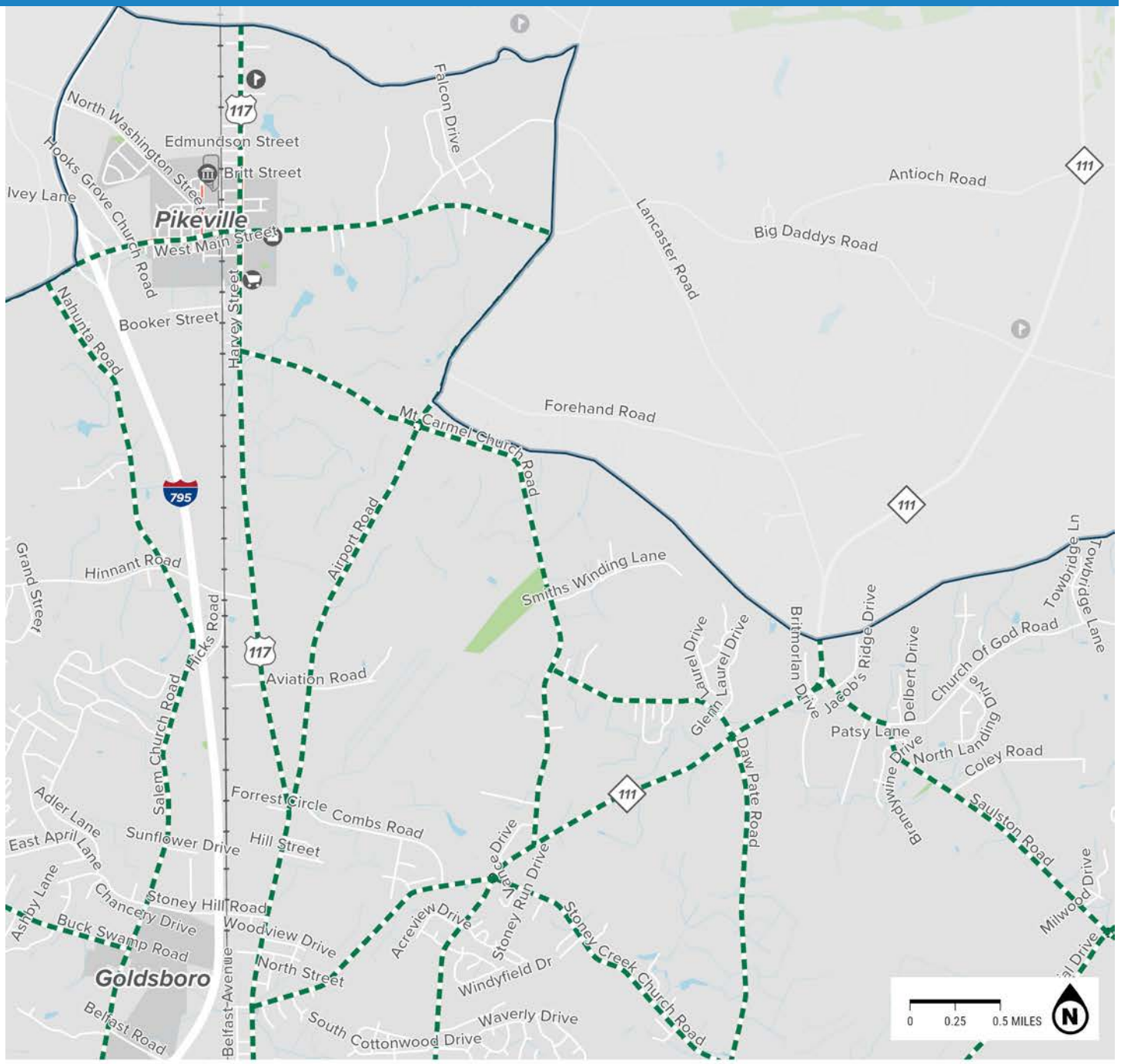
LEGEND

RECOMMENDATIONS 2024

- Shared Use Path

- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO NORTH



LEGEND

- Government
- Grocery
- Post Office
- K-12 Schools

RECOMMENDATIONS 2024

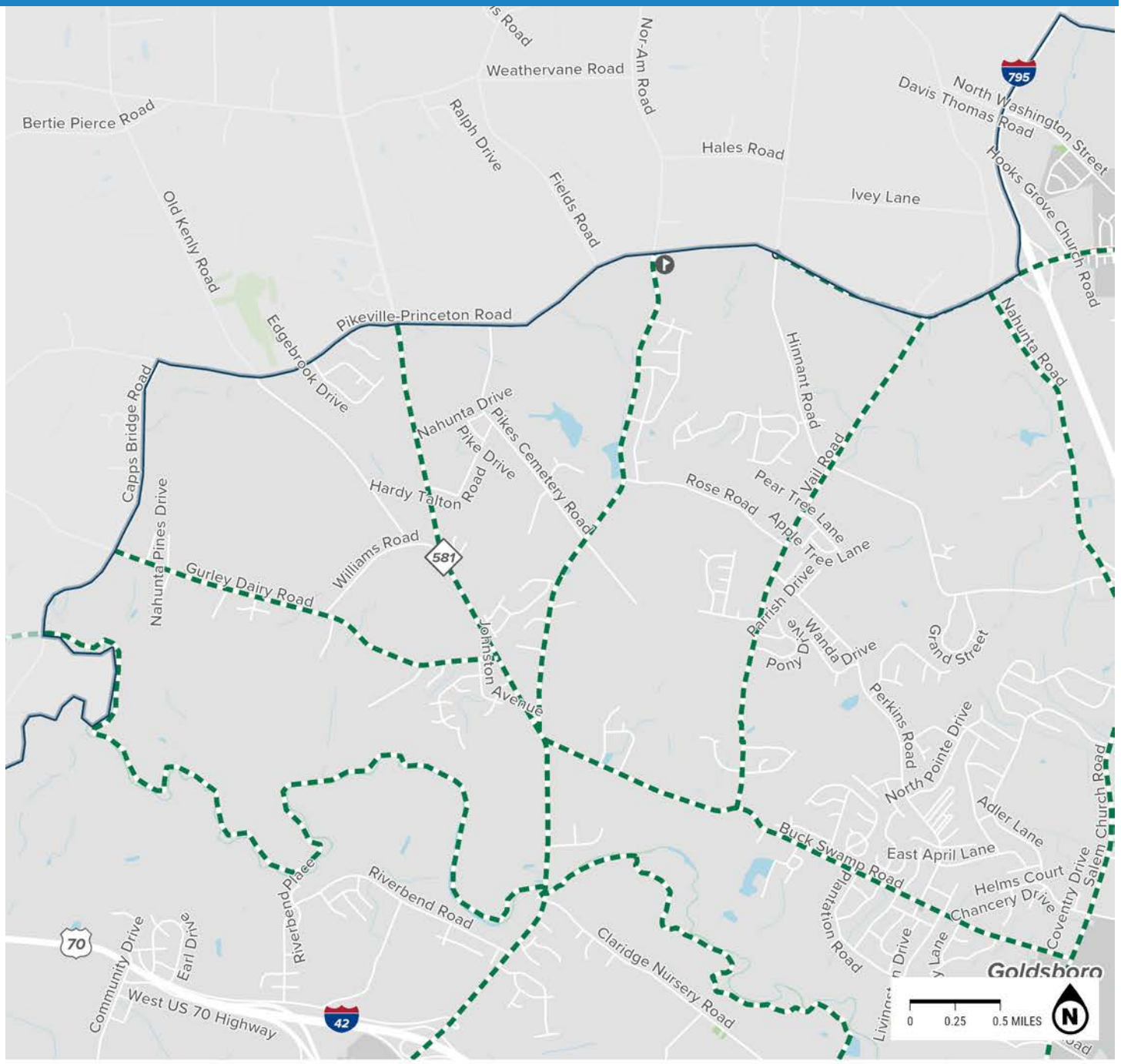
- Sidewalk
- Shared Use Path

EXISTING FACILITIES

- Sidewalks

- Railroads
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO NORTHWEST



LEGEND

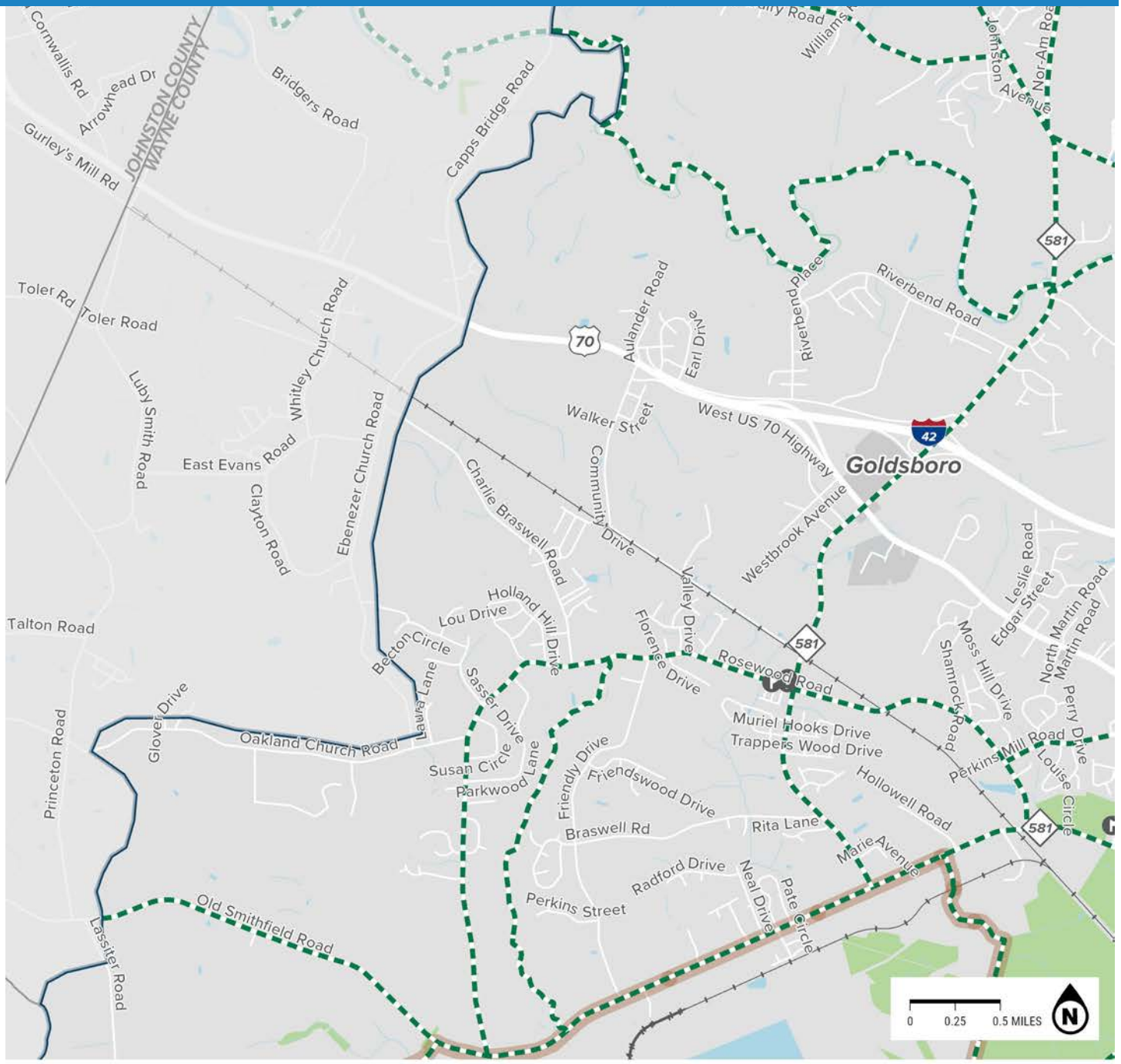
- K-12 Schools

RECOMMENDATIONS 2024

- Shared Use Path

- Water Body
- Parks & Managed Lands
- Municipal Boundaries

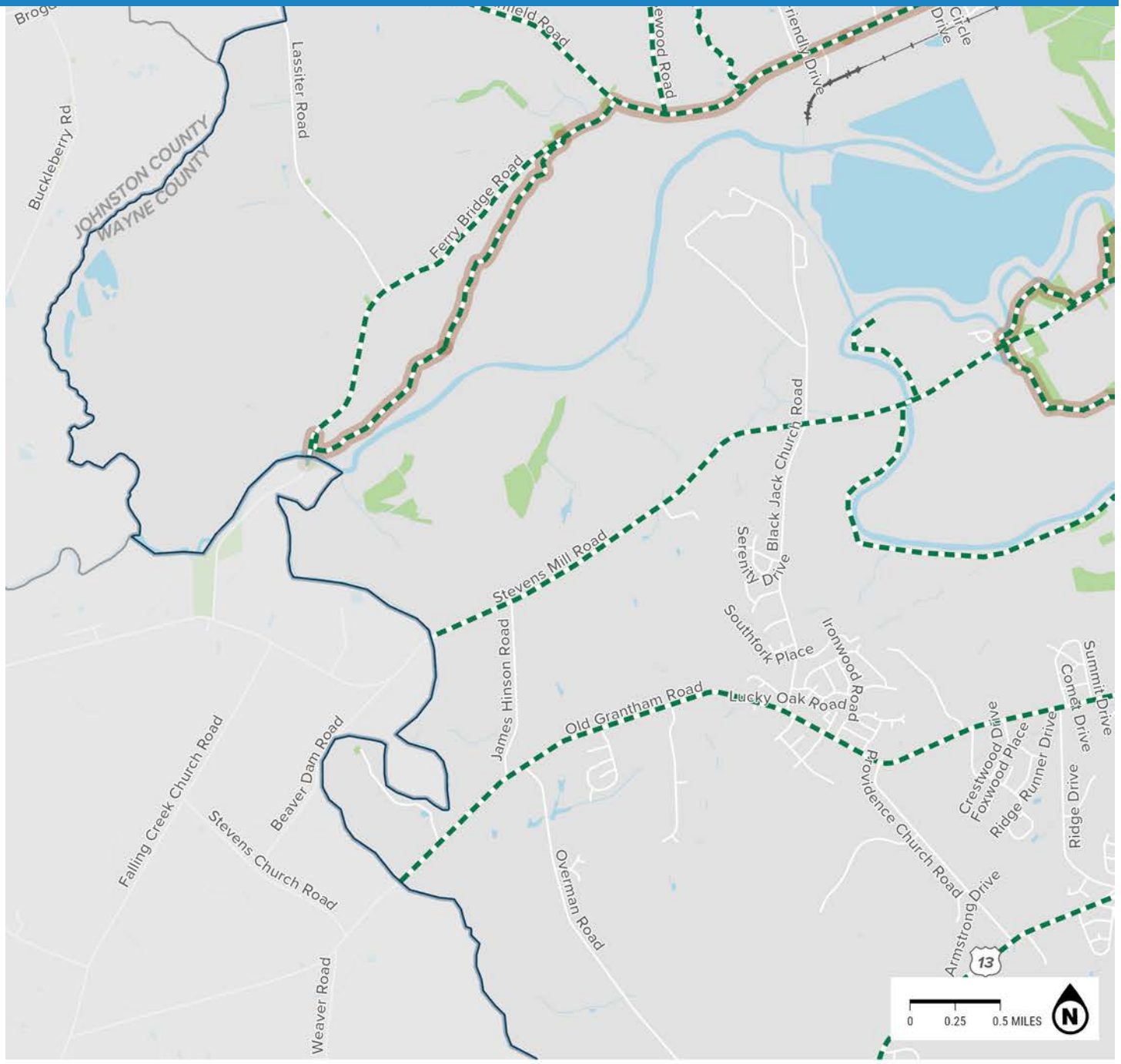
COMPREHENSIVE NETWORK: MPO WEST



LEGEND

- K-12 Schools
- RECOMMENDATIONS 2024
- Shared Use Path
- Sidewalks
- Mountains-To-Sea Trail
- Railroads
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO SOUTHWEST

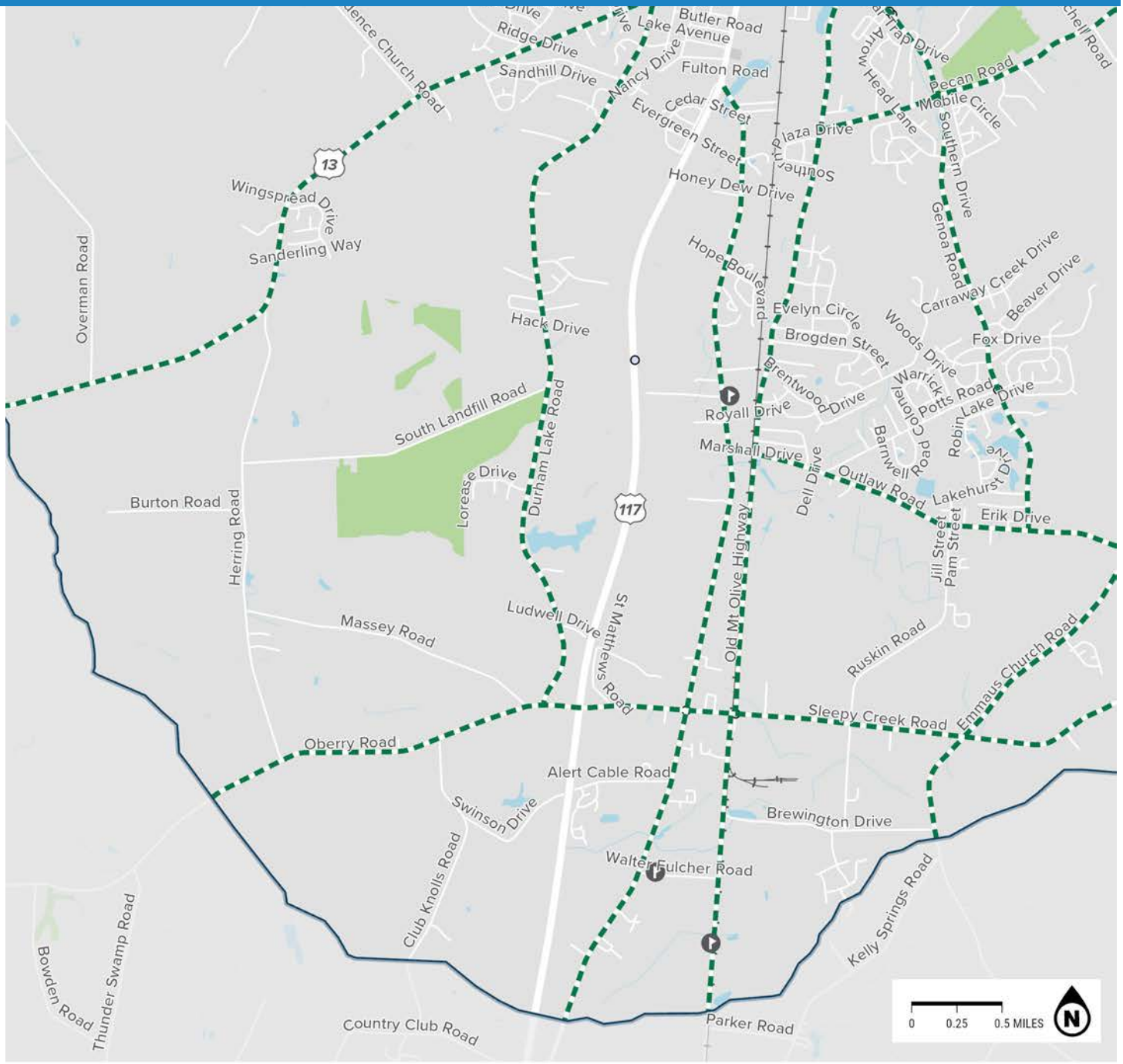


LEGEND

RECOMMENDATIONS 2024

- *Shared Use Path*
- *Mountains-To-Sea Trail*
- *Railroads*
- *Water Body*
- *Parks & Managed Lands*

COMPREHENSIVE NETWORK: MPO SOUTH



LEGEND

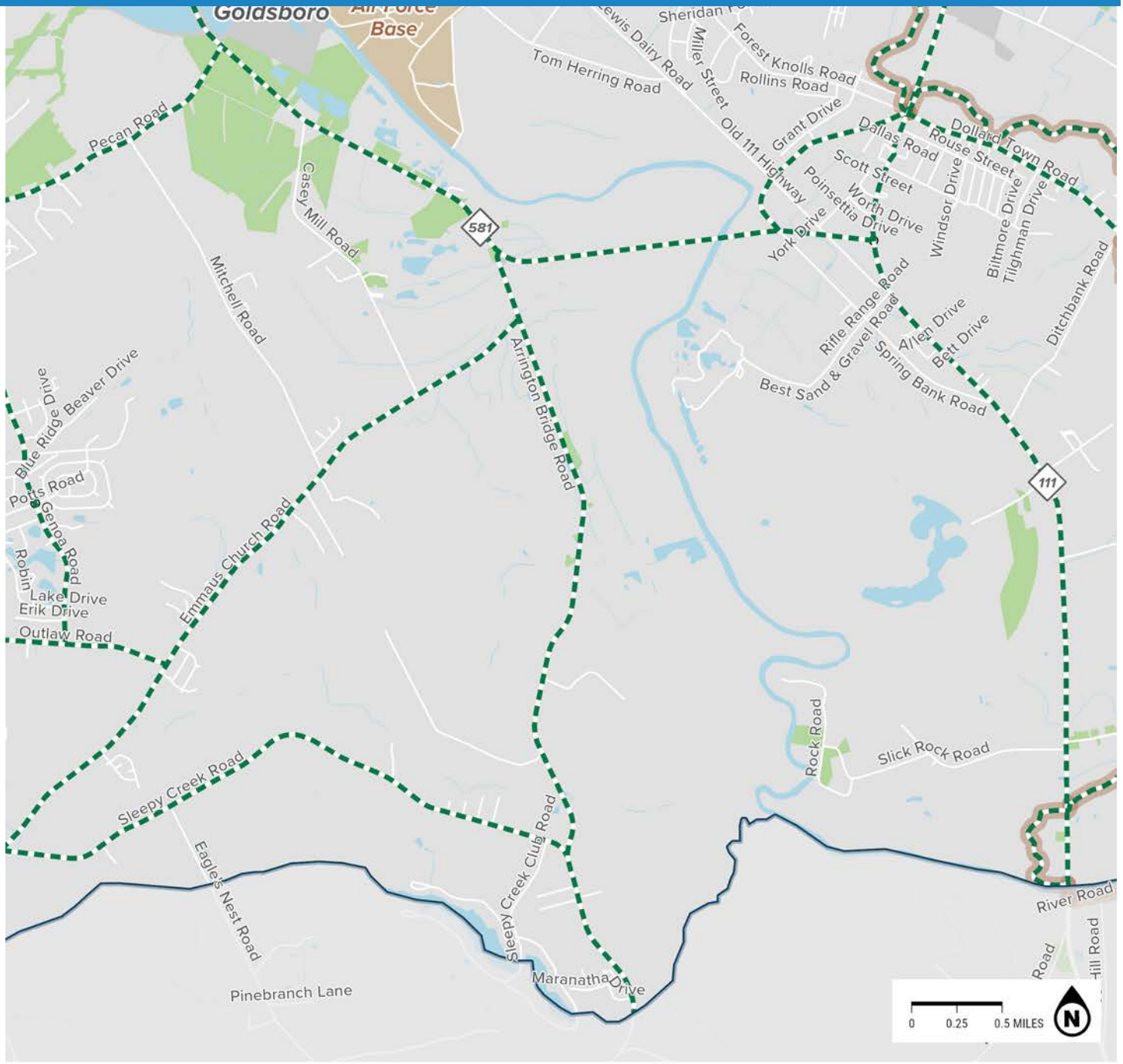
- K-12 Schools

RECOMMENDATIONS 2024

- Shared Use Path

- Railroads
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO SOUTHEAST

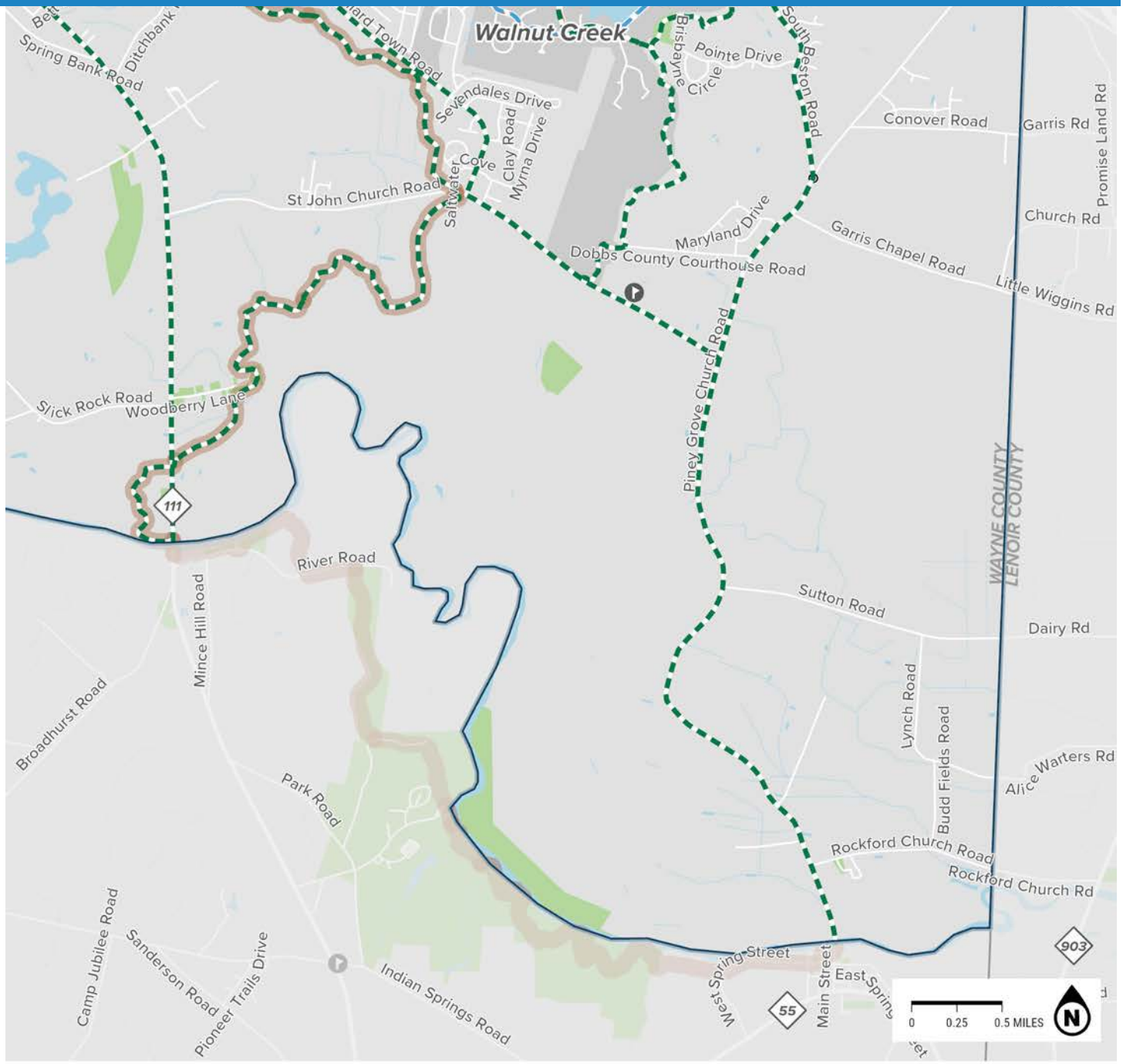


LEGEND

RECOMMENDATIONS 2024

- Shared Use Path
- Mountains-To-Sea Trail
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

COMPREHENSIVE NETWORK: MPO SOUTHEAST CORNER



LEGEND

- K-12 Schools

RECOMMENDATIONS 2024

- Sidewalk
- Bike Boulevard
- Shared Use Path

- Mountains-To-Sea Trail
- Water Body
- Parks & Managed Lands
- Municipal Boundaries

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APPENDIX B

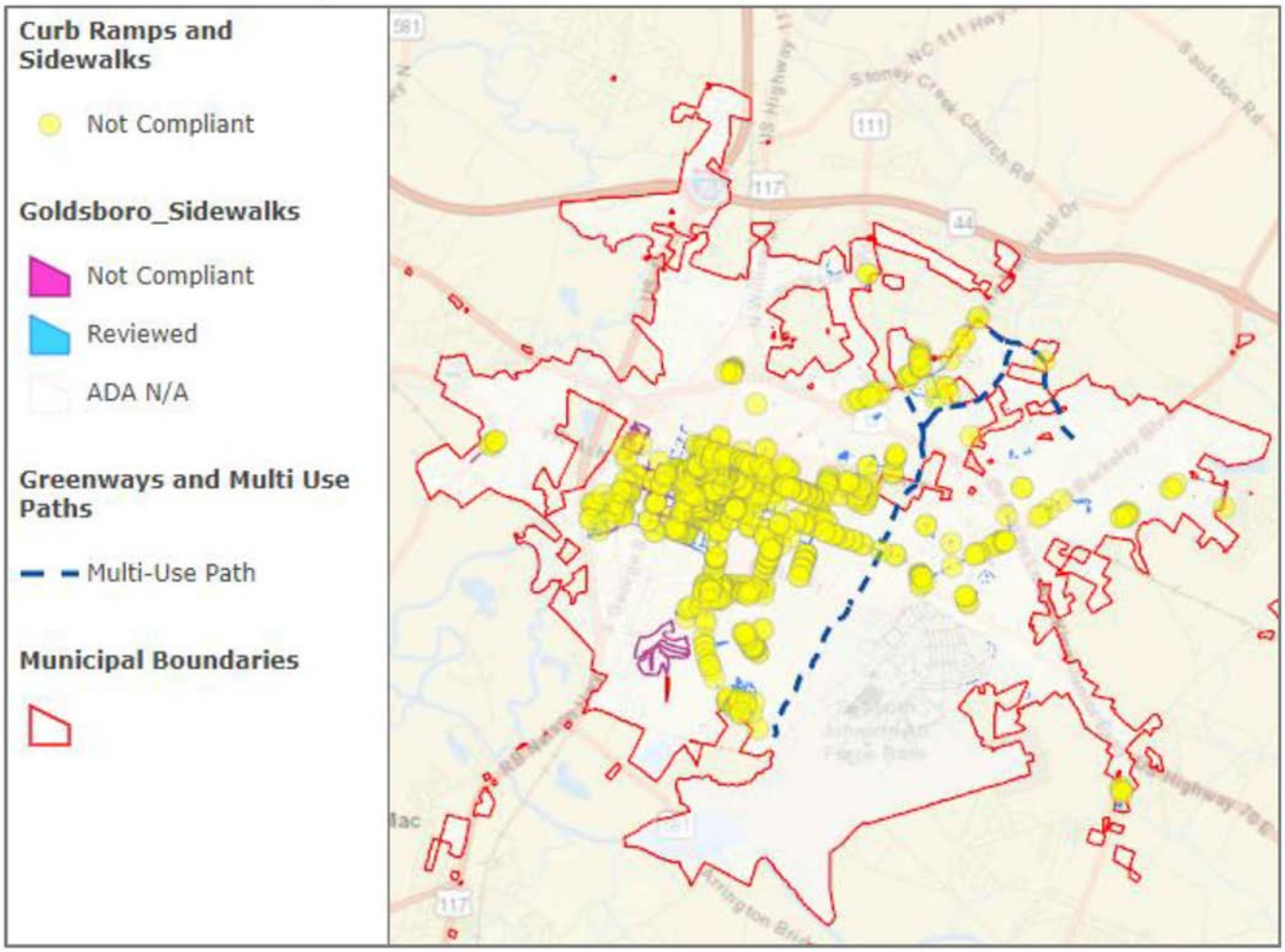
ADA Compliance and Intersection Improvements

OVERVIEW

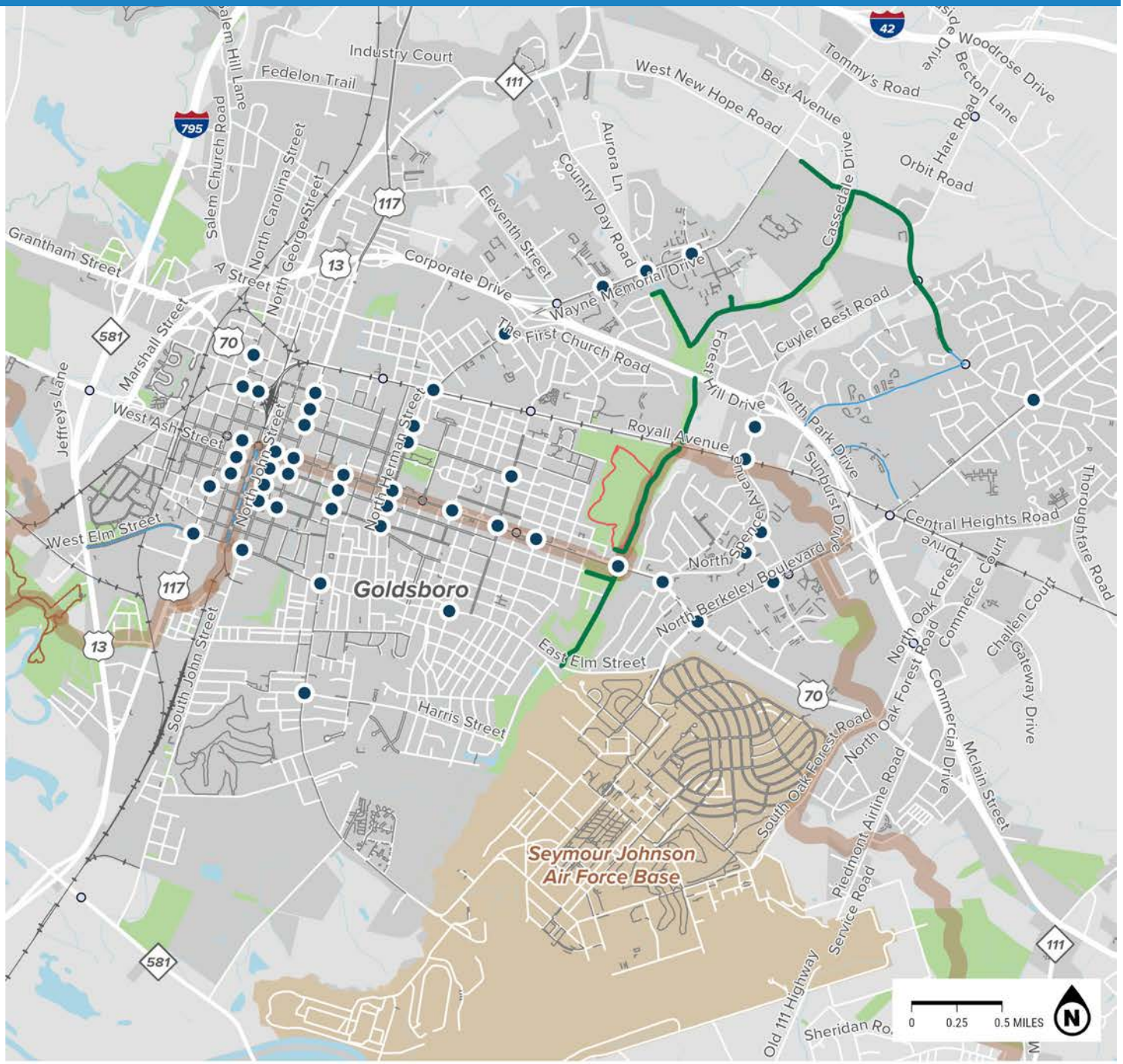
ADA Self-Evaluation and Transition Plan (2021)

The City of Goldsboro completed an *ADA Self-Evaluation and Transition Plan* in 2021. This document provides a detailed review of ADA improvements needed around the City and includes recommended policies and procedures. Examples of guidance provided in this document include missing curb ramps slopes that exceed ADA requirements. The map below is from page 28 of the report, highlighting the comprehensive inventory conducted. See this document for further detail regarding needed ADA updates across the City.

Below: Map of non-compliant curb ramps and sidewalks from the ADA Self-Evaluation and Transition Plan from 2021



INTERSECTION RECOMMENDATIONS



LEGEND

- Intersection Improvements

EXISTING FACILITIES

- Sidewalks
- Bike Lanes
- Shared Use Paths
- Hiking Trails
- Mountain Bike Trails
- Mountains-To-Sea Trail
- Railroads
- Water Body
- Seymour Johnson AFB
- Parks & Managed Lands
- Municipal Boundaries

Intersection Improvements

During this 2024 planning process updating the bicycle, pedestrian, and greenway plan, the project team reviewed several intersections around the City, identifying additional needs for improving crossing facilities for pedestrians. Below is a summary of additional pedestrian crossing improvement recommendations.

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
Andrews Ave	Elm St		✓								
Audubon St	Ash St			✓				✓			
Berkeley Blvd	Ash St	✓	✓	✓				✓			
Berkeley Blvd	Cashwell Dr			✓				✓			
Berkeley Blvd	New Hope Rd	✓	✓	✓				✓			
Best St	Ash St			✓				✓			
George St	Grantham St/US 70 BUS			✓				✓			

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
George St	Chestnut St			✓		✓		✓			
George St	Elm St	✓	✓	✓				✓	✓		
George St	RR (just north of Vine)					✓					
Herman St	Holly St			✓					✓		
Herman St	Beech St			✓					✓		
Herman St	Ash St	✓	✓					✓	✓		
Herman St	Mulberry St			✓		✓		✓			
Herman St	Evergreen & Walnut			✓				✓			

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
James St	Walnut St							✓	✓		
James St	Mulberry St			✓		✓					
James St	Ash St			✓				✓	✓		
James St	RR (just north of Vine)					✓					
Jefferson Ave	Beech St			✓				✓			
Jefferson Ave	Ash St			✓		✓		✓			
Ash St	Stoney Creek Greenway		✓	✓		✓	✓			✓	
John St	Elm St			✓				✓			

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
John St	Chestnut St			✓				✓			
John St	Walnut St			✓				✓			
John St	Mulberry St			✓				✓			
John St	Ash St			✓				✓	✓		
Slocumb St	Walnut St			✓		✓		✓			
Slocumb St	Mulberry St			✓		✓		✓			
Slocumb St	Ash St			✓				✓	✓		
Slocumb St	Harris St/ Bunche Dr	✓	✓	✓		✓		✓			

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
Slocumb St	Elm St			✓				✓			
Spence Ave	at Walmart			✓		✓		✓			
Spence Ave	Royall Ave			✓		✓		✓	✓		
Spence Ave	Ash St			✓		✓		✓	✓		
Spence Ave	Cashwell Dr			✓		✓		✓	✓		
Spence Ave	Mall Rd			✓		✓		✓	✓		
Wayne Memorial Dr	Lockhaven Dr			✓		✓	✓	✓	✓		

✓ = Recommended Improvement

Cross Street A	Cross Street B	CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
		Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
Wayne Memorial Dr/ Herman St	Royall Ave	✓	✓	✓		✓		✓	✓		
William St	Holly St			✓				✓			
William St	Beech St			✓				✓			
William St	Park Ave/ Vine St			✓				✓			
William St	Ash St			✓				✓			
William St	Mulberry St			✓							

✓ = Recommended Improvement

		CROSSING IMPROVEMENTS						SIGNAL IMPROVEMENTS		PEDESTRIAN BEACONS	
Cross Street A	Cross Street B	Curb Extension	Curb Radius Reduction	High Visibility Crosswalk	Advanced Yield/ Stop	Curb Ramp	Pedestrian Refuge Island	Pedestrian Signal	Leading Pedestrian Interval	Pedestrian Beacon	RRFB
William St	Chestnut St			✓							
Main St (Pikeville)	Railroad			✓		✓					
Main St (Pikeville)	US 117			✓		✓		✓			
Wayne Memorial Dr	Country Day Rd			✓		✓		✓	✓		
Wayne Memorial Dr	Hospital Rd			✓			✓	✓	✓		
Wayne Memorial Dr	Ninth St			✓				✓			

APPENDIX C

Policy Recommendation Tables

BICYCLE AND PEDESTRIAN POLICY AND REGULATORY REVIEW

In the tables that follow, policy recommendations are organized into three major categories of "Complete Streets and Greenways", "Pedestrian and Bicycle-Oriented Urban Design Elements", and "Connectivity". In each category, recommendations are aligned with strategic policies recommended by the Envision 35: City of Goldsboro Urbanized Area Comprehensive Plan (Envision 35) process. Policies are sorted into three categories: **Good**, **Needs Improvement**, and **Inadequate**.

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
Complete Streets and Greenways				
1.1. Adopt 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. The National Complete Streets Coalition has several helpful resources for municipalities considering Complete Streets policies: The Complete Streets Policy Framework describes best practices to help communities develop strong Complete Streets policies and Best Complete Streets Policies 2023 identifies the top Complete Streets policies in the country based on a standardized rating scale.	No specific policy. **Inadequate**	No specific policy. **Inadequate** *Envision 35*, Strategy 1.64: "***The City may consider the development and adoption of a complete streets policy.*** *This policy should focus on providing a wide range of transportation options including: access to transit, bicycling lanes and sharrows, and pedestrian access facilities. Increased attention should be given to streets programmed for resurfacing and/or expansion.*"	No specific policy. **Inadequate**	No specific policy. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.2 Develop Complete Street Design Guidelines for a variety of contexts and all street/roadway user groups. The design guidelines that accompany this plan also include detailed recommendations on Complete Streets design elements. NCDOT multimodal facilities follow the guidance of the Department's authoritative design resources from AASHTO, NACTO, FHWA, and the NCDOT Roadway Design Manual as stated in the Department's Complete Streets policy. Wayne County and/or its municipalities could adopt and endorse these and other national guidelines, including the NACTO Urban Bikeway Design Guide. The design guidelines would then need to be integrated into development standards for new development, as was done with the Raleigh Street Design Manual and the Charlotte Urban Street Design Guidelines.	Uses NCDOT *Subdivision Roads Minimum Construction Standards*, which are not currently complete street-oriented. **Needs Improvement**	UDO § 7.2 MINIMUM REQUIREMENTS FOR SUBDIVISION ROAD CONSTRUCTION includes various requirements for major and local streets, however, the requirements are not context-based and do not include bikeway requirements. The minimum widths for local streets are too wide to promote low speed motor vehicle traffic movements. In general, the menu of street alternatives needs to be more refined to provide better complete street options that meet local goals for connectivity, safety, and comfort. **Inadequate**	§ 93.46 STREETS provides a number of minimum widths for streets and street ROWs. The minimum widths for thoroughfares may not be sufficient for bike lanes. The minimum widths for local streets are too wide to promote low speed motor vehicle traffic movements. In general, the menu of street alternatives needs to be more refined to provide better complete street options that meet local goals for connectivity, safety, and comfort. **Inadequate**	No street design requirements. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.3. Require pedestrian accommodations (sidewalks, crosswalks, etc.) during new or redevelopment. *"Pedestrian networks are fundamental to supporting transportation for people of all ages, abilities, and economic opportunities. Consider pedestrian facilities, such as sidewalks, sidepaths, and crossings, as a critical part of the roadway design with few exceptions."* (*NCDOT Roadway Design Manual*, page 4-31) *Envision 35* recommends the following **changes to the Wayne County and City of Goldsboro development standards** to promote transit, bike and pedestrian connectivity (Implementing Strategy 1.21): • Cul-de-sac and block-length maximums; • Internal connectivity standards; • Sidewalk requirements For model language, see City of Wilson, NC UDO, Section 6.3: Required Improvements for All Development (and related sections that follow).	**Sidewalks not required**, but may be provided to meet open space requirements: § 70-103 (H) OPEN SPACE (1) A.: "*Sidewalks built to state department of transportation standards **may be provided** by the developer, if approved by the planning board or the board of commissioners as leading to a pedestrian designation point such as school, park, etc. **Sidewalks may constitute all or part of the open space requirements.**"* **Needs Improvement** The *2008 Comprehensive Plan for Wayne County* encourages multimodal, walkable communities and includes policies to support the construction of sidewalks, including: Action 1.4: *"Reexamine the County's development standards to evaluate the need for improved pedestrian systems (sidewalks, greenways, streetlights, etc.) in new residential developments."*	**Sidewalks required** on interior and exterior roadways for multi-family and commercial development (UDO Chapter 5). **Good.** Should apply to all new development, including single family residential development of a certain size threshold (e.g. number of housing units, density). **Good.** Sidewalks required by street type are as follows: *"1. Sidewalks shall be provided along **both sides of all major thoroughfares** as shown on the official Thoroughfare or Transportation Plan.* *2. Sidewalks shall be provided along **one side of all minor streets, including cul-de-sacs."*** (UDO § 7.16) **Needs Improvement** Furthermore, Goldsboro should consider eliminating its Fee in Lieu program for sidewalks that allows developers to pay a minmal fee in place of contstructing sidewalks.	**Sidewalks not required.** In some zoning districts, sidewalks can be required if deemed necessary by the Village Council, after receiving the recommendation of the Planning Board. (§ 94.55A R-PATIO HOME RESIDENTIAL CONDITIONAL DISTRICT (PATIO HOME RCD)). **Inadequate**	**Sidewalks not required.** **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.4. Require sidewalks or bike accommodations by roadway type or context. Ideal standards would require sidewalks on both sides of all collector and arterial streets and on at least one side of local streets where warranted by density and/or system connectivity. Five feet is the minimum width required for two adults to walk side-by-side. Five-foot-wide sidewalks along local streets and six-foot-wide sidewalks along collectors and arterials are preferred minimum widths. In areas of higher density and mixed-use development, the minimum required width for sidewalks should be six feet or more. The land use context and density of development necessitates a greater level of requirement for sidewalk specifications. In areas such as downtowns with buildings at the back of the sidewalk and ground level retail, sidewalks should be as wide as 10-18 feet wide. Reference the NCDOT Roadway Design Manual for more detailed recommendations on sidewalk measurements according to land use and density.	**Not required.** The County uses the NCDOT *Subdivision Roads Minimum Construction Standards*. Neither the County Code of Ordinances nor the NCDOT standards require sidewalks. **Needs Improvement**	Sidewalks required by street type are as follows: *"1. Sidewalks shall be provided along **both sides of all major thoroughfares** as shown on the official Thoroughfare or Transportation Plan. 2. Sidewalks shall be provided along **one side of all minor streets, including cul-de-sacs."*** (UDO § 7.16) *"When sidewalk construction is required by the Unified Development Ordinance, the City Council for site plans requiring City Council approval or the Planning Director for plans requiring staff approval, may allow the developer the **option of paying a fee in lieu for sidewalk construction.** The fees acquired from this ordinance shall be used for sidewalk projects within the city of Goldsboro and its extra-territorial jurisdiction."* (UDO § 7.1.6) **Good,** but could be improved to require sidewalks on both sides based on density of development or land uses. Consider implementing criteria for the fee in lieu option to improve predictability of the future sidewalk network.	Not required. **Inadequate**	Not required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.5. Require pedestrian-scaled lighting (< 18' tall) required along streets and pathways. Pedestrian-scale lighting should not exceed 18 feet in height over the sidewalk and should be located at key intersections or crossings and along preferred pedestrian routes. Pedestrian-scale lighting also enhances the illumination of bicycle facilities since the lighting is located closer to the sidewalk and roadway. 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.	**Not required.** Street lights required, but no requirements for pedestrian-scaled lights for walkways and pathways § 70-105 (D): *Streetlights. All subdivisions that involve additional public street improvements shall have streetlights installed throughout the subdivision in accordance with the standards of National Electrical Safety Code.* **Needs Improvement**	**Not required.** Street lights required, but no requirements for pedestrian-scaled lights for walkways and pathways. UDO § 7.1.5 STREET LIGHTS: "*The developer shall install **streetlights within subdivisions in accordance with City standards**...If the developer desires a different lighting design, other than the City standards, the developer shall pay the City an amount equal to the difference in material and installation cost.*" **Needs Improvement** *Envision 35* Implementation Strategy 1.72 discusses lighting as a component of Crime Prevention Through Environmental Design (CPTED) and a strategy to "*improve upon overall community safety and appearance.*"	**Not required.** **Inadequate**	**Not required.** Street lights are required in specific circumstances, but pedestrian scale is not specified. § 153.078 STREET LIGHTS: *"All streets in a mobile home park located outside the town limits shall be adequately illuminated from sunset until sunrise by the developer. The minimum size street light shall be a 175-watt mercury- vapor (approximately 7,000 lumen class) or its equivalent, spaced at intervals of not more than 400 feet."* **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.6. Require street trees between sidewalk and curb. In addition to their value for improving the air quality, water quality, and beauty of a community, street trees can 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. When planted in a planting strip between the sidewalk and the curb, street trees also provide a buffer between the pedestrian zone and the street. See Town of Wendell UDO Chapter 8, especially section 8.8: Street Trees.	None required. **Inadequate**	UDO § 6.3.10 STREET YARD DESIGN STANDARDS requires street trees be planted in "street yards" along property frontages. Unfortunately, "street yards" are not in the public right of way and, therefore, trees are not required between the sidewalk and the street curb where they can provide separation between pedestrians and roadway travel lanes. **Good,** but could use improvement.	§ 93.68 REQUIRED IMPROVEMENTS (F) Street trees. "*It is recommended that street trees be planted in all subdivisions. The planting of street trees is considered a duty of the subdivider as well as good business practice. Street trees are a protection against excessive heat and glare and enhance the attractiveness and value of the property. Trees, where planted,* ***shall be planted inside the property lines*** *where they are less subject to injury, decrease the chance of motor accidents, and enjoy more favorable conditions for growth.*" **Needs Improvement**	None required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.7. Require designated bikeways (bike lanes, shoulders, greenways, etc) during new development or redevelopment. Generally, as traffic volumes exceed 3,000 vehicles per day and traffic speeds exceed 25mph, facilities to separate bicycle and motor vehicle traffic are recommended. Multi-lane roads are typically more dangerous for all users because of the increased traffic volume, the potential for higher speeds, and the additional number of conflict locations due to turning vehicles. Refer to AASHTO *Guide for the Development of Bicycle Facilities (2012) 4th Edition* Chapter 4 for more information about selecting bicycle facilities for different roadway contexts. See Chapter 6: Subdivision & Infrastructure Standards of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. § 6.8.2, 6.9, 6.10. See Chapter 7: Parks and Open Space of the Wilson, NC UDO regarding greenways. See Article 5: Development Standards (section 5.7 G) of the City of Jacksonville, NC UDO for example language	Not required. **Inadequate** Wayne County Comprehensive Plan, Vision 1: Transportation, Action 1.3: Consider expanding Goldsboro's bikeway master plan into parts of the unincorporated county. **Consider bike lanes as part of street construction standards for new developments in locations identified by the plan.** Consider areas adjoining extraterritorial jurisdiction as places to expand bike lanes.	Not required. Street design guidelines do not address bicycle facilities and do not require that they be included with new roadway construction, even on collector and thoroughfare streets. **Inadequate**	Not required. **Inadequate**	Not required. **Inadequate** The Town should also consider removing its regulation against riding bicycles or skateboards on sidewalks, as sidewalks are often safer and more comfortable than roadways without adequate bicycle facilities. § 130.07 BICYCLES AND SKATEBOARDS; FORBIDDEN ON SIDEWALKS. *"No person shall operate or ride any bicycle or skateboard upon a sidewalk within the town."*

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.6 Require dedication, reservation or development of greenways. Consider adding requirements for greenway reservation, dedication, or provision in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway. See requirements in Wake Forest, NC UDO, § 6.8.2 Greenways: *"When required by the Wake Forest Comprehensive Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow this section]."*	Dedication or reservation of "Open Space" is required in new subdivisions, however, the **types or amounts of dedication is not specified**, but various types of trail-related facilities are allowed: "*Provision of active and/or passive recreation opportunities (e.g., ball fields, playgrounds, tennis courts, swimming pools, basketball courts, golf courses, bikeways, walking trails, nature trails, and picnic areas), either for the general public or for the subdivision's residents or employees and their guests." (Sec. 103-70 (h)(2) a.4).* **Needs Improvement**	Not required. **Inadequate** *Envision 35* Implementation Strategies 1.96 and 1.102: "*The City will discourage improvements of any kind in undisturbed conservation areas (as shown on Map 39) within the 100-year floodplain; designate these areas for open space corridors, greenways, and other low-intensity uses.*"	Not required. **Inadequate**	Not required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.7 Require new sidewalks, bike lanes, greenways, etc., to connect to existing facilities. 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 Chapter 6: Subdivision & Infrastructure Standards of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. § 6.5.3, 6.8.2, 6.9, 6.10. See Chapter 7: Parks and Open Space of the Wilson, NC UDO regarding greenways.	Not required. **Inadequate**	Interior sidewalks in most residential zones are required to connect to destinations within the boundaries of the development, but there is no requirement to connect to existing facilities at the border/exterior of the development. **Needs Improvement**	Not required. **Inadequate**	Not required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.8. Consider pedestrian and bicycle concerns and Level of Service (LOS) in Traffic Impact Analyses and other engineering studies. Wayne County and its municipalities should consider adopting multimodal of service standards where active transportation and transit use are expected to be high. Consideration of bicycle and pedestrian levels of service helps assure adequate facilities for bicyclists and pedestrians can be provided, while legitimizing active transportation as a mode of travel. Several national guidance documents exist. The Highway Capacity Manual 7th Edition outlines methodologies for pedestrian and bicycle LOS. The Institute of Transportation Engineers (ITE) adopted a Multimodal Transportation Impact Analysis for Site Development (MTIASD) in 2023. It provides key considerations for practitioners preparing multimodal transportation impact analyses and presents approaches to proactively plan for multimodal transportation when reviewing site developments. At a local level, the City of Raleigh's Street Design Manual requires multimodal level of service approach in determining road improvements and traffic mitigation. Charlotte, NC uses pedestrian level of service and bicycle level of service methodologies for intersection improvements in their Urban Street Design Guidelines.	No specific guidelines. **Inadequate**	No specific guidelines. **Inadequate**	No specific guidelines. **Inadequate**	Not required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.9 Adopt traffic calming programs, policies, and standards. NACTO's Urban Street Design Guide provides guidance for using traffic calming measures in urban contexts. The City of Greenville, SC's Traffic Calming Program uses a formal process to address speed concerns on neighborhood streets using design measures such as speed humps, curb extensions, medians, and other traffic calming measures.	None cited. **Inadequate**	None cited. **Inadequate**	None cited. **Inadequate**	Not required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.10. Develop an access management program or policy. *"Access management is the coordinated planning, regulation, and design of access between roadways, highways, and major arterials. The utilization of proper control over access is one of the most effective and economical means for maintaining the safety and utility of streets and highways. Street and driveway access connections are major contributors to traffic congestion and poor roadway facility operations. The benefits of access management include efficient and safe movement of traffic and reduced conflicts on the roadway system."* (NCDOT Roadway Design Manual, page 2-10) *"Access management should be considered in all land use/zoning decisions."* (*Envision 35* Guiding Land Use/Planning Principles, p. 9-31) Requiring cross-access between adjacent parcels of land is a great tool for reducing the amount of traffic on major roads while increasing connectivity for pedestrians, bicycles, and cars.	Wayne County Comprehensive Plan, Vision 1: Transportation includes several policies related to access: Policy 1.6 pertains to limiting the number of driveways on major roads, using central medians, and several other strategies for access management." Policy 1.7 ecourages ***"street connections between adjoining residential areas, as well as connections between parking lots of adjoining commercial developments."*** Policy 1.8 recommends *"at least two points of access/egress to through streets should be planned for or provided for larger subdivisions. The secondary access/ egress may be gated for emergency services, but* ***should allow for passage of pedestrians and bicyclists.****"* **Needs Improvement**	None cited. **Inadequate**	None cited. **Inadequate**	None cited. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
1.11. Establish a sidewalk retrofit/infill program or policy. *Envision 35* Strategy I.66: "*The City and County should* ***consider street and sidewalk improvements adjacent to existing school sites.*** *This effort shall involve the installation of raised crosswalks to help reduce vehicle speeds and improved pedestrian visibility. Curb extensions may also be considered to shorten pedestrian crossing distance, eliminate parking on or near the crosswalk, and improve sight distance for pedestrians."* The communities should consider developing sidewalk infill and maintenance program where municipal staff periodically inventory the street network to identify sidewalk gaps, and develop strategies, project prioritization criteria and funding for completing these gaps. Potential project prioritization criteria include filling gaps along key pedestrian routes, near major pedestrian trip generators like schools, and along streets with high vehicle volumes. The City of Greenville, SC's Neighborhood Sidewalk Targeted Expansion Program provides a good example of a sidewalk infill policy and program, found on their City website and their Neighborhood Sidewalk Targeted Expansion Program resource.	None cited. **Inadequate**	None cited. **Inadequate**	None cited. **Inadequate**	None cited. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
Pedestrian- and Bicycle-oriented Urban Design Elements				
2.1. Develop pedestrian-oriented form-based or design-based development standards. Pedestrian and bicycle design requirements and land use policy are fundamental to creating a more walkable and bikeable community. *"The City and County may amend their ordinances to include Active Health Design guidelines that require buildings to have:* • *an obvious pedestrian entrance,* • *pedestrian level entrance,* • *pedestrian level windows, and weather protection;* • *are oriented to the street;* • *have architectural details and pedestrian style signage on the street; and* • *emphasize alternative means of transportation."* (*Envision 35* Implementation Strategy 1.63) Form-Based Codes are one option that can help create pedestrian- and bicyclist-friendly communities. (See the Form-Based Codes Institute website to learn more). Some NC communities that have form-based or design-based elements in their ordinances include: Belmont, Cornelius, Davidson, Huntersville, Knightdale, Salisbury, Wake Forest, Waynesville, Wendell, and Wilson.	None cited. **Inadequate**	Generally no, with the exception of the development requirements in the CBD, which are very pedestrian-oriented. (UDO Section 5.3) The *Design Guidelines for Downtown Goldsboro* provide good pedestrian-oriented guidance for new development and redevelopment. These guidelines could be expanded to include other pedestrian-oriented and mixed use districts in the City. **Good in CBD; Needs Improvement in other districts**	No. In fact, the minimum lot size (greater than half acre) is not supportive of pedestrian-oriented neighborhoods: § 93.47 LOTS. (B) *Residential lots shall be at least 25,000 square feet in area of usable land, not less than 120 feet wide at the building line, nor less than 150 feet in depth.* **Inadequate**	None cited. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
2.2. Allow/Require mixed use buildings and blocks. ***Envision 35* Strategy 1.21:** "*The City of Goldsboro UDO and Wayne County zoning and subdivision ordinances should be reviewed and revised to* ***accommodate and encourage Mixed Use I and II development.*** *The ordinance revisions should consider locating stores, offices, residences, schools, and recreation spaces within walking distance of each other in relatively compact areas which promote:* • *Independence of movement, especially for the young and the elderly who can conveniently walk, cycle, or ride transit.* • *Safety in commercial areas, through around-the-clock presence of people.* • *Reduction in auto use, especially for shorter trips."* Mixed use development should be encouraged in appropriate zoning districts, as recommended by *Envision 35*. This increases the number of destinations that can be reached by walking or biking and is fundamental to developing walkable places.	Permitted, but not encouraged. **Needs Improvement**	Specifically allowed in the CBD. (UDO Section 5.3) **Good in CBD. Needs improvement in other districts.**	Not permitted. **Inadequate**	Permitted in Community Shopping Zone, Business Zone, and Industrial Zone, but not encouraged. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
2.3. Require off-street motor vehicle parking behind or to side of buildings in commercial districts. Having buildings close to the street instead of parking lots creates a more pedestrian friendly environment by bringing building entrances closer to the sidewalk. It also creates a human-scaled street that's more pleasurable for walking— for example: consider the differences in the walking environment of downtown Goldsboro versus that of a strip shopping area. See City of Wilson UDO, Chapter 9: Parking & Driveways, Section 9.3.	Not required. **Inadequate**	In CBD only. (UDO Chapter 5) **Needs Improvement** Consider requiring in neighborhood and other mixed use or pedestrian oriented business districts as well.	Not required. **Inadequate**	Not required. § 153.021 COMMUNITY SHOPPING (D)(1): *"Required off-street parking space shall be provided on the same lot as the use for which provided or within a distance of 300 feet from the lot provided that such parking space land is owned by the same owner as the use lot."* **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
2.4. Define maximum automobile parking requirements. Requiring parking maximums and reducing the minimum number of required off-street parking spaces for new development creates a more pedestrian-friendly environment, prevents overbuilt and unsightly parking lots, and reduces parking construction costs. Tie parking standards to land use context. For example, fewer spaces may be required in CBD (see Goldsboro ordinance) and other pedestrian-oriented areas; parking maximums only (with no minimums) should be considered in such districts. Also, on-street parking should be allowed to count towards parking requirements for greater sharing of public parking resources and to maximize development capacity. See Chapter 8: Parking and Driveways of the Town of Davidson, NC Planning Ordinance.	Yes, for some land uses. See Wayne County, NC Code of Ordinances, Appendix A, Sec. 71, Table 2: Off-street Parking Requirements **Needs Improvement**	Yes. However, with the exception of the CBD district (where no parking is required), the minimums and maximums for residential and commercial development are not based on land use context and walkability and are generally too high for pedestrian-supportive development. **Needs Improvement** *Envision 35* recommends parking maximums and reduced parking minimums to promote infill development. (Implementing Strategy 1.1(e), 1.83, and 1.21)	No; parking minimums only. (see § 94.37 OFF-STREET PARKING AND STORAGE) **Inadequate**	Parking minimums in R5 Residential Zone, R4 Residential Zone, and Community Shopping Zone; however, most zones have no parking requirements (minimum or maximum): Business Zone, Residential-Agricultural Zone, R8 Residential Zone, R6 Residential Zone, and Industrial Zone. **Needs Improvement**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
2.5. Adopt bicycle parking requirements. *"The City and County should **consider amending the zoning and subdivision regulations to require the establishment of bicycle parking** for new and redeveloped commercial, industrial, and institutional uses."* (*Envision 35* Implementation Strategy 1.67 and I.87) Bicycles should receive equal consideration when calculating parking needs with specific calculations for each district type. Design and location standards for bicycle parking should be clearly stated to provide for safe and convenient access to destinations. Different standards of bicycle parking are needed for short-term visitors and customers and for longer term users like employees, residents, and students. See City of Wilson UDO, Chapter 9: Parking & Driveways, Section 9.4 and 9.6. See Chapter 8: Parking and Driveways of the Town of Davidson, NC Planning Ordinance. Good standards for bicycle parking design can be found through the Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines, 2nd Edition.	None. **Inadequate**	None. **Inadequate**	None. **Inadequate**	None. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
2.6. Adopt other place-supportive parking regulations (e.g., on-street parking allowed to count towards minimums, shared parking, pricing, employer incentives/programs). Shared parking is a good start. Other policies that reduce the need for parking, contribute to walkable and bikeable places and have economic benefits are: • establishing parking maximums, • parking pricing in downtown areas (such as parking meters), • allowing on-street parking spaces to count towards parking requirements, and • Transportation Demand Management programs such as promoting carpool programs for large employers.	***Interconnectivity [of Parking Lots] Required***—*All parking lots shall dedicate access easements and provide interconnectivity to adjoining properties where such connections are practical. The Planning Board may waive this requirement when it is demonstrated that topographical, incompatibility of land uses or other factors make such connections impractical.* (Appendix A, Zoning, Section 71. B. 15) Shared parking allowed between land uses. (Appendix A, Zoning, Section 71. C.) **Good**	**Parking lot interconnectivity required.** This allows for fewer trips on major roadways and potentially fewer turning movement conflicts at driveways. *UDO Section 6.1.3.15. Interconnectivity Required – All parking lots shall dedicate access easements and provide interconnectivity to adjoining properties where such connections are practical.* Shared Parking is allowed (UDO Section 6.1.6) **Good**	Shared parking is discouraged. § 94.37 OFF-STREET PARKING AND STORAGE (B) Combination of required parking space. *The required parking space for any number of separate uses may be combined in one lot, but* ***the required space assigned to one use may not be assigned to another use,*** *except that one-half of the parking space required for churches, theaters, or assembly halls whose peak attendance will be a night or on Sundays may be assigned to a use which will be closed at night or on Sundays.* **Needs Improvement**	None. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
Connectivity Requirements				
3.1. Revise block size requirements. Large block sizes increase trip times and decrease connections across all transportation modes. Smaller block sizes create more opportunities for pedestrian and bicyclist connections, especially if they increase access to thoroughfares and surrounding land uses. *Envision 35* recommends updating the Wayne County and City of Goldsboro development standards to include **cul-de-sac and block-length maximums** to promote transit, bicycle, and pedestrian connectivity (Implementing Strategy 1.21). Development density 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 800-1,000 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 of 6-8 feet in width should be required, with an easement of 15-20 feet wide. The City of Raleigh's Street Design Manual establishes block design guidelines and connects these standards to accessibility.	Code of Ordinances Sec. 70-103 (a) Blocks: *(2) Blocks shall* ***not be less than 400 feet or more than 1,800 feet.*** **Needs Improvement** *(4) "****Where deemed necessary*** *by the planning board or the board of commissioners,* ***a pedestrian crosswalk at least 15 feet in width may be required to provide convenient public access*** *to a public area such as a park or school, to a water area, or to a areas such as shopping centers, religious, or transportation facilities."* **Good, but needs improvement:** Include a better definition of "pedestrian crosswalk" (presumed here to be a pedestrian accessway based on context/intent) and a quantifiable standard for when standard is to be applied. A good rule of thumb is when a block is 800 feet or longer in width, a pedestrian accessway should be provided.	UDO Sec. 7.1.8 Blocks: *In no case shall block lengths* ***exceed fourteen hundred feet or be less than four hundred feet.*** UDO Sec. 7.2.c. Blocks: ***Where deemed necessary*** *by the Planning Commission,* ***a pedestrian crosswalk at least five feet in width may be required.*** **Needs Improvement.**	Code of Ordinances § 93.49 BLOCKS. *Block lengths shall* ***not exceed 1,200 feet or be less than 400 feet.*** **Needs Improvement.**	No existing requirements. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
3.2. Require connectivity/cross-access between adjacent land parcels. *Envision 35* recommends updating the Wayne County and City of Goldsboro development standards to include **internal connectivity standards** to promote transit, bicycle, and pedestrian connectivity (Implementing Strategy 1.21). See Recommended Strategy 3.1 in this table for notes about 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 model language, see City of Wilson, NC UDO, Section 6.4: Connectivity. See City of Wake Forest, NC UDO, Section 6.5, Connectivity. Both codes above also provide requirements for when bicycle/pedestrian connections between parcels, public open space, and between cul-de-sacs is required.	**None required.** At the discretion of the Board of Commissioners, per § 70-104 (c): *"Access to adjacent properties. Where, **in the opinion of the board of commissioners**, it is necessary to provide for street access to an adjoining property, proposed streets shall be extended by dedication to the boundary of such property and a temporary turnaround provided."* **Inadequate**	**Connectivity suggested, but not required.** UDO § 7.1.1: *The proposed street layout shall be coordinated with the street system of the surrounding area and, **where possible,** existing principle streets shall be extended. Where **in the opinion of the City Council** it is desirable to provide for street access to an adjoining property, proposed streets shall be extended by dedication to the boundary of such property.* **Needs Improvement** **Alleys required for commercial uses:** *UDO* Sec 7.1.1: *Alleys of at least twenty feet in width shall be provided to the rear of all lots used for business purposes. All dead end alleys shall provide a turn around with a paving diameter of eighty feet.* **Good**	**Connectivity required, but limited details on application.** § 93.46 STREETS. *(A) In any new subdivision the street layout shall conform to the arrangement, width and location indicated on any official plans or maps for the village. . .* *(B) The proposed street layout shall be made according to good land planning practice for the type of development proposed, and s**hall be coordinated with the street system of the surrounding areas**. All streets must provide for the continuation or approximate projection of principal streets in surrounding areas and provide reasonable means of ingress and egress for surrounding acreage tracts.* **Good.** Improvement in the details of required connectivity is needed, however.	None required. **Inadequate**

EVALUATION OF EXISTING POLICIES AND REGULATIONS

RECOMMENDED STRATEGY	Wayne County	City of Goldsboro	Village of Walnut Creek	Town of Pikeville
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 hindrance to pedestrian and bicycle connectivity and overall neighborhood accessibility, including for emergency access and other services. *Envision 35* recommends updating the Wayne County and City of Goldsboro development standards to include **cul-de-sac and block-length maximums** to promote transit, bicycle, and pedestrian connectivity (Implementing Strategy 1.21). Provide quantifiable connectivity standards (see Recommended Strategy 3.2 in this table) based on land use context and other guidelines. Consider requiring other traffic calming measures that allow for connectivity and improve the pedestrian and biking environment such as street trees, narrow street width standards, and T-intersections. Make the maximum length for cul-de-sacs 250-300 feet to limit the distance that a person would have to travel along a cul-de-sac. For model language, see City of Wilson, NC UDO, Section 6.4: Connectivity. See City of Wake Forest, NC UDO, Section 6.5, Connectivity.	**Cul-de-sacs or permanent dead end streets are allowed and permitted to be longer than is appropriate for pedestrian-friendly development.** No quantifiable standards are provided for when application of the connectivity provision should be used. *"Cul-de-sac. Permanent dead-end streets **shall not exceed 900 feet**. Measurement shall be from the point where the centerline of the dead-end street intersects with the center of a through street to the center of the turnaround of the cul-de-sac. . .Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street, unless exception is granted by the county board of commissioners."* (§ 70-104 (e)(2)) **Needs Improvement**	**Cul-de-sacs or permanent dead end streets are allowed and permitted to be longer than is appropriate for pedestrian-friendly development.** No quantifiable standards are provided for when application of the connectivity provision should be used. *UDO* § 7.1.1: *"Permanent dead end streets or cul-de-sacs shall **not exceed eight hundred feet (800 ft)."*** **Needs Improvement**	**Cul-de-sacs or permanent dead end streets are allowed and permitted to be longer than is appropriate for pedestrian-friendly development.** No quantifiable standards are provided for when application of the connectivity provision should be used. § 93.46 STREETS. *"(K) Permanent dead end streets or cul-de-sac shall be **no longer than 600 feet."*** **Needs Improvement**	No requirements. **Inadequate**

RESOURCES

The following documents were referenced for this policy review.

Local Guidelines and Regulations

Wayne County

- Wayne County, NC Code of Ordinances
- 2008 Comprehensive Plan for Wayne County
- Envision 35: Goldsboro Urbanized Area Comprehensive Plan
- NCDOT Subdivision Roads Minimum Construction Standards

City of Goldsboro

- City of Goldsboro Unified Development Ordinance, Zoning Code
- Envision 35: Goldsboro Urbanized Area Comprehensive Plan
- Design Guidelines for Downtown Goldsboro

Village of Walnut Creek

- Walnut Creek Code of Ordinances
- Envision 35: Goldsboro Urbanized Area Comprehensive Plan

Town of Pikeville

- Pikeville Code of Ordinances

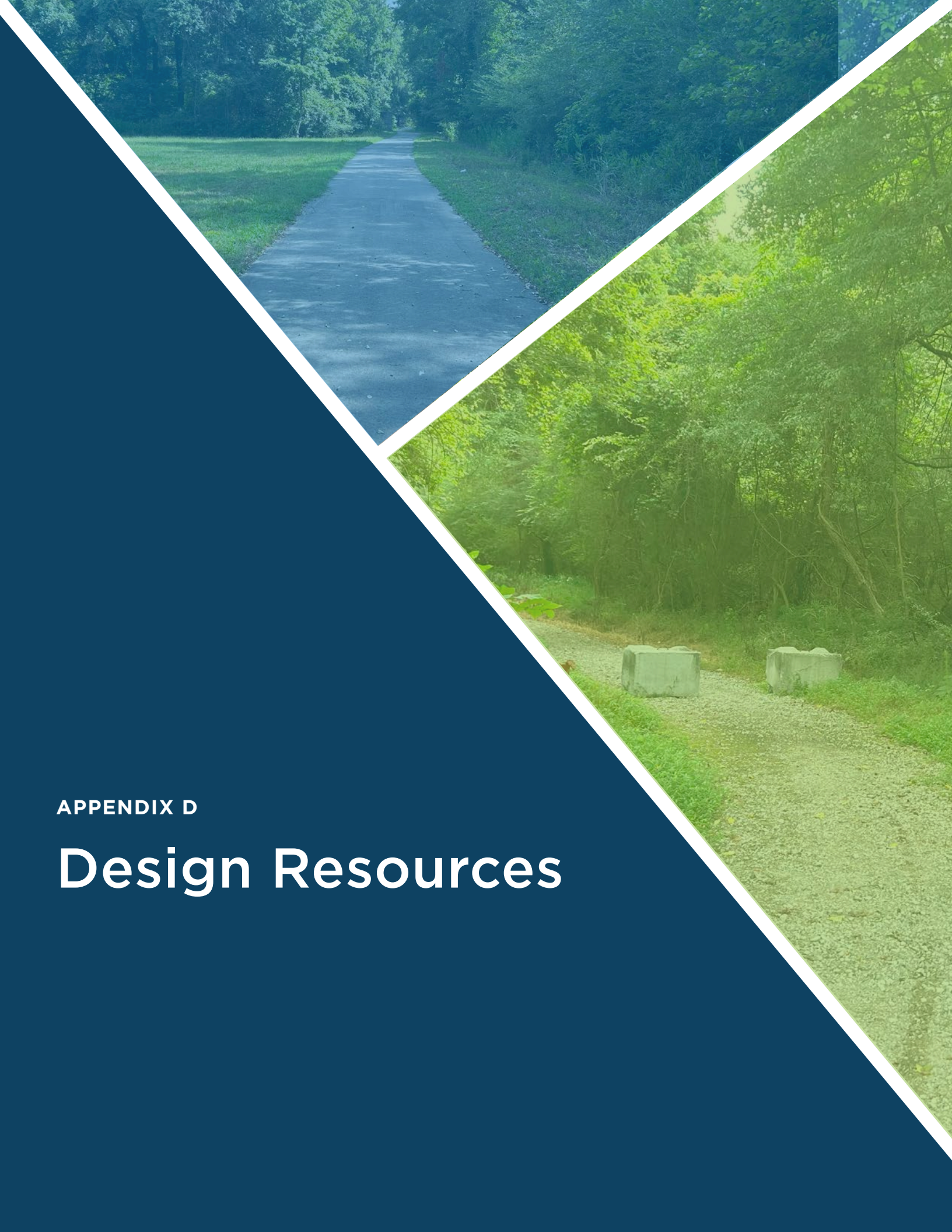
Guidance and Best Practices

State and Local

- NCDOT Complete Streets Policy (2019)
- NCDOT Roadway Design Manual (2021, revised 2024)
- City of Charlotte, NC Urban Street Design Guidelines
- Town of Davidson, NC Planning Ordinance
- City fo Greenville, SC Traffic Calming Program
- City of Raleigh, NC Street Design Manual Update (2018)
- City of Wake Forest, NC UDO
- City of Wilson, NC UDO
- Town of Wendell, NC UDO

National

- Association of Pedestrian and Bicycle Professionals, Bicycle Parking Guidelines, 2nd Edition (2010)
- Institute of Transportation Engineers, Multimodal Transportation Impact Analysis for Site Development (2023)
- NACTO Urban Bikeway Design Guide (2012)
- National Academies of Sciences, Engineering, and Medicine and Transportation Research Board, Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis (2022)
- Smart Growth America, The Best Complete Streets Policies of 2023
- Smart Growth America, Complete Streets Policy Framework (2018, revised 2023)



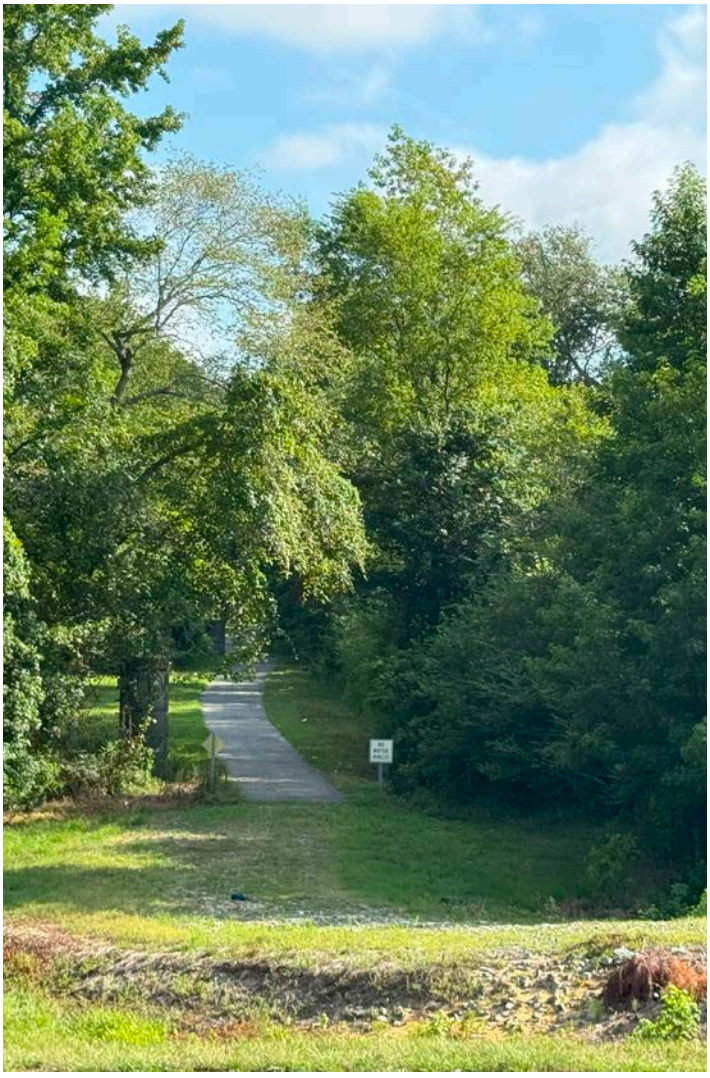
APPENDIX D

Design Resources

GUIDANCE BASIS

The sections that follow provide design guidelines for pedestrian and bicycle facilities in the greater Goldsboro area. Specifically, they focus on the facility types mentioned in the Goldsboro Bicycle, Pedestrian, and Greenway Plan. These design guidelines are drawn from national, state, and local standards and industry best practices.

Planners and project designers should refer to these guidelines in developing the infrastructure projects recommended by this plan, but they should not be used as the sole reference for any detailed engineering design.



Stoney Creek Greenway

STATE RESOURCES

NCDOT

North Carolina Department of Transportation (NCDOT) multimodal facilities follow the guidance of authoritative national and state design resources as stated in the NCDOT Complete Streets policy.*

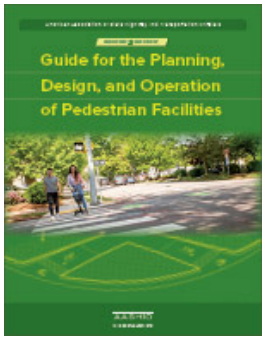
Links to these and other resources are available on NCDOT's Bicycle & Pedestrian Project Development & Design Guidance webpage.

- **NCDOT Roadway Design Manual**
- **WalkBikeNC: Statewide Pedestrian & Bicycle Plan**
- **Glossary of North Carolina Terminology for Active Transportation**
- **Evaluating Temporary Accommodations for Pedestrians**
- **Local Programs Management Handbook & Updates**
- **Greenway Standards Summary Memo**
- **Design Issues Summary**
- **Greenway Design Guidelines Value Engineering Report** and **Summary of Responses**
- **Minimum Pavement Design Recommendations for Greenways**
- **Steps to Construct a Greenway or Shared Use Trail**

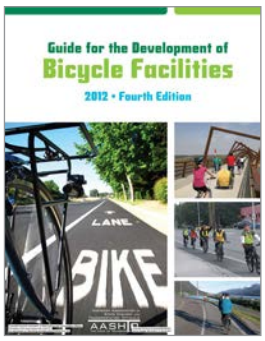
**The Complete Streets policy directs the department to consider and incorporate several modes of transportation when building new projects or making improvements to existing infrastructure. The Complete Streets webpage contains the Complete Streets policy, the Implementation Guide, Evaluation Methodology, Flowchart, FAQs, and more.*

NATIONAL RESOURCES

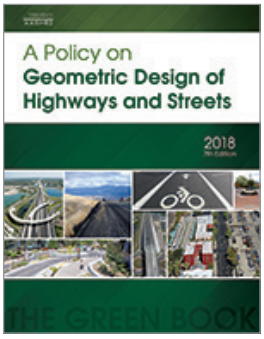
American Association of State Highway and Transportation Officials (AASHTO)



AASHTO's **Guide for the Planning, Design, and Operation of Pedestrian Facilities (2021)** identifies effective measures for accommodating pedestrians on public rights-of-way, that vary among roadway and facility types.

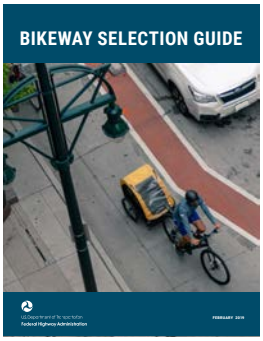


AASHTO's **Guide to the Development of Bicycle Facilities (2012)** provides information on how to accommodate bicycle travel and operations in most riding environments. It provides flexibility to encourage context-sensitive designs, but includes suggested minimum dimensions for some facilities or scenarios.

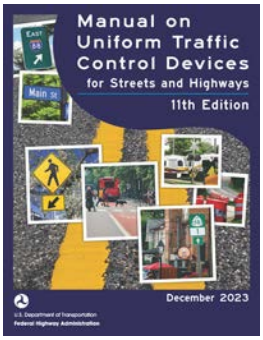


A Policy on Geometric Design of Highways and Streets, 7th Edition (2018), also called the Green Book, contains the current design research and practices for highway and street geometric design. This edition presents an updated framework for geometric design that is more flexible, multimodal, and performance-based than in the past.

Federal Highway Administration (FHWA)



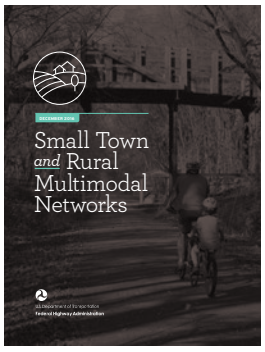
The **Bikeway Selection Guide (2019)** is a resource to help transportation practitioners consider and make informed decisions about trade-offs relating to the selection of bikeway types. This report highlights links between the bikeway selection process and the transportation planning process.



The **Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition (2023)** specifies the legal standard for traffic signs and road surface markings. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, recommended signage, and pavement markings. Key sections include:

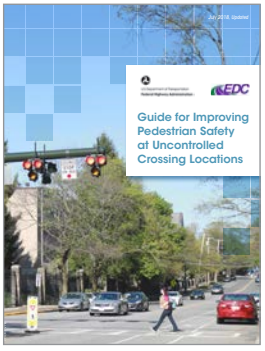
- Part 4E: Pedestrian Control Features
- Part 7: Traffic Controls for School Areas
- Part 9: Traffic Controls for Bicycle Facilities

Separated Bike Lane Planning and Design Guide (2015) is national guidance on the planning and design of separated bike lane facilities released by FHWA. It documents best practices around the US and offers ideas on future areas of research, evaluation, and design flexibility.



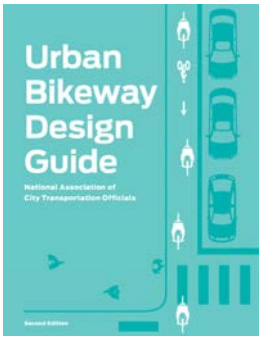
Small Town and Rural Multimodal Networks (2016) is intended to help small towns and rural communities support active travel for people of all ages and abilities by bridging the gap between existing guidance and rural practice. An online resource is also available: Small Town and Rural Design Guide.

Achieving Multimodal Networks (2016) highlights ways that planners and designers can apply design flexibility found in current national design guidance to address common roadway design challenges and barriers, reduce multimodal conflicts, and create safe and connected networks.

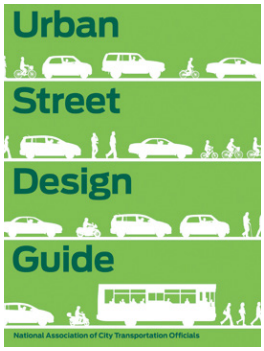


The **Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018)** is a reference for State or local transportation or traffic safety departments that are considering developing a policy or guide to support the installation of countermeasures at uncontrolled pedestrian crossing locations.

National Association of City Transportation Officials (NACTO)



The **Urban Bikeway Design Guide (2012)** provides cities with state-of-the-practice solutions that can help create Complete Streets that are safe and enjoyable for bicyclists.



NACTO's **Urban Street Design Guide (2013)** is a collection of nationally recognized street design standards, and offers guidance on the current state of the practice designs.

US Access Board

- **Architectural Barriers Act Accessibility Standards**
- **Americans with Disabilities Act Accessibility Standards**
- **Public Right-of-Way Accessibility Guidelines (PROWAG)**

Rails-to-Trails Conservancy

- **General Trail Design Guidance**
- **Rails-with-Trails**

BICYCLE AND PEDESTRIAN USER TYPES

In most cases, bicycle and pedestrian facilities should be designed for users of all ages and abilities. Each experience level and mode requires unique design considerations to make facilities safe and enjoyable for everyone who uses them. The table on the next page outlines various user types and factors that may influence design.

People with Disabilities

The term “people with disabilities” includes individuals with physical or cognitive impairment, which also includes those with hearing or visual limitations. According to the Centers for Disease Control and Prevention (CDC), in 2016, one out of every four Americans had a disability that limits their mobility.

Additionally, nearly everyone will experience a disability at some point in their life, whether through injury, aging, or other circumstances. Trails that are physically separated from motor vehicle traffic provide a safe and comfortable place for people with disabilities to travel or enjoy the outdoors.

An example of an ADA-accessible trail within the American Tobacco Trail located in Durham, Chatham, and Wake County.

Bicyclist and Pedestrian User Needs

User Type		Travel Speed	Considerations
	WALKERS	1 to 3 mph	Need wider areas for traveling in groups or walking dogs Comfortable on sidewalks and paths that are grade separated from vehicles and fast active users
	WHEELCHAIR USERS	1 to 3 mph (non-motorized) 3-5 mph (motorized)	Comfortable on sidewalks and paths that are grade separated from vehicles and fast cyclists
	RUNNERS	5 to 9 mph	Prefer off-street paths with consistent lighting Fast runners may prefer to share space with cyclists during periods of high pedestrian traffic
	CASUAL AND NEW CYCLISTS	6 to 12 mph	Prefer riding on off-street facilities Compared to experienced cyclists, casual cyclists are more likely to utilize rest areas
	E-BIKE USERS	16 to 20 mph	Most prefer fewer crossings, separated paths, and room to pass slower cyclists Opportunities for shared mobility docking stations with charging stations
	E-SCOOTER USERS	Up to 20 mph	Stand-up and seated versions, e-skateboards, hoverboards, balance board Access to on-street corrals, racks in the furnishing zones, shared mobility parking zones
	EXPERIENCED CYCLISTS	12 to 25 mph	Very experienced cyclists may choose to use roadways over paths Most prefer fewer crossings, separated paths, and room to pass slower cyclists

Source: Boise Pathways Plan, 2021

SHARED USE PATH MATERIALS

Trail Surface

A trail segment's design, material, and level of accessibility will vary depending on its context. Many sections of the trail network are likely to be either a concrete or asphalt surface with natural surface or crushed aggregate shoulders. However, key segments will require a permeable surface for constrained portions of the trail that are along river and creek channels or near sensitive habitat.

Asphalt vs. Concrete

Asphalt requires lower upfront costs, but has a shorter life expectancy and, depending on the location, requires more maintenance than concrete. When concrete is used, saw-cut joints (not tooled joints) should be used. Saw-cut joints provide a smoother and safer experience for people on wheels. This is particularly noticeable with smaller wheels, such as those on roller blades or skateboards.

Pavement Markings

Pavement markings can be used to delineate space, provide wayfinding information, and establish an identity or brand for the SUP. Dashed centerlines are not necessary on lower-volume SUPs, but may help organize two-directional flow where there is more demand. Wayfinding and branding markings may be incorporated with decals, thermoplastic, paint, stamped or sandblasted pavement, or embedded metal.

Eco-Friendly Trail Design & Materials

To achieve sustainability goals, trail design should incorporate emerging technology in tandem with context-specific irrigation and planting. Below are a few potential materials and approaches that should be considered as trail segments move into design and construction.

Aggregate Binding

Natural surface trails can use a binding application that allows for water permeability while maintaining the strength and accessibility of an asphalt trail.

http://www.stabilizersolutions.com/products/stabilizer-landscape/

https://www.organic-lock.com/

Native Planting and Contour Filters

Grading and landscaping should utilize native plantings and techniques that encourage filtration and provide benefits such as drought mitigation, flood mitigation, groundwater enhancement, and habitat regeneration.

Carbon Sequestering Concrete

When concrete is needed, carbon sequestering processes can be applied to improve the overall sustainability of the project, without compromising characteristics of the material.

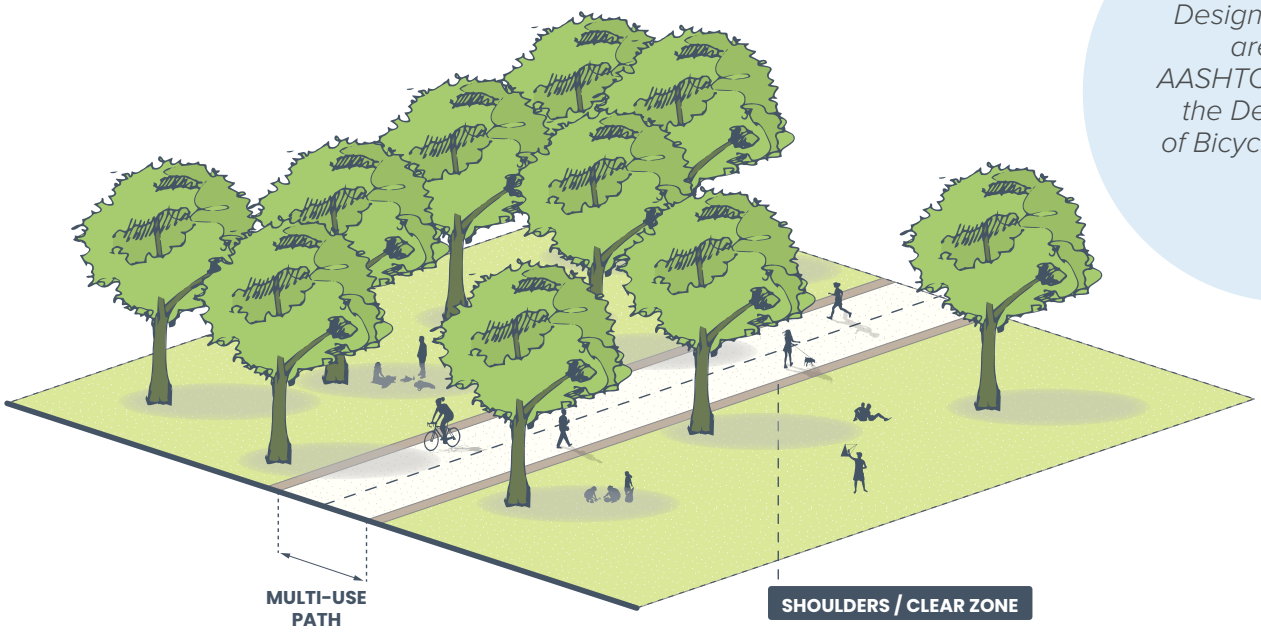
https://www.carboncure.com/

Material Trade-Offs

IMAGE	MATERIAL	PROS	CONS
	ASPHALT	• Relatively inexpensive • Low maintenance • Smoother surface • 20+ year life expectancy	• Tendency to buckle after time and from tree roots, creating bumps and ruts that pool water. Particularly likely if near irrigation systems
	CONCRETE	• Durable • Long lasting • Resilient to flooding • 25+ year life expectancy	• Expensive • Cracks are difficult to repair
	PERVIOUS CONCRETE	• Provides smooth surface for people cycling while being highly permeable	• Not as strong as conventional concrete • Relatively expensive • Requires maintenance to maintain permeability • 10- to 15-year life expectancy
	NATURAL SURFACE OR CRUSHED AGGREGATE	• Preferred by some user types • Color blends well with surrounding landscape	• Limits most users on wheels • Requires regular maintenance • 5- to 10-year life expectancy

SHARED USE PATHS (OR GREENWAYS)

Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012)



Description

A shared use path (SUP), labeled in the graphic above as a multi-use path, provides a travel area separate from motorized traffic for cyclists, pedestrians, skaters, wheelchair users, joggers, and other users. SUPs are desirable for cyclists of all skill levels preferring separation from traffic. These off-road travelways generally provide routes and connections not provided by existing roadways. Most SUPs are designed for two-way travel of multiple user types. Designs vary depending on factors such as the grade of the land, size and amount of vegetation present, and proximity to waterways, structures, and other elements.

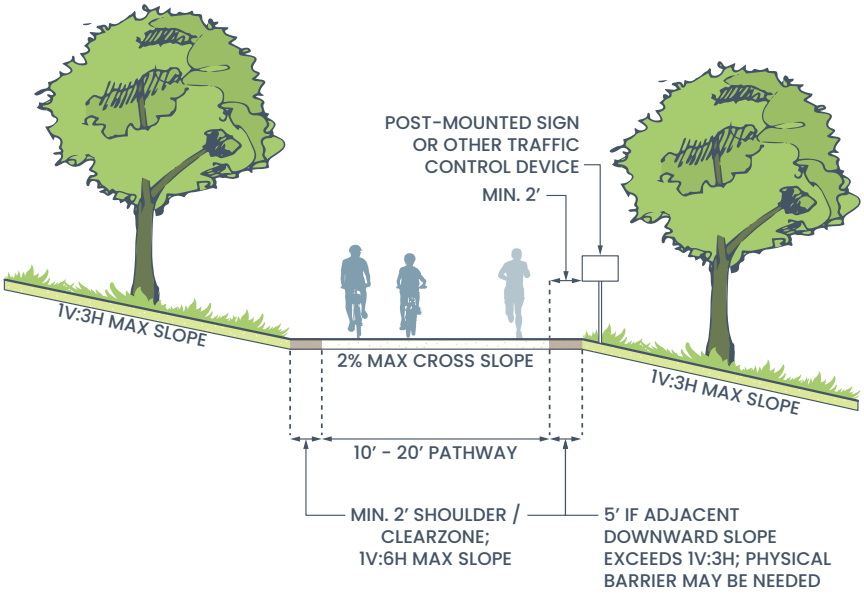
Typical Application

SUPs are typically located in independent rights-of-way, separate from roadways. Refer to guidance on sidepaths for information on shared use paths adjacent to roadways.

REAL WORLD EXAMPLES

Left: Reedy Branch Greenway, Goldsboro, NC

Right: Dismal Swamp Canal Trail, Chesapeake, VA



Design Guidelines

WIDTH:

A Bicycle Travel Demand Analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. 10-12' is a typical default SUP width, and 8' width is acceptable only in constrained conditions and for short distances (2012 AASHTO Guide for the Development of Bicycle Facilities, section 2.6.5.).

SHOULDER / CLEAR ZONE:

Minimum 2' graded area (maximum 1V:6H slope) should be provided for clearance from landscaping or other vertical elements such as fences, light poles, sign posts, etc.; recommend aggregate or turf grass to prevent weeds from spilling onto trail.

VERTICAL CLEARANCE:

8' minimum, 10' typical.

SLOPE:

Trail slopes should be designed at 5% (greater slope is permitted, but should be limited, see AASHTO); SUP cross slope should not exceed 2%.

PHYSICAL BARRIER:

If the land beyond the shoulder/clear zone has a slope exceeding 3:1, a physical barrier may need to be added.

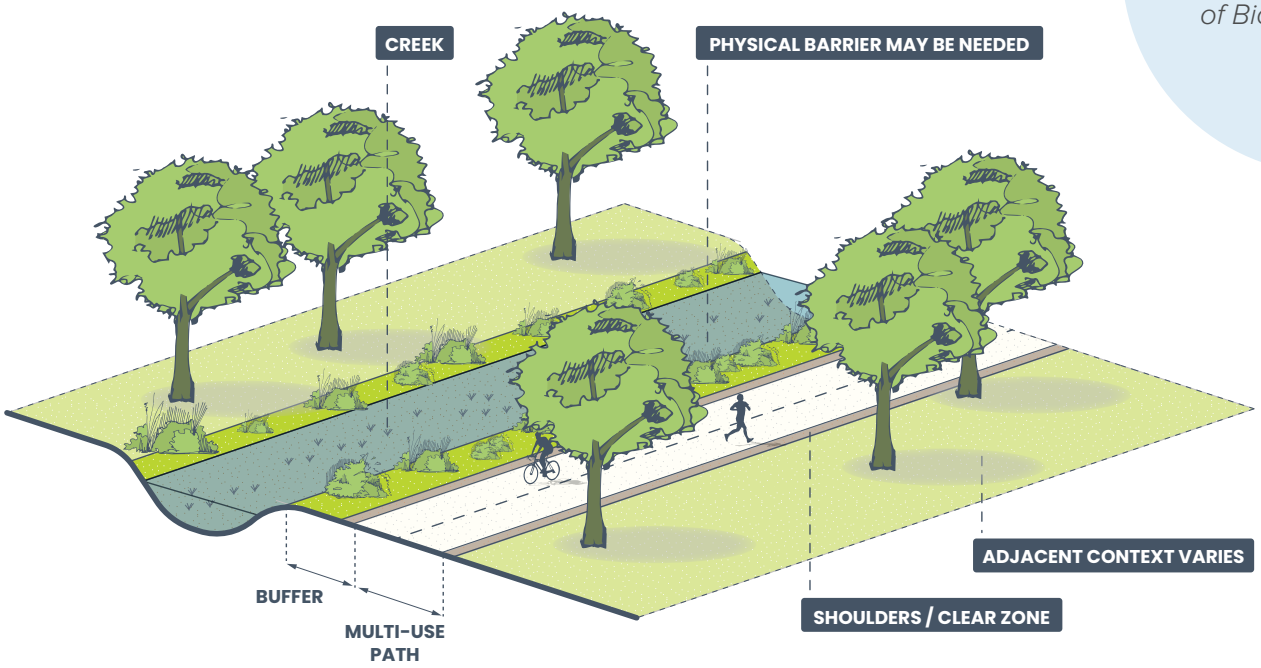
OTHER DESIGN CRITERIA:

With the great variety of users on open space trails, amenities such as benches, trash and recycling receptacles, bike racks, and appropriate lighting should be included along trails.

Trail design should comply with all AASHTO requirements for shared use paths related to design speed, sight distances, stopping distances, and grades.

SHARED USE PATHS:
Riparian Corridor in Urban and Suburban Areas

Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012)



Description

SUPs running along a riparian corridor offer scenic views, access to natural areas, and connections to additional recreational opportunities.

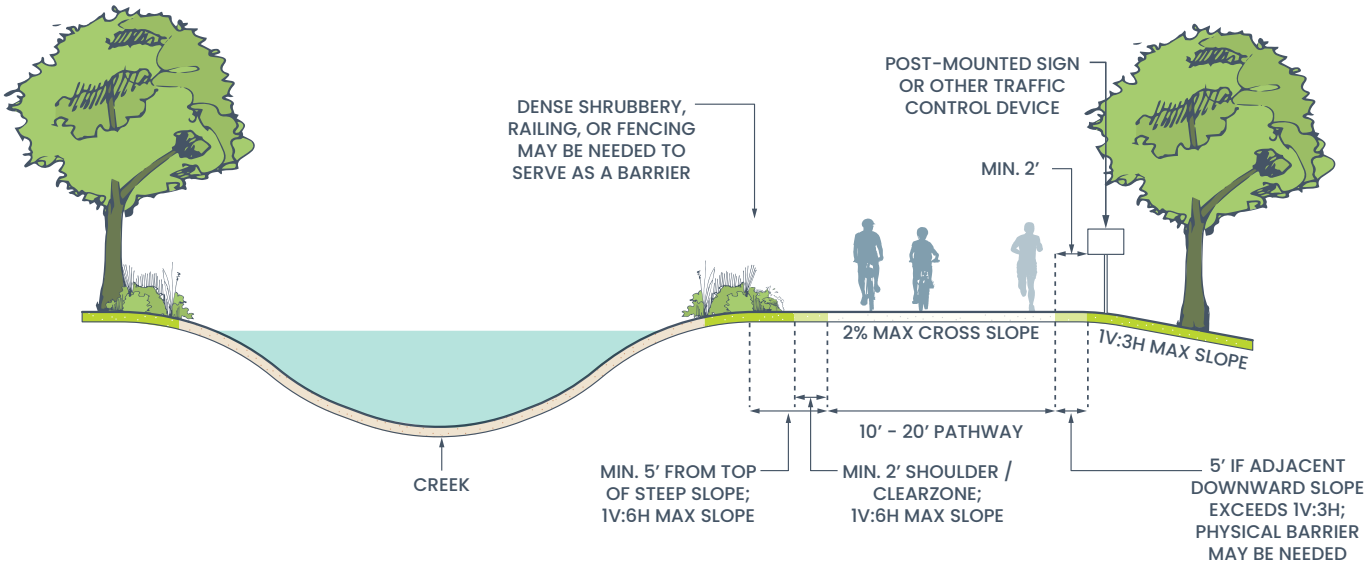
Typical Application

SUPs along riparian corridors should provide plenty of separation between the path and waterway. Where width allows, riparian landscaping should be included. If the slope from the path to waterway exceeds 3:1, a fence or other physical barrier should be installed.

REAL WORLD EXAMPLES

Left: Stoney Creek Greenway, Goldsboro, NC

Right: Prince Solms Park Trail, New Braunfels TX



Design Guidelines

WIDTH:

A Bicycle Travel Demand Analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. 10-12' is a typical default SUP width, and 8' width is acceptable only in constrained conditions and for short distances (2012 AASHTO Guide for the Development of Bicycle Facilities, section 2.6.5.).

SHOULDER / CLEAR ZONE:

Minimum 2' graded area (maximum 1V:6H slope) should be provided for clearance from landscaping or other vertical elements such as fences, light poles, sign posts, etc.; recommend aggregate or turf grass to prevent weeds from spilling onto trail.

VERTICAL CLEARANCE:

8' minimum, 10' typical.

SLOPE:

SUP slopes should be designed at 5% (greater slope is permitted, but should be limited, see AASHTO); SUP cross slope should not exceed 2%.

ENVIRONMENTAL CONSIDERATIONS:

SUPs within environmentally sensitive areas should be designed to minimize impacts during construction and once in use. Alignment should avoid significant waterways, mature tree stands, sensitive habitat areas and ecosystems, or endangered or significant flora and fauna areas, staying 30' outside of these conditions when possible.

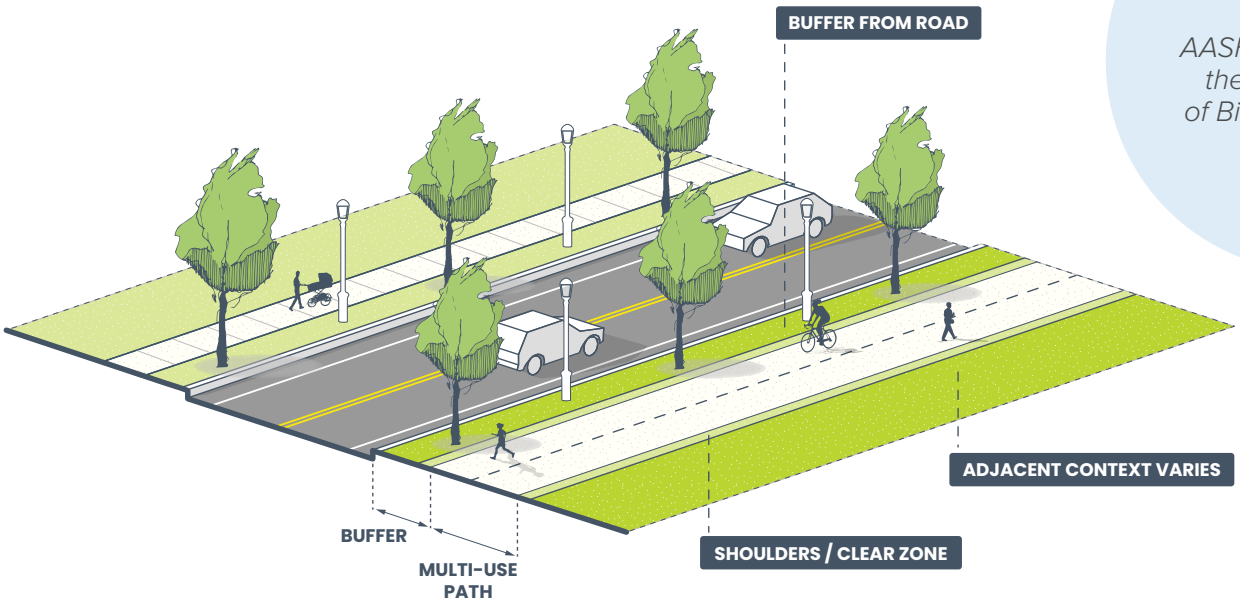
Where SUP construction must run through sensitive areas, sustainable construction materials and methods must be used to make up for the negative impacts. The design of the trail should not detract from the natural landscape, but rather should enhance and blend in to the area.

OTHER DESIGN CRITERIA:

SUP design should comply with all AASHTO requirements for shared use paths related to design speed, sight distances, stopping distances, and grades.

SIDEPATHS

Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012)



Description

Shared use paths which are located alongside roadway corridors, also known as sidepaths, serve as both recreational and utilitarian routes. While this placement poses unique SUP challenges, such as driveway crossings and close proximity to moving vehicles, these trails create direct and important routes through the community.

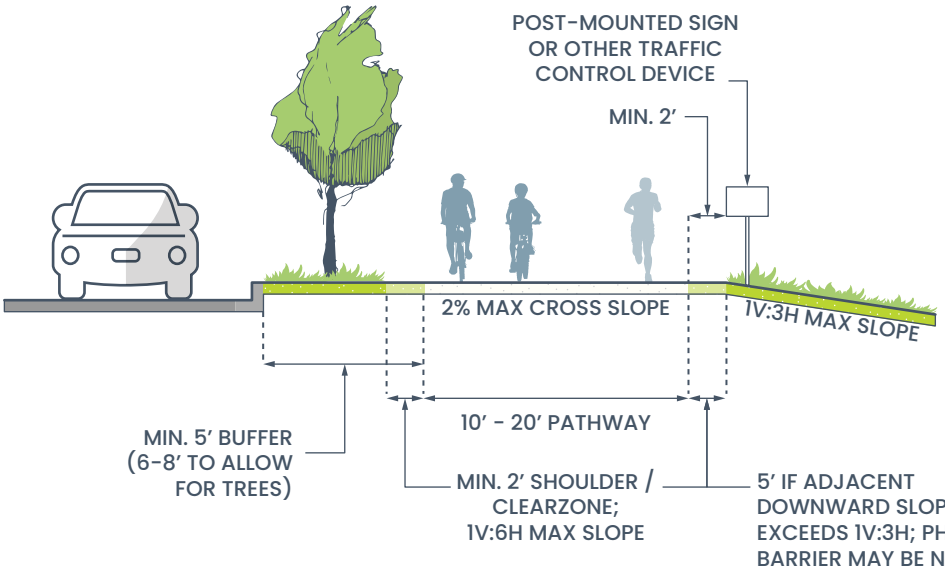
Typical Application

When SUPs run alongside a roadway corridor, standard shared use path characteristics should be maintained in order to reinforce the continuity of the SUP and create a distinction between sidewalks and other nearby facilities. Buffer space of at least 5' between the roadway and SUP can include smaller vegetation, light and utility poles, and other physical barriers. A buffer must be at least 8' wide to accommodate trees.

REAL WORLD EXAMPLES

Left: New Hope Rd sidepath, Goldsboro, NC

Right: Olmos Basin Greenway Trail, San Antonio TX



Design Guidelines

WIDTH:

A Bicycle Demand Analysis analysis, combined with the use of FHWA's SUPLOS Calculator, should be conducted to determine appropriate widths. 10-12' is a typical default SUP width, and 8' width is acceptable only in constrained conditions and for short distances (2012 AASHTO Guide for the Development of Bicycle Facilities, section 2.6.5.).

BUFFER:

A wide separation should be provided between the trail and adjacent roadway. The buffer is measured from the face of curb (if present) or the edge of the paved roadway, and should not be less than 8'. Paved shoulders do not count towards the overall buffer width. Greater separation is desirable along high-speed roadways. In either case, if proper separation is not achievable, a physical barrier or railing should be provided.

SHOULDER / CLEAR ZONE:

Minimum 2' graded area (maximum 1V:6H slope) should be provided for clearance from landscaping or other vertical elements such as streetscape amenities, light poles, sign posts, etc.; recommend aggregate or turf grass to prevent weeds from spilling onto trail.

VERTICAL CLEARANCE:

8' minimum, 10' typical.

SLOPE:

SUP slopes should be designed at 5% (greater slope is permitted, but should be limited, see AASHTO); SUP cross slope should not exceed 2%.

OTHER DESIGN CRITERIA:

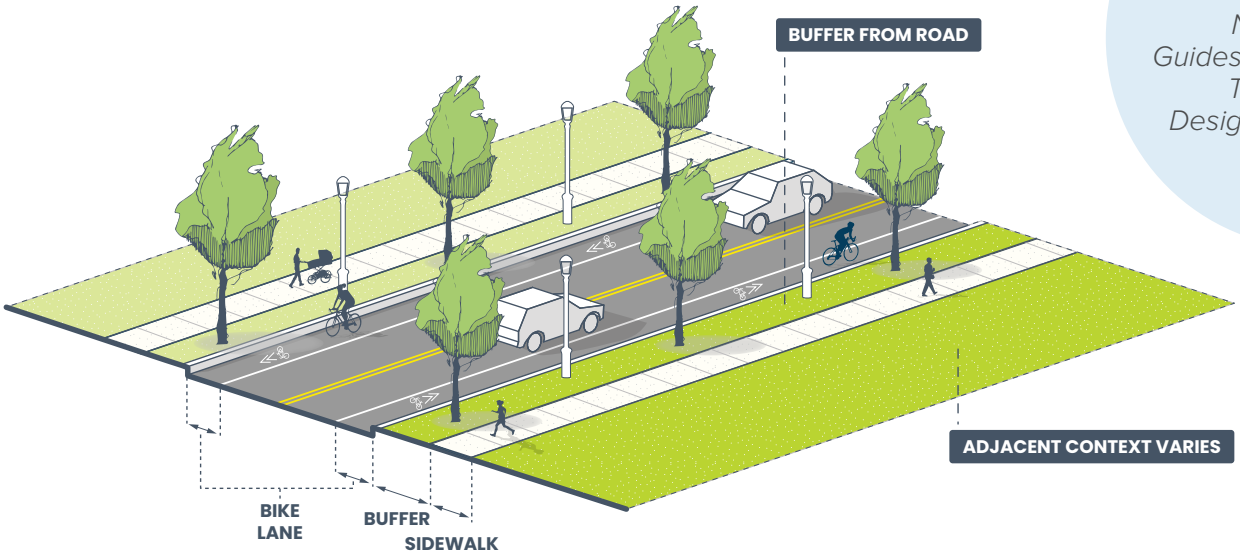
Trail design should comply with all AASHTO requirements for shared use paths related to design speed, sight distances, stopping distances, and grades. See AASHTO p. 5-8 for roadway corridor conflict considerations.

SIGNAGE:

Wayfinding or other informational signage, if located within buffer between roadway and trail, should be mounted at 7' from trail to bottom of sign and 2' from the side of the SUP (see MUTCD).

SIDEWALKS

Design guidelines are based on NACTO Design Guides and the Small Town and Rural Design Guide (2016)



Description

Sidewalks are a fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.

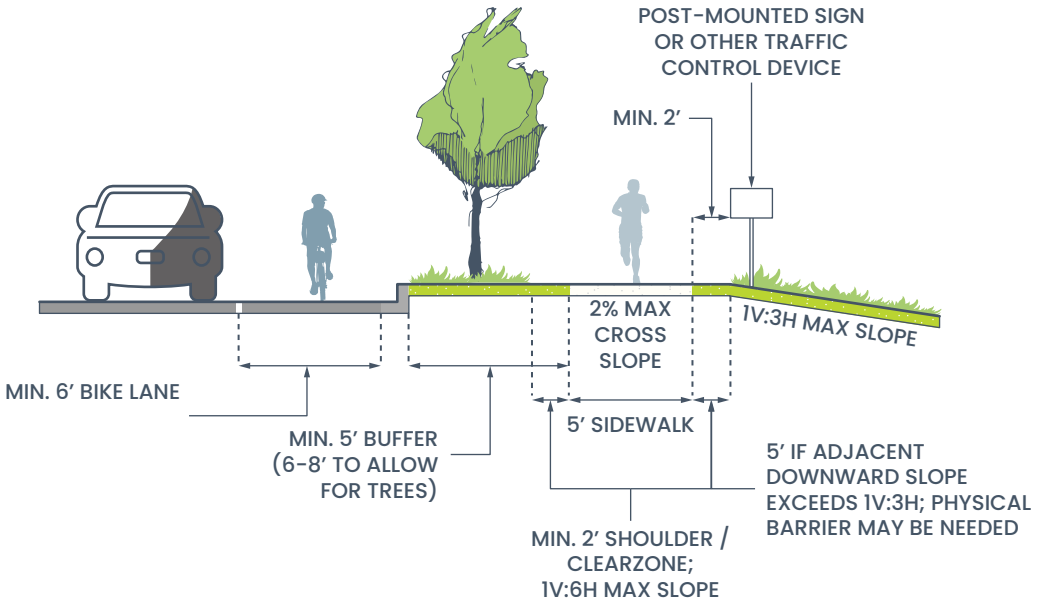
Typical Applications

Sidewalks should be provided on both sides of urban commercial streets, and should be required in areas of moderate residential density. (1-4 dwelling units per acre).

In rural areas, no curb and gutter is necessary to establish a sidewalk. Instead, the sidewalk should feature a wide furnishing zone, which may be configured as an open ditch for stormwater catchment and infiltration. Ditches can be retrofitted into bioswales or rain-gardens for filtration and water purification.

REAL WORLD EXAMPLE

Center St sidewalk, Goldsboro, NC



Design Guidelines

WIDTH:

It is important to provide adequate width along a sidewalk corridor. A pedestrian through zone width of 6’ enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably.

In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians.

BUFFER:

Appropriate placement of street trees in the furnishing zone (minimum width 4’) helps buffer pedestrians from the travel lane and increases facility comfort.

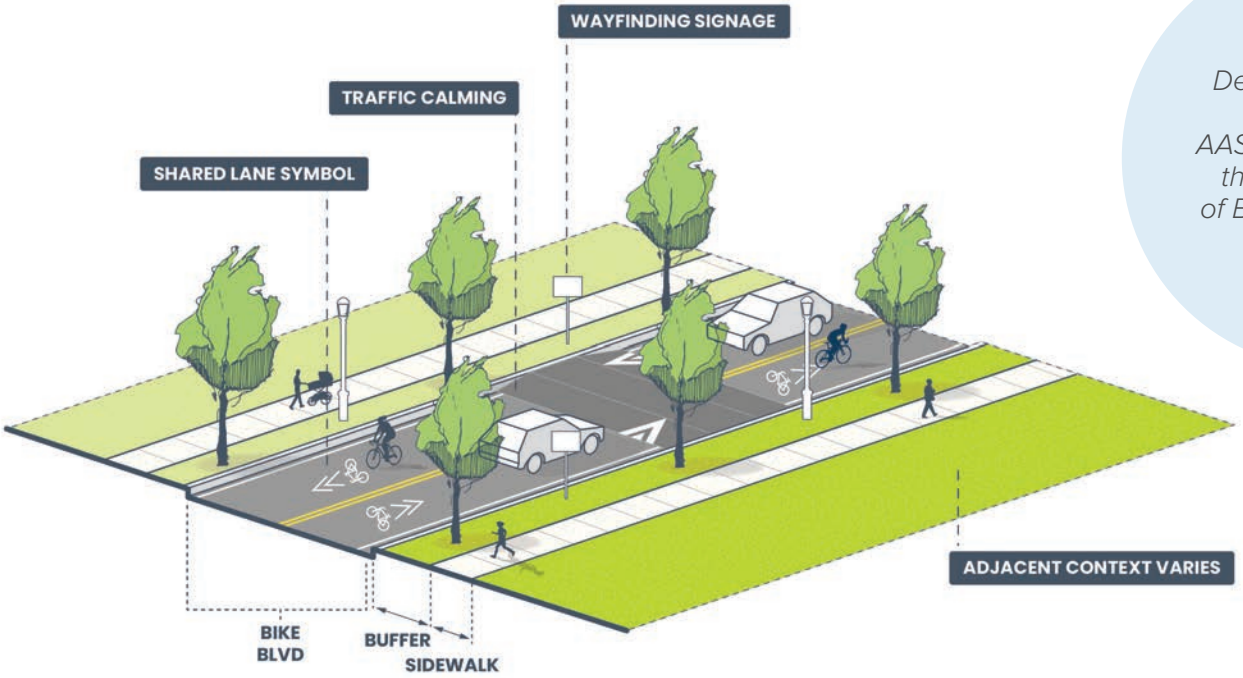
OTHER DESIGN CRITERIA:

At a minimum, the Americans with Disabilities Act requires a 3’ clear width in the pedestrian zone plus 5’ passing areas every 200’.

The clear width may be reduced to a minimum of 32 inches for short, constrained segments of up to 24 inches long, provided that constrained segments are separated by regular clear width segments that are a minimum of 48 inches long and 36 inches wide.

Providing a 6’ clear width across the full corridor for all new sidewalks (and 12’ or greater in downtown and pedestrian-priority areas) meets requirements for passing and maneuverability.

BIKE BOULEVARDS



Design guidelines are based on AASHTO, Guide for the Development of Bicycle Facilities (2012)

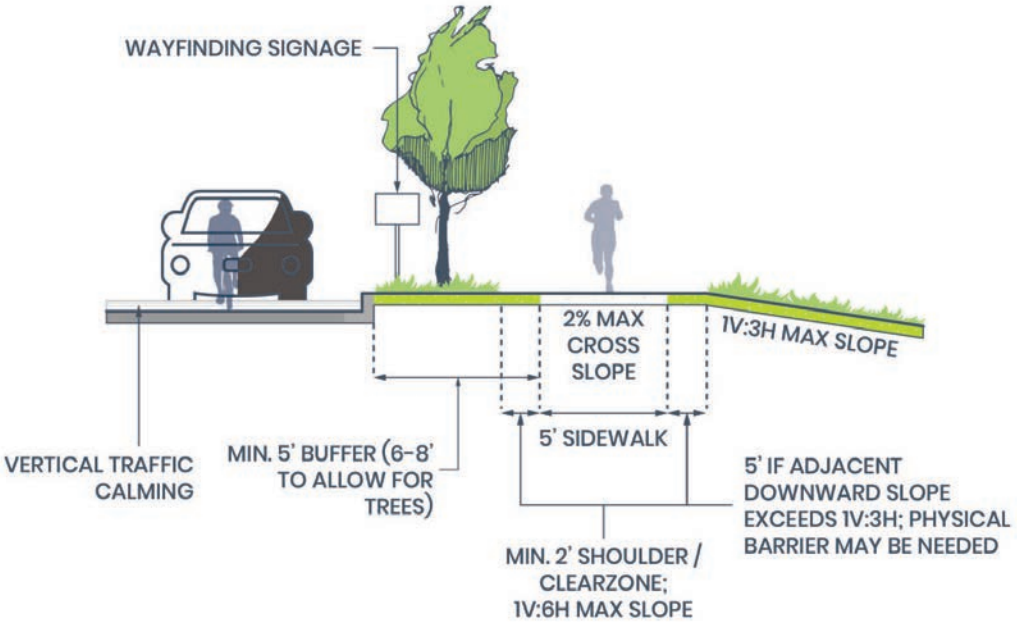
Description

A bike boulevard is a low-speed, low-volume roadway that is designed to enhance comfort and convenience for people cycling. It provides better conditions for cycling while improving the neighborhood character and maintaining emergency vehicle access. Bike boulevards are intended to serve as a low-stress bikeway network, providing direct and convenient routes. Key elements of bike boulevards are unique signage and pavement markings, traffic calming and diversion features to maintain low vehicle volumes, and convenient major street crossings.

REAL WORLD EXAMPLES

Left: Rocky Mount, NC

Right: Durham, NC



Design Guidelines

GENERAL DESIGN CRITERIA:

Signs and pavement markings are the minimum treatments necessary to designate a street as a bike boulevard.

Implement volume control treatments based on the context of the bike boulevard, using engineering judgment.

Intersection crossings should be designed to enhance comfort and minimize delay for cyclists of diverse skills and abilities

TYPICAL USE:

Parallel with, and in close proximity to major thoroughfares (1/4 mile or less) on low-volume, low-speed streets.

Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).

Avoid alignments with excessive zigzag or circuitous routing. The bikeway should have less than 10% out of direction travel compared to shortest path of primary corridor.

Local streets with traffic volumes of fewer than 2,500 vehicles per day and posted speed limits of 25 miles per hour. Utilize traffic calming to maintain or establish low volumes and discourage speeding.

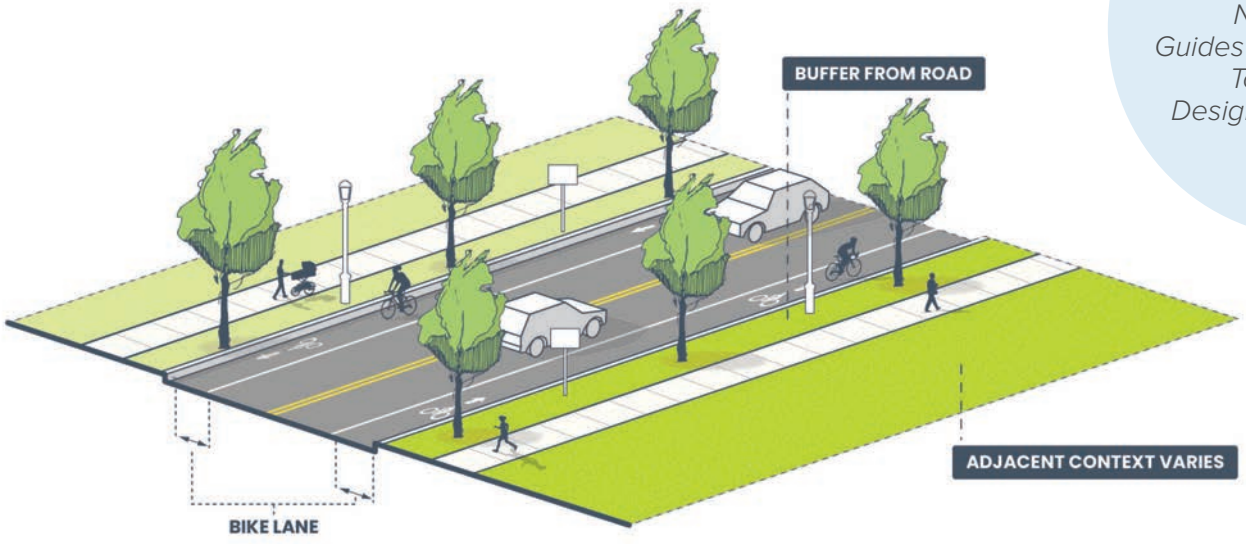
FURTHER CONSIDERATIONS:

Bike boulevards are established on streets that improve connectivity to key destinations and provide a direct, low-stress route for cyclists, with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority over other modes.

Bike boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for cyclists, these intersections can become major barriers along the bike boulevard.

ON-STREET BIKE LANES

Design guidelines are based on NACTO Design Guides and the Small Town and Rural Design Guide (2016)



Description

On-street bike lanes designate an exclusive space for cyclists through the use of pavement markings and signs. Bike lanes are located adjacent to motor vehicle travel lanes and travel in the same direction as motor vehicle traffic.

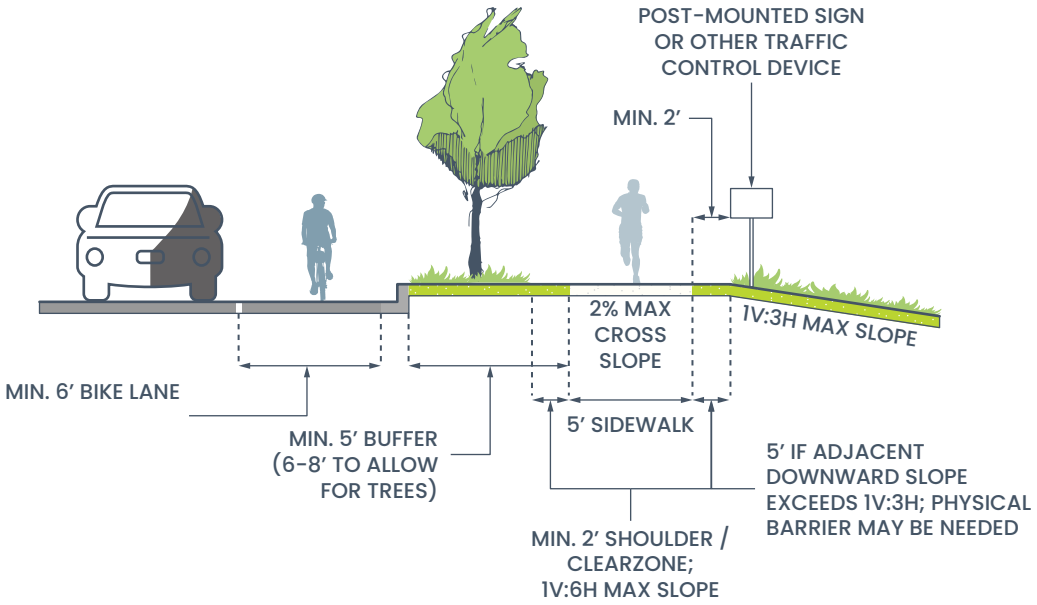
Where additional width is available, or where additional distance from motor vehicles is desired, a marked buffer may be included between the bike lane and travel or parking lane.

Typical Application

On streets with multiple travel lanes in any one direction, consider buffered or separated bike lanes for increased separation.

REAL WORLD EXAMPLE

Elm St, Goldsboro, NC



Design Guidelines

WIDTH:

Standard bike lane width is 7’ (2.1 m) preferred. In constrained conditions, minimum width is 6’ (1.8 m) adjacent to on-street parking, 5’ (1.5 m) adjacent to curb faces, and 4’ (1.2 m) adjacent to road edge (AASHTO Bike Guide 2012).

BUFFER:

If used, bike lane buffers should be at least 2’ (.6 m) wide. If buffer area is 4’ (1.2 m) or wider, white chevron or diagonal markings should be used (MUTCD 2009, 3D.02). At driveways, mark the inside buffer line with dotted lines.

OTHER DESIGN CRITERIA:

Where on-street parking is permitted, NCHRP Report 766 recommends installing a buffer space between the parking lane and bicycle lane rather than between the bicycle lane and vehicle travel lane.

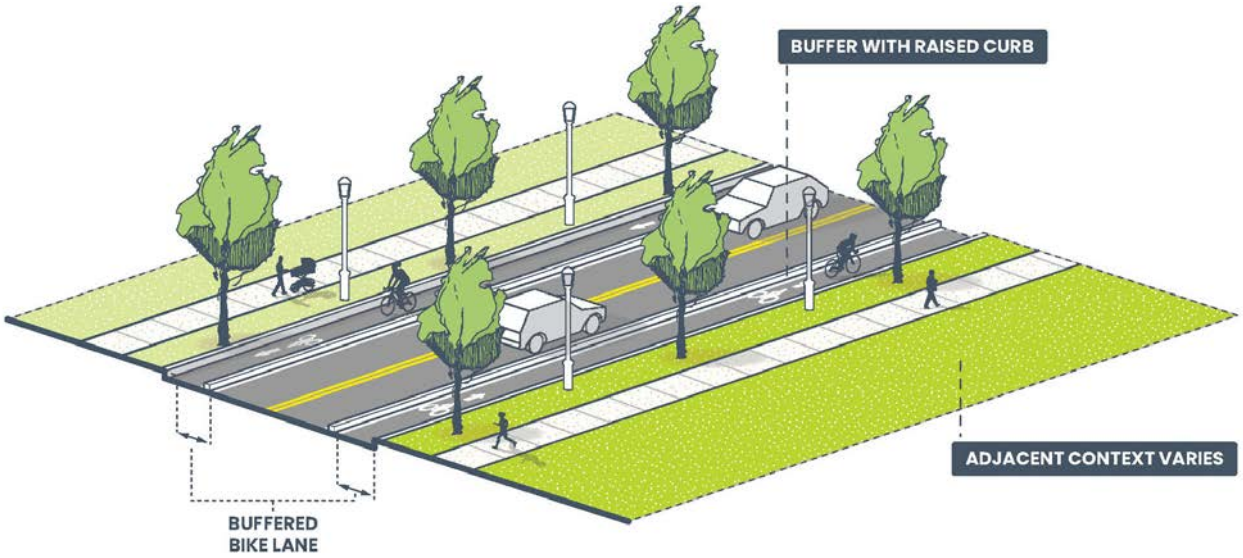
There are many strategies available to implement bicycle lanes into roadway resurfacing projects, including road widening, lane narrowing, travel lane reconfiguration and parking lane reconfiguration (FHWA Resurfacing Guide, 2016).

Physically separated bike lane or sidepath is preferred over a bike lane or buffered bike lane for safety where vehicles speeds and volumes are high. Refer to the FHWA Bikeway Selection Guide for further guidance on when to implement separated facilities.

SIGNAGE:

Bike lane signs R3-17 (BIKE LANE) are required for use in conjunction with bike lanes; and additional supplemental signs, such as R3-17aP (AHEAD) and R3-17bP (END) may be used to indicate bike lane provision.

SEPARATED BIKE LANES (ONE-WAY)



Description

One-way separated bike lanes, also known as protected bikeways or cycle tracks, are on-street bikeway facilities that are separated from vehicle traffic. Physical separation is provided by a barrier between the bikeway and the vehicular travel lane (see *Separated Bike Lane Barriers*, below). Separated bikeways using these barrier elements typically share the same elevation as adjacent travel lanes, but the bikeway could also be raised above street level, either below or equivalent to sidewalk level.

Typical Application

Streets with a high level of stress for bicyclists due to factors such as multiple lanes, high bicycle volumes, high motor traffic volumes (9,000-30,000 ADT), higher traffic speeds (35+ mph), high incidence of double parking, higher truck traffic (10% of total ADT) and high parking turnover.

Streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments. The FHWA Bikeway Selection Guide provides additional guidance on when separated bike facilities may be most appropriate.

REAL WORLD EXAMPLE

Bike lane along Escarpment Blvd in Austin TX

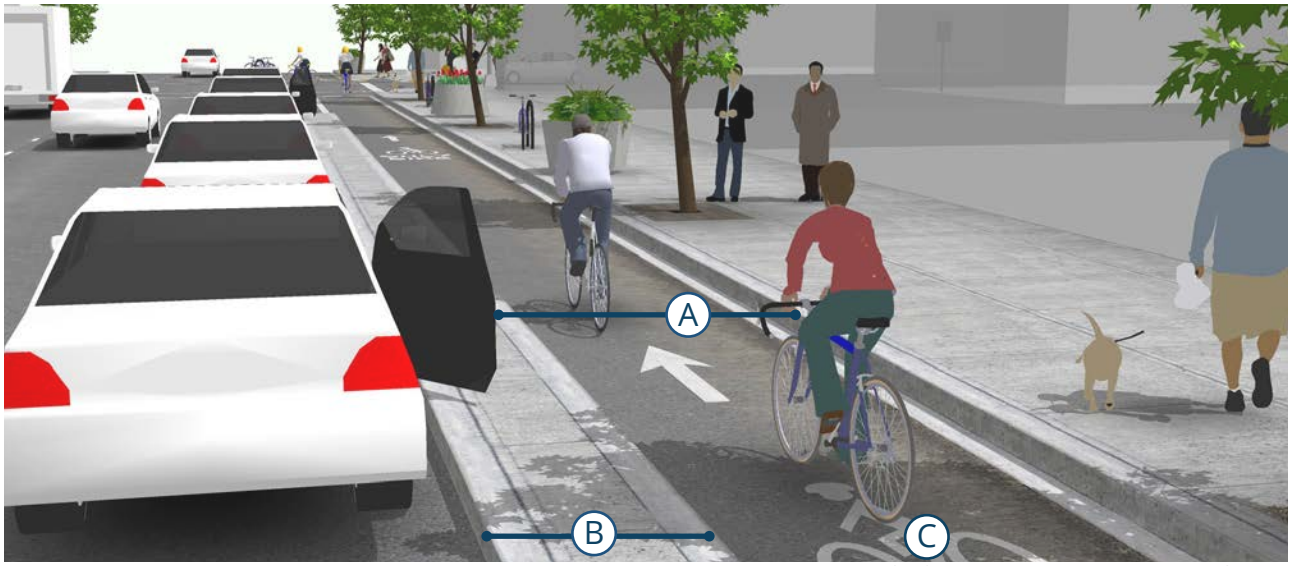


Image: NACTO Urban Bikeway Design Guide

Design Guidelines

(A) WIDTH:

7 feet or more in width preferred in areas with high bicycle volumes or uphill sections to facilitate safe passing behavior. Minimum width, 6 feet.

(B) BUFFER:

Buffers should be wide enough to support the type of separation provided without that separation creating a hazard for drivers or bicyclists using the roadway. When placed adjacent to parking, the parking buffer should be 4 ft wide to allow for passenger loading and to prevent door collisions.

(C) SIGNAGE AND MARKINGS:

Pavement markings, symbols and/or arrow markings must be placed at the beginning of the separated bikeway and at intervals along the facility based on engineering judgment to define the bike direction.

Include green elephant crossings marks or markings that denote a crosswalk for cyclists and pedestrians at conflict points like intersections or driveways. Diagonal markings are used in buffers that are 2.5 to 4 feet wide. Chevron markings are used in buffers over 4 feet wide.

FURTHER CONSIDERATIONS:

Curbs may be used as a channeling device. Grade-separation provides an enhanced level of separation in addition to buffers and other barrier types.

Where possible, physical barriers such as removable curbs should be oriented towards the inside edge of the buffer to provide as much extra width as possible for bicycle use.

A retrofit separated bikeway has a relatively low implementation cost compared to road reconstruction by making use of existing pavement and drainage and using a parking lane as a barrier.

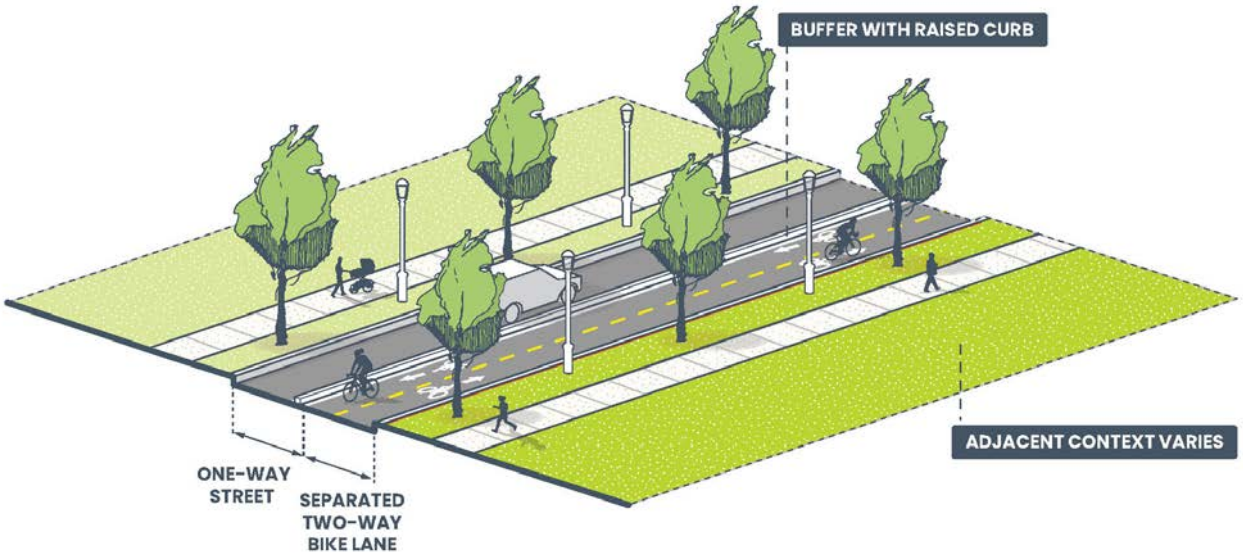
Gutters, drainage outlets and utility covers should be designed and configured as not to impact bicycle travel.

For clarity at major or minor street crossings, consider a dotted line for the buffer boundary where cars are expected to cross.

Special consideration should be given at transit stops to manage bicycle and pedestrian interactions.

When placed adjacent to a travel lane, one-way raised cycle tracks may be configured with a mountable curb to allow entry and exit from the bicycle lane for passing other bicyclists or to access vehicular turn lanes.

SEPARATED BIKE LANES (TWO-WAY)



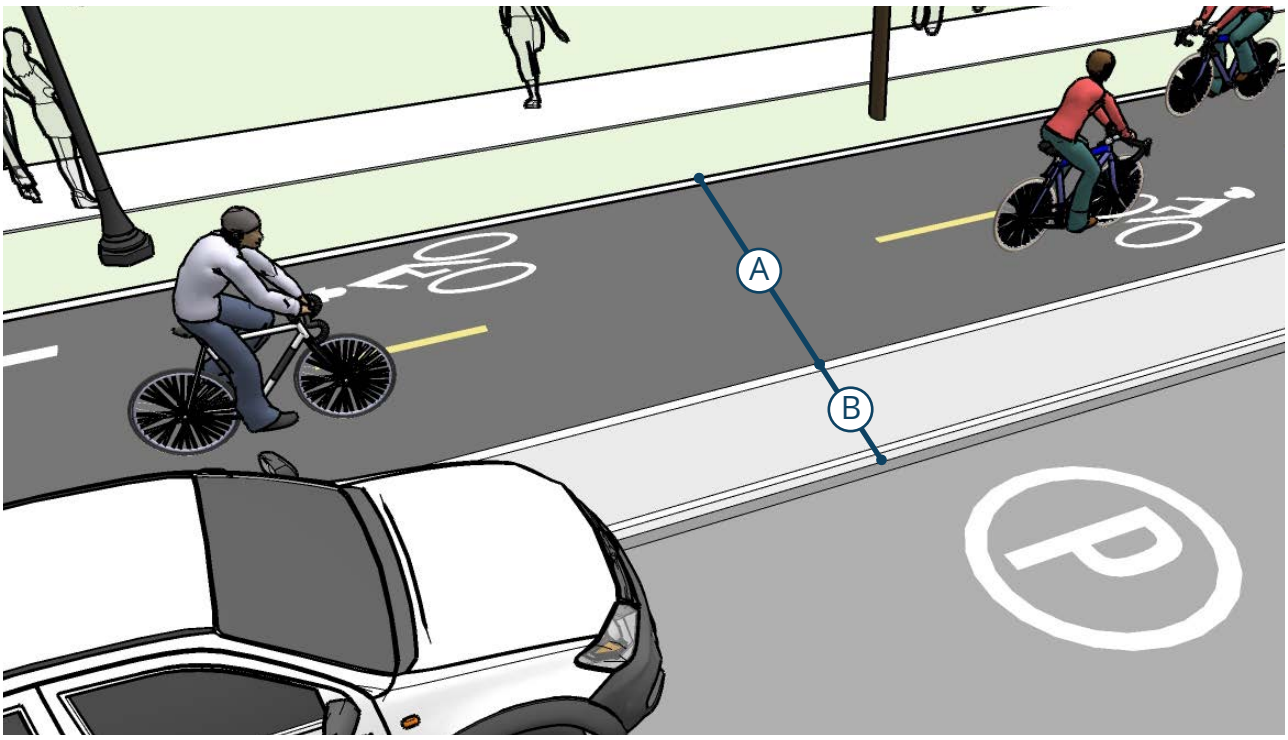
Description

Two-way separated bike lanes are bicycle facilities that allow bicycle movement in both directions on one side of the road. Two-way separated bikeways share some of the same design characteristics as one-way separated bikeways, but often require additional considerations at driveway and side-street crossings, and intersections with other bikeways.

Typical Application

Works best on the left side of one-way streets, streets with high motor vehicle volumes and/or speeds, streets with high bicycle volumes, streets with a high incidence of wrong-way bicycle riding, streets with few conflicts such as driveways or cross-streets on one side of the street, and streets that connect to shared-use paths or trails.

REAL WORLD EXAMPLE
Washington, D.C.



Design Guidelines

Ⓐ WIDTH:

12 foot operating width preferred (10 ft minimum) width for two-way facility. In constrained locations an 8 foot minimum operating width may be considered for short intervals.

Ⓑ BUFFER:

Adjacent to on-street parking a 3 foot minimum width channelized buffer or island should be provided to accommodate opening doors. (NACTO, 2012).

SIGNAGE AND MARKINGS:

Additional signalization and signs may be necessary to manage conflicts.

FURTHER CONSIDERATIONS

- A two-way separated bikeway on a one-way street should be located on the left side.
- A two-way separated bikeway may be configured at street level or as a raised separated bikeway with vertical separation from the adjacent travel lane.
- Two-way separated bikeways should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.
- Two-way separated bikeways may have implications for signalized and unsignalized intersections that put contra-flow bicyclists in increased levels of risk. This should be strongly considered with any project. Bicycle exclusive signals and other control elements are often recommended with two-way separated bikeways.

Materials and Maintenance

- Bikeway striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway. Green conflict markings (if used) will also generally require higher maintenance due to vehicle wear.
- Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.
- Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

SEPARATED BIKE LANE BARRIERS

Description

Separated bike lanes may use a variety of vertical elements to physically separate the bikeway from adjacent travel lanes. Barriers may be robust constructed elements such as curbs, or may be more interim in nature, such as flexible delineator posts.

Typical Application

Appropriate barriers for retrofit projects:

- Parked cars
- Flexible delineators
- Bollards
- Planters
- Modular curbing

Appropriate barriers for reconstruction projects:

- Curb separation
- Medians
- Landscaped medians
- Raised protected bike lane with vertical or mountable curb
- Pedestrian Refuge Islands (median width of 6' required)

Design Guidelines

WIDTH:

Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable. Allow for adequate shy distance of 1 to 5 feet from vertical elements to maximize useful space.

BUFFER:

When next to parking allow for 3 feet of space in the buffer space to allow for opening doors and passenger unloading.

OTHER DESIGN CRITERIA:

The presences of landscaping in medians, planters and safety islands increases comfort for users and enhances the streetscape environment.

FURTHER CONSIDERATIONS

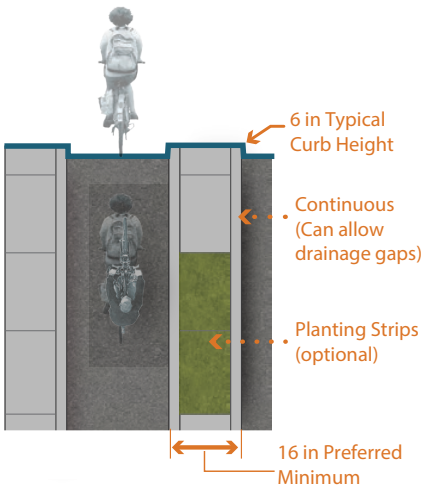
- With new roadway construction, a raised separated bikeway can be less expensive to construct than a wide or buffered bicycle lane because of shoulder trenching and sub base requirements.
- Parking should be prohibited within 30 feet of intersections and driveways to improve visibility. Clearly indicate the parking prohibition through the use of a red curb, signs, or other tools.

REAL WORLD EXAMPLE

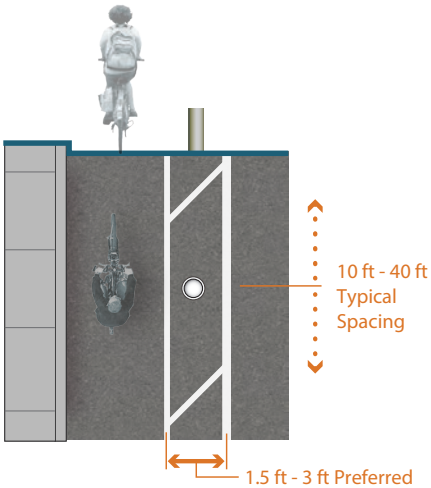
Landscaped median barrier, Indianapolis Cultural Trail, Indianapolis IN

Forms of Physical Buffer Separation

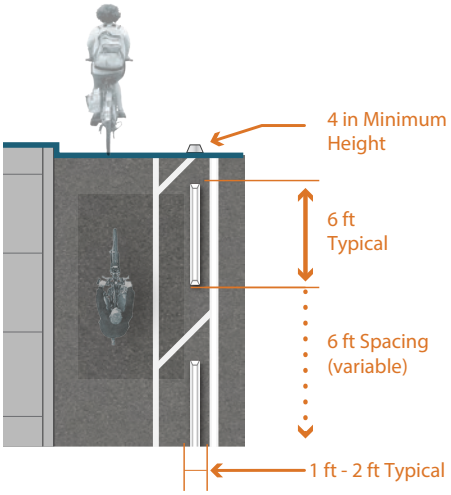
Raised Median



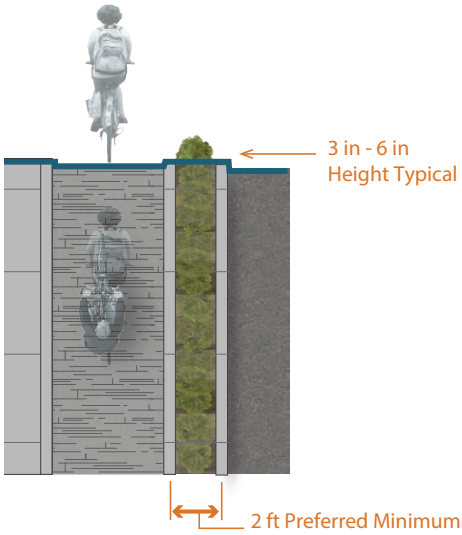
Bollards



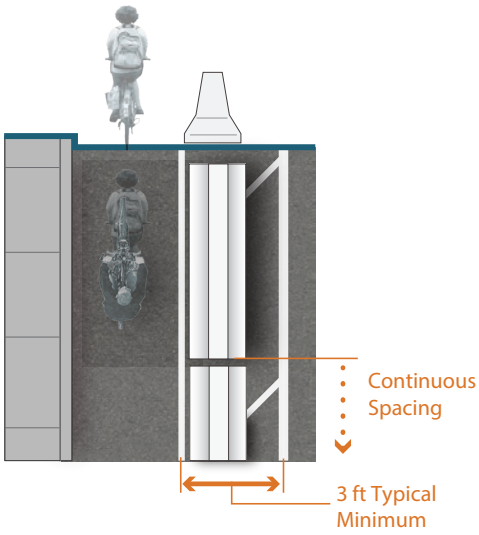
Parking Stops



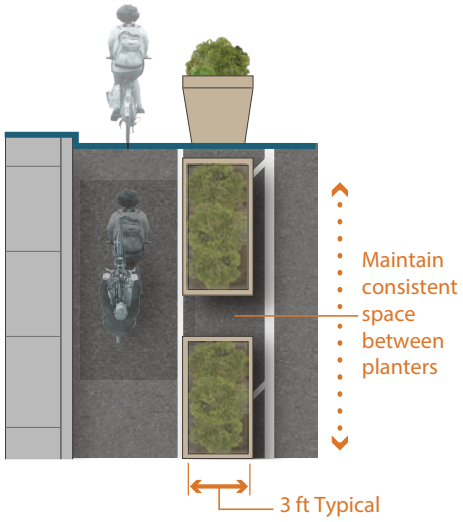
Raised Lane



Concrete Barrier



Planters



Forms of separation as outlined in the FHWA's Separated Bike Lane Planning and Design Guide.

Materials and Maintenance

- Separated bikeways protected by concrete islands or other permanent physical separation, can be swept and plowed by smaller street sweeper vehicles.
- Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

SAFE CROSSINGS

For most people, interaction with vehicle traffic is one of the primary deterrents to using active transportation, which is why off-street trails attract such a wide range of people. However, unless careful consideration is given to how trails cross streets, highways, and other barriers, the concern over safety will still be prevalent in people's decision to use trails.

Selecting a Crossing Treatment

Selecting the most appropriate trail crossing treatment depends on the characteristics of the barrier that the trail crosses. Treatments range from simple marked crosswalks to full traffic signals or grade-separated crossings. An engineering study should be conducted for each crossing to determine the most appropriate treatment, and should consider:

- Number of lanes
- Presence of, or opportunity for, a median
- Distance from adjacent signalized intersections
- Trail user volumes and delays
- Vehicle speeds and volumes
- Geometry of the location
- Possibility to consolidate multiple crossing points
- Availability of street lighting

Contextual Guidance

The matrix below provides guidance for crossing treatments when a pathway crosses a street or highway at unsignalized locations and should be used during the design process when considering appropriate crossing treatments. More information can be found in FHWA's *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (2018).

		Local Streets 15-25 mph		**Collector Streets** 25-30 mph			**Arterial Streets** 25-45 mph							
CROSSING TREATMENT		2 lane	3 lane	2 lane	2 lane with median refuge	3 lane	2 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
1	Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
	Crosswalk with warning signage and yield lines	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
	Raised Crosswalk	✓	✓	✓	✓	EJ	EJ	X	X	X	X	X	X	X
2	Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
3	Hybrid Beacon*	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
4	Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
5	Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	✓	✓	✓	✓	✓

LEGEND

Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

*Hybrid beacons should not be used in conjunction with railroad crossing signals due to the similarity in lens and flash pattern. Use full traffic signal instead.

CROSSWALK

Where streets are 2-3 lanes wide and vehicle speeds are low (15-25 mph), a crosswalk should be considered. Crosswalks consist of high visibility paint at a minimum, and may include pedestrian crossing signs with supplemental yield triangle pavement markings. Raised crosswalks should also be considered as a traffic calming measure and to prioritize pathway users.

RECTANGULAR RAPID FLASHING BEACON (RRFB)

A rectangular rapid flashing beacon is an appropriate treatment when 2-3 lane roads have more moderate vehicle speeds (25-40 mph). The RRFB is a high-frequency blinking pedestrian warning sign that is used in tandem with a pedestrian crossing sign. The flashing pattern can be activated with pushbuttons or automated pedestrian detection (e.g., video or infrared), and should be unlit when not activated.

PEDESTRIAN HYBRID BEACON

A beacon that is used to warn and control traffic at unsignalized marked crosswalks. Key design components of PHBs include: overhead beacons with circular yellow signal indication centered below two horizontally aligned circular red signals facing both directions on the major street; overhead signs labeled “CROSSWALK STOP ON RED” to indicate that the location is associated with a pedestrian crosswalk; a marked crosswalk; countdown pedestrian signal heads; and pedestrian pushbuttons.

FULL TRAFFIC SIGNAL

The use of a full traffic signal at a mid-block location would require a signal warrant as outlined in the Manual on Uniform Traffic Control Devices (MUTCD) and should be considered where pathways cross arterial roads in conjunction with a railroad crossing or where high volumes of pathway traffic is anticipated.

GRADE SEPARATED CROSSING

Grade separated crossings include bridges and undercrossings and should be used when physical barriers such as canals or creeks need to be crossed, or when an at-grade street or railroad crossing is deemed unsuitable through an engineering analysis. Bridges and undercrossings should be at least 14’ wide (16’ preferred). Greater widths are preferred for undercrossings that are longer than 60’. Undercrossings should have a minimum vertical clearance of 10’, and lighting should be considered, especially in culverts or tunnels or when high use is anticipated.

APPENDIX E

Funding Resources

This appendix is intended to assist the Goldsboro MPO and stakeholders in identifying appropriate federal, state, and local funding sources that can be used for pedestrian and bicycle project development and implementation.

The funding sources in this appendix can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This list 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 formula funds or discretionary grants. Federal funding typically requires a local match of five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support the construction of trail facilities.

Formula Funds (State DOT-administered)

Transportation Alternatives Program (TAP)

The 2021 Infrastructure Investment and Jobs Act (IIJA) increased TAP from $850 million to $1.44 billion per year, an increase of 70%. 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

Building Capacity for Grant Writing

Writing grants can involve considerable time and effort. There are many options to build capacity for grant writing, including:

- Create a Bicycle and Pedestrian Advisory Committee to assist staff in grant writing efforts.
- Coordinating with NCDOT IMD about upcoming grant opportunities (they often have all-call submissions for potential projects in which they will help write or pay for professional grant writers, especially for larger federal grants).
- Contracting with professional grant writers that specialize in active transportation funding.

STBGP-DA & TASA-DA Funds

The Surface Transportation Block Grant Program Direct Attributable (STBGP-DA) and Transportation Alternative Set Aside Direct Attributable (TASA-DA) are federal funding sources distributed by metropolitan planning organizations (MPOs). Member jurisdictions of MPOs are eligible to apply for these funds through a competitive funding process that prioritizes locally administered projects. These projects are funded using the federal funding sources directly attributed to the region with a minimum 20% local match.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

CMAQ increased by 10% to $13.2B with the passage of the IIJA. This program funds interchange improvements, local transit operations, and bike and pedestrian infrastructure to help meet the National Ambient Air Quality Standard in non-attainment areas. Each project is evaluated to quantify its air quality improvement benefits. Funds cannot be used to add capacity for single-occupancy vehicles. Funding is distributed to non-attainment areas by population and weighted by air quality severity.

For more information: https://www.fhwa.dot.gov/environment/air_quality/cmaq/index.cfm

Highway Safety Improvement Program (HSIP)

States where more than 15% of all fatalities involve cyclists or pedestrians (Vulnerable Road Users or VRU) are required to spend 15% of their HSIP funding on bicycle/pedestrian projects. This includes North Carolina, where about 15% of all fatalities involve VRUs. Projects are evaluated, prioritized, and selected at the NCDOT district level based on three years of crash data (targeted funds) or systemic approved projects as outlined in the HSIP guidance. Every state and MPO is required to use at least 2.5% of its apportioned funding to develop planning documents that can include but are not limited to, Complete Streets standards, a Complete Streets prioritization plan, multimodal corridor studies, or active transportation plans (among other uses).

For more information: https://highways.dot.gov/safety/hsip

Discretionary Grants (USDOT-administered)

Active Transportation Infrastructure Investment Program (ATIIP)

The ATIIP awards competitive grants “to plan, design, and construct networks of safe and connected active transportation facilities that connect between destinations within a community or metropolitan region” (FHWA). These grants are intended to support planning and active transportation implementation at the network scale, rather than on a project-by-project basis. ATIIP grants may also fund projects to plan, design, and construct an active transportation

"spine," or a facility that connects communities, regions, or states.

For more information: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/atiip/

Healthy Streets Program

The Healthy Streets Program is a new discretionary grant program to help expand the use of cool and porous pavement, and to expand tree cover. Goals of the program include mitigating urban heat islands, improving air quality, reducing the extent of impervious surfaces, reducing stormwater run-off and flood risks, and reducing heat impacts to infrastructure and road users. These goals can benefit active transportation by creating a more comfortable walking and biking environment.

For more information: https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf

Rebuilding American Infrastructure with Sustainability and Equity (RAISE)

RAISE is a competitive grant program that allows the United States Department of Transportation (USDOT) to provide funds for road, rail, transit, and port projects. This grant program was previously known as the Better Utilizing Investments to Leverage Development (BUILD) and Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants. USDOT evaluates applications for this grant program on the requested infrastructure project's potential to improve safety, environmental sustainability, quality of life, mobility and community connectivity, economic competitiveness and opportunity (including tourism), state of good repair, partnership and collaboration, and innovation.

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

Reconnecting Communities and Neighborhoods (RCN) Program

The RCN program provides funding to transportation projects "1) to advance community-centered transportation connection projects, with a priority for projects that benefit disadvantaged communities[...], that improve access to daily needs such as jobs, education, healthcare, food, nature, and recreation, and foster equitable development and restoration, and 2) to provide technical assistance to further these goals" (FHWA).

The following types of grants are available under this program: Community Planning Grants and Capital Construction Grants, and Regional Partnership Challenge Grants. These are offered as part of two programs that are now under the umbrella of the RCN program: the Reconnecting Communities Pilot (RCP) Program and the Neighborhood Access and Equity (NAE) Program. A single application through the RCN program allows an applicant to be considered for both RCP and NAE grants.

For more information: https://www.transportation.gov/grants/rcnprogram/about-rcp

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)Program

The PROTECT grant is a USDOT fund for projects that address the climate crisis by improving the resilience of all surface transportation. Projects should closely follow best available information and practices for climate change risks, impacts, and vulnerabilities. Projects can be funded for any level and scale of transportation, and this is reflected in that states, MPOs, local governments, federally recognized tribes and affiliated groups, and US territories can all apply directly for the grant. There are two types of grants: Planning and Resilience Grants. Resilience grants have four sub-types: Resilience Improvement, Community Resilience and Evacuation Routes, and At-Risk Coastal Infrastructure. Bicycle and pedestrian paths are eligible surface transportation facilities.

For more information: https://www.transportation.gov/rural/grant-toolkit/promoting-resilient-operations-transformative-efficient-and-cost-saving

Other Federal Funding Sources

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. Check the link below for information on the current funding cycle.

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

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 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 IIJA, $2.2 billion has been allocated to the program for FY 2022-2026.

For more information: https://highways.dot.gov/federal-lands/transportation

Federal Land and Water Conservation Fund (LWCF)

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

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

For more information: https://www.ncparks.gov/about-us/grants/land-and-water-conservation-fund

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

STATE & STATE-ADMINISTERED FUNDING SOURCES

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

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

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

- Initial Project Review (NCDOT Strategic Prioritization Office (SPOT))
- Review Projects and Data (NCDOT Integrated Mobility Division (IMD))
- Review Data (MPOs, RPOs, Divisions)
- Review Updates and Calculate Measures (NCDOT IMD)
- Score Projects (NCDOT SPOT)
- Bicycle and Pedestrian Project Eligibility Requirements
- Minimum total project cost = $100,000.
- Eligible costs include right-of-way, preliminary engineering, and construction.

Bicycle and pedestrian and public transportation facilities that appear in a state, regional or locally adopted transportation plan will be included as part of the proposed roadway project. NCDOT will fully fund the cost of designing, acquiring right of way, and constructing the identified facilities.

Specific Improvement Types:

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

Bundling Projects

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

More Information on Prioritization 7.0

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.
- Session 7: Detailed slides explaining the bicycle and pedestrian project scoring.

High Impact/Low Cost Funds

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

Project Selection Criteria

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

The average daily traffic volume of a roadway and whether the proposed project will generate additional traffic.

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

NCDOT Technical Review & Approval

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

Incidental Projects

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

In addition, bicycle safe drainage grates and handicapped accessible sidewalk ramps are now a standard feature of all NCDOT highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds.

“Incidental Projects” are often constructed as part of a larger transportation project, when they are justified by local plans that show these improvements as part of a larger, multi-modal transportation system. Having a local bicycle or pedestrian plan is important, because it allows

NCDOT to identify where bike and pedestrian improvements are needed, and can be included as part of highway or street improvement projects. It also helps local government identify what their priorities are and how they might be able to pay for these projects.

Under the updated NCDOT Complete Streets Policy, NCDOT pays the full cost for incidental projects if the project is proposed in a locally adopted plan (see link to updated NCDOT Complete Streets Implementation Policy below).

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

NC Highway Safety Improvement Program

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

- A system of safety warrants is developed to identify locations that are possibly deficient.
- Locations that meet warrant criteria are categorized as potentially hazardous (PH) locations.
- Detailed crash analyses are performed on the PH locations with the more severe and correctable crash patterns.
- The Regional Traffic Engineering staff performs engineering field investigations
- The Regional Traffic Engineering staff utilizes Benefit: Cost studies and other tools to develop safety recommendations.

Depending on the cost and nature of the 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

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

For more information: https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-program-and-Projects.aspxHazard Elimination Program projects typically ranges between $400,000 and $1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP).

Governor's Highway Safety Program

The Governor's Highway Safety Program (GHSP) funds safety improvement projects on state highways throughout North Carolina. All funding is performance-based. Substantial progress in reducing crashes, injuries, and fatalities is required as a condition of continued funding. Permitted safety projects include checking station equipment, traffic safety equipment, and BikeSafe NC equipment. However, funding is not allowed for speed display signs. This funding source is considered to be "seed money" to get programs started. The grantee is expected to provide a portion of the project costs and is expected to continue the program after GHSP funding ends. Applications must include county level crash data. Local governments, including county governments and municipal governments, are eligible to apply.

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

The North Carolina Division of Parks and Recreation - Recreational Trails Program Grant

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

- New trail or greenway construction
- Trail or greenway renovation
- Approved trail or greenway facilities
- Trail head/ trail markers
- Purchase of tools to construct and/or renovate trails/greenways
- Land acquisition for trail purposes
- Planning, legal, environmental, and permitting

costs - up to 10% of grant amount

- Combination of the above

For more information: https://trails.nc.gov/trail-grants

NC Parks and Recreation Trust Fund (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities, and public authorities, as defined by G.S. 159-7, are eligible applicants. A local government can request a maximum of $500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. Property acquired with PARTF funds must be dedicated for public recreational use.

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

North Carolina Land and Water Fund

The North Carolina Land and Water Fund, formerly known as the Clean Water Management Trust Fund, is available to any state agency, local government, or nonprofit 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: https://nclwf.nc.gov/#appmain.htm

Urban and Community Forestry Grant

The North Carolina Division of Forest Resources Urban and Community Forestry grant can provide funding for a variety of projects that will help plan and establish street trees as well as trees for urban open space. The goal is to improve public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects which will lead to more effective and efficient management of urban and community forests.

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

The Great Trails State Program

The Great Trails State Program provides funding for new trail development and extension of existing trails, including paved trails or greenways, natural surface trails, biking trails, equestrian trails, or any other type of trail recognized by the DNCR. There will be one grant cycle distributing $25 million in non-recurring funding.

For more information: https://www.ncparks.gov/about-us/grants/great-trails-state-program

Complete the Trails Program

Legislation passed in 2021 created the Complete the Trail Program (CTP), which provides over $30 million of funding for the "planning, construction, promotion, and maintenance of state trails in North Carolina." The planned state trail system is over 3,500 miles, and a portion of CTP funds are designated to support the development of trails that will connect small communities to these trails.

For more information: https://trails.nc.gov/state-trails/nc-complete-trails-program

LOCAL FUNDING SOURCES

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

PRIVATE AND NONPROFIT FUNDING SOURCES

Many communities have solicited funding assistance from private foundations and other conservation-minded benefactors. The following columns 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 are 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: https://www.railstotrails.org/grants/doppelt/

National Fish and Wildlife Foundation (NFWF)

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

The Foundation provides grants through more than 70 diverse conservation grant programs. One of the most relevant programs for bicycle and pedestrian projects is Acres for America. Funding priorities include conservation of bird, fish, plants and wildlife habitats, providing access for people to enjoy outdoors, and connecting existing protected lands. Federal, state, and local government agencies, educational institutions, Native American tribes, and 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: https://www.nfwf.org/apply-grant

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 nonprofit 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: https://www.tpl.org/

The Conservation Alliance

The Conservation Alliance is a nonprofit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. Grants are typically about $35,000 each. Funding criteria states that:

- The project should seek to secure lasting and quantifiable protection of a specific wild land or waterway. We prioritize landscape-scale projects that have a clear benefit for habitat.
- The campaign should engage grassroots citizen action in support of the conservation effort. We do not fund general education, restoration, stewardship, or scientific research projects.
- All projects must have a clear recreational benefit.

For more information: https://conservationalliance.com/grants/?yearly=2020

Blue Cross Blue Shield (BCBS) of North Carolina Foundation

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

For more information: https://www.bcbsncfoundation.org/overview-and-opportunities/

Duke Energy Foundation

Funded by Duke Energy shareholders, this foundation makes charitable grants to nonprofit organizations and government agencies. Grant applicants must serve communities that are also served by Duke Energy. The grant program has several investment priorities that could potentially fund bicycle and pedestrian projects.

The Duke Energy Foundation is committed to making strategic investments to build powerful communities where nature and wildlife thrive, students can excel and a talented workforce drives economic prosperity for all.

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

Z. Smith Reynolds Foundation

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

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

Bank of America Charitable Foundation

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

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

Local Trail Sponsors

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

Corporate Donations

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

Private Individual Donations

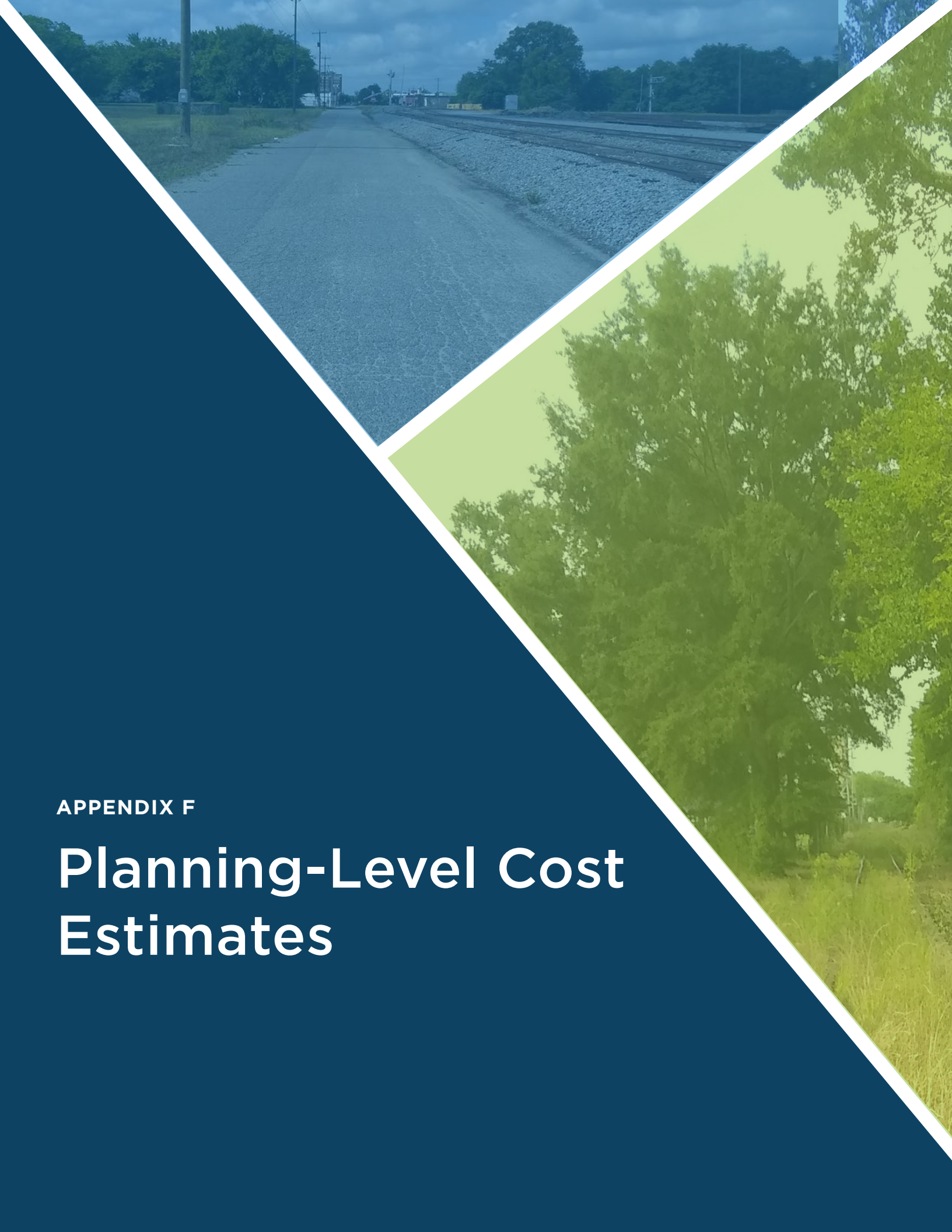
Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Local governments typically create funds to facilitate and simplify a transaction from an individual's donation to the given locality. Donations are mainly received when a widely supported capital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

Fundraising/Campaign Drives

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

Volunteer Work

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fundraising, maintenance, and programming needs.



APPENDIX F

Planning-Level Cost Estimates

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 2: ROYALL AVE

DESCRIPTION: WAYNE MEMORIAL DR TO BERKELEY BLVD ALONG ROYALL AVE.
8,660 LF OF 10' ASPHALT PATH WITHOUT CURB ALONG ROYALL AVE FROM WAYNE MEMORIAL DR TO BERKELEY BLVD.
INTERSECTION AND CROSSING IMPROVEMENTS AT JEFFERSON AVE, SPENCE AVE, AND BERKELEY BLVD.

TOTAL LENGTH: 2.8 MILE

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0000100000-N	800	MOBILIZATION	1	LS	$236,000.00	$236,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$135,000.00	$135,000.00
0043000000-N	226	GRADING	1	LS	$812,000.00	$812,000.00
1121000000-E	520	AGGREGATE BASE COURSE	3,930	TON	$55.00	$216,150.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	1,100	TON	$175.00	$192,500.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	70	TON	$900.00	$63,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	5,427	LF	$40.00	$217,080.00
2591000000-E	848	4" CONCRETE SIDEWALK	5,962	SY	$80.00	$476,960.00
2605000000-N	848	CONCRETE CURB RAMP	45	EA	$3,000.00	$135,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	2,040	SY	$110.00	$224,400.00
3030000000-E	862	STEEL BM GUARDRAIL	200	LF	$50.00	$10,000.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$430,000.00	$430,000.00
8801000000-E	SP	MSE RETAINING WALL NO ****	900	SF	$110.00	$99,000.00
		AT-GRADE RAILROAD CROSSING - ADDITIONAL PEDESTRIAN CROSSING AND OTHER REQUIRED UPGRADES (PER INTERSECTION)	1	LS	$200,000.00	$200,000.00
		HIGHWAY 70 OVERPASS RETAINING WALL STRUCTURAL MODIFICATION	1,000	SF	$150.00	$150,000.00
		HERMAN / ROYALL INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		JEFFERSON AVE / ROYALL AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (1 LEGS)	1	LS	$20,000.00	$20,000.00
		SPENCE AVE / ROYALL AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (1 LEGS)	1	LS	$20,000.00	$20,000.00
		SUNBURST DR / ROYALL AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (1 LEGS)	1	LS	$20,000.00	$20,000.00
		N BERKELEY BLVD / ROYALL AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		DRAINAGE ALLOWANCE	1	LS	$270,000.00	$270,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$115,000.00	$115,000.00
		MINOR ITEMS (5%)	1	LS	$193,000.00	$193,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$4,296,000.00
		CONTINGENCY			30%	$1,288,800.00
		UTILITIES (ABOVE GROUND)				$175,000.00
					TOTAL CONSTRUCTION COST (2024)	**$5,760,000.00**
		INFLATION FACTOR	4	YRS	8%	$2,077,000.00
					CONSTRUCTION COST TOTAL (2028)	**$7,837,000.00**
		DESIGN AND PERMITTING			15%	$1,176,000.00
		NCDOT ADMINISTRATION FEE			10%	$784,000.00
		CONSTRUCTION ENGINEERING INSPECTION (CEI)			20%	$1,568,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$11,365,000.00**

NOTE:
ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
ASSUMES LAP FUNDING WITH NCDOT ADMINISTRATION FEE
EXCLUDES RIGHT-OF-WAY COSTS.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/27/2024

Alta Engineering SE, PLLC
NC License #P-1301

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

LOCATION: PROJECT 3: STONEY CREEK GREENWAY

DESCRIPTION: 9,837 LF OF 10' ASPHALT GREENWAY CONNECTING S SLOCUMB ST TO EAST ELM ST VIA THE UTILITY CORRIDOR ALONG STONEY CREEK.
4,460 LF OF 10' CONCRETE SIDE PATH ALONG S SLOCUMB ST FROM WESTBROOK RD TO SEYMOUR JOHNSON AIR FORCE BASE ENTRANCE GATE AS WELL AS ALONG EAST ELM ST FROM S CLAIBORNE ST TO BERKELEY BLVD.
2,968 LF ROAD DIET ON EAST ELM ST WILL REDUCE LANES FROM 5 TO 3 AND ALLOW FOR AN IN-ROAD SHARED USE PATH BETWEEN THE GREENWAY TRAILHEAD AND BERKELEY BLVD.

TOTAL LENGTH: **3.4 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
0000100000-N	800	MOBILIZATION	1	LS	$309,000.00	$309,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$137,000.00	$137,000.00
0043000000-N	226	GRADING	1	LS	$923,000.00	$923,000.00
1121000000-E	520	AGGREGATE BASE COURSE	4,460	TON	$55.00	$245,300.00
1297000000-E	607	MILLING ASPHALT PAVEMENT, 2" DEPTH	19,800	SY	$7.50	$148,500.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	3,470	TON	$175.00	$607,250.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	210	TON	$900.00	$189,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	4,265	LF	$40.00	$170,600.00
2591000000-E	848	4" CONCRETE SIDEWALK	4,956	SY	$80.00	$396,480.00
2605000000-N	848	CONCRETE CURB RAMP	14	EA	$3,000.00	$42,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	200	SY	$110.00	$22,000.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	990	SY	$120.00	$118,800.00
4025000000-E	901	CONTR FURN, ***SIGN (E)	108	SF	$20.00	$2,160.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	162	LF	$20.00	$3,240.00
4102000000-N	904	SIGN ERECTION, TYPE E	12	EA	$150.00	$1,800.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$200,000.00	$200,000.00
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	23,002	LF	$2.00	$46,004.00
4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	2,968	LF	$2.25	$6,678.00
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	12	EA	$500.00	$6,000.00
		PEDESTRIAN BRIDGE	200	LF	$3,500.00	$700,000.00
		10' CLEAR WIDTH WOOD BOARDWALK	600	LF	$1,000.00	$600,000.00
		S BERKELEY BLVD / ELM ST INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		DRAINAGE ALLOWANCE	1	LS	$205,000.00	$205,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$185,000.00	$185,000.00
		MINOR ITEMS (5%)	1	LS	$251,000.00	$251,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$5,586,000.00
		CONTINGENCY			30%	$1,675,800.00
		UTILITIES (ABOVE GROUND)				$40,000.00
					TOTAL CONSTRUCTION COST (2024)	**$7,302,000.00**
		INFLATION FACTOR	4	YRS	8%	$2,633,000.00
					CONSTRUCTION COST TOTAL (2028)	**$9,935,000.00**
		DESIGN AND PERMITTING			15%	$1,491,000.00
		NCDOT ADMINISTRATION FEE			10%	$994,000.00
		CONSTRUCTION ENGINEERING INSPECTION (CEI)			20%	$1,987,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$14,407,000.00**

NOTE:
- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- ASSUMES LAP FUNDING WITH NCDOT ADMINISTRATION FEE
- EXCLUDES RIGHT-OF-WAY COSTS.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
- SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/27/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 4a: W MULBERRY ST

DESCRIPTION: 11,035 LF EXISITNG BIKE BLVD IMPROVEMENTS ALONG W MULBERRY ST FROM CENTER ST TO STONEY CREEK PARK WITH SHARED LANE INSTALLATION OF 7 NEIGHBORHOOD TRAFFIC CIRCLES

TOTAL LENGTH: **2.2 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
0000100000-N	800	MOBILIZATION	1	LS	$19,000.00	$19,000.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	138	SY	$150.00	$20,700.00
4025000000-E	901	CONTR FURN, ***SIGN (E)	396	SF	$20.00	$7,920.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	594	LF	$20.00	$11,880.00
4102000000-N	904	SIGN ERECTION, TYPE E	44	EA	$150.00	$6,600.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$30,000.00	$30,000.00
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	92	EA	$500.00	$46,028.00
		SPEED CUSHIONS (PER SET OF 3 AT EACH LOCATION)	7	EA	$7,700.00	$53,900.00
		MINOR ITEMS (5%)	1	LS	$9,000.00	$9,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$206,000.00
		CONTINGENCY			30%	$61,800.00
					TOTAL CONSTRUCTION COST (2024)	**$268,000.00**
		INFLATION FACTOR	4	YRS	8%	$97,000.00
					CONSTRUCTION COST TOTAL (2028)	**$365,000.00**
		DESIGN AND PERMITTING			15%	$55,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$420,000.00**

NOTE:
- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- ASSUMES NO LAP FUNDING WITH NCDOT ADMINISTRATION FEE.
- ASSUME NO CONSTRUCTION ENGINERING INSPECTION.
- EXCLUDES RIGHT-OF-WAY COSTS.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
- SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT

DATE 9/27/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT4b: MULBERRY ST

DESCRIPTION: 1,025 LF 10' CONCRETE SIDEPATH ALONG US 117 TO CONNECT EXISTING BIKE LANE FACILITIES TO OLD WAYNESBOROUGH PARK.
350 LF 10' CONCRETE CONNECTING SPUR BETWEEN SOUTH VIRGINIA ST AND WEST ELM ST BIKE FACILITIES
2,365 LF BIKE BLVD ON SOUTH VIRGINIA STREET FROM CONNECTING SPUR TO WEST MULBERRY ST
1,142 LF BIKE BLVD ON WEST MULBERRY ST FROM SOUTH VIRGINIA ST TO NORTH CENTRAL ST.

TOTAL LENGTH: **1.0 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0000100000-N	800	MOBILIZATION	1	LS	$69,000.00	$69,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$13,000.00	$13,000.00
0043000000-N	226	GRADING	1	LS	$80,000.00	$80,000.00
1121000000-E	520	AGGREGATE BASE COURSE	170	TON	$65.00	$11,050.00
2591000000-E	848	4" CONCRETE SIDEWALK	1,528	SY	$80.00	$122,240.00
2605000000-N	848	CONCRETE CURB RAMP	9	EA	$3,000.00	$27,000.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	40	SY	$150.00	$6,000.00
4025000000-E	901	CONTR FURN, ***SIGN (E)	144	SF	$20.00	$2,880.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	216	LF	$20.00	$4,320.00
4102000000-N	904	SIGN ERECTION, TYPE E	16	EA	$150.00	$2,400.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$40,000.00	$40,000.00
4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	577	LF	$12.00	$6,924.00
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	30	EA	$500.00	$15,228.00
4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM GREEN THERMOPLASTIC PAVEMENT MARKING (90 MILS)	1,908	SF	$25.00	$47,700.00
		SPEED CUSHIONS (PER SET OF 3 AT EACH LOCATION)	1	EA	$7,700.00	$7,700.00
		RECTANGULAR RAPID FLASHING BEACON CROSSING (EA SIGN)	2	EA	$10,000.00	$20,000.00
		AT-GRADE RAILROAD CROSSING - ADDITIONAL PEDESTRIAN CROSSING AND OTHER REQUIRED UPGRADES (PER INTERSECTION)	1	LS	$200,000.00	$200,000.00
		W ELM ST. / US 117 INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (3 LEGS)	1	LS	$40,000.00	$40,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$15,000.00	$15,000.00
		MINOR ITEMS (5%)	1	LS	$33,000.00	$33,000.00
		CONSTRUCTION COST SUBTOTAL (2024)				$764,000.00
		CONTINGENCY			30%	$229,200.00
		UTILITIES (ABOVE GROUND)				$25,000.00
		TOTAL CONSTRUCTION COST (2024)				**$1,019,000.00**
		INFLATION FACTOR	4	YRS	8%	$368,000.00
		CONSTRUCTION COST TOTAL (2028)				**$1,387,000.00**
		DESIGN AND PERMITTING			15%	$209,000.00
		TOTAL ESTIMATED PROJECT COST (2028)				**$1,596,000.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
ASSUMES NO LAP FUNDING WITH NCDOT ADMINISTRATION FEE
ASSUME NO CONSTRUCTION ENGINERING INSPECTION
EXCLUDES RIGHT-OF-WAY COSTS.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/27/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 5: BEECH ST

DESCRIPTION:
- 1,509 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG CENTER ST FROM ASH ST TO BEECH ST
- 9,504 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG BEECH ST FROM CENTER ST TO CLAIBORNE ST
- 520 LF BUFFERED BIKE LANE ALONG CENTER ST FROM ASH ST TO OAK ST
- 1,965 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG CLAIBORNE ST FROM EDGERTON ST TO ROSE ST
- 585 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG ROSE ST FROM CLAIBORNE ST TO RANDOLPH ST
- 400 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG RANDOLPH ST FROM ROSE ST TO PEACHTREE ST
- 515 LF BIKE BLVD WITH TRAFFIC CALMING STRIPING ALONG PEACHTREE ST FROM RANDOLPH ST TO THE STONEY CREEK GREENWAY
- 7 NEIGHBORHOOD CIRCLES

TOTAL LENGTH: **2.8 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0000100000-N	800	MOBILIZATION	1	LS	$31,000.00	$31,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$3,000.00	$3,000.00
0043000000-N	226	GRADING	1	LS	$17,000.00	$17,000.00
1121000000-E	520	AGGREGATE BASE COURSE	140	TON	$50.00	$7,000.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	40	TON	$175.00	$7,000.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	5	TON	$900.00	$4,500.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	312	SY	$150.00	$46,800.00
4025000000-E	901	CONTR FURN, ***SIGN (E)	504	SF	$20.00	$10,080.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	756	LF	$20.00	$15,120.00
4102000000-N	904	SIGN ERECTION, TYPE E	56	EA	$150.00	$8,400.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$110,000.00	$110,000.00
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	520	LF	$2.00	$1,040.00
4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	520	LF	$2.25	$1,170.00
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	114	EA	$500.00	$56,832.00
		EROSION CONTROL ALLOWANCE	1	LS	$5,000.00	$5,000.00
		MINOR ITEMS (5%)	1	LS	$15,000.00	$15,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$339,000.00
		CONTINGENCY			30%	$101,700.00
		UTILITIES (ABOVE GROUND)				$0.00
					TOTAL CONSTRUCTION COST (2024)	**$441,000.00**
		INFLATION FACTOR	4	YRS	8%	$159,000.00
					CONSTRUCTION COST TOTAL (2028)	**$600,000.00**
		DESIGN AND PERMITTING			15%	$90,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$690,000.00**

NOTE:
- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- ASSUMES NO LAP FUNDING WITH NCDOT ADMINISTRATION FEE.
- ASSUME NO CONSTRUCTION ENGINERING INSPECTION.
- EXCLUDES RIGHT-OF-WAY COSTS.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
- SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/27/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 6a: WAYNE MEMORIAL DR

DESCRIPTION:
- 3,144 LF ROAD DIET ON WAYNE MEMORIAL DR FROM 5 LANES TO 3 LANES WITH INCLUSION OF BUFFERED BIKE LANES BETWEEN HOLLY ST AND 7TH ST.
- FILL 1,510 LF SIDEWALK GAPS FROM HOLLY ST AND 7TH ST.
- 11,035 LF OF NEW SIDEPATH ALONG NORTHSIDE OF WAYNE MEMORIAL DR AND FILL 1,675 LF SIDEWALK GAPS ON SOUTH SIDE FROM NORTHEAST OF 7TH ST TO NEW HOPE ROAD
- 7 INTERSECTION PED CROSSING IMPROVEMENTS ACROSS ALL LEGS
- RRFB AT 7TH ST INTERSECTION

TOTAL LENGTH: **2.7 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
0000100000-N	800	MOBILIZATION	1	LS	$254,000.00	$254,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$148,000.00	$148,000.00
0043000000-N	226	GRADING	1	LS	$743,000.00	$743,000.00
1297000000-E	607	MILLING ASPHALT PAVEMENT, 2" DEPTH	2,900	SY	$7.50	$21,750.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	320	TON	$175.00	$56,000.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	20	TON	$900.00	$18,000.00
2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	600	LF	$40.00	$24,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	15,592	SY	$80.00	$1,247,360.00
2605000000-N	848	CONCRETE CURB RAMP	42	EA	$3,000.00	$126,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	1,540	SY	$100.00	$154,000.00
2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	2,096	SY	$150.00	$314,400.00
3030000000-E	862	STEEL BM GUARDRAIL	600	LF	$50.00	$30,000.00
4025000000-E	901	CONTR FURN, ***SIGN (E)	288	SF	$20.00	$5,760.00
4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	432	LF	$20.00	$8,640.00
4102000000-N	904	SIGN ERECTION, TYPE E	32	EA	$150.00	$4,800.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$340,000.00	$340,000.00
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	7,788	LF	$2.00	$15,576.00
4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	6,288	LF	$2.25	$14,148.00
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	16	EA	$500.00	$8,000.00
		RECTANGULAR RAPID FLASHING BEACON CROSSING (EA SIGN)	2	EA	$10,000.00	$20,000.00
		PEDESTRIAN HYBRID BEACON	1	EA	$150,000.00	$150,000.00
		WOOD SAFETY RAILING	300	LF	$50.00	$15,000.00
		AT-GRADE RAILROAD CROSSING - ADDITIONAL PEDESTRIAN CROSSING AND OTHER REQUIRED UPGRADES (PER INTERSECTION)	1	LS	$200,000.00	$200,000.00
		WAYNE MEMORIAL DR / 9TH ST INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WAYNE MEMORIAL DR / 11TH ST INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (3 LEGS)	1	LS	$40,000.00	$40,000.00
		WAYNE MEMORIAL DR / LOCKHAVEN DR INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WAYNE MEMORIAL DR / MEMORIAL COMMONS INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WAYNE MEMORIAL DR / HOSPITAL RD INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WAYNE MEMORIAL DR / HWY 70 ON/OFF RAMP INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		WAYNE MEMORIAL DR / COUNTY DAY DR INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		WAYNE MEMORIAL DR / WAYNE COMMUNITY COLLEGE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$30,000.00	$30,000.00

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		WAYNE MEMORIAL DR / WEST NEW HOPE RD INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$30,000.00	$30,000.00
		DRAINAGE ALLOWANCE	1	LS	$35,000.00	$35,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$125,000.00	$125,000.00
		MINOR ITEMS (5%)	1	LS	$208,000.00	$208,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$4,627,000.00
		CONTINGENCY			30%	$1,388,100.00
		UTILITIES (ABOVE GROUND)				$670,000.00
					TOTAL CONSTRUCTION COST (2024)	**$6,686,000.00**
		INFLATION FACTOR	4	YRS	8%	$2,411,000.00
					CONSTRUCTION COST TOTAL (2028)	**$9,097,000.00**
		DESIGN AND PERMITTING			15%	$1,365,000.00
		NCDOT ADMINISTRATION FEE			10%	$910,000.00
		CONSTRUCTION ENGINEERING INSPECTION (CEI)			20%	$1,820,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$13,192,000.00**

NOTE:

- ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
- ASSUMES LAP FUNDING WITH NCDOT ADMINISTRATION FEE
- EXCLUDES RIGHT-OF-WAY COSTS.
- UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
- SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY	SBT
DATE	9/27/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 6b: WILLIAM ST

DESCRIPTION: 3,188 LF ROAD DIET ON WILLIAM ST DECREASING LANES FROM 4 TO 3 WITH 4' STRIPPED BUFFER
FILL 2,750 SIDEWALK GAPS ALONG WILLIAM ST FROM HOLLY ST TO US 13
IMPROVED PED CROSSINGS ON ALL LEGS AT HOLLY ST, ROYALL AVE, AND STRONACH AVE

TOTAL LENGTH: **0.8 MILE**

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0000100000-N	800	MOBILIZATION	1	LS	$151,000.00	$151,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$25,000.00	$25,000.00
0043000000-N	226	GRADING	1	LS	$86,000.00	$86,000.00
1297000000-E	607	MILLING ASPHALT PAVEMENT, 2" DEPTH	14,200	SY	$7.50	$106,500.00
1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	1,590	TON	$175.00	$278,250.00
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	100	TON	$900.00	$90,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	1,287	SY	$80.00	$102,960.00
2605000000-N	848	CONCRETE CURB RAMP	40	EA	$3,000.00	$120,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	970	SY	$100.00	$97,000.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$110,000.00	$110,000.00
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	18,331	LF	$2.00	$36,662.00
		AT-GRADE RAILROAD CROSSING - ADDITIONAL PEDESTRIAN CROSSING AND OTHER REQUIRED UPGRADES (PER INTERSECTION)	1	LS	$200,000.00	$200,000.00
		WILLIAM ST / HOLLY ST INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WILLIAM ST / ROYALL AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WILLIAM ST / STRONACH AVE INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		WILLIAM ST / US 13 EASTBOUND ENTRANCE/EXIT RAMP INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$25,000.00	$25,000.00
		MINOR ITEMS (5%)	1	LS	$73,000.00	$73,000.00
					CONSTRUCTION COST SUBTOTAL (2024)	$1,682,000.00
		CONTINGENCY			30%	$504,600.00
		UTILITIES (ABOVE GROUND)				$85,000.00
					TOTAL CONSTRUCTION COST (2024)	**$2,272,000.00**
		INFLATION FACTOR	4	YRS	8%	$820,000.00
					CONSTRUCTION COST TOTAL (2028)	**$3,092,000.00**
		DESIGN AND PERMITTING			15%	$464,000.00
		NCDOT ADMINISTRATION FEE			10%	$310,000.00
		CONSTRUCTION ENGINEERING INSPECTION (CEI)			20%	$619,000.00
					TOTAL ESTIMATED PROJECT COST (2028)	**$4,485,000.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
ASSUMES LAP FUNDING WITH NCDOT ADMINISTRATION FEE
EXCLUDES RIGHT-OF-WAY COSTS.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/24/2024

PLANNING ESTIMATE

2024 GOLDSBORO BICYCLE, PEDESTRIAN, AND GREENWAY PLAN

Alta Engineering SE, PLLC
NC License #P-1301

LOCATION: PROJECT 6c: BERKELEY BLVD

DESCRIPTION: FILL4,250 LF SIDEWALK GAPS BETWEEN ASH ST AND ROYALL AVE ON BERKELEY BLVD.
IMPROVE 6 SIGNALIZED INTERSECTIONS WITH PEDESTRIAN CROSSINGS

TOTAL LENGTH: 0.9 MILE

TOWN/CITY: GOLDSBORO COUNTY: WAYNE

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
DESC. NO.	SECT. NO.					
0000100000-N	800	MOBILIZATION	1	LS	$75,000.00	$75,000.00
0000400000-N	801	CONSTRUCTION SURVEYING	1	LS	$43,000.00	$43,000.00
0043000000-N	226	GRADING	1	LS	$147,000.00	$147,000.00
2591000000-E	848	4" CONCRETE SIDEWALK	2,362	SY	$80.00	$188,960.00
2605000000-N	848	CONCRETE CURB RAMP	36	EA	$3,000.00	$108,000.00
2612000000-E	848	6" CONCRETE DRIVEWAY	1,000	SY	$100.00	$100,000.00
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS	$140,000.00	$140,000.00
		AT-GRADE RAILROAD CROSSING - ADDITIONAL PEDESTRIAN CROSSING AND OTHER REQUIRED UPGRADES (PER INTERSECTION)	1	LS	$200,000.00	$200,000.00
		BERKELEY BLVD / US70 EASTBOUND ON/OFF RAMPS INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$45,000.00	$45,000.00
		BERKELEY BLVD / US70 WESTBOUND ON/OFF RAMPS INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$45,000.00	$45,000.00
		BERKELEY BLVD / GRAVES DR INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		BERKELEY BLVD / CASHWELL DR INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		BERKELEY BLVD / LANGSTON DR INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (4 LEGS)	1	LS	$45,000.00	$45,000.00
		BERKELEY BLVD / ROYALL AVE / CENTRAL HEIGHTS RD INTERSECTION SIGNAL WORK - INSTALL PEDESTRIAN SIGNALS (2 LEGS)	1	LS	$30,000.00	$30,000.00
		EROSION CONTROL ALLOWANCE	1	LS	$40,000.00	$40,000.00
		MINOR ITEMS (5%)	1	LS	$61,000.00	$61,000.00
		CONSTRUCTION COST SUBTOTAL (2024)				$1,358,000.00
		CONTINGENCY			30%	$407,400.00
		UTILITIES (ABOVE GROUND)				$115,000.00
		TOTAL CONSTRUCTION COST (2024)				**$1,881,000.00**
		INFLATION FACTOR	4	YRS	8%	$679,000.00
		CONSTRUCTION COST TOTAL (2028)				**$2,560,000.00**
		DESIGN AND PERMITTING			15%	$384,000.00
		NCDOT ADMINISTRATION FEE			10%	$256,000.00
		CONSTRUCTION ENGINEERING INSPECTION (CEI)			20%	$512,000.00
		TOTAL ESTIMATED PROJECT COST (2028)				**$3,712,000.00**

NOTE: ESTIMATE IS NOT BASED ON AN ENGINEERING DESIGN, AND IS FOR PLANNING PURPOSES ONLY.
ASSUMES LAP FUNDING WITH NCDOT ADMINISTRATION FEE
EXCLUDES RIGHT-OF-WAY COSTS.
UNDERGROUND UTILITY COORDINATION/RELOCATION COSTS UNKNOWN AND NOT INCLUDED.
SIGNAL WORK ASSUMES IMPROVEMENT LISTED ONLY, AND EXCLUDES OTHER SIGNAL UPGRADE WORK THAT MAY BE REQUIRED.

COMPUTED BY SBT
DATE 9/27/2024

APPENDIX G

Bicycle Level of Traffic Stress Methodology

Level of Traffic Stress & OpenStreetMap Derivation Assumptions

Overview

Alta uses a tiered data collection framework for Level of Traffic Stress (LTS) analysis that derives initial analysis inputs from readily accessible data, in order to determine where additional data collection will be of the most value to meet project goals. In the case of LTS analysis, Alta derives initial base analysis inputs from OpenStreetMap (OSM) data.[1] This appendix documents how Alta develops the input variables for this analysis.

Where OSM data includes values for lanes, posted speeds, bike lanes, sidewalks, parking lanes, and one-way tags, these tags are used to populate a database for LTS inputs. Once that database is populated, Alta uses the Mekura et al, 2012 Level of Traffic Stress methodology to score roadway segments. This initial LTS is intended to be augmented by either automated or manual review of aerial imagery, local GIS data and/or street view data. Once the base input values have been validated, the LTS scores can be refreshed using Alta's LTS calculation scripts. This enables evaluation of new scenarios as needed in addition to standardized network analysis.

OSM Processing

When using OSM networks for LTS analysis, there are several considerations for creating a useful network for visualization and analysis. The sections below outline how Alta processes OSM data for LTS and related network analysis.

Network Connectivity

OSM networks contain segments that are not ready for network analysis in most instances. There are various software processing packages such as the Open-Source Routing Machine and OpenTripPlanner that come with routines to prepare OSM networks for network analysis. Alta uses scripts built on the OSMnx[2] Python package to derive its geospatial networks. This package is used to ensure that extracted networks are valid and have appropriate end-to-end connectivity provided by network segments. This process complies all OSM networks wherein the highway tag[3] is available and the corresponding geometry is a line. For cartographic presentation, it is often preferable to filter out features such as service roads (roads within parking lots) and footways (sidewalks drawn separately from the centerline). This is typically done to focus attention to facilities that jurisdictions and regions can reasonably improve.

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[1] OpenStreetMap (OSM) is a crowd-sourced database of geographic features including administrative boundaries, street centerlines, points of interest, building footprints, physical and natural features, and other types of geographic information. OSM is one of the most prominent examples of Volunteered Geographic Information (VGI), where community processes drive the contributions of geographic information to a shared database (2). These geographic features are tagged based on their attributes, and while community wiki-pages provide guidance on which tags apply to which features, there is no centralized authority that authenticates these contributions. For example, street networks in OSM may include tags where contributors denote functional classification, number of lanes, one-way classification, speed limits, presence of sidewalks, and the type of bicycle facility that might be present on the network. While OSM is not always accurate, it has been benchmarked against comparable map data sources such as Google and found to have comparable or better accuracy for Bike Paths depending on the type of error (3). Multiple non-profits, academics, and practitioners have found OSM to be an acceptable base for initial derivation of LTS analysis (4,5,6,7).

[2] Boeing, G. 2017. OSMnx: New Methods for Acquiring, Constructing, Analyzing, and Visualizing Complex Street Networks. Computers, Environment and Urban Systems 65, 126-139. doi:10.1016/j.compenvurbsys.2017.05.004

[3] Highway Tag. Key:highway - OpenStreetMap Wiki. (n.d.). https://wiki.openstreetmap.org/wiki/Key:highway.

Tag Processing

In many cases, OSM data includes tags for attributes such as lanes, posted speed, bicycle infrastructure, and other facility information recorded in the database. This data tends to more likely to be completed in urbanized areas globally, and on major facilities such as arterials and highways. There can be substantial variance in tag availability from location to location, but the presence of Bike Paths and a consistent indicator of functional classification is generally well recorded in OSM. In the case of bike lane blockage rates, Alta assumes these instances are rare unless manual review of commercial districts indicates otherwise. When tags are missing from OSM for the purposes of LTS analysis, the assumptions outlined in Table 1 are used as proxy values.

Table 1. Alta's OSM Assumptions for Missing Inputs

Functional Class	Lanes [1,2,3]	Speed Limit [1,2,3]	Centerline Present [3]
Residential	2	25	No
Living Street	2	25	No
Unclassified	2	25	Yes
Track	2	30	Yes
Tertiary	3	30	Yes
Secondary	4	35	Yes
Primary	4	45	Yes
Trunk	6	65	Yes
Motorway	6	65	Yes
OTHER	2	25	Yes

1. Lane assumptions for one-way streets are halved to reflect an accurate per-segment assumption. In addition, all one-way streets are assumed to have medians for the purposes of LTS computations.
2. These assumptions only apply if there is no tag provided for speed limit or number of lanes.
3. These assumptions were developed based on Wasserman et al, 2019 and Harvey et al, 2019.

LTS analysis also requires an understanding of other geometric considerations, such as bicycle facility width and parking lane width (if present). Alta begins with a "benefit of the doubt" approach for these attributes, meaning that if they are present, they are assumed to be of sufficient width. Validation is recommended for detailed LTS assessments, but this is typically less important for less rigorous, or large scale (e.g., county-, region-, or state-wide) LTS-based analysis. Bicycle infrastructure-related tags are processed using assumptions outlined in Table 2.

Table 2. Alta's OSM Assumptions for Bicycle Facilities

Cycleway Tag[1]	Bicycle Facility Type	Assumed Bicycle Facility Width (Feet)	Is Protected
Shared	Bike Route / Class III	0	No
Shared_lane	Bike Route / Class III	0	No
Lane	Bike Lane / Class II	6	No
Shared_busway	Bike Lane / Class II	6	No
Opposite_lane	Bike Lane / Class II	6	No
Cycleway[2]	Bike Path / Class I	10	Yes
Path	Bike Path / Class I	10	Yes
Track	Separated Bikeway / Class IV	8	Yes
Opposite_track	Separated Bikeway / Class IV	8	Yes
Buffered_lane	Separated Bikeway / Class IV	8	Yes
OTHER	NA	0	No

1. Alta processes a non-directional cycleway tag and directional cycleway tags as part of its conversion. The final LTS score is the worst-case score based on the direction of facilities.
2. Highway tags including the tag "cycleway" are also considered to be Class I facilities.

When parking lane-related tags are processed, assumptions related to their width and rates of bike lane blockage are outlined in Table 3.

Table 3. Alta's OSM Assumptions for Parking Facilities

Parking Lane Tag	Assumed Parking Lane Width (Feet)
Parallel	8
Marked	8
Diagonal	16
Perpendicular	20
OTHER	NA

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Bicycle Level of Traffic Stress (BLTS) Analysis

Overview

The Bicycle Level of Traffic Stress (BLTS) analysis estimates the level of comfort for people biking on a given roadway segment. BLTS helps to identify where "gaps" or deficiencies in a bike network exist, and provides a measure of how likely different types of riders, based on ability and comfort level, are to use the facility.

Alta's BLTS analysis methodology is adapted from the 2012 Mineta Transportation Institute Report 11-19: *Low-Stress Bicycling and Network Connectivity*.[1] LTS is determined by characteristics of a given roadway segment that affect a bicyclist's perception of safety and comfort, including posted speed limit, number of travel lanes, and the presence and character of bicycle lanes. The combination of this criteria classifies a road segment into one of four levels of traffic stress:

- BLTS 1 represents roadways where bicyclists of all ages and abilities would feel comfortable riding. These roadways are generally characterized by low volumes, low speeds, no more than two travel lanes, and traffic control measures at intersections. These roadways may have bicycle facilities; separated shared-use paths for bicycles also fall into this category.
- BLTS 2 represents slightly less comfortable roadways, where most adults would feel comfortable riding.
- BLTS 3 represents moderately uncomfortable roadways, where most experienced bicyclists would feel comfortable riding.
- BLTS 4 represents high-stress roadways where only strong and fearless bicyclists would feel comfortable riding. These roadways are generally characterized by high volumes, high speeds, several travel lanes, and complex transitions approaching and crossing intersections.

The results of the BLTS analysis helps identify existing areas that are low-stress for many bicyclists, and identifies the degree to which roadways must be improved in order to provide a comfortable experience for riders of all ages and abilities. Additionally, scenario testing can be used to determine how a roadway or route's level of stress may change with improvements.

Methodology

BLTS analysis is completed through an assessment of street segments using spatial data and aerial imagery. Each segment of the roadway is evaluated based on its characteristics; if multiple scores are present within a segment the highest (most stressful) score is used as the overall segment score.

Figure 1 illustrates the overall BLTS scoring process. Notes on data inputs and assumptions are found in Table 1. Segment scores are assigned as shown in Table 2 through Table 5.

[1] Mineta Institute. Mekuria M., Furth P., Nixon H. Low-Stress Bicycling and Network Connectivity. 2012. https://transweb.sjsu.edu/research/Low-Stress-Bicycling-and-Network-Connectivity

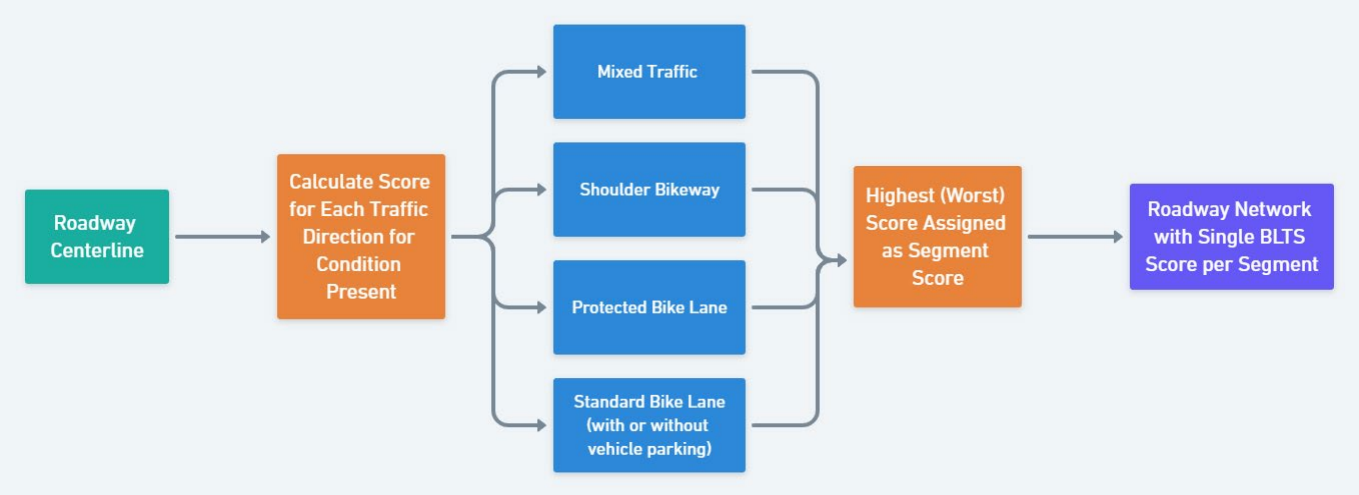


Figure 1. BLTS Generalized Segment Scoring Process

Table 1: Data Inputs and Assumptions

Inputs	Notes	Assumptions
Bicycle Facilities	Bicycle lanes have a positive impact on bicycle level of travel stress and are a primary input for developing a BLTS model. The width of facilities can have an impact on the associated comfort level. Wider facilities provide greater comfort, especially on higher speed roadways.	For analysis purposes, a standard width of 5 feet was assumed for all bike lanes within the city. Buffered bike lanes, which provide an additional degree of separation from motor vehicles and great operating space for bicyclists, were considered to be greater than 6 feet, meeting the requirements for a BLTS 1 score as outlined in Table 2 and Table 3 below.
Speed Limit	Higher speed roadways are considered to be less comfortable for bicyclists, particularly in mixed traffic or with minimal separation from motor vehicles. Low-speed roadways are considered more comfortable.	Speed limit data was available for a subset of roadways within the city limits. The BLTS evaluation was completed only for those roadways in which speed limit data was available.
Presence and width of on-street parking adjacent to bicycle lanes	On-street parking is particularly important for corridors on which bicycle lanes are present. Bicycle levels of travel stress are greater on bicycle lanes adjacent to parking than on bicycle lanes not adjacent to parking, due to the potential for 'dooring' incidences.	A standard width of 7.5 feet was assumed for all parking lanes.
Number of Lanes	The number of travel lanes corresponds with an increase in the roadway width, which has an effect on bicyclists' level of stress. Roadways with fewer lanes are generally less stressful for bicyclists.	When data was not available or was inadequate, assumptions about number of lanes were made based on the roadway's functional classification according to OSM or other available data.
Presence of Trails	Class I facilities can be a vital component of a municipality's active transportation network. Increased separation from motor vehicles can improve comfort and safety.	Class I facilities are scored as a BLTS 1.

Tables 2 through 4 specify the scoring criteria based on roadway configuration, speed, and bike lane/parking lane presence and width. The criteria are adapted from the original 2012 Mineta Institute report. These tables are used in combination to assign an overall LTS score; if multiple scores are present within a segment the highest (most stressful) score is used as the overall segment score These tables are used in combination to create the segment, approach, and intersection scores described above.

Table 2: Criteria for Bicycle Level of Traffic Stress in Mixed Traffic

Prevailing Speed or Speed Limit (mph)	Street Width		
	2-3 Lanes	4-5 Lanes	6+ Lanes
≤ 25	BLTS 1 or 21	BLTS 3	BLTS 4
30	BLTS 2 or 3[1]	BLTS 4	BLTS 4
≥ 35	BLTS 4	BLTS 4	BLTS 4

1. Lower value is assigned to streets without marked centerlines or classified as residential with fewer than 3 lanes. Residential roadways are identified based on the Open Street Map 'highway' tag.

Table 3: Criteria for Bike Lanes Not Alongside a Parking Lane

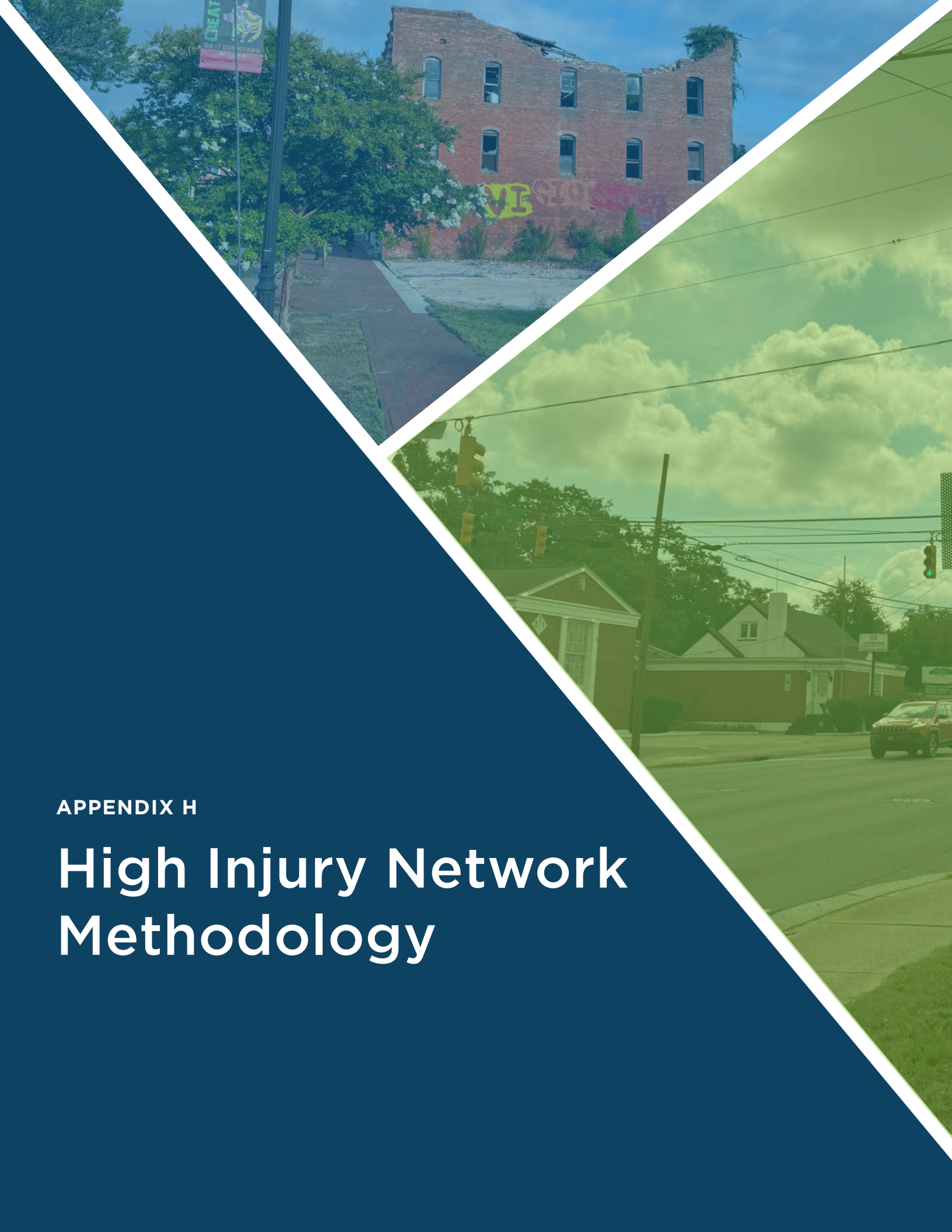
	BLTS 1	BLTS 2	BLTS 3	BLTS 4
Street Width (Through lanes per direction)	1	2	More than 2	(no effect)
Bike Lane Width	6 feet or more	5.5 feet or less	(no effect)	(no effect)
Speed Limit (mph)	30 mph or less	(no effect)	35 mph	40 mph or more
Bike lane blockage[1]	rare	(no effect)	frequent	(no effect)

1. Bike lane blockage is part of Alta's analysis methodology, but assumed to be rare by default.

Table 4: Criteria for Bike Lanes Alongside a Parking Lane

	BLTS 1	BLTS 2	BLTS 3	BLTS 4
Street Width (Through lanes per direction)	1	(no effect)	2 or more	(no effect)
Sum of Bike Lane Width + Parking Lane Width	15 feet or more	14 or 14.5 feet	13.5 feet or less	(no effect)
Speed Limit (mph)	25 mph or less	30 mph	35 mph	40 mph or more
Bike lane blockage[1]	rare	(no effect)	frequent	(no effect)

1. Bike lane blockage is part of Alta's analysis methodology, but assumed to be rare by default.



APPENDIX H

High Injury Network Methodology

High Injury Network (HIN)

Overview and Purpose

A High Injury Network (HIN) illustrates that improving a small number of roadways can often address the majority of injury-causing crashes. This approach moves beyond typical crash history and allows for a better understanding of the types of roadways in North Carolina where users are most at risk.

Alta developed a HIN for the Goldsboro MPO region, focusing on local and state-owned roadways and excluding limited-access roadways such as interstates. This memo explains Alta's approach to analyzing crash data and developing the HIN.

The HIN used data from all vehicle-involved crashes in which a person was killed or severely injured, as well as bicycle and pedestrian crashes of any severity. It is not mode-specific due to lower numbers of crashes involving bicyclists or pedestrians. However, bicycle- and pedestrian-involved crashes were weighted more heavily than other types of crashes to effectively prioritize segments where these crashes occurred.

Data Inputs

HIN development required two data sets: crash points and a prepared roadway network.

Crashes
Seven-year crash data (2017 through 2023, inclusive) of all crashes within the region, provided by Goldsboro MPO.

- Inclusive of all modes of travel.
- Crashes only involving motor vehicles were filtered to only those where a person was killed or severely injured (K or A on the KABCO scale)
- Crashes involving a bicyclist or pedestrian were included regardless of injury severity.
- Crashes officially associated with federally managed limited-access roadways and ramps and limited-access state-managed roadways were not included, as bicycles and pedestrians are not allowed on these roadways and they are outside jurisdiction of the Goldsboro MPO.

Prepared Roadway Network
Street centerline network, accessed via the NCDOT open data portal.

- Filtered to roadways within the region boundary.
- Remove federally-managed limited-access roadways and ramps and limited-access state-managed roadways

HIN Methodology

This approach is summarized visually in **.**

Prepare Street Network

a. **Consolidate dual-carriage (divided) roadways so that split roads are represented as one line.** Alta used ArcGIS Pro's Merge Divided Roadways tool and verified results.

b. **Use the "unsplit lines" tool to dissolve road segments based on road name and functional class.** This eliminates arbitrary splits in the spatial data so that roads can be split into even-length segments.

c. **Divide centerlines into ¼ mile segments within urbanized areas and ½-mile segments elsewhere.** Shorter segments are appropriate in urban areas where crashes happen more frequently, and allow for more granularity in pinpointing high-injury corridors. Longer segments in are more appropriate in rural areas where crashes are sparser and the roadway and land use context changes less frequently.

d. Create a unique ID for each roadway segment.

e. Create a "Rolling Window / Sliding Window" feature class where the lines are extended over each road segment. This is a temporary feature class for analysis purposes. Roadways will be extended 25% in each direction for a total rolling length of either ¾ mile or 3/8 mile depending on the original segment length. Lines will overlap with their neighbors by some set percentage. This process allows rolling window statistics to be calculated on each road segment. The benefits of rolling window analysis are that it reduces the impact that dead-end streets, network segmentation artifacts, or anomalous crashes have on the final HIN. Fundamentally, it better captures the linear corridor crash patterns where they exist (Fitzpatrick, 2018)[1]. This methodology is illustrated in **.**

Prepare Crash Data

a. **Weight each crash based on the most serious injury sustained by any individual involved in the crash.** This effectively prioritizes areas where more severe crashes involving bicyclists and pedestrians are occurring to identify areas where the most serious injuries can be reduced.

   i. Bicycle or pedestrian crash involving a severe injury or fatality: 4

   ii. Bicycle or pedestrian crash involving a minor injury or no injury: 2

[1] These patterns would consider crashes sometimes not directly on a particular segment in other to smooth out analysis results. Examples of this type of analysis are provided by FHWA in their Guide Book on High Pedestrian Crash Locations.

iii. Motor vehicle-only crash involving a severe injury or fatality: 1

b. **Snap all crashes within 170 feet of the street centerline network to the prepared network segments (see Step 1).** This distance accounts for a margin of error in crash coordinates. It also captures crashes on dual carriage roadways that occur far from the now-consolidated centerline (such as wide highways) but is not large enough to capture crashes that occurred in parking lots adjacent to roadways.

Apply Rolling Window Analysis:

f. **Spatially join the crash layer to the rolling window road network.**

g. **Calculate the summed rolling crash weight for each rolling road segment.** This sums the weight of crashes on each rolling segment to reflect total crash severity on each segment.

a. **Join the rolling crash weight from the rolling window layer back to the original centerline network using the unique ID to show rolling crash weight per road mile on each original ¼ mile or ½ mile segment.** This normalizes the crash weight for the road length. However, for the purpose of calculating crash weight per road mile, count any rolled segments of less than 0.15 miles as 0.15 miles to avoid overrepresenting crashes on small road segments, as dividing by very small numbers yields very large numbers. See for an explanation of the process.

Accumulate Crashes

h. **Beginning with segments with the highest crash weight per mile, progressively add segments to the HIN.** Analysts calculate the length in miles for each segment as it is added and keeping track of the cumulative miles in the HIN and the number of crashes occurring on those segments. The process stops when the designated threshold of crashes has been accumulated. A threshold of 60% is used as a starting point, and is adjusted after examining initial outputs as described in following steps. The tool also generates a table that shows the number of crashes and the number of roadway miles accounted for with each HIN segment.

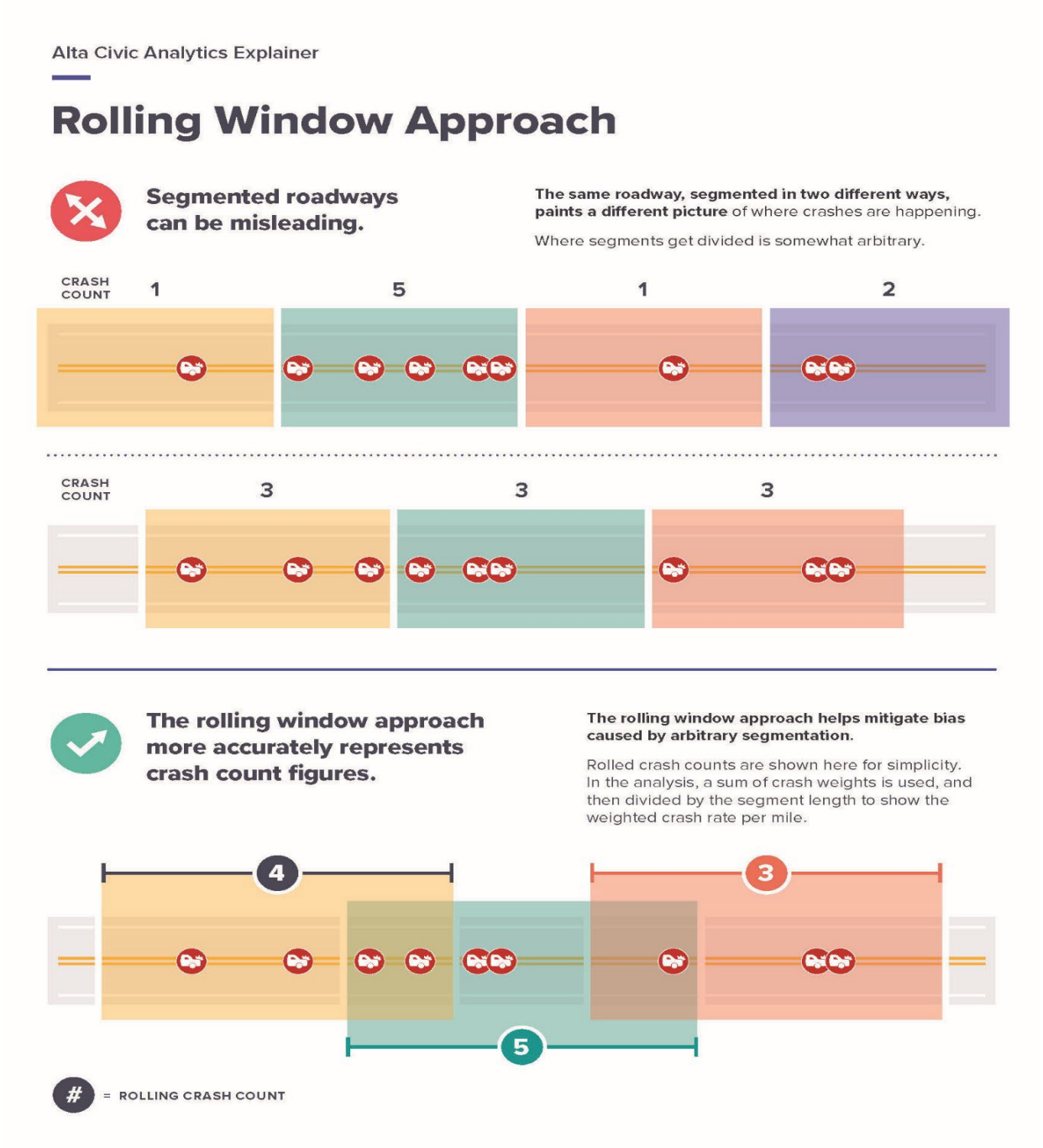


Figure 1: The rolling window approach

Examine initial output

i. **Decide the threshold for the percentage of crashes included in the HIN based on the natural inflection point or plateau in the data.** This represents the point at which adding more roadways to the HIN has diminishing returns in terms of identifying more crashes. Since the segments with the most severe crashes get selected for the HIN first, adding crashes to the HIN requires progressively more and more roadway segments. Thus, the threshold helps to strike a balance between accounting for as many crashes as possible while limiting the number of segments selected for the HIN.

j. The goal is to find the smallest share of the roadway network that accounts for the largest number of severe crashes. A small crash percentage may indicate that the selected HIN will not address enough crashes, while a large share of the roadway network is likely too large of an area in which to focus safety improvements. To find an ideal threshold, examine a scatterplot of segments by accumulated collisions and accumulated length to find a spot at which adding more collisions to the network requires progressively more network length. An example is shown in **Figure 2.**

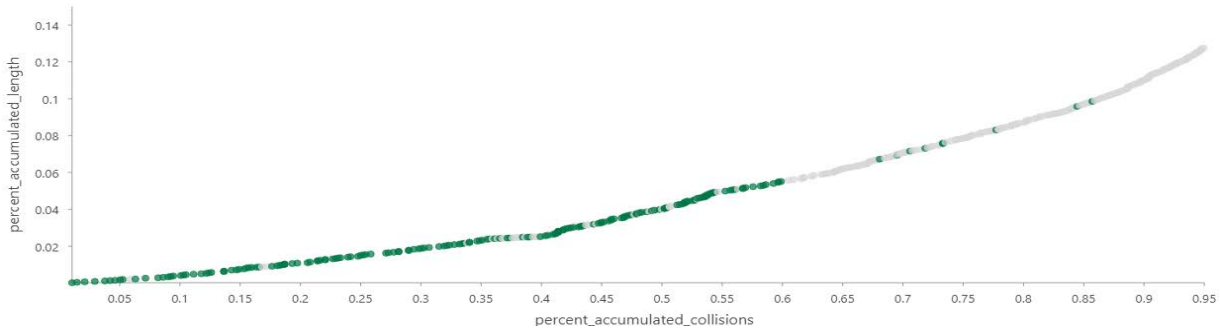


Figure 2: Example of a graph of accumulated collisions and accumulated length. Collisions ultimately selected for the HIN are represented in green.

Final Refinement

k. **Examine the map of qualifying HIN segments and perform manual cleaning output from the tool.** This step eliminates segments that the tool may have selected that are adjacent to high-crash corridors but where no crashes have occurred. It also fills small gaps in otherwise contiguous networks on major roadways.

l. **Calculate the percent of roadway miles and the percent of crashes accounted for in the final HIN.** These percentages show decision makers that safety investments in a small share of the road network can help to prevent the majority of crashes in the region. They also demonstrate how crashes are unevenly distributed on the road network and how cumulative collision counts change as more centerline length is added to the high injury network.

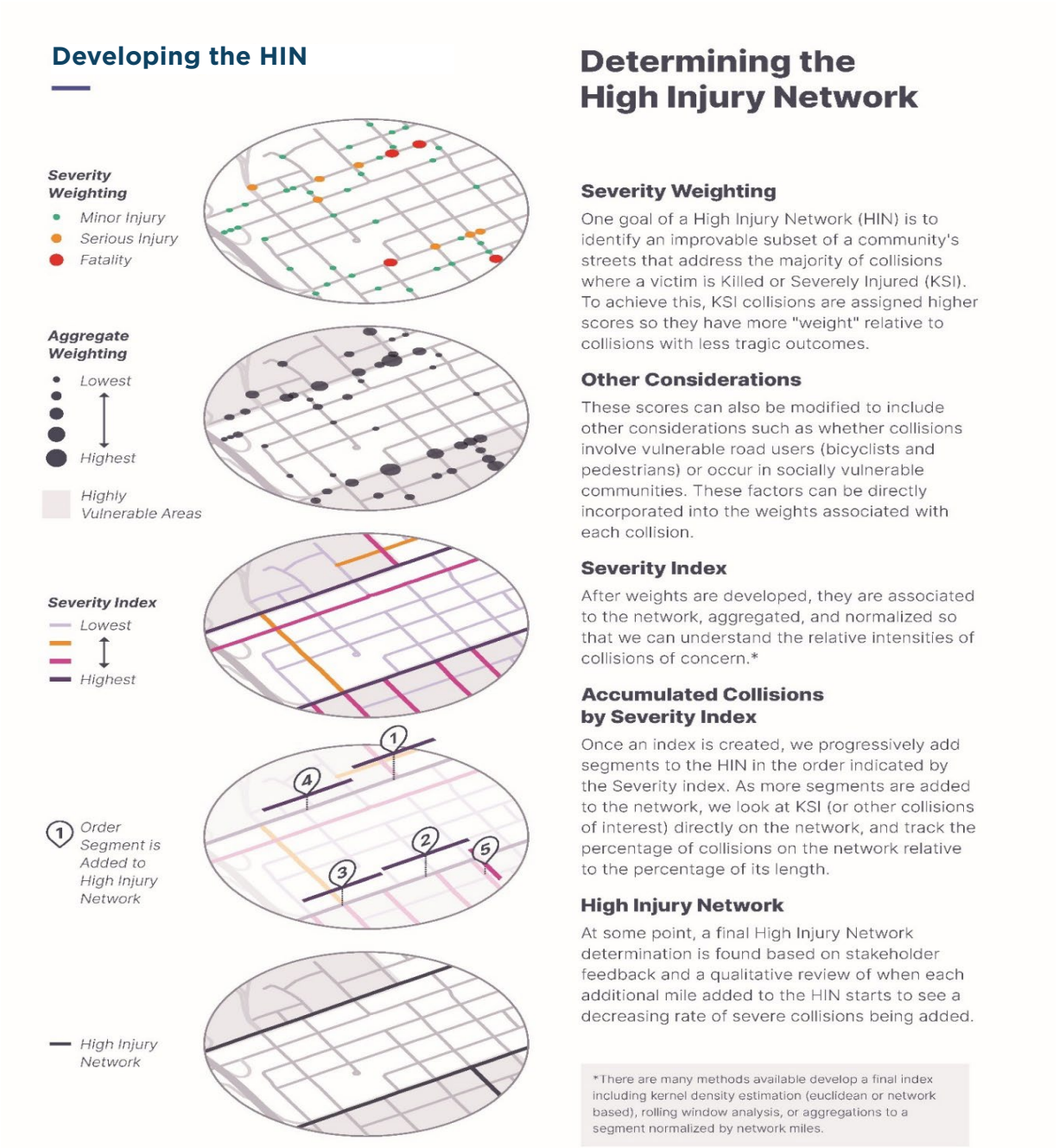


Figure 3. High Injury Network approach

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APPENDIX I

Plan Review

LOCAL PLANS

Agency/ Organization	Plan Name	Year	Bike/Ped Infrastructure Recommendations
Goldsboro MPO	Goldsboro MPO Bicycle, Pedestrian, and Greenway Plan	2015	• Defines five primary goals for future bike/ped infrastructure projects including mobility, economy, safety, health, and environment/stewardship. • Delineates existing conditions for bike/ped transportation facilities. Describes broad maintenance issues like cracked sidewalks, cluttered debris, and heavily worn crosswalk markings. • Identifies desired destinations and community hubs for bike/ped facilities. • Provides specific recommendations for greenway system expansions, bike infrastructure implementation, and pedestrian facility projects.
Wayne County Health Department	2021-2024 Strategic Plan	2021-2024	• No direct mention of bike/ped infrastructure. • Potential overlap exists between active transportation and public health goals, include: • Goal 2 Promote Health and Wellness Objective 2.2 - Foster policy development and adoption to promote healthy behaviors. • Goal 2 Promote Health and Wellness Objective 2.3- Engage local and regional communities in health empowerment and resiliency.
City of Goldsboro	City of Goldsboro Trail Development Plan	2021	• Describes strategies to implement the MST from western Wayne County/the Neuse River corridor to Goldsboro, potentially utilizing Duke Energy property and state land connecting to Old Waynesborough Park. • Describes strategies to implement the MST from Goldsboro to Cliffs of the Neuse State Park, including connectivity from the Stoney Creek Greenway to the Berkeley Blvd corridor as well as Seymour Johnson Air Force Base. • Also lays out a potential backbone for a citywide greenway system.
City of Goldsboro	Ash St Corridor Study	2023	• Details recommendations for reconfiguring Ash St from four and five lanes to three lanes, including separated bike lanes and improving intersections. Cost estimates are included.
City of Goldsboro	Goldsboro Community Floodprint	2023	• Describes three locations in Goldsboro where floodplain restoration would significantly improve flooding issues and could also serve as a multiple benefits investment in improving urban habitat and access to urban open space.
Goldsboro MPO	Unified Planning Work Program	2023	• Summarizes funding opportunities for the Goldsboro MPO. • MPO staff members commit to tracking and updating the bicycle, pedestrian, and greenway plan/ inventory.

Agency/ Organization	Plan Name	Year	Bike/Ped Infrastructure Recommendations
City of Goldsboro	Goldsboro Urban Area 2045 Metropolitan Transportation Plan	2019	• Under Goldsboro's Goals & Objectives, themes relating to bike/ped infrastructure include connectivity, safety, accessibility, and economic development. Investment in multimodal streets is clear through Goldsboro's vision and adoption of a Complete Streets framework. • Identifies existing greenways as Reedy Branch Greenway and Stoney Creek North Greenway, prioritizing the latter for expansions. This prioritization is reinforced in the Goldsboro Bike, Pedestrian and Greenway Plan (2015) and the Parks and Recreation Master Plan (2012). • Out of all commuters, 1.4% are pedestrians or cyclists. 15% of households in Goldsboro do not have access to cars. • Safety is identified as the top transportation concern from a community survey, followed by accessibility and efficiency. • Locals express interest in pedestrian improvements highest among other various projects from a community survey. Reduced congestion, system maintenance, and bicycle improvements followed. • Shares updated bike/ped existing facility maps, including the proposed MST Trail Alignment path. • Bike/Ped improvements are discussed in context to Transportation Demand Management (TDM) and Transportation Systems Management (TSM) strategies. • Funding for active transportation projects is articulated under Chapter 6: Financial Plan. It mentions Powell Bill funds, federal programs, discretionary funds, and local dollars.
Goldsboro MPO	STIP7 Highway Projects Draft	2023	• Proposed road diet on US 70 Business at various intersections including George St, Herman St, Virginia St, Daisy St, Pineview Ave, Madison Ave, and Ridgewood Dr. • Sidewalk additions on US 13 (Berkeley Boulevard), NC 111 (Patetown Road), I-795, US 117, SR 1556, Royall Ave.
City of Goldsboro	City of Goldsboro Strategic Plan	Circa 2023	• Defines Transportation Improvement as a metric under the goal "Model for Excellence in Government," focused on supporting STIP projects and accommodating current mobility needs for locals and visitors alike. • Bike/ped infrastructure may fulfill and intertwine the following listed metrics: Access to Parks and Facilities, Building Thriving Neighborhoods, Street Pavement Conditioning, Street Pothole Repairs and Transportation Improvement. For example, during road pavement, the city may allocate space toward bike and pedestrian use.
City of Goldsboro	ADA Self-Evaluation and Transition Plan	2021	• Inventories existing ADA deficiencies across the City • Recommends strategies for improvements

STATE PLANS

Agency/ Organization	Plan Name	Year	Bike/Ped Infrastructure Recommendations
NCDOT	Walk Bike NC	2013	• Provides evidence to support the expansion of bike/ped facilities across the state of North Carolina, drawing attention to project population demographics that predict higher elderly populations. • Public comments from a NCDOT 2011 Bicycle and Pedestrian Safety Survey indicate general conceptions of poor, below-average bike/ped facilities, indicating necessary improvements in the future. • Plan's vision is to incorporate walking and biking into residents' daily life, promoting their five goals: improve mobility, improve strategy, contribute to public health, maximize economic competitiveness, and advance environmental stewardship. • Pedestrian infrastructure recommendations include, but not limited to, connected and continuous greenways, high visibility marked crosswalks, sidewalks, pedestrian count signals, paved shoulders in rural areas. Comprehensive list exists in Chapter 6 Design Toolbox. • Bicycle infrastructure recommendations include, but not limited to, bike parking structures, designated areas for circulating bikes, reduced curb cuts, continuous and connected bike lanes, smooth pavement and minimal debris, paved shoulder in rural areas for bicyclists. Comprehensive list exists in Chapter 6 Design Toolbox. • Defines the State's prioritization process for funding bike/ped projects. Criterium includes safety, access, demand/density, constructability, and benefit-cost. Reference pages 5-14 through 5-17 for further details.
North Carolina Division of Parks and Recreation	Eastern Carolina Regional Trails Plan	2022	• Created for the Eastern Carolina Council of Governments, which includes counties such as Carteret, Craven, Duplin, Greene, Jones, Lenoir, Onslow, Pamlico, and Wayne. • Visually combines and displays the proposed trails from the MST Trail, the East Coast Greenway, and the Mountains-to-Sea Coastal Crescent plan. • Depicts existing municipalities, parks, forests, and downtown city centers like Goldsboro and New Bern.
NCDOT	NC Great Trails State Plan	2022	• Compiles existing local community and statewide bike/ped plans, public input, and existing trails for future trail development across North Carolina. • Proposes trail networks by location, according to pre-established State Divisions. • The Draft Network Division 4 map outlines Goldsboro's proposed trails within the NC Great Trails State Plan. • Connects the existing Stoney Creek Greenway to Mount Olive and the Cliffs of Neuse State Park, Four Oaks to Goldsboro, and Goldsboro to Seven Springs. • Outlines implementation strategies for local municipalities, some of which highlight the importance of accountability, trail-friendly policies, and wayfinding.

Agency/ Organization	Plan Name	Year	Bike/Ped Infrastructure Recommendations
North Carolina Division of Parks and Recreation	Mountains To Sea Trails Master Plan	2022	• Envisions an off-road hiking trail connecting Clingman's Dome on North Carolina's western border to Jockey's Ridge State Park on the eastern Outer Banks • Significant geographical areas are segmented and organized for implementation, assigning Wayne County as the 14th planning segment. • Listed as a near-term planning priority, the Wayne County proposed trail flows southeast, following the Neuse River. • Anticipated challenges include stream/river crossings, coordinating easements, urbanized corridor, and floodplain/wetlands.
NCDOT	Strategic Plan	2023-2025	• Defines 8 organizational goals, including one relevant to Bike/Ped infrastructure: (Goal 1) Make transportation safer / Vision Zero • Lists a 27% targeted reduction in the number of state-wide non-motorized fatalities and serious injuries, found under Goal 1 Objective 1.1 Performance Measure 1.3
NCDOT	Potentially Hazardous Section Locations in WAYNE County	2024 Cycle	• Identifies and lists the most dangerous intersections in Wayne County, according to crash frequency and severity. • Top three most dangerous intersections include SR 1744 (in the vicinity of SR 1932), SR 1958 (in the vicinity of SR 1956), and SR 1008 (in the vicinity of SR 1217). • One intersection within Goldsboro city limits is SR 1711 (in the vicinity of SR 1895), logging 17 crashes.

FEDERAL PLANS

Agency/ Organization	Plan Name	Year	Bike/Ped Infrastructure Recommendations
US DOT	National Roadway Safety Strategy (NRSS)	2022	• Adopts the Safe System approach to transforming road safety protocols, particularly involving the five bike/ped safety strategies such as Safer People, Safer Roads, Safer Vehicles, Safer Speeds, and Post-Crash Care. • Emphasizes the increasing frequency of fatalities among road users, particularly noting the more intensive rates for pedestrians and bicyclists.
Federal Highway Administration (FHWA)	FHWA Strategic Plan	FY 2022-2026	• Building on USDOT's National Roadway Safety Strategy, this plan creates FHWA strategies that correspond to each USDOT Strategic Goals, which broadly include safety, economic strength and global competitiveness, equity, climate and sustainability, transformation, and organizational excellence. • Under USDOT's Safety Goal, the FHWA recommends strategies that correspond to one of the USDOT Safe System objectives (including Safe Design, Safe System, Safe Public, Safe Workers, and Critical Infrastructure Cybersecurity). • Among these, the FHWA Strategies most related to bike/ped infrastructure are SD01, SD02, and SP02. • Safe Design Strategy #1 (SD01) aims to advance roadway safety through interdisciplinary development and deployment of regulatory and policy tools across FHWA programs. • Safe Design Strategy #2 (SD02) aims to conduct and coordinate Federal research on safety designs and implement innovations that mitigate fatality and serious injury crashes for all road users. • Safe Public Strategy #2 (SP01) aims to expand the use of effective speed management practices in areas where drivers commonly interact with pedestrians and bicycles. • Under USDOT's Climate and Sustainability Goal, the FHWA recommends CSN1 and CSJ1, which most closely relate to bike/ped infrastructure. • CSN1, under the sub-goal Path to Net-Zero Emissions, aims to establish policies and implement BIL programs to deliver the safe expansion of active transportation networks for walking and biking, multimodal facilities, shifting mode choices, and reducing emissions by changing land-use patterns. • CSJ1, under the sub-goal Climate and Environmental Justice, aims to improve transportation planning processes to ensure that system operations, safety, freight, and infrastructure asset investments consider and integrate climate justice into transportation prioritization and programming decision-making.

APPENDIX J

Program Review

EXISTING PROGRAMS

Program Name, Agency	Years Active	Brief Key Tasks	Recommendations (from 2015 Plan)	Progress on Recommendation Implementation
Downtown Criterium Race, Goldsboro and the Seyboro Cyclists Club	May 2014-July 2015	• In May 2014, Goldsboro and the Seyboro Cyclists Club hosted the Downtown Goldsboro Criterium Race. • The race included a closed course through the downtown, with race categories for men and women of all ages, including kids, juniors, and a 45+ group. • The race advertised local restaurants, shopping, and bars and attracted hundreds of participants and spectators to downtown.	• Expand upon the momentum and success of the Downtown Criterium Race to offer regular bicycle rides, walks, and races in Downtown Goldsboro. • These events draw large crowds that patronize local businesses and help to build Goldsboro's reputation as a bike- and walk-friendly city. • Similar events should be held throughout Goldsboro, particularly as part of a celebration when new trails, bike lanes, or other facilities are constructed. • Having the Mayor or other elected officials participate helps to draw attention to these events and raises bicycle and pedestrian awareness among key decision-makers.	• Event occurred in 2014 and 2015 and hasn't since
Youth Bicycle Education, The Boys & Girls Club of Wayne County	Unknown	• Offers educational events annually to emphasize traffic safety strategies and teach children how to ride bikes. • In addition, Goldsboro Police Officers host a bicycle safety education program with local children.	• The Boys & Girls Club should consider expanding its education efforts and possibly partnering with the Goldsboro Police Department to offer an expanded program.	• Goldsboro Police Department website mentions a Bicycle Safety Program, though minimal details are provided. • Partnership with the Boys & Girls Club is unclear.

Program Name, Agency	Years Active	Brief Key Tasks	Recommendations (from 2015 Plan)	Progress on Recommendation Implementation
Physical Activity and Health Programs, GoWayneGo	Present	• Offers several active programs and events to promote better health in Wayne County. • Residents can make the GoWayneGo Commitment to Great Health, log weight loss progress, and attend a variety of fitness and sports programs listed on the GoWayneGo website, including the Summer Walk & Roll Series of walks, hikes, and bike rides.	• None listed	• Educational materials listed on Wayne County's website.
Friends of the Greenway Group (FGG), Friends of Wayne County Greenways	2012-Present	• Conducts a variety of trail advocacy events to build support for local trails to connect to the statewide Mountains to Sea Trail. • Hosts regular Trail Cleanup Days and trail walks, hikes, and rides.	• FGG should work with the City of Goldsboro and other partners to host trail celebration events. • Events could include a themed fun run/walk, bike ride, or race, along with a ribbon cutting and festival as new portions of trail open.	• Over the years, FGG has hosted many themed walks and community events. • Examples include the Cures for the Colors event in 2018, which was a color run community event • First Day Hike, on New Year's Day in 2024, celebrated the new year with a community-focused event.

Program Name, Agency	Years Active	Brief Key Tasks	Recommendations (from 2015 Plan)	Progress on Recommendation Implementation
Outdoor Community Events, Various Participants	Unknown	• Participating events include The Goldsboro Farmers Market, Cornhole, Charity Tournaments, Movies on the Lawn, Cruise the Neuse Paddle Trip, and Center Street Jam	• Outdoor community events offer valuable partnership opportunities for bicycle and pedestrian programs. • A bike rodeo, where police officers and volunteers teach children traffic safety and riding skills, could be included as part of outdoor events downtown. • An Open Streets Event could be held in conjunction with, or spun off of, other outdoor events such as Center Street Jam. • City staff and volunteer organizations could pass out bicycle and pedestrian event information and traffic safety materials	• Bike Rodeo was created in 2021. See “New Programs Table” for more information. • Outdoor events, such as Center Street Jam and Movies on the Lawn, are hosted presently. • Unclear whether street closures or informational bike tabling occurs at these classic Goldsboro community events.
The Downtown Goldsboro Development Corporation (DGDC)	• Unkown	• Developed a self-guided tour of Goldsboro’s historic downtown to encourage people to visit. • The self-guided tour includes 40 destinations of interest and three walking routes. • Downtown events, restaurants, and other sites of interest are also listed. The self-guided tour is available in print and as a printable PDF online	• DGDC could expand upon this effort with other partners to develop a series of downtown walking and biking tours that each center around a different theme. • Self-guided tours could be in brochure form and also made available as an audioguide file that people could download to their phones or digital music devices. • Live guided tours could also be offered.	• Two new self-guided tours exist from DGDC. These include a Winery Tour and a Nature & Parks Tour, found here

PREVIOUS PROGRAM RECOMMENDATIONS

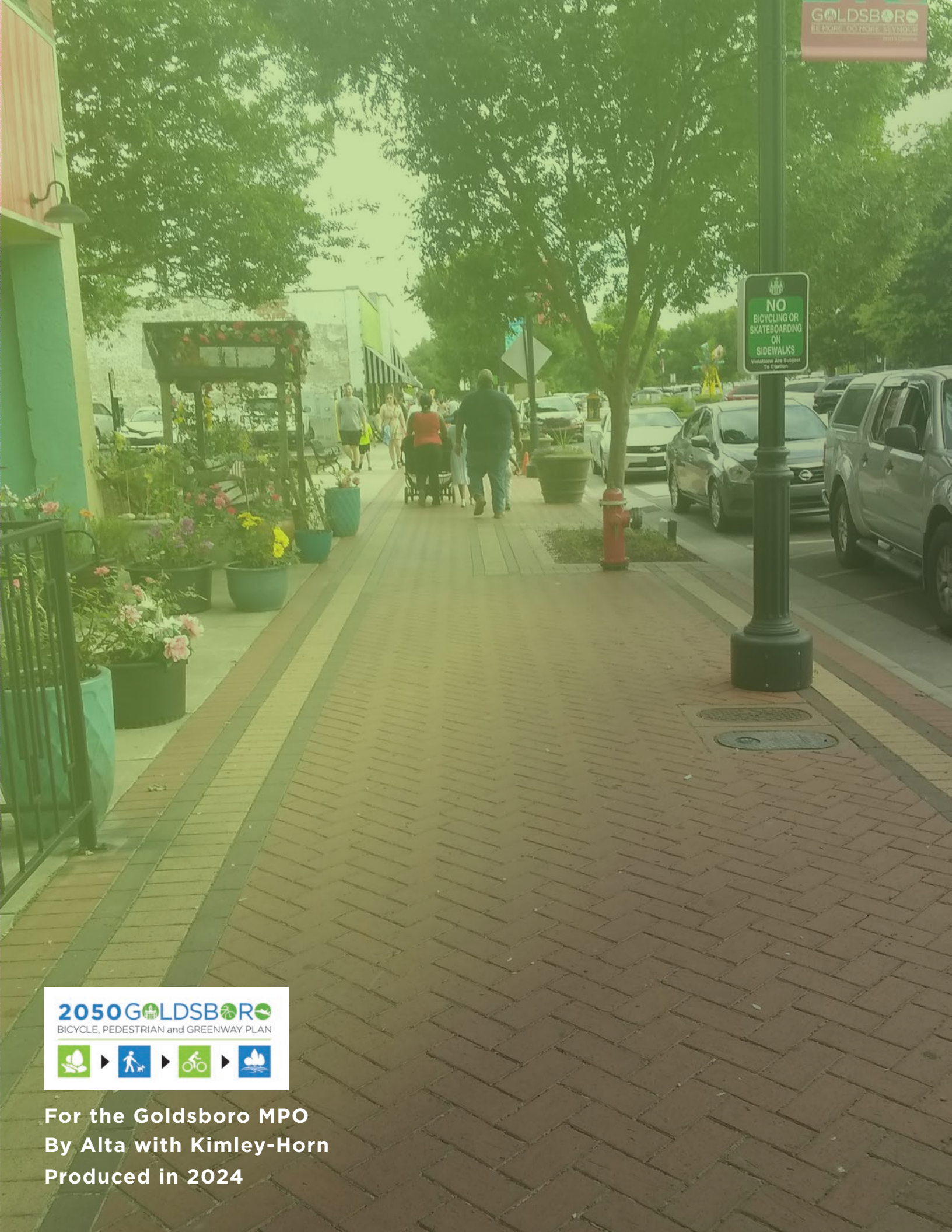
The 2015 *Bike, Pedestrian, and Greenway Goldsboro MPO Plan* recommended the City of Goldsboro to implement various programs categorized under four main themes: Education, Encouragement, Enforcement, and Evaluation. This section expands upon these recommendations, by listing their intended purpose, the current progress, and further suggestions for each program. Program status updates are categorized by three types: **Complete**, **In Progress**, and **Incomplete**.

Program Recommendation from 2015	Purpose	Progress
Education		
Media Campaign to Educate Motorists, Bicycle, and Pedestrians	Educate all road users on traffic laws and safety tips to reduce crashes and make roadways more comfortable for all users	**Incomplete**
Safe Routes to School Program	Provide opportunities for children to safely walk and bike to school; improve traffic safety around schools through investments in bicycle and pedestrian infrastructure and programs	**In Progress** Federal funding opportunity exists from the North Carolina SR-5001 Safe Routes to School Program. This is listed on the Goldsboro Urban Area MPO FFY2022 Authorizations.
Professional Development Courses	Educate and train planners, engineers, and other professional staff on best practices for bicycle and pedestrian facility planning, design, and implementation	**Incomplete**

Program Recommendation from 2015	Purpose	Progress
Traffic Ticket Diversion Class	Educate first-time traffic offenders, including motorists, bicyclists, and pedestrians, on roadway safety and traffic laws	**In Progress** A Diversion Program exists for drivers who are cited for child passenger safety violations; this program is led by the Safe Kids Wayne County at the Partnership for Children. Opportunity exists to expand the Diversion Program and include citations for safety revolving around bicyclists and pedestrians.
One Stop Website	Provide a comprehensive website of bicycle and pedestrian resources for residents, visitors, and businesses	**Incomplete** The Town of Chapel Hill has a one-stop section of their town website dedicated to bike and pedestrian resources, found here.
Encouragement		
Local Business Discounts for Bicyclists	Encourage and reward residents and visitors for making trips by bike; promote a bicycle-friendly culture among businesses in Goldsboro	**Incomplete**
Walk and Bike to School Days	Encourage children to walk to school in order to provide opportunities for physical activity and safety education	**In Progress** In 2021, the Goldsboro Daily News shared the community's participation in the National Bike to School Day, found here.

Program Recommendation from 2015	Purpose	Progress
Open Streets Events	Raise awareness of bicycling and walking opportunities in Goldsboro and Wayne County; Encourage people to participate in walking and biking activities in a fun, traffic-free environment	**In Progress** Since 2015, the City of Goldsboro has hosted and maintained a variety of meaningful community events, including 5Ks and the summertime Center Jams. **Opportunity exists to host more walk- and bike-related events to fulfill the initial program goals.**
Walking and Bicycling Maps and Tours	Encourage walking and biking by providing easy-to-read maps of on-road bicycle facilities, sidewalks, trails, and routes for reaching destinations by foot or by bike; Promote walking and biking tourism within the Goldsboro MPO	**In Progress** Visit Goldsboro has a list of recreational trails and parks, found here. The City of Goldsboro website has adequate information on the Stoney Creek Park, including operational hours, a map, and facilities, found here. **Opportunities to share more information center around bike/pedestrian infrastructure and facility maps.**
Wayfinding Signage Program	Enhance resident and visitor orientation by directing pedestrians, bicyclists, and motorists to popular destinations around town	**In Progress** Adequate wayfinding signage is placed around the City of Goldsboro. The City should ensure proper maintenance of wayfinding signage, including cleanliness and relevant information.
Bike to Work Day and Bike Month Activities	To showcase the benefits of bicycling and to encourage current and potential bicyclists to incorporate bicycling into their everyday lives	**In Progress**

Program Recommendation from 2015	Purpose	Progress
Enforcement		
20's Plenty Campaign	Reduce crashes and crash severity by reducing vehicle speeds on neighborhood streets to 20MPH	**Incomplete**
Speeding Enforcement and Speed Feedback Signs	Reduce speeding throughout Goldsboro MPO to lower the risk and severity of bicycle and pedestrian crashes	**In Progress**
Crosswalk Enforcement Action Program	Increase driver awareness of and yielding to pedestrian right-of-way in crosswalks; increase pedestrian safety at crosswalks	**Incomplete**
Evaluation		
Bicycle and Pedestrian Advisory Committee	Represent bicycle and pedestrian interests in Goldsboro and Wayne County; Assist with the promotion and operation of bicycle and pedestrian projects and programs	**Incomplete** No official advisory committee exists. Potential opportunity and collaboration may exist with the Friends of the Greenway community group.
Pedestrian and Bicycle Counts Program	Gather important benchmarking information about walking and bicycling rates throughout Goldsboro and Wayne County	**Incomplete**
Walking, Bicycling, and Greenways Report Card	Share information about key walking and bicycling metrics	**Incomplete**
Maintenance Hotlines	Allow road users to report safety problems related to walking and bicycling facilities and request facilities	**Incomplete**



2050 GOLDSBORO
BICYCLE, PEDESTRIAN and GREENWAY PLAN

For the Goldsboro MPO
By Alta with Kimley-Horn
Produced in 2024