



—2023—

NC 210 East Coast Greenway Feasibility Study



MCADAMS

ACKNOWLEDGMENTS

Cape Fear Rural Planning Organization

Duke Energy

East Coast Greenway Alliance

Friends of the Mountains-to-Sea Trail

Greater Topsail Area Chamber of
Commerce + Tourism

North Carolina Department of Transportation

NC State Parks

Pender County

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Prepared for:



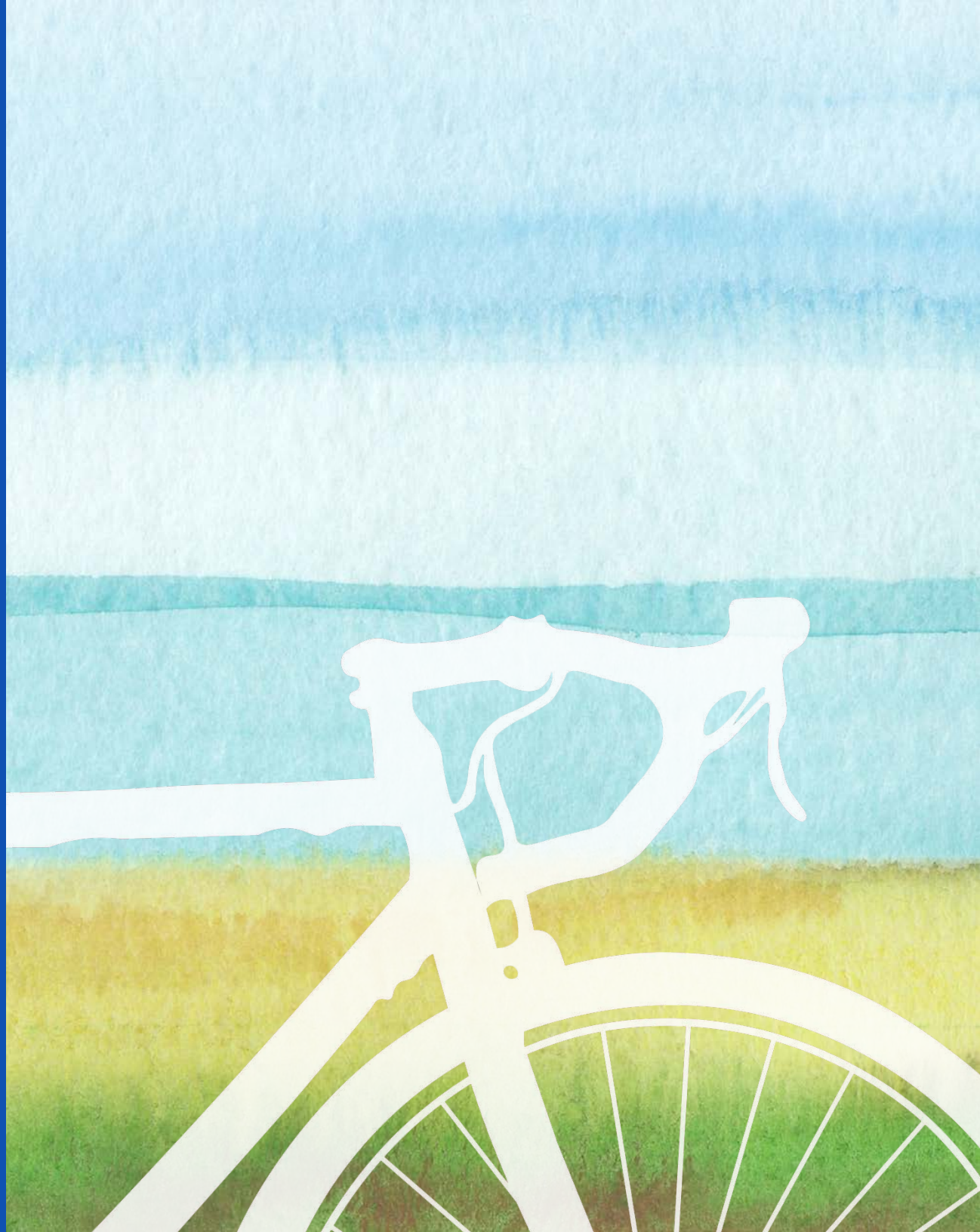
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EXECUTIVE SUMMARY

The *NC 210 East Coast Greenway (ECG) Feasibility Study* assesses existing conditions, evaluates potential routes for opportunities and constraints, develops detailed cost estimates, and provides strategies for implementation. The study also provides insight into previous planning efforts such as the Mountains-to-Sea Trail (MST), the ECG, and the Gullah Geechee Trail. The project team assessed several routes along roadways in Pender County and the Town of Surf City, mainly along NC 210. The study proposes a preferred alignment with potential connector routes.

This study includes a Steering Committee, stakeholder and public engagement, and a strategic engagement plan to coordinate with landowners. An existing conditions analysis, including an extensive Geographic Information Systems (GIS) analysis with base mapping, parcel-by-parcel analysis, and examination of environmental features and topography is used to understand opportunities and constraints associated with the study area.

Alternative trail route scenarios with the identification of landowner and acquisition challenges, road and stream crossings, and environmental and permitting constraints are provided. Route scenarios were narrowed to one preferred route through community and stakeholder input.

The preferred route includes the development of acquisition strategies, planning-level cost estimates, and project phasing. An implementation plan, along with action steps and funding resources are provided at the end of the document.

PREFERRED ROUTE

The preferred route (featured right) will provide users with a safe path, separated from roadway traffic, for approximately 16 miles from Nelva Arberry Park in Surf City to Country Club Road in Hampstead. The route consists of road adjacent sidepaths, boardwalks, bridges and some scenic greenway segments. A number of key connectors off the main route are also recommended, to support community interests in reaching shopping and recreation destinations and to recognize the priorities identified by the Steering Committee. The preferred alignment was divided into six segments, for ease of implementation, which are described in detail in Chapter 5 and briefly below:

- Segment 1 – Sidepath; New River Drive and North Topsail Drive from Nelva Arberry Park to NC 210
- Segment 2 – Sidepath; Roland Avenue at Surf City Bridge to NC 210 at Caretta Drive (future)
- Segment 3 – Sidepath, Greenway, Boardwalk; NC 210 at Caretta Drive, north to Duke Energy easement, west just north of Electric Lane to Alston Boulevard Extension
- Segment 4 – Sidepath, Greenway, and Boardwalk; Alston Boulevard Extension to US 17 and down Sloop Point Road
- Segment 5 – Greenway, Boardwalk, Sidepath; Sloop Point Road to Sloop Point Loop Road at Hampstead Kiwanis Park
- Segment 6 – Sidepath and retaining wall; Sloop Point Loop Road at Hampstead Kiwanis Park to Country Club Road at NC17

TOWN OF SURF CITY ALTERNATIVE ROUTES

During the late stages of the planning process, the Town of Surf City decided to evaluate three (3) additional alternative routes as part of the mainline for the greenway. These segments are described and displayed in the cutsheet maps in Chapter 5 (Implementation); however, they were not analyzed as part of this feasibility study.

64
Segments

- Studied for -
Feasibility

~50
Miles
Modeled

- in 3D Using -
CAD Software

13
Meetings

- Held with -
Major
Stakeholders



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY PREFERRED ROUTE + CONNECTORS

LEGEND

NC 210 ECG Corridor

- Preferred Alignment
- Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



01. INTRODUCTION



OVERVIEW

The NC 210 corridor in Pender County is a critical missing link in the regional greenway network and is the proposed corridor for gap segments of the Mountains-to-Sea Trail (MST) and the East Coast Greenway (ECG). The *NC 210 ECG Feasibility Study* will evaluate potential route scenarios along roadway corridors to determine the preferred route. The study will also provide cost estimates and an implementation plan to construct the trail.

VISION + GOALS

The project team held a visioning exercise with the Steering Committee to define what success looks like for the project and what kind of goals can be pursued to achieve the vision for the study. Goals for the study are presented to the right, while pathways to success, as well as potential obstacles are outlined below.

What Does Success Look Like?

According to the Steering Committee, success is defined as identifying and designing study routes that are accessible to all user groups (ages 8 to 80). The study will also inform the North Carolina Department of Transportation's (NCDOT) work on US 17 and NC 210 in Pender County. It will also lay the groundwork for a foundational plan for local communities. In terms of safety, the plan will assess and highlight safety priorities. The project team will identify and recommend improvements to drastically reduce bicycle and pedestrian accidents in the study area to create a safe facility for all users to enjoy.

What Are the Biggest Obstacles?

Obstacles identified by the Steering Committee include the fast pace of land development in the study area, identification of funding sources, limited right-of-way (ROW) and associated costs, and potential impacts to scenic routes.



Safety

Provide safe access points, road crossings, and paths for bicyclists, pedestrians, and hikers of all ages and abilities.



Accessibility + Connectivity

Provide easy access for a range of user groups to parks, shopping, schools, places of interest, and outdoor recreation areas.



Environmental Protection

Prioritize the development of a route and design solutions that balance potential impacts to environmental features with the desire for access to natural scenery and outdoor recreation opportunities.



Regional Collaboration

Collaborate with government entities and other regional stakeholders to identify priorities and concerns. Coordinate to support future funding, design, construction, and maintenance.



Project Feasibility

Prioritize the development of a route that is permissible, solves ROW challenges, and generates public excitement that can be focused towards future construction and maintenance funding efforts.

WHAT IS A FEASIBILITY STUDY?

Feasibility studies bridge the gap between conceptual planning, prioritization, and programming of projects. They build upon higher-level planning efforts and take a comprehensive look to identify possible alignment alternatives. The purpose of this type of study is to evaluate technical feasibility from a design, permitting, and constructability perspective. Input solicited from the local community and stakeholders help guide the recommended alignments. Quantity-based preliminary cost estimates are generated for the alignments to help inform further decision making, identify funding needs, and identify next steps for project implementation. It is important to note that a feasibility study does not present a final design for construction. Willing property owners and available funding will help determine the final alignment for a project.



PROCESS + SCHEDULE

Potential routes for the *NC 210 ECG Feasibility Study* were developed and evaluated using an approach with considerations of the built, natural, social, and economic environments. The *NC 210 ECG Feasibility Study* started in April 2022 and concluded in February 2023. The study process was divided into the following four phases: Existing Conditions, Route Analysis, Study Recommendations, and Implementation & Final Study. Key components for each phase are listed within the study process graphic below. Engagement efforts were integrated throughout the study process and included meetings with either a Steering Committee, stakeholders, landowners, or the general public.



STUDY AREA

The proposed NC 210 corridor is a 16.2-mile corridor in Pender County connecting existing park trails in the Holly Shelter Game Land and North Topsail Beach. The proposed corridor parallels NC 210 and US 17 from Country Club Drive (SR 1565) and Sloop Point Loop Road/Sloop Point Road (SR-1561), northeast of Hampstead community, to US 17, to NC 210 to Surf City, across the intercoastal waterway and north along the island to Nelva R. Albury Recreation Area. The NC 210 corridor is a critical missing link in the regional greenway network and is the proposed corridor for gap segments of the East Coast Greenway (ECG) and the Mountains-to-Sea Trail (MST). The Gullah Geechee Greenway-Blueway Heritage Trail also traverses the study area. Maps exhibiting the Gullah Geechee Greenway-Blueway Heritage Trail, the regional context of the project, and the study area are presented on the following pages.

East Coast Greenway

The ECG is a 3,000-mile walking and biking route from Maine to Florida that connects major cities, small towns, and parklands along the Eastern Seaboard. The ECG is currently over 32 percent complete. In North Carolina, the ECG Spine Route passes through the cities of Durham, Raleigh, Fayetteville, and Wilmington and primarily follows the Neuse River and Cape Fear River corridors across the state. A complementary Historic Coastal Route roughly parallels the intracoastal waterway, and passes through Elizabeth City, Greenville, New Bern, and Jacksonville before merging with the Spine Route in Wilmington. The proposed trail extension along the NC 210 corridor aims to expand the connected greenway network in the region, further developing the ECG Historic Coastal Route in North Carolina. The MST segment is co-located with the ECG in this corridor and will provide an off-road link for the national ECG effort.



Mountains-to-Sea Trail

The MST is North Carolina's flagship state trail. It stretches from Clingmans Dome on the Tennessee border to Jockey's Ridge State Park on the coast. The route of the MST segment 15, from Burgaw up to Stella through Surf City, North Topsail Beach, Sneads Ferry, and Jacksonville, is over 41 percent off-road. This corridor will help to bring even more off-road trails to the system. Currently, trails run through the study area along US 17, NC 210, and the edge of Ocean City Beach (North Topsail Beach).

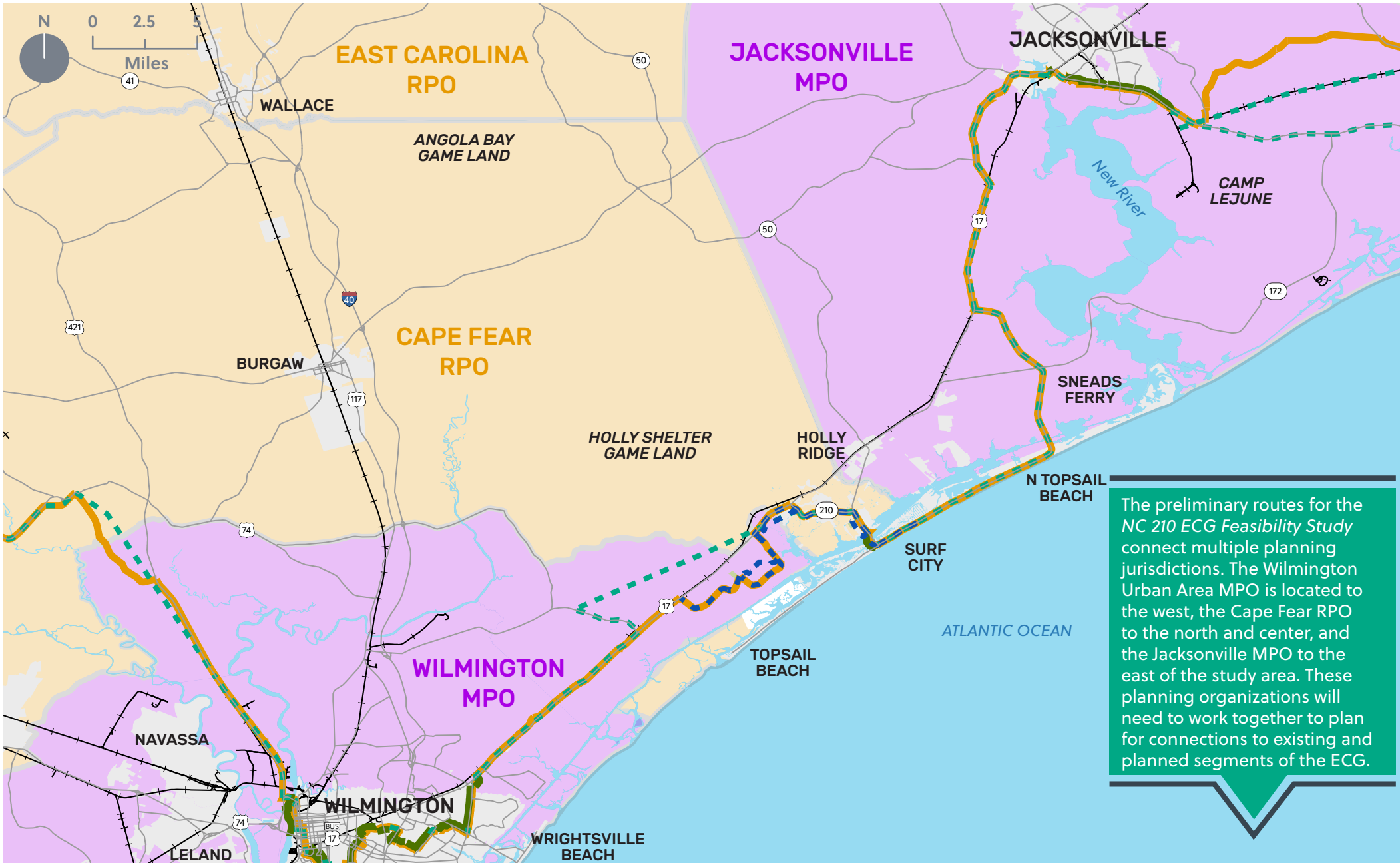


Gullah Geechee Greenway-Blueway Heritage Trail

The Gullah Geechee Greenway-Blueway Heritage Trail corridor runs from Jacksonville, North Carolina, to Jacksonville, Florida, and it includes Brunswick, New Hanover, and Pender counties. This trail stretches from the coastline to 30 miles inland. It was created by Congress to highlight the historic and cultural contributions of the Gullah Geechee people, the descendants of Africans who were enslaved and brought to North and South Carolina, Georgia, and Florida to work on plantations. The Heritage Trail would help commemorate the culture and history of the Gullah Geechee people in the region. The future route through Pender County could potentially be co-located with the NC 210 ECG route. The map of the proposed route is provided to the right.

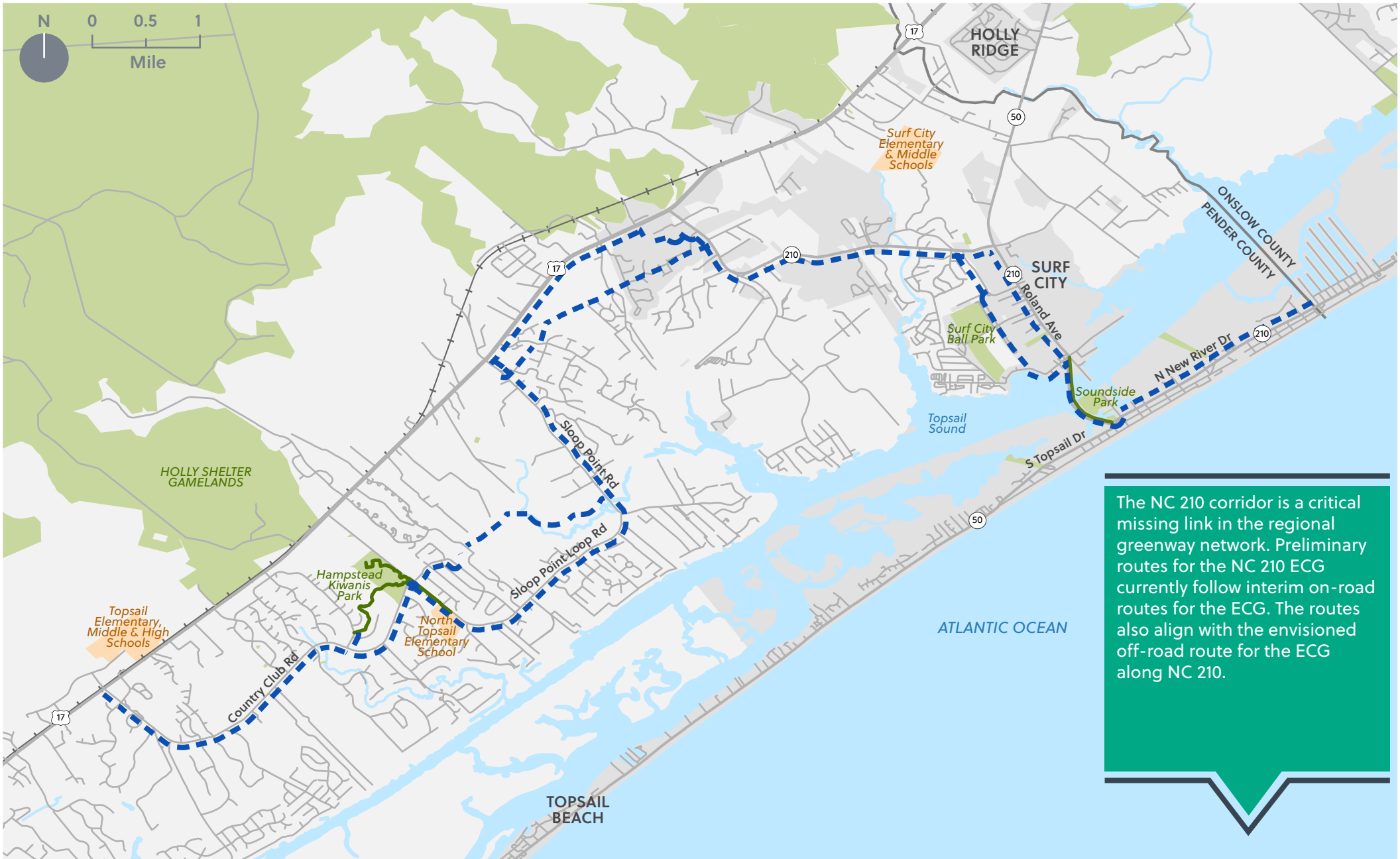






The preliminary routes for the NC 210 ECG Feasibility Study connect multiple planning jurisdictions. The Wilmington Urban Area MPO is located to the west, the Cape Fear RPO to the north and center, and the Jacksonville MPO to the east of the study area. These planning organizations will need to work together to plan for connections to existing and planned segments of the ECG.

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY REGIONAL CONTEXT: METROPOLITAN + RURAL PLANNING ORGANIZATIONS



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY STUDY CORRIDOR

LEGEND

NC-210 ECG CORRIDOR

— Preliminary Routes

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

PREVIOUS PLANNING EFFORTS

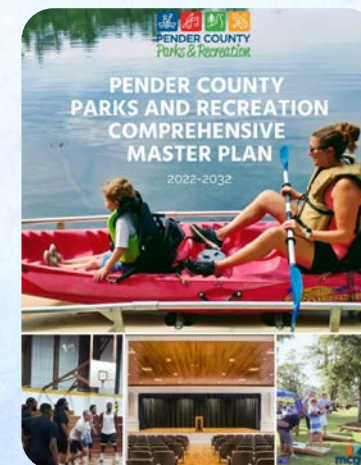
The Pender County, Surf City, and the Cape Fear Region have prioritized bicycle and pedestrian connectivity in planning efforts over the past decade. The following pages provide a summary of key bicycle and pedestrian, transportation, land use, and parks and recreation recommendations from previous plans and studies that are relevant to the *NC 210 ECG Feasibility Study*.

The following plans were reviewed as part of this exercise:

- *Pender County Parks and Recreation Master Plan, 2022*
- *NCDOT State Trails Plan, 2022*
- *WMPO 2045 Metropolitan Transportation Plan (MTP), 2020*
- *Pender 2.0 Comprehensive Land Use Plan, 2018*
- *Surf City Bicycle and Pedestrian Master Plan, 2017*
- *Cape Fear Regional Bicycle Plan, 2017*
- *US 17/NC 210 Corridor Study, 2012*
- *Topsail Area Comprehensive Transportation Plan (CTP), 2011*

Pender County Parks and Recreation Master Plan, 2022

The 2022 update to the *Pender County Parks and Recreation Master Plan* identifies routes of both the ECG and the MST as valuable recreation facilities. The plan is more focused on parks and facilities, so it does not provide further detail on greenways.



NCDOT State Trails Plan, 2022

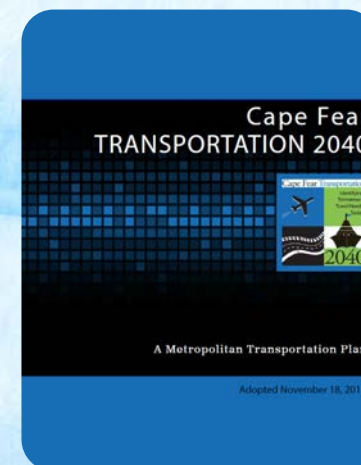
The *NCDOT Trails State Plan*, completed in 2022, underwent an extensive public input process which helped identify priorities of existing trail users. Among the top destinations for current users were Local and Regional Parks (#1) and Small Towns/Rural Communities (#3). The plan also emphasizes key design features including the need for wayfinding/branding, roadway crossings with traffic calming features or median refuges, and the need to coordinate with developers.

The plan identifies segment 3H in Pender County which runs along US 17 from NC 210 in Surf City, south to the New Hanover County Line. This provides similar connectivity to that of the proposed ECG route. The plan also identifies a gap between planned trails within the Holly Shelter Game Land and proposed segment 3H along US 17.



WMPO 2045 Metropolitan Transportation Plan, 2020

The Wilmington Urban Area Metropolitan Planning Organization (WMPO) covers an area which includes the western portion of the NC 210 ECG study area. The MTP is a fiscally constrained document which identifies projects which can be considered for Federal Funding. The MTP does not include the NC 210 ECG project alignment, nor any bicycle and pedestrian projects within the study area.



Pender 2.0 Comprehensive Land Use Plan, 2018

The *Pender County Comprehensive Land Use Plan* was developed in 2018, and in addition to the land use planning component, it includes a series of goals, objectives, policies, and recommended actions.

Recommended actions identified in the plan which are relevant to greenway development include:

- 3.1.J.3 – Develop a green infrastructure plan that identifies the network of natural land and open space to provide for ecosystem conservation and greenway development
- 4.3.D.1 – Establish a funding strategy and continuing maintenance policy for County sidewalks, greenways, and multi-use path facilities.
- 4.3.D.3 – Establish a Countywide greenway plan which would outline priority locations, funding mechanisms, and procedures for maintenance of greenways.

Surf City Bicycle and Pedestrian Master Plan, 2017

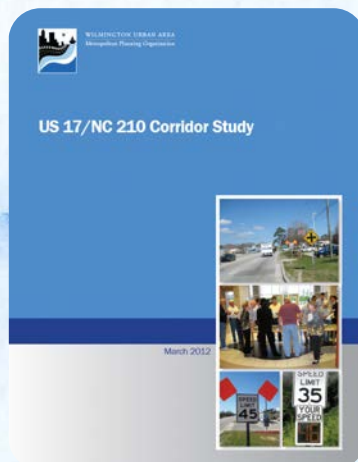
Surf City's Bicycle and Pedestrian Plan was completed in 2017 and includes a number of recommended multi-use paths which overlap with the proposed NC 210 ECG route. The plan calls for multi-use paths along portions of NC 210, NC 50, along the Duke Energy transmission easement, on side streets connecting to the Surf City Community Center, and along planned connector roads.

The plan includes several design standards for bicycle and pedestrian facilities based on national best practices, including the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, and the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities.

Cape Fear Regional Bicycle Plan, 2017

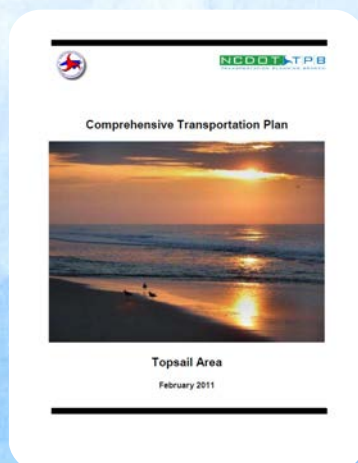
This regional plan was completed in 2017 and underwent significant public involvement. The plan identified that portions of the proposed NC 210 ECG route are already being used by local cycling groups such as the Cape Fear Cyclists. The long-term recommendations in the plan include the proposed shared use path for the ECG alignment being assessed in the study. There is an additional connection from Sloop Point Loop Road to US 17, which would connect to planned on-street bicycle routes within the Holly Shelter Game Lands.





US 17/NC 210 Corridor Study, 2012

The *US 17/NC 210 Corridor Study* included two potential greenway routes along the US 17 corridor. The first, identified in the 2006 *Pender County Parks and Recreation Master Plan* proposed the use of the Progress Energy easement from NC 210 in Surf City to NC 210 near Island Creek Drive. Alternatively, the abandoned rail line north of US 17 (a previous Atlantic Coast Line Railroad) could provide an opportunity for conversion to a greenway facility along the rail corridor.



Topsail Area Comprehensive Transportation Plan, 2011

The *Topsail Area CTP* was developed in 2011 and covers the urbanized areas of Surf City, Topsail Beach, North Topsail Beach, and Holly Ridge. This plan identified the need for off-road bicycle facilities to parallel US 17 from NC 210 to Sloop Point Road. The plan includes recommendations for off-road bicycle facilities both within the US 17 corridor and along a parallel route. Recommended pedestrian improvements are limited to the incorporated areas of Surf City.

POLICY REVIEW

The following table provides a summary of key state, and local policies from NCDOT, Pender County, and the Town of Surf City that may guide or impact the development of the NC 210 ECG.

EXISTING POLICY	KEY ORDINANCES RELATED TO THE NC 210 ECG FEASIBILITY STUDY
Pender County Unified Development Ordinance	<p>The Pender County Unified Development Ordinance (UDO) was updated in 2022 and contains regulations which guide development within Pender County. Chief among these is section 4.12.6, which defines the Bicycle and Pedestrian Improvement Overlay District. This district requires developments within the district build bicycle and pedestrian improvements, provided one of three conditions are met, it also sets facility/site design standards, and establishes a payment-in-lieu option. Developers are required to build bicycle and pedestrian facilities if one of the three conditions below are met:</p> <ol style="list-style-type: none"> 1. The development is within the Wilmington MPO (WMPO) boundary and is located along an existing or planned non-local street in the WMPO functional classification map. 2. The proposed development is outside the WMPO boundary but is located along an existing or planned non-local street as defined by the NCDOT functional classification map. 3. The proposed development is located along a road or street where bicycle and/or pedestrian improvements have been identified and included in an adopted bicycle plan, pedestrian plan, or other adopted plan. <p>Other regulations which are relevant for trail development include:</p> <ul style="list-style-type: none"> • 4.8.1.E.4 – Within Mixed-Use Planned Use Developments (PUDs), adequately constructed and maintained bike and/or hiking trails shall be counted towards open space requirement. Bike lanes and multi-use paths which extend the minimum right-of-way (ROW) width shall be designed in accordance with the North Carolina Bicycle Facilities Planning and Design Guidelines Manual. • 4.11.1.C.1 – Pedestrian trails are an exception to the regulation that no land disturbing activities may occur within an Environmental Conservation (EC) district. • 7.6.1.B.2 – Passive open space can be designated as part of the County greenway system. • 7.6.1.E.2 – Through a subdivision, open space for greenways shall be a continuous linear parcel at least 30 feet wide • 8.1.7.B.5 – Bicycle and pedestrian trails are allowed within the landscaping buffer of a development. <p>Other broadly relevant sections include:</p> <ul style="list-style-type: none"> • 7.5 – Street Design Standards • 7.6 – Open Space Design Standards • 7.9 – Stormwater Management Standards

EXISTING POLICY	KEY ORDINANCES RELATED TO THE NC 210 ECG FEASIBILITY STUDY
Town of Surf City Code of Ordinances	<p>The Code of Ordinances for the Town of Surf City contains all local regulations applicable within the Town. This document also contains the Town's Zoning Ordinance and Subdivision Regulations. Sections relevant to trail development include:</p> <ul style="list-style-type: none"> • Zoning Ordinance (Appendix A), Section 4.1.8.4.F – The useable open space within the multifamily cluster zoning district shall be planned and improved to be useable by persons living nearby. Improvements can include greenways, trails, and bikeways. • Subdivision Regulations (Appendix B), Article III, Section 4 – All subdivisions shall comply with the principles, goals, and/or objectives of the CAMA Land Use Plan and all other officially adopted plans and policies of the town. Where a proposed subdivision includes any part of a greenway as officially adopted by the town, such part shall be dedicated and platted by the subdivider in the location shown on the plan. • Subdivision Regulations (Appendix B), Article VII, Section 2.7 – Standards for dedication of land for recreation areas, including trails.
Town of Surf City Street Regulations	<p>The Town of Surf City's Street Regulations establish design principles and standard street layout for different classifications of streets. The regulations also establish minimum widths for sidewalks, bike lanes, and multi-use paths.</p> <p>Additionally, section 1.3.1 requires than any new commercial development, residential development of more than 3 lots/units, or any change of use shall construct a sidewalk along the street frontage. The Town's Planning Board may require a multi-use path be built instead.</p>

EXISTING POLICY

NCDOT Roadway Design Manual, 2021

KEY ORDINANCES RELATED TO THE NC 210 ECG FEASIBILITY STUDY

The Roadway Design manual provides general design information, design criteria, and plan preparation guidance for NCDOT roadways. Guidance on multimodal design elements can be referenced in Part 1, Chapter 4 Sections 4.14, 4.15, and 4.16. Guidance states that shared-use paths, often referred to as greenways, are paths physically separated from motor vehicle traffic and used by pedestrians, bicyclists, skaters, wheelchair users, and other non-motorized users. Most shared-use paths are designed for two-way travel. Sidepaths are shared-use paths located immediately adjacent to and parallel to the roadway, or within the ROW. Sidepaths and other shared-use paths are wider than sidewalks, accommodating both bicyclists and pedestrians, and are used for both transportation and recreational uses. The width of a shared-use path may vary based on expected user volumes and context. Minimum widths do not include graded areas or buffers on either side of the pathway.

- Desirable width – 12 to 14 feet
- Minimum width – 10 feet; 8 feet in exceptionally constrained areas
- Vertical clearance, minimum – 8 feet

Shared-use paths follow federal requirements for accessibility per the U.S. Access Board and the U. S. Department of Justice. Refer to PROWAG Chapter 3 Section R302.5 and R302.6. Minimum requirements follow the 2010 ADA Standards for Accessible Design.

Refer to NCDOT Minimum Design Recommendations for Greenways for pavement design, when applicable. Refer to AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, and AASHTO Guide for the Development of Bicycle Facilities 2012 Fourth Edition, Chapter 5 for more detailed information.

For Pedestrian Roadway Crossing, refer to NCDOT Roadway Standard Drawings Std. Nos. 848.05 and 848.06 for detailed dimensions for pedestrian refuge islands, crossing islands at channelized right turn lane intersections, curb extensions, and raised crossings.

EXISTING POLICY**KEY ORDINANCES RELATED TO THE NC 210 ECG FEASIBILITY STUDY**

NCDOT Complete Streets Policy, 2019

The NCDOT Complete Streets Policy Update was adopted by the Board of Transportation in August 2019. This policy requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of all transportation projects in North Carolina. The adopted Comprehensive Transportation Plan (CTP) is considered the controlling plan for the identification of nonmotorized facilities to be evaluated as part of a roadway project. The CTP may include and/or reference locally adopted plans for public transportation, bicycle and pedestrian facilities, and greenways. Bicycle, pedestrian, and public transportation facilities that appear in the CTP directly or by reference will be included as part of the proposed roadway project. In these cases, NCDOT is responsible for the full cost of the project. Bicycle, pedestrian, and transit facilities incidental to a roadway project where a need has been identified through the project scoping process, but not identified in an adopted plan, may be included in the project. Inclusion of these incidental facilities requires the local jurisdiction to share the incremental cost of constructing the improvements based on population thresholds. The policy also establishes maintenance responsibility for active transportation facilities. Bicycle, pedestrian, and transit improvements inside a municipal boundary are subject to local maintenance. For multi-modal improvements outside of a municipal boundary, separated facilities (outside of the roadway) such as sidewalks, sidepaths, and multi-use paths, will require a maintenance agreement with the county. Projects that have not completed environmental review prior to August 2019 are subject to the Complete Streets Policy.

NCDOT Bridge Policy, 2000

This policy establishes design elements of new and reconstructed bridges on the North Carolina Highway System. Vertical clearances for new structures shall be designed above all sections of pavement including the useable shoulder. Future widening and pavement cross slope will be considered in design clearance. Vertical clearances for facilities are as follows: over interstates, freeways, and arterials: 16'-6" to 17'-0"; over local and collector roads and streets: 15'-0" to 15'-6"; over all railroads: 23'-0" to 23'-6" or less if approved by Railroads; pedestrian overpasses and sign structures vertical clearance: 17'-0" to 17'-6". When a bikeway is required on a bridge, the structure shall be designed in accordance with AASHTO standard design accommodations to give safe access to bicycles. A minimum handrail height of 54" is required where bicyclist will be riding next to the handrail. Sidewalks shall be included on new bridges with curb and gutter approach roadways that are without control of access. A minimum handrail height of 42" is required.

PROJECT BENEFITS

Future construction of routes studied in the *NC 210 ECG Feasibility Study* will provide numerous benefits to its users. Benefits achievable from these sidepaths and greenways within Pender County include but are not limited to the following: mobility and connectivity, increased safety, improved health and well-being, positive environmental and economic impacts, as well as promotion of equity and accessibility.



...contribute to an increase in multi-modal network connectivity and modes shift to bicycle and pedestrian commuting and travel.

More than 45 percent of all driving trips in the US are under 3 miles, and 60 percent of trips are less than 5 miles. These trips, which could be taken by bike or on foot in 20 to 30 minutes, represent opportunities for mode shifts to biking and walking in communities across the United States. Communities that are increasing their active transportation mode shares invest in well-connected, multi-modal networks that allow people of all ages and abilities to bike and walk to their desired destinations. Connectivity investments that focus on active transportation make better use of existing facilities and enable more users to connect to their destinations.

SAFETY



...contribute to a reduction in bicycle and pedestrian crashes and lead to an increase in biking and walking as a result of safety enhancements.

When transportation networks are designed for all modes, bicyclists and pedestrians become less vulnerable to collisions with motorists and rates of bicycling and walking increase. In a NACTO study of seven cities that expanded their bikeway networks by 50 percent between 2007–2014, ridership more than doubled while risk of death and serious injury to people biking was halved.



...provide access to biking and walking, which lead to increased physical activity, improved mental well-being, decreased risks of chronic disease, and a reduction in healthcare costs.

North Carolina has the 19th highest adult obesity rate in the nation, a leading factor resulting from insufficient physical activity. In 2019, the obesity rate was 34.0 percent, increasing from 20.9 percent in 2000 and from 12.3 percent in 1990. As most North Carolinians lack access to safe and convenient places to be active, bicycle and pedestrian facilities can significantly improve the ability of residents to live more healthy lifestyles. In the 2018 report on the impact of shared use paths in North Carolina, researchers found that trail users generated an estimated 21.2 million miles of bicycling and 9.8 million miles of walking, spurring 5.4 million hours of physical activity per year. This activity is estimated to save approximately \$300,000 in healthcare related costs annually in the communities studied.

Active transportation facilities...



...contribute to a reduction in greenhouse gas emissions, reduction in vehicle miles traveled, preserves wildlife habitats and natural areas, and improves water quality.

Between 1990 and 2018, greenhouse gas emissions due to transportation increased more than any other sector. Twenty-eight percent of all emissions are attributed to transportation-related activities. Passenger cars and trucks account for 60 percent of those emissions.

Investing in active transportation expands access to these facilities and leads to a reduction in vehicle miles traveled and CO₂ emissions. In the 2018 report on the impact of shared use paths in North Carolina, researchers found that low-impact travel along the Duck Trail, Brevard Greenway, and Little Sugar Creek Greenway leads to annual reduction of 53.7 million pounds of CO₂ emissions and 686,000 pounds of motor vehicle emissions, resulting in an annual environmental cost savings of \$707,000.



...contribute to increased tourism, increased sales revenue, and increased property values, which lead to job creation and business growth.

North Carolina communities face a multitude of challenges in attracting sustainable economic development. Active transportation facilities are proven economic generators and create unique opportunities for communities to expand their tourism industry, create jobs, and support local businesses. In the 2018 report on the impact of shared use paths in North Carolina, researchers found that greenways provide significant economic benefits to communities. Trail users along the American Tobacco Trail, Brevard Greenway, Little Sugar Creek Greenway, and Duck Trail made purchases at businesses along these trails, which increased sales revenue and contributed to job creation in local communities. The sale revenue generated from these purchases is \$19.5 million annually and helps support 261 jobs each year.



...contribute to a reduction of household transportation costs; expand access to jobs, services, and recreation; and provide first and last mile connections to transit.

Gaps in transportation networks may disproportionately impact vulnerable residents. People who rely on transit, biking, and walking live in areas that often lack access to safe and convenient multimodal infrastructure, which diminishes access and opportunity to employment, services, and recreation. Ensuring residents have access to transportation that is affordable and convenient is fundamental to efforts reducing income inequality. Newly established bicycle and pedestrian connections within Pender County will expand access to jobs, grocery stores, schools, and parks. In the 2018 report on the impact of shared use paths in North Carolina, researchers found that trail users in the communities studied reduced their annual transportation costs by \$1.83 million by having access to multimodal facilities to travel more frequently and safely by foot or by bike.



02. STUDY CONSIDERATIONS + ALTERNATIVES DEVELOPMENT



STUDY CONSIDERATIONS

The project team originally assessed and discussed several project alignments with project stakeholders before deciding on the preferred alignment for the *NC 210 ECG Feasibility Study*. In addition to relying on discussions held with project stakeholders, the natural and built environments were evaluated through a desktop analysis using Geographic Information Systems (GIS). This analysis was supplemented with site visits to the study area to gain a better understanding of the existing conditions associated with the study area corridor in Pender County.

Learn More About the Following Topics:

Planning Level Considerations

Natural Environment Considerations

Human Environment Considerations

Summary of Field Observations

PLANNING LEVEL CONSIDERATIONS

The following planning level considerations were reviewed as part of this study:

- Demographics
- Existing + Future Land Uses
- Major Employers + Primary Commuter Routes

For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.

COMMUNITY DEMOGRAPHICS

Analyzing demographic trends are essential to planning the study area's active transportation network. This analysis helps inform the public engagement approach and ensures the proposed recommendations meet the diverse needs of people residing in the study area. Demographic data was pulled from the 2020 American Community Survey (ACS) 5-year estimates (2016-2020) and was accessed through the United States Census Bureau. Census tracts 4.01, 4.03, 9201.01, 9201.02, 9201.03, 9202.01, 9202.02, 9202.03, and 9202.04 (Onslow County and Pender County) were included in the study area for the *NC 210 ECG Feasibility Study* which includes an estimated total population of 39,994.

This section includes an analysis of the following:

- Age
- Poverty status
- Race + ethnicity
- Education
- Income
- Language
- Commute
- Vehicle availability



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CENSUS TRACTS

LEGEND

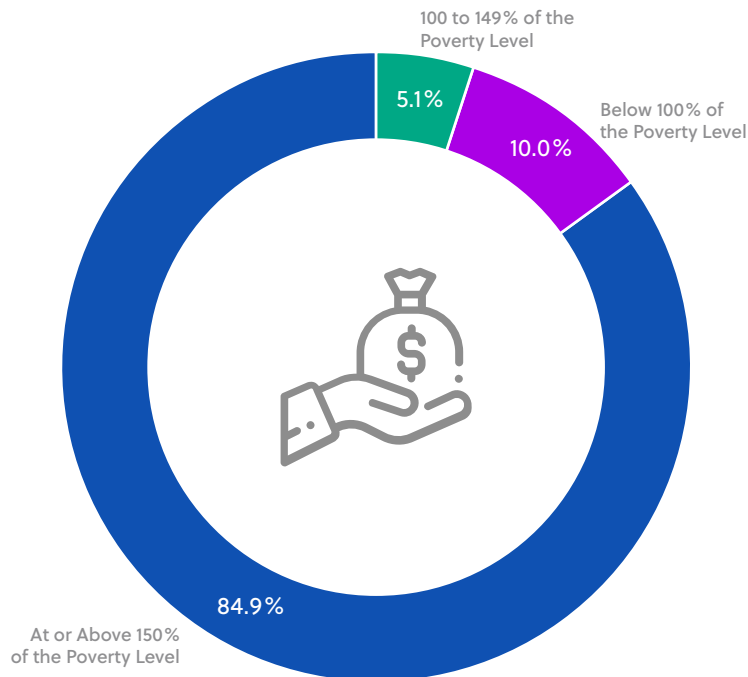
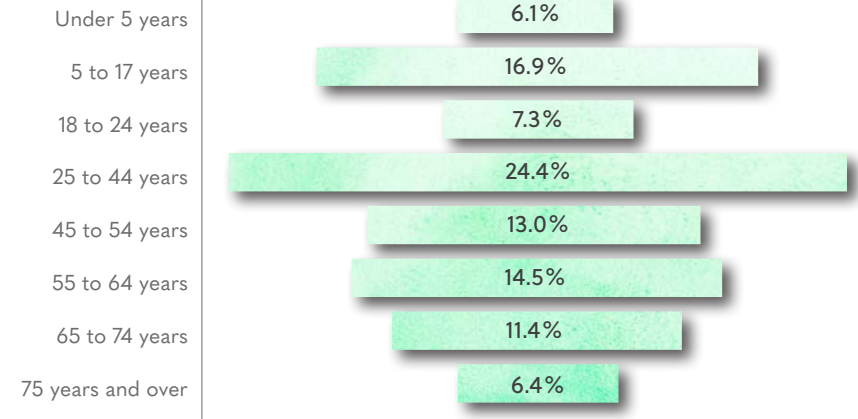
- Preliminary Routes
- Census Tracts

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

AGE

A little over 24 percent (24.4%) of the population within the study area falls between 25 to 44 years of age. This is consistent with the median age in North Carolina which is 38.9. The second largest age range is the 5- to 17-year-old category at 16.9 percent. More than half (54.7%) of the population within the study area is 44 years or younger.

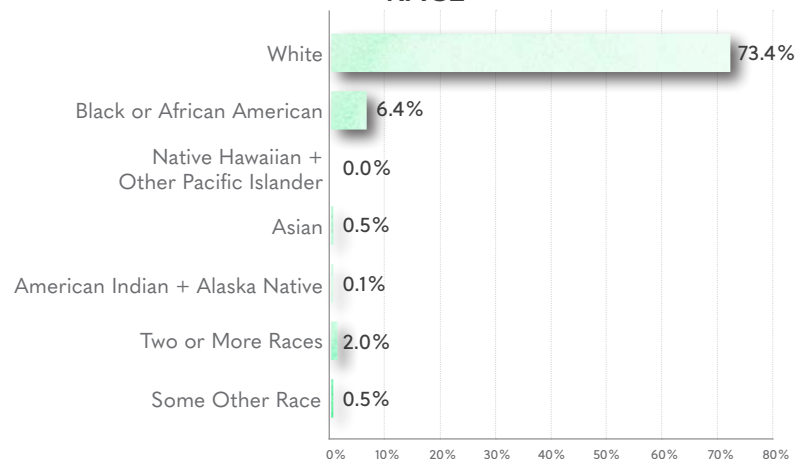
AGE RANGES



POVERTY

The majority of the population (84.9%) within the study area is at or above 150% of the poverty level. Ten percent (10.0%) fall below the poverty level, while 5.1 percent fall between 100 to 149% of the poverty level. Recent ACS data revealed that 14 percent of North Carolina residents earned incomes below the federal poverty line.

RACE



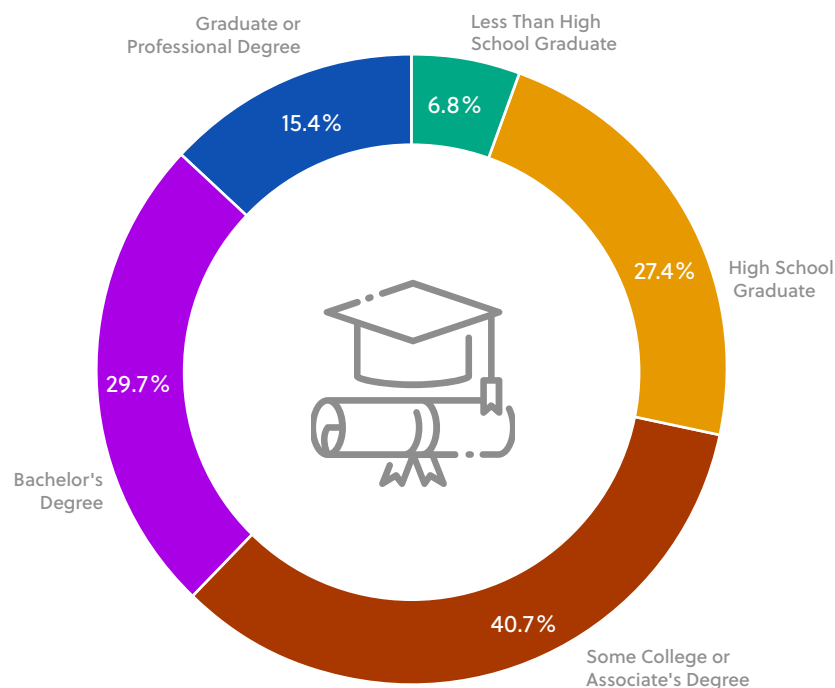
RACE + ETHNICITY

In North Carolina, approximately 70 percent (70.1%) of residents identify as "White alone", and 22 percent (22.3%) of residents identify as "Black alone". The NC 210 ECG study area shows a slightly different distribution, with 73.4 percent of the study area identifying as "White alone" and approximately 6 percent (6.4%) of the population identifying as Black or African American. Residents in the study area identify as having some other race (0.5%) or having two or more races (2.0%). Approximately 3 percent of the state's population identifies as "Asian alone", and this is higher than that of residents within the study area of interest (0.5%).

In the study area, 1.9 percent of residents identify as Hispanic or Latino origin which is much lower than North Carolina, in which 10 percent (10.2%) of the statewide population identifies as "Hispanic or Latino".

EDUCATION

Less than 7 percent (6.8%) of residents in the NC 210 ECG study area did not complete high school. Approximately forty percent (40.7%) of residents within the study area have completed some college or obtained an associate degree. Almost 30 percent (29.7%) of residents obtained a four-year college degree, which is slightly lower than the state's rate at 32 percent.

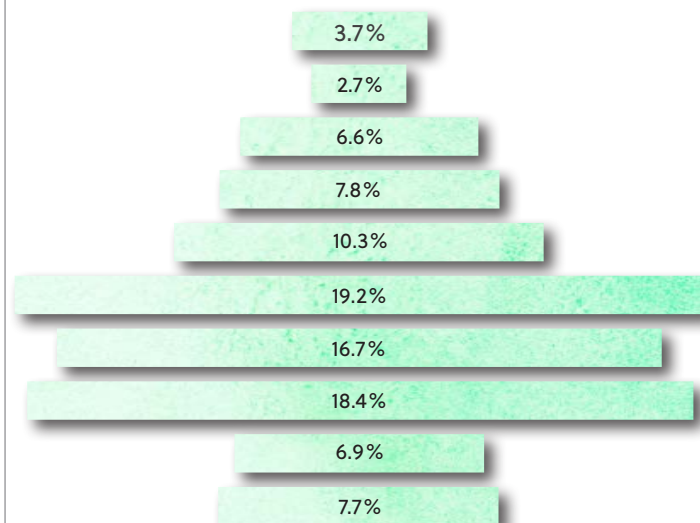


INCOME

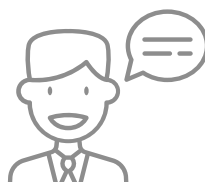
Nineteen percent (19.2%) of the study area's residents have an annual household income between \$50,000 and \$74,999. This is comparable to the median income of North Carolina households which is \$56,642. Almost 50 percent (49.7%) of residents within the study area have an annual household income greater than \$75,000.

Less than \$10,000	3.7%
\$10,000 to \$14,999	2.7%
\$15,000 to \$24,999	6.6%
\$25,000 to \$34,999	7.8%
\$35,000 to \$49,999	10.3%
\$50,000 to \$74,999	19.2%
\$75,000 to \$99,999	16.7%
\$100,000 to \$149,999	18.4%
\$150,000 to \$199,999	6.9%
\$200,000 or more	7.7%

HOUSEHOLD INCOME



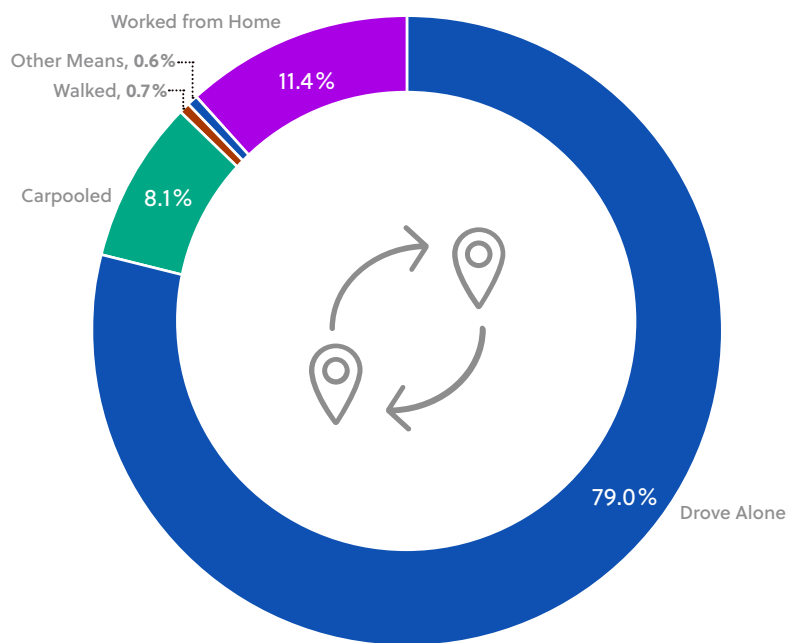
5.0%
Speak a Language
Other than English



0.5%
Speak English Less than
"Very Well"

LANGUAGE

Five percent (5.0%) of residents in the study area speak a language other than English and 0.5 percent of residents speak English less than "very well". Interpretive services should be offered for those who do not speak English, or have a limited ability to read, speak, or understand English so that they may participate and contribute to discussions about the project.

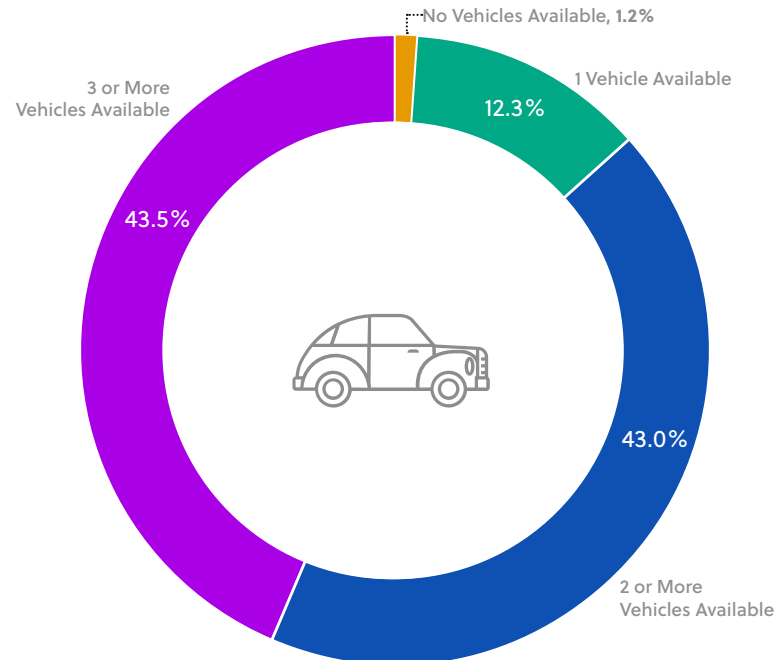


COMMUTE

Residents in the study area predominantly commute by single-occupancy vehicle, with 79 percent of workers driving alone to work, and of those workers, the average commute time is 33.2 minutes. In North Carolina, the mean travel time to work is 24.9 minutes. Roughly 21 percent (20.8%) of workers commute by walking, using other means, or by carpooling. Residents working from home in the study area make up 11 percent (11.4%) of the study area's population.

ACCESS TO VEHICLES

Over 43 percent (43.5%) of households within the study area have access to three or more vehicles. Households with access to two or more vehicles are similar at 43 percent. Twelve percent (12.3%) of households have access to one vehicle. Less than two percent (1.2%) of households do not have access to a vehicle.



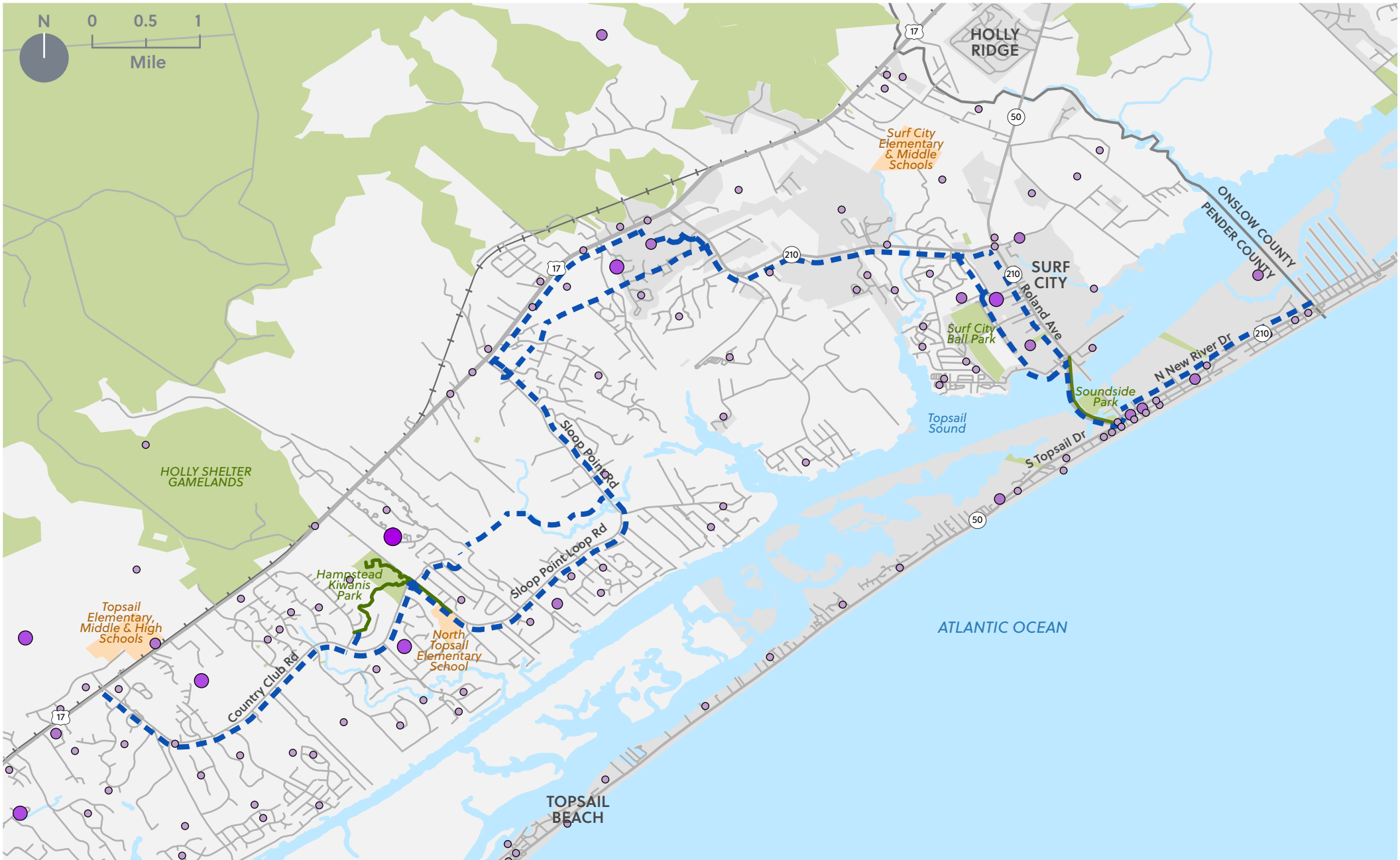
EMPLOYMENT DENSITY

The map to the right displays the employment density for all jobs within Pender County in 2019. Several points along NC 210 indicate that the study corridor acts a major travel corridor for businesses in the study area. For example, the largest point located near Hampstead Kiwanis Park represents several local businesses, such as EnviroSafety Corporation, Carolina Elite Athletics, ServiceMaster Restoration of Wilmington and more. Several other points along the corridor represent shopping centers, schools, and restaurants.

The addition of an active transportation facility within the study area will help connect residents and visitors from the beach to the inland. As indicated on the previous page, less than 2 percent of residents in the study area do not have access to a vehicle. A new active transportation facility within the corridor may serve as a viable transportation option for those who need to access businesses and essential services within their community.



The NC 210 ECG Corridor Could Provide Opportunities to Bike to Work



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
EMPLOYMENT DENSITY (ALL JOBS 2019)**

- LEGEND**
- NC-210 ECG CORRIDOR**
- Preliminary Routes
- EMPLOYMENT DENSITY**
- < 50 Jobs
 - 51 - 150 Jobs
 - 151 - 300 Jobs
 - 301-506 Jobs
- Existing Greenways
 - Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties

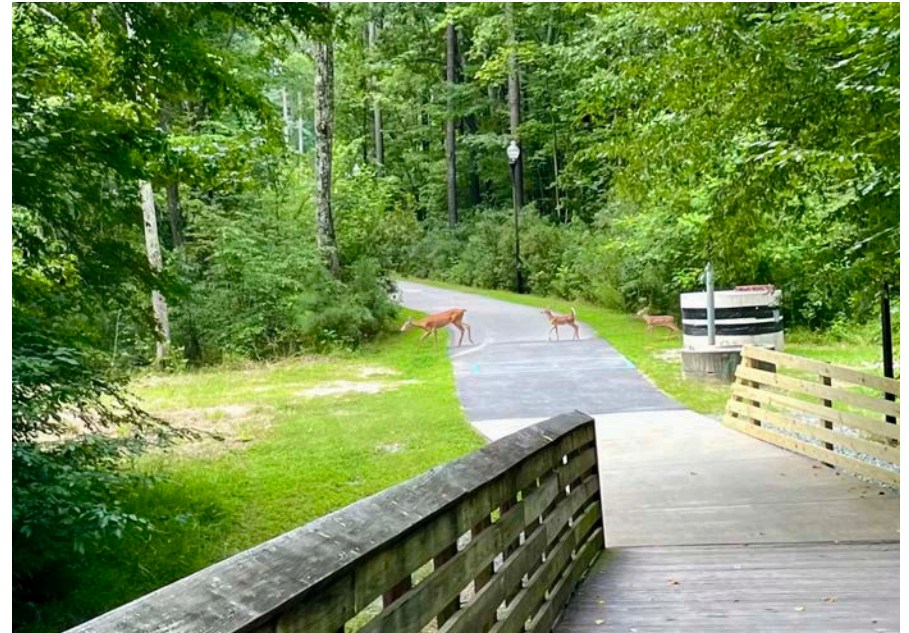
NATURAL ENVIRONMENT CONSIDERATIONS

Nature plays a large role in the way humans connect with and/or shape the environment. While the greenway studied in this plan would benefit from traversing through natural landscapes and next to water, other natural constraints may be identified that will affect the final alignment proposed in this study.

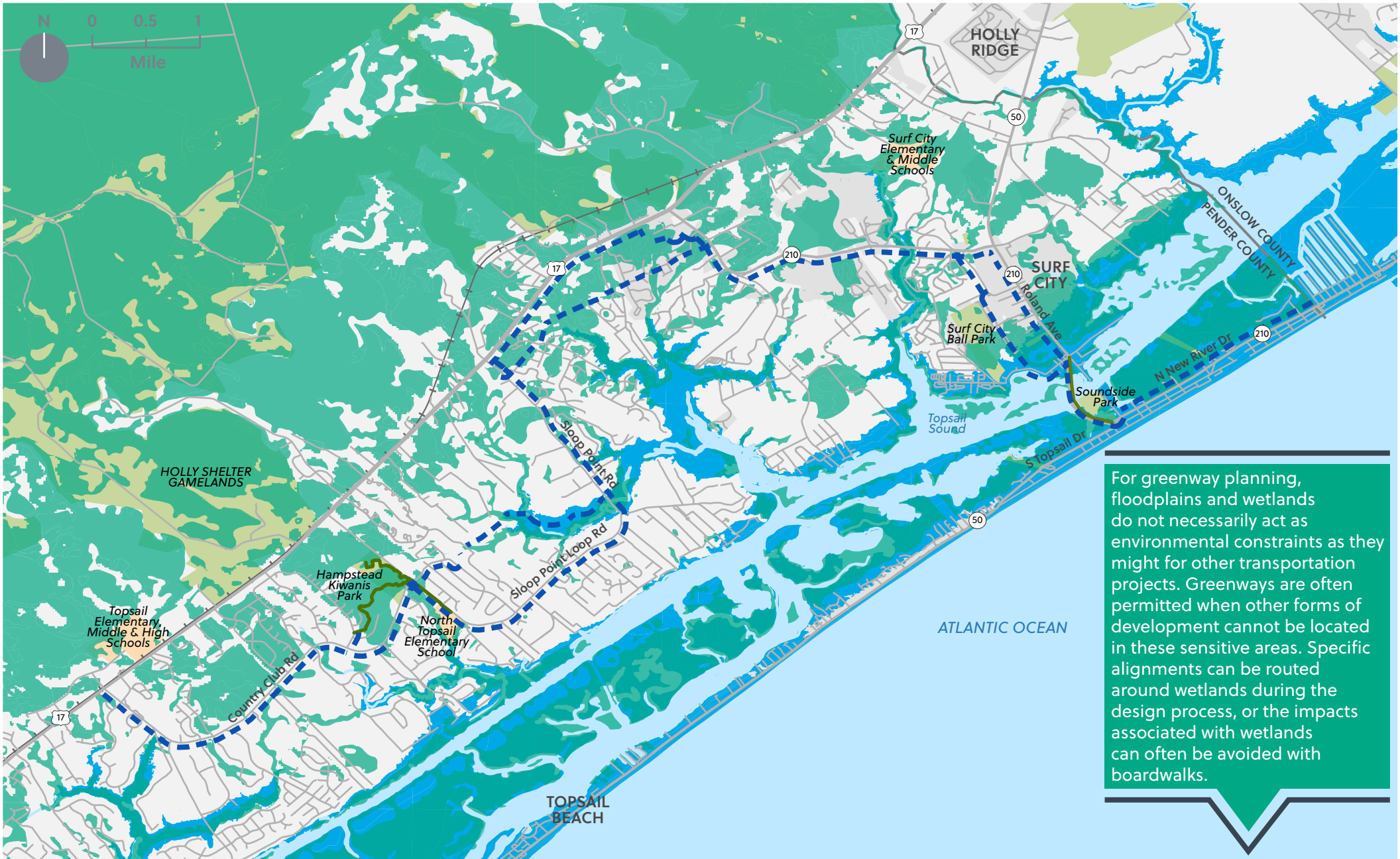
The following natural environment considerations were assessed as part of this study:

- Stream corridors + hydrology
- Floodways + wetlands
- Topography
- Conservation + managed areas
- Threatened + endangered species

For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.



Deer Crossing Greenway in Apex Nature Park - Apex, NC

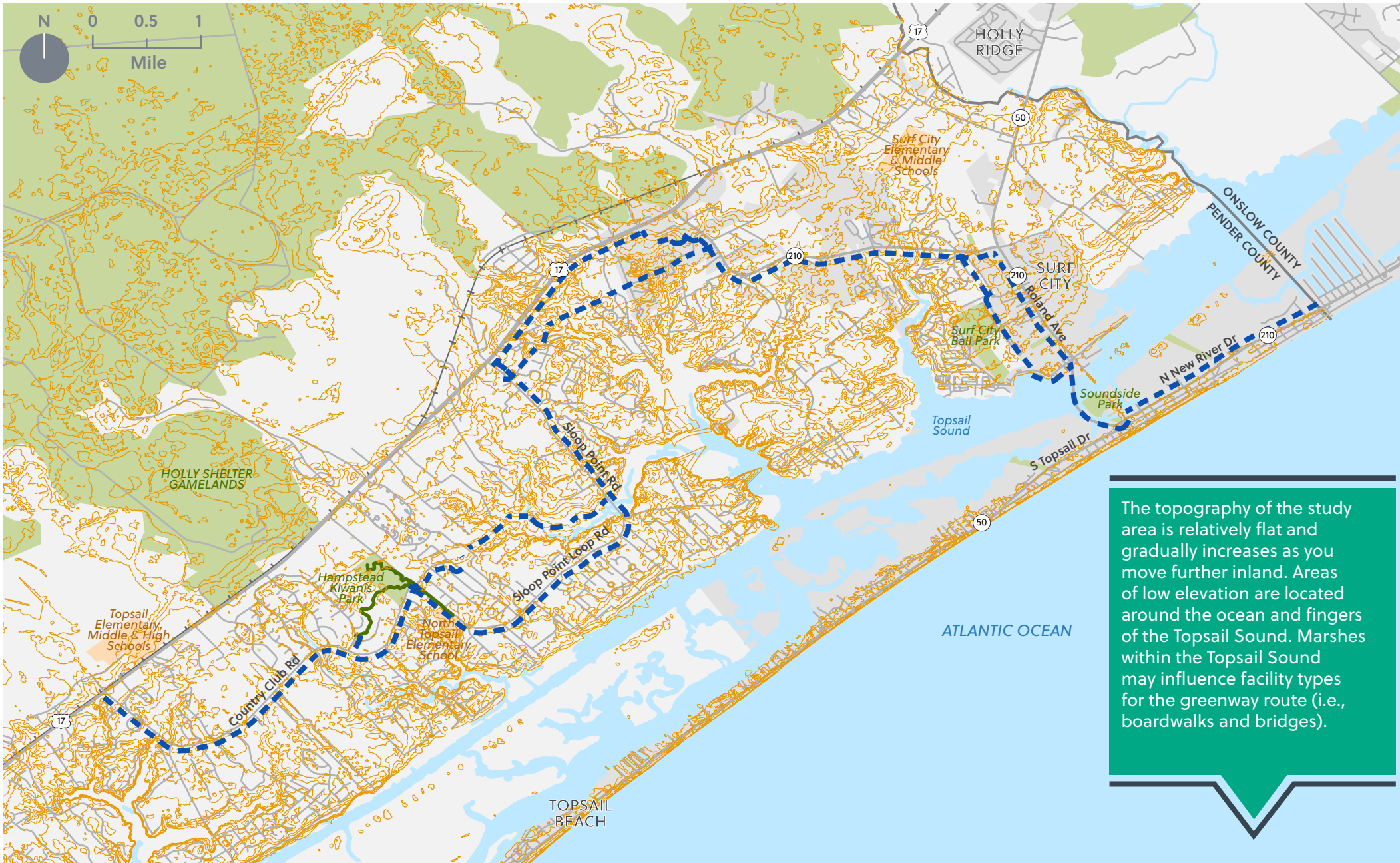


NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY FLOODWAYS + WETLANDS

LEGEND

- Preliminary Routes
- Wetlands
- Floodways

- Existing Greenways
- Roadways
- + Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



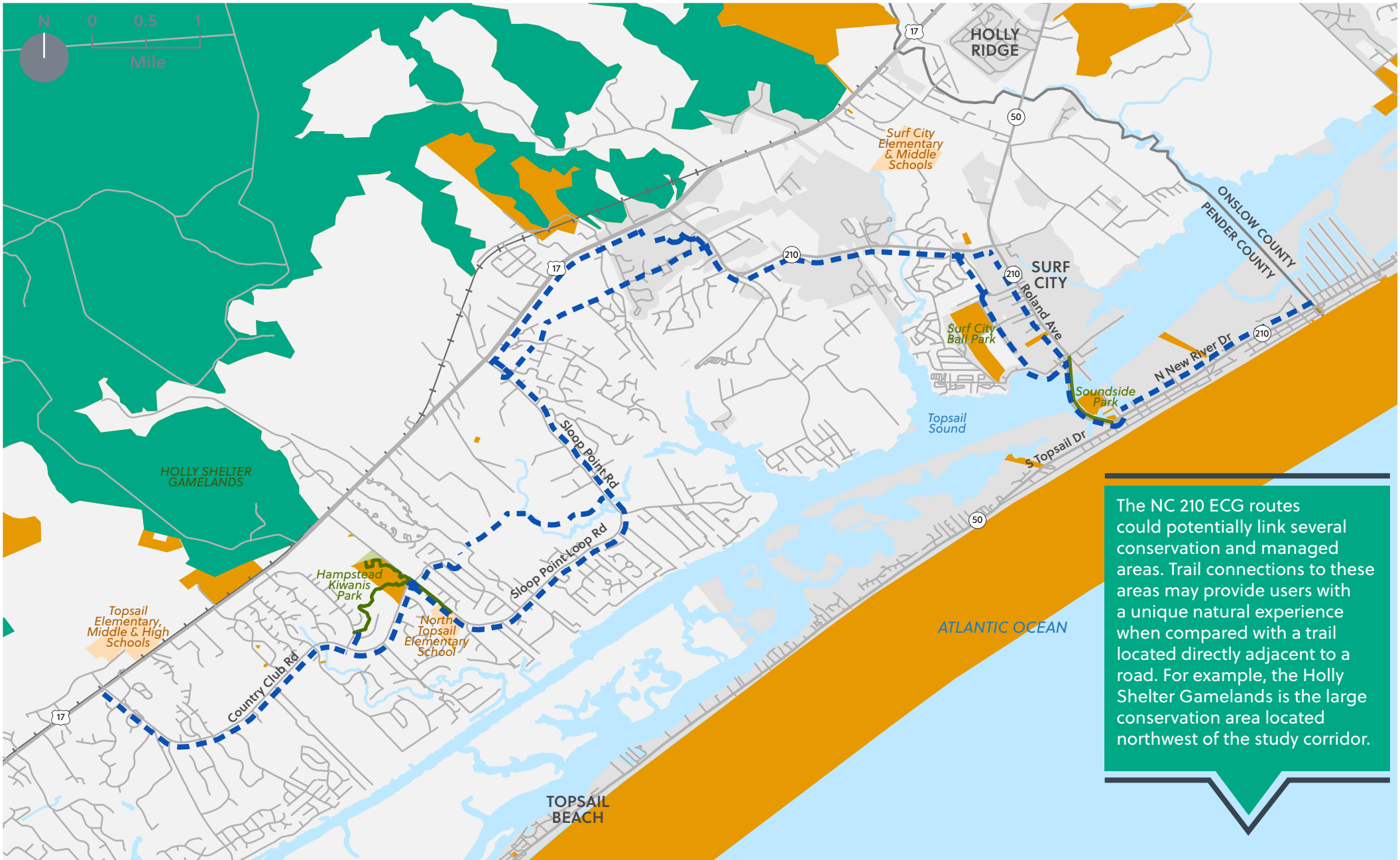
The topography of the study area is relatively flat and gradually increases as you move further inland. Areas of low elevation are located around the ocean and fingers of the Topsail Sound. Marshes within the Topsail Sound may influence facility types for the greenway route (i.e., boardwalks and bridges).

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY TOPOGRAPHY (4' CONTOURS)

LEGEND

- Preliminary Routes
- Elevation (4' Contours)
- Topography Lines

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

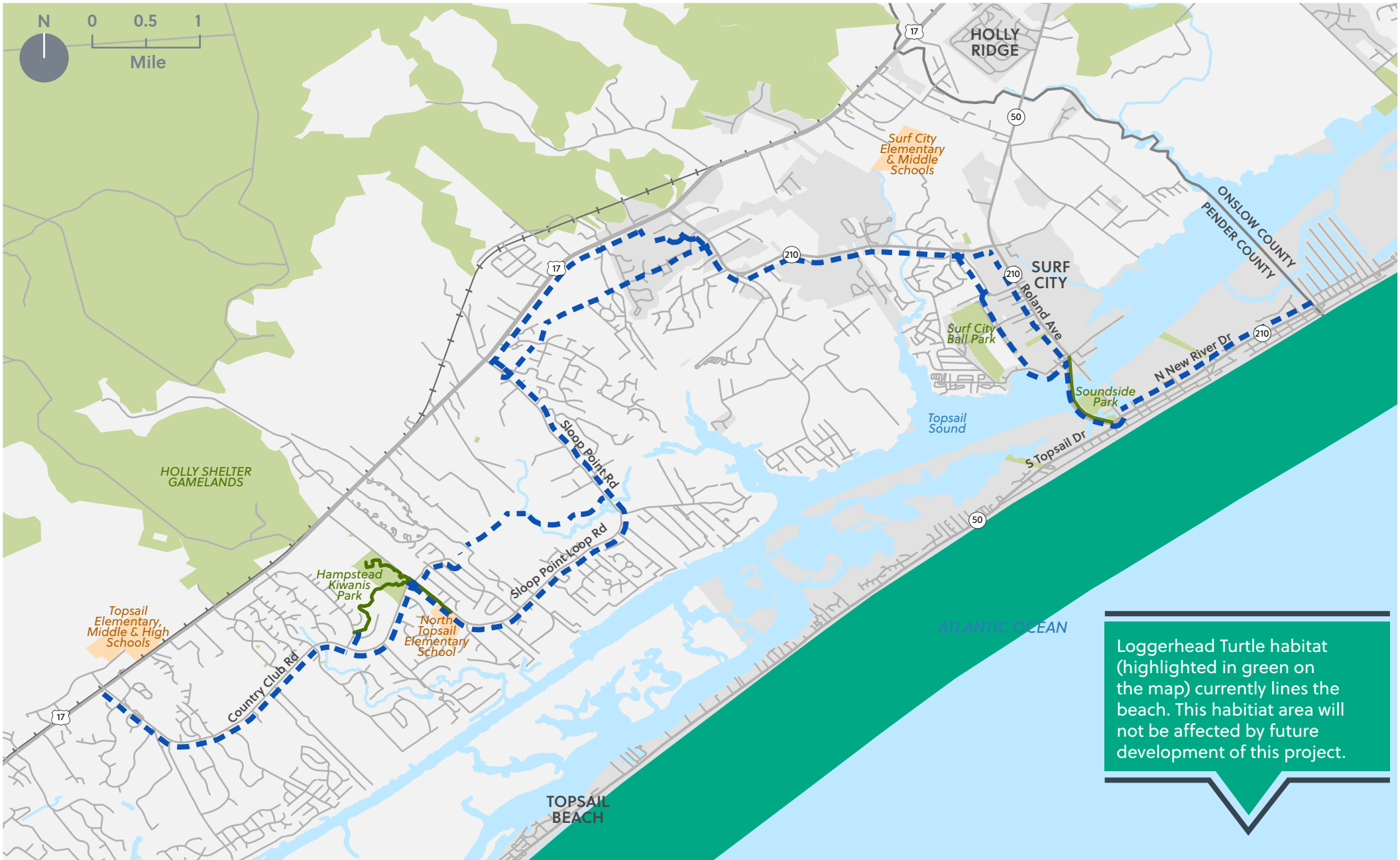


The NC 210 ECG routes could potentially link several conservation and managed areas. Trail connections to these areas may provide users with a unique natural experience when compared with a trail located directly adjacent to a road. For example, the Holly Shelter Gamelands is the large conservation area located northwest of the study corridor.

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CONSERVATION + MANAGED AREAS

- LEGEND**

 - Preliminary Routes
 - Conservation Areas
 - Managed Areas
- Existing Greenways
 - Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY THREATENED SPECIES

LEGEND

NC-210 ECG CORRIDOR

- Preliminary Routes
- Loggerhead Turtle Habitat

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

LOCAL GREENWAY SUPPORT

Several organizations actively support cycling in the area. 2021 saw the first Gravel Grinder off road bike race in the Holly Shelter Gamelands. Members of the Terry Benjey Bicycling foundation advocate for safe facilities in the Cape Fear Region and riders from the Cape Fear Cyclists bicycling club, based in Willmington, have reported regularly riding in Pender County and Surf City. The Karen Beasley Sea Turtle Rescue and Rehabilitation Center is a supporter of the Surf to Sound 5K. Participants start the race in Soundside Park in Surf City, head across the Surf City Bridge and down to Atkinson Point. Future implementation of the NC 210 ECG could help encourage similar racing events or help to extend the Surf to Sound 5K course.

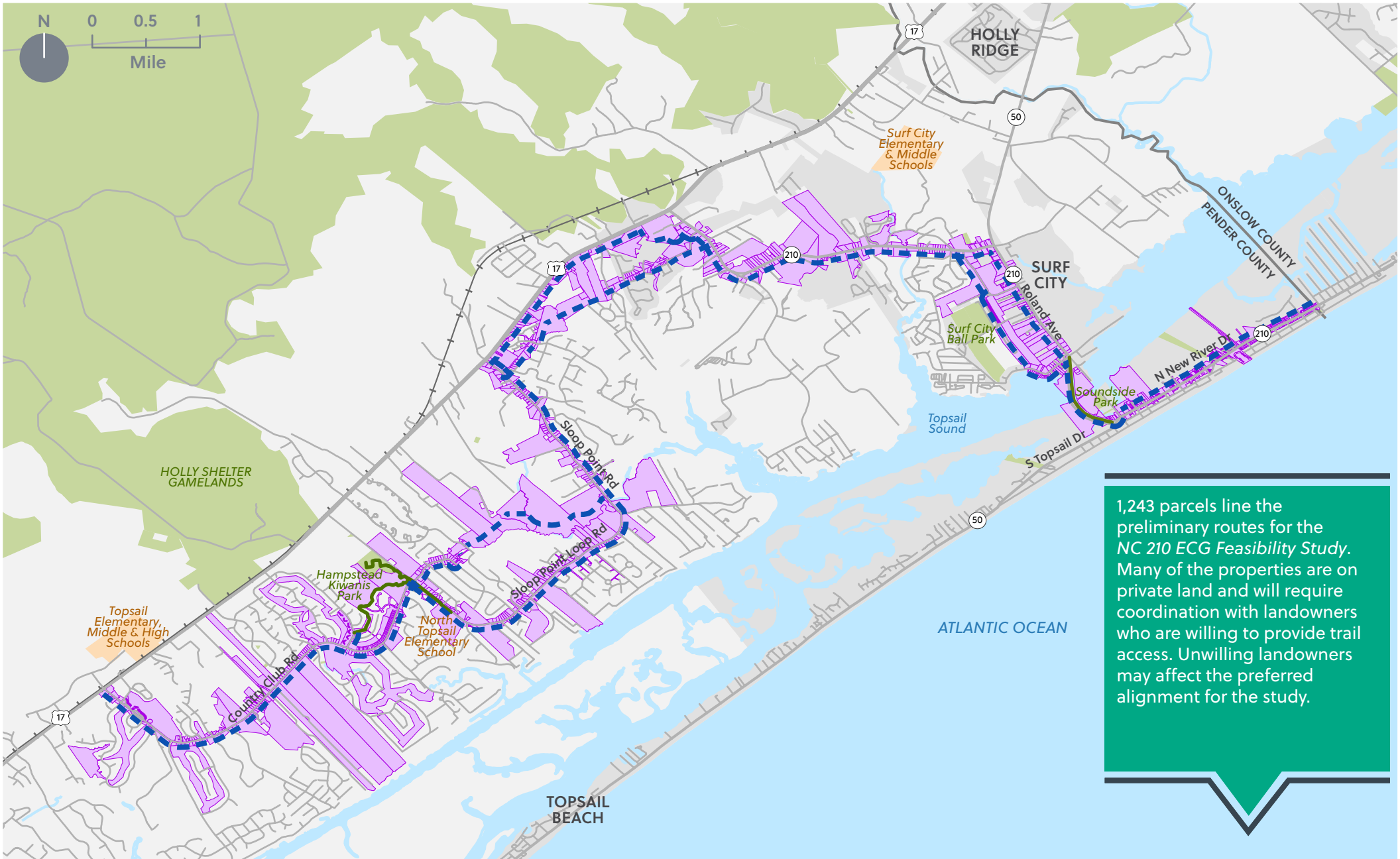


HUMAN ENVIRONMENT CONSIDERATIONS

The following human environment considerations were assessed as part of this study:

- Adjacent Parcels
- Annual Average Daily Traffic (AADT)
- Speed Limits
- Right-of-Way (ROW)
- Land Use + Zoning
- Cultural and Historic Resource inventories
- Existing Bicycle + Pedestrian Facilities
- Planned Bicycle + Pedestrian Facilities
- Bicycle Crashes
- Pedestrian Crashes
- NCDOT 2020-2029 STIP Projects
- NCDOT Highway Maintenance Improvement Program (HMIP)
- Local + Regional Trail Connections
- Regional Context: Metropolitan + Rural Planning Organizations

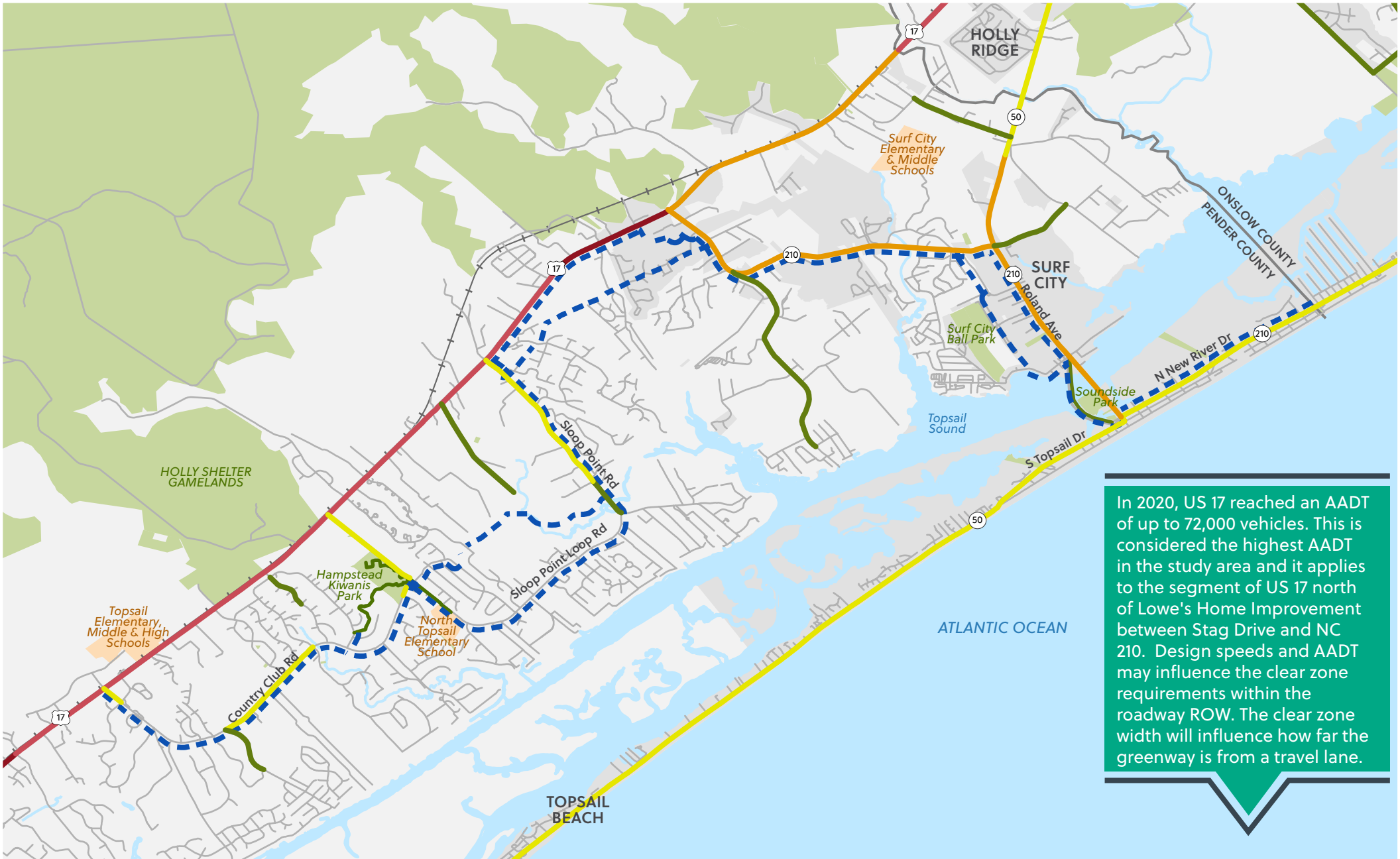
For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.



1,243 parcels line the preliminary routes for the NC 210 ECG Feasibility Study. Many of the properties are on private land and will require coordination with landowners who are willing to provide trail access. Unwilling landowners may affect the preferred alignment for the study.

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY ADJACENT PARCELS

- LEGEND**
NC-210 ECG CORRIDOR
 - Preliminary Routes
 - Parcels within 10' of Route
- Existing Greenways
 - Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY ROADWAY TRAFFIC VOLUMES

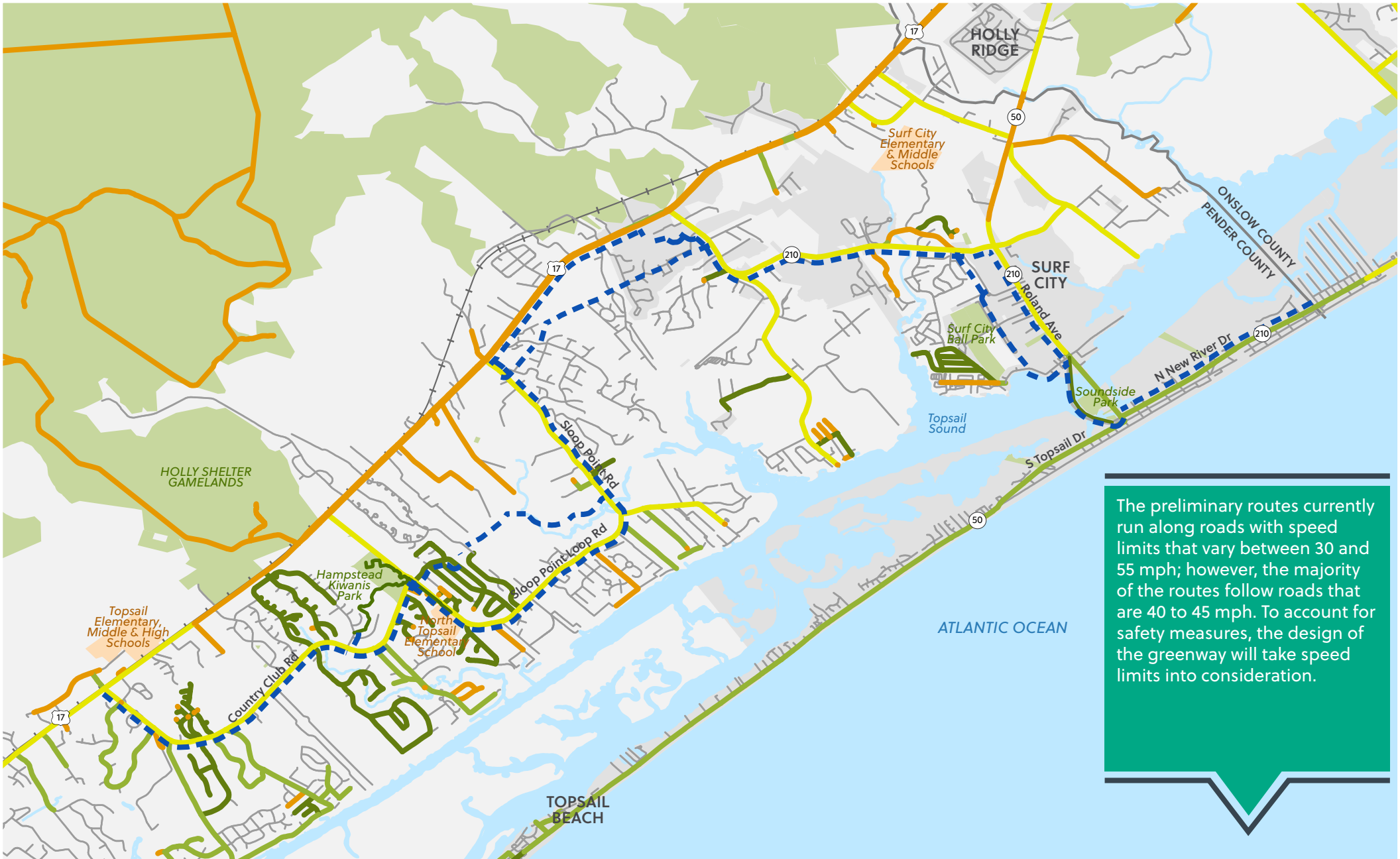
LEGEND

— Preliminary Routes

2020 AADT

- 60 - 3,000
- 3,001 - 9,000
- 9,001 - 18,000
- 18,001 - 36,000
- 36,001 - 72,000

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



The preliminary routes currently run along roads with speed limits that vary between 30 and 55 mph; however, the majority of the routes follow roads that are 40 to 45 mph. To account for safety measures, the design of the greenway will take speed limits into consideration.

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY ROADWAY SPEED LIMITS

LEGEND

- Preliminary Routes
- Speed Limits**
 - 20 - 25 MPH
 - 30 - 35 MPH
 - 40 - 45 MPH
 - 50 - 55 MPH

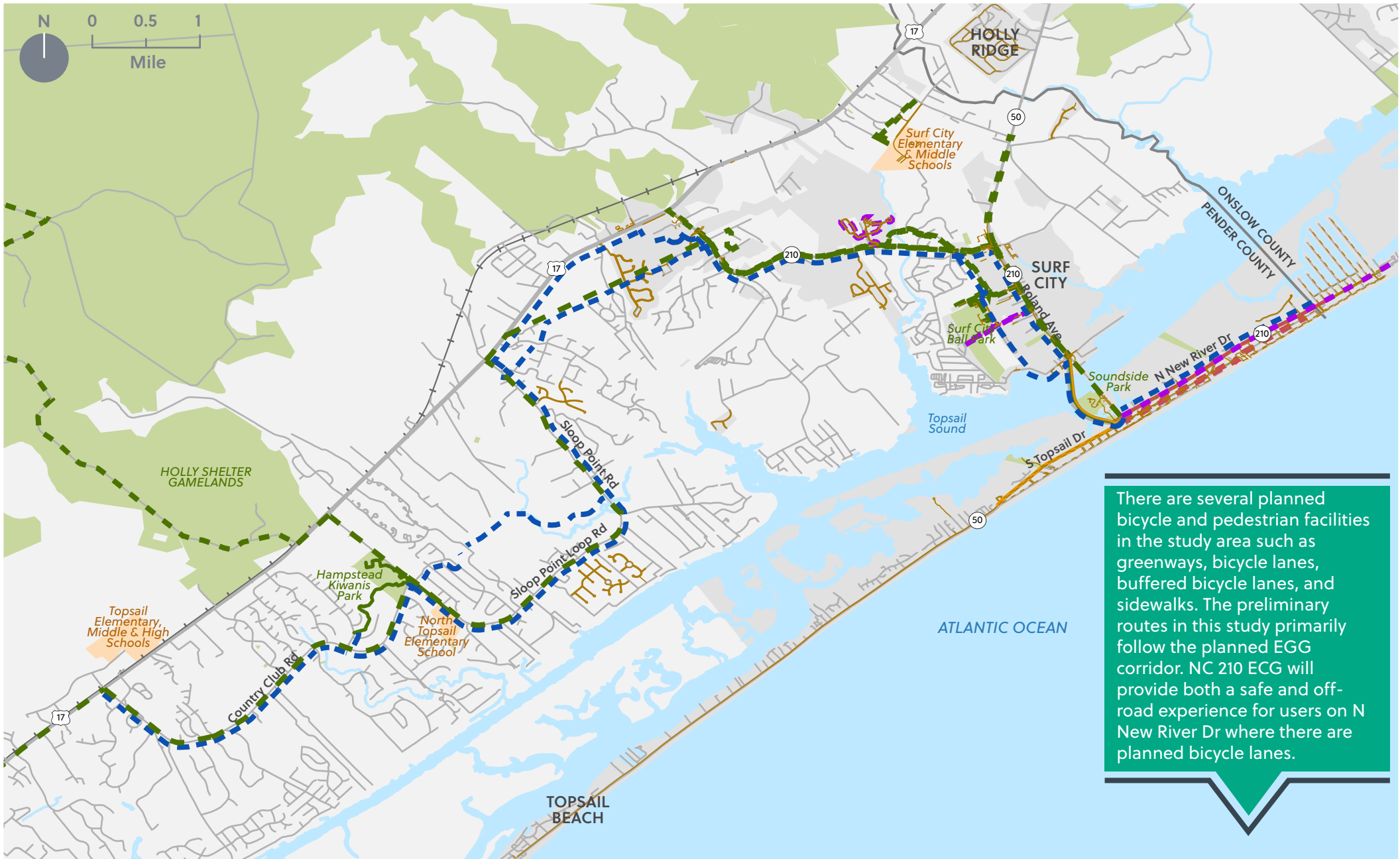
- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY EXISTING BICYCLE + PEDESTRIAN FACILITIES

LEGEND

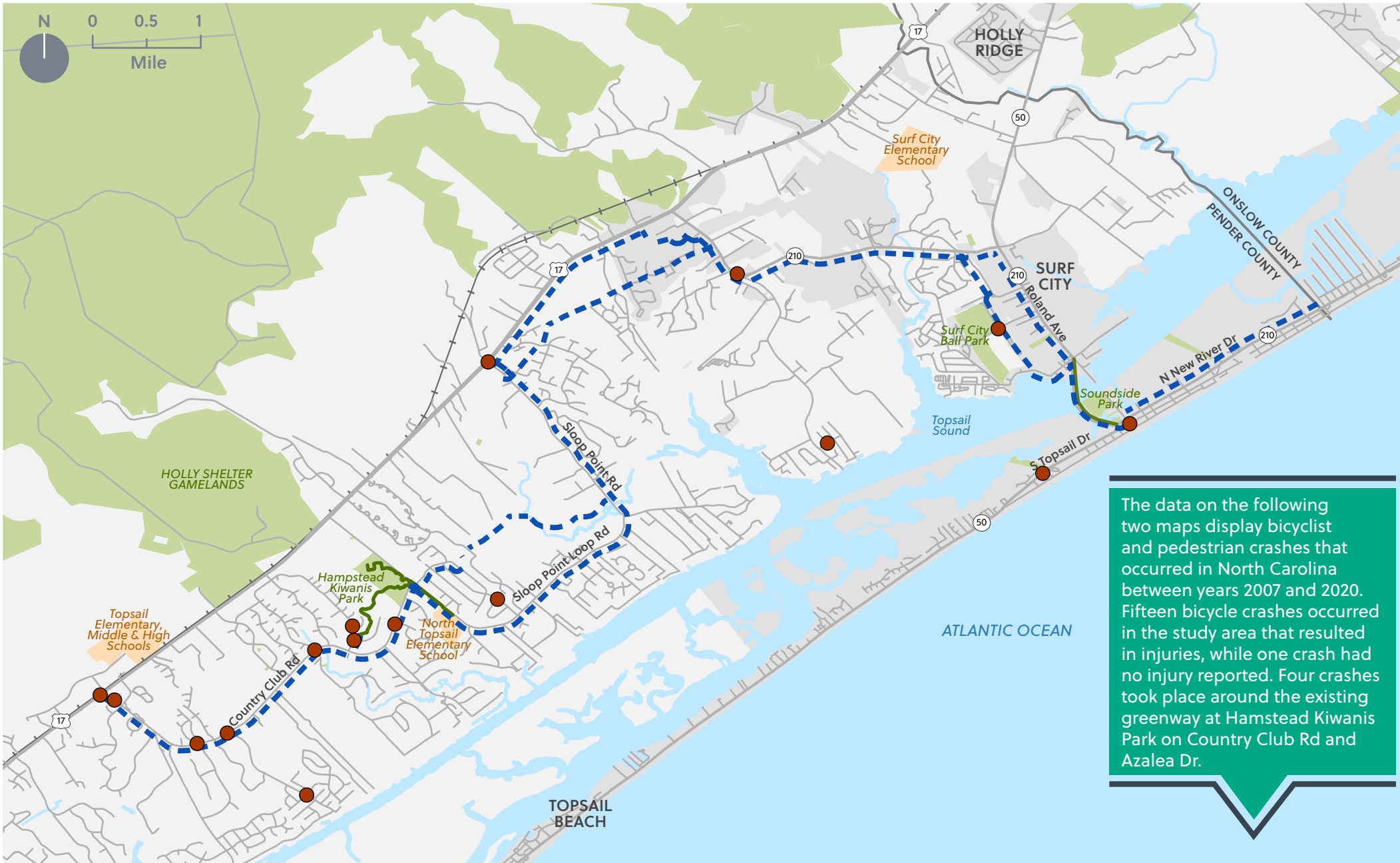
- | | |
|--|---|
| --- Preliminary Routes | --- Roadways |
| --- Greenways | -+ - Rail |
| --- Bicycle Lanes | --- Water Bodies |
| --- Paved Shoulders | --- Parks |
| --- Sidewalks | --- Schools |
| | --- Municipalities |
| | --- Counties |



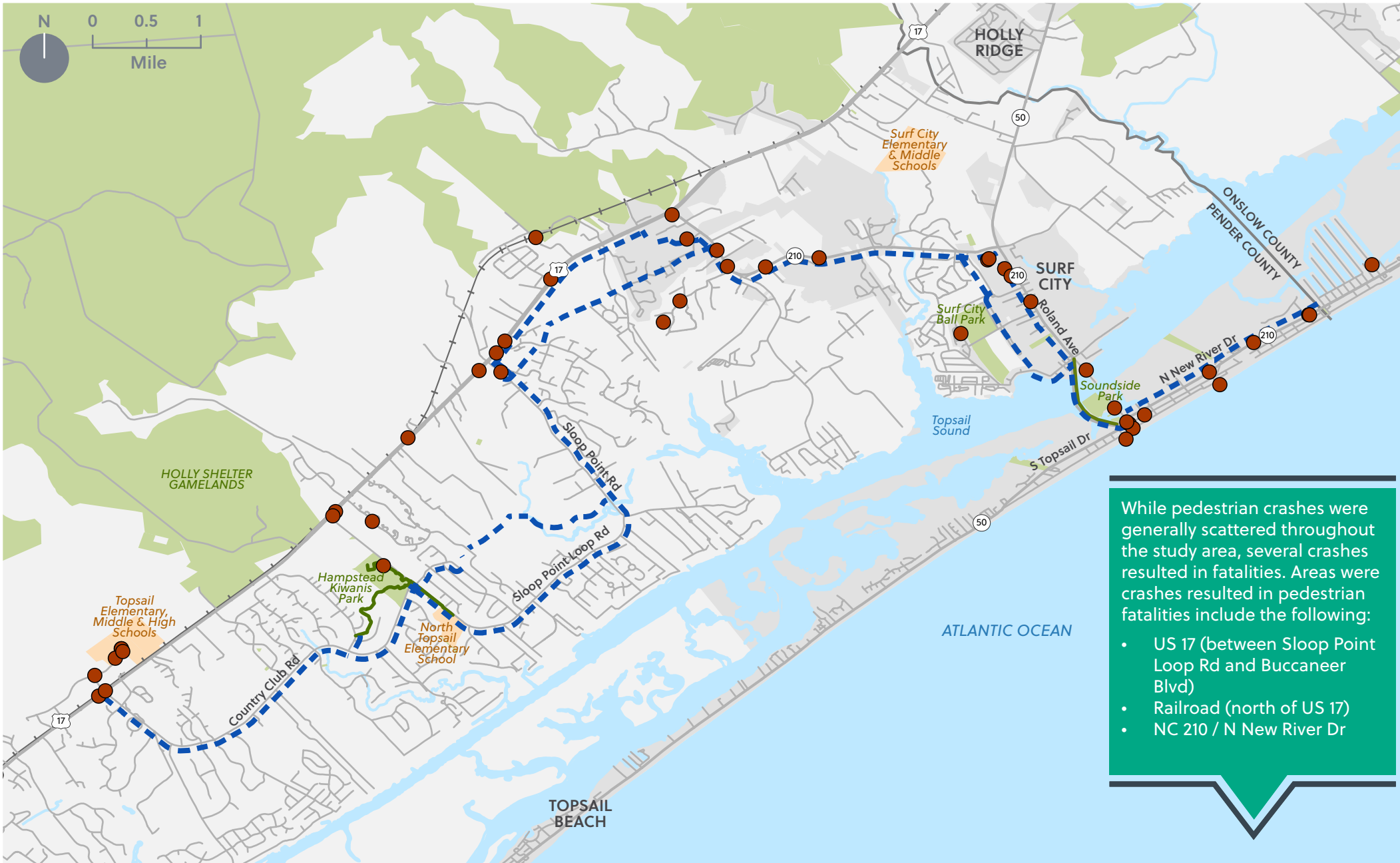
NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY PLANNED BICYCLE + PEDESTRIAN FACILITIES

LEGEND

— Existing Greenways	- - - Preliminary Routes
— Existing Bicycle Lanes	— Roadways
— Existing Paved Shoulders	+ + + Rail
— Existing Sidewalks	— Water Bodies
- - - Planned Greenways	— Parks
- - - Planned Bicycle Lanes	— Schools
- - - Planned Sidewalks	— Municipalities
- - - Planned Buffered Bicycle Lanes	— Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY BICYCLE CRASHES

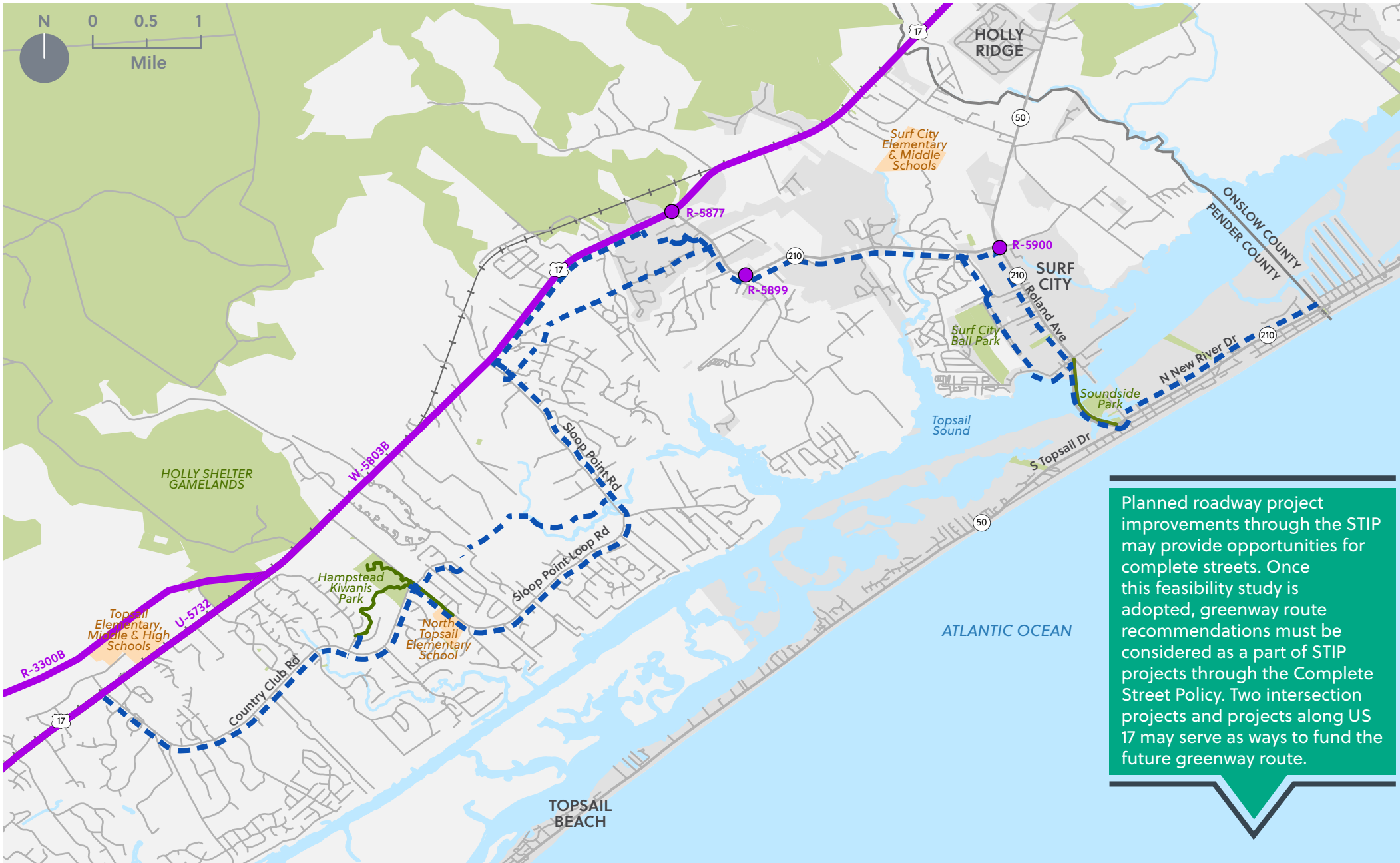


NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY PEDESTRIAN CRASHES

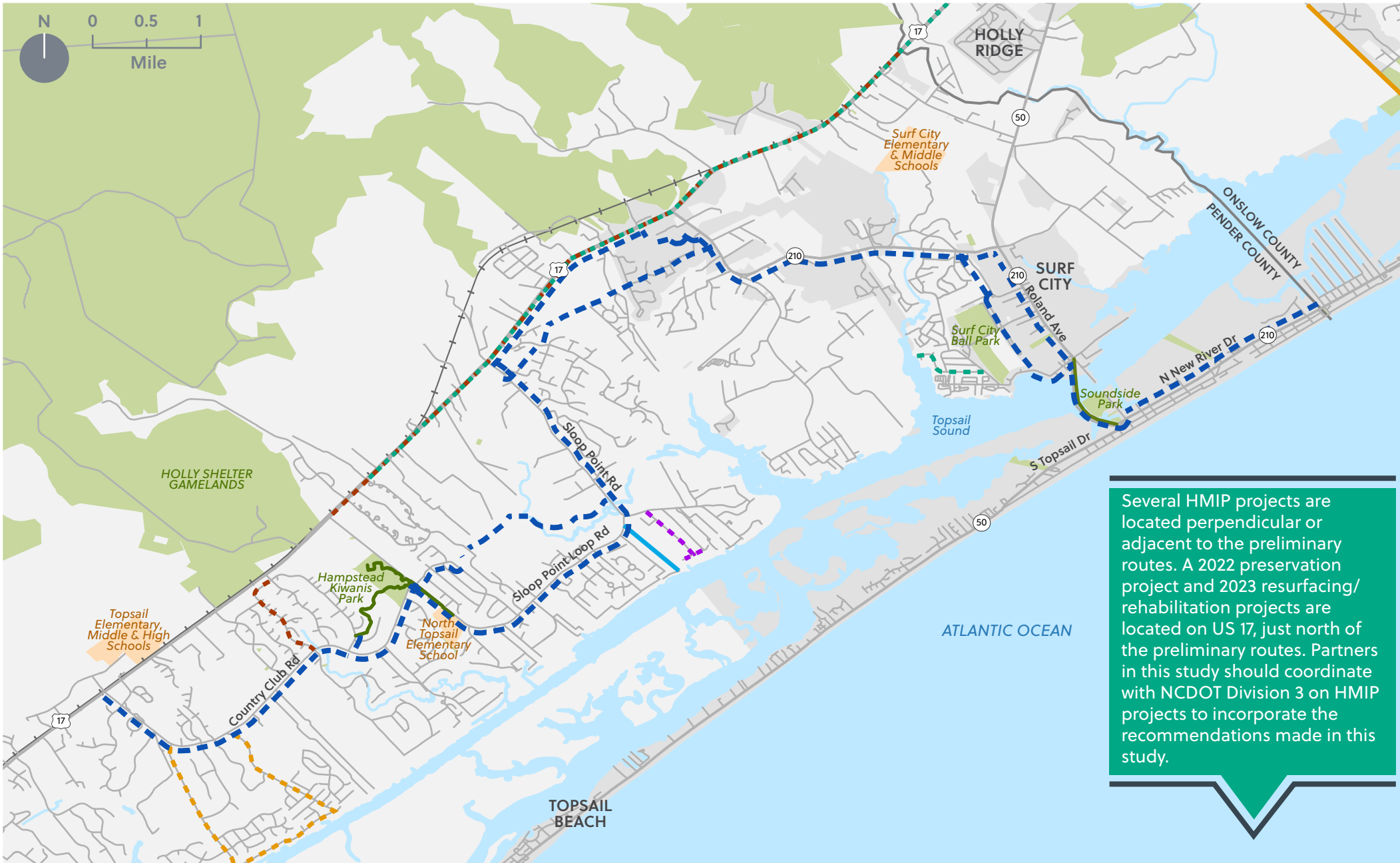
LEGEND

- Preliminary Routes
- Pedestrian Crashes

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY 2020-2029 NCDOT STIP PROJECTS



Several HMIP projects are located perpendicular or adjacent to the preliminary routes. A 2022 preservation project and 2023 resurfacing/rehabilitation projects are located on US 17, just north of the preliminary routes. Partners in this study should coordinate with NCDOT Division 3 on HMIP projects to incorporate the recommendations made in this study.

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY HIGHWAY MAINTENANCE IMPROVEMENT PROGRAM (HMIP)

LEGEND

--- Preliminary Routes

HMIP Projects

2021	--- Resurfacing/Rehabilitation	--- Preservation
2022	--- Resurfacing/Rehabilitation	--- Preservation
2023	--- Resurfacing/Rehabilitation	--- Preservation
2024	--- Resurfacing/Rehabilitation	--- Preservation
2025	--- Resurfacing/Rehabilitation	--- Preservation

--- Existing Greenways

--- Roadways

--- Rail

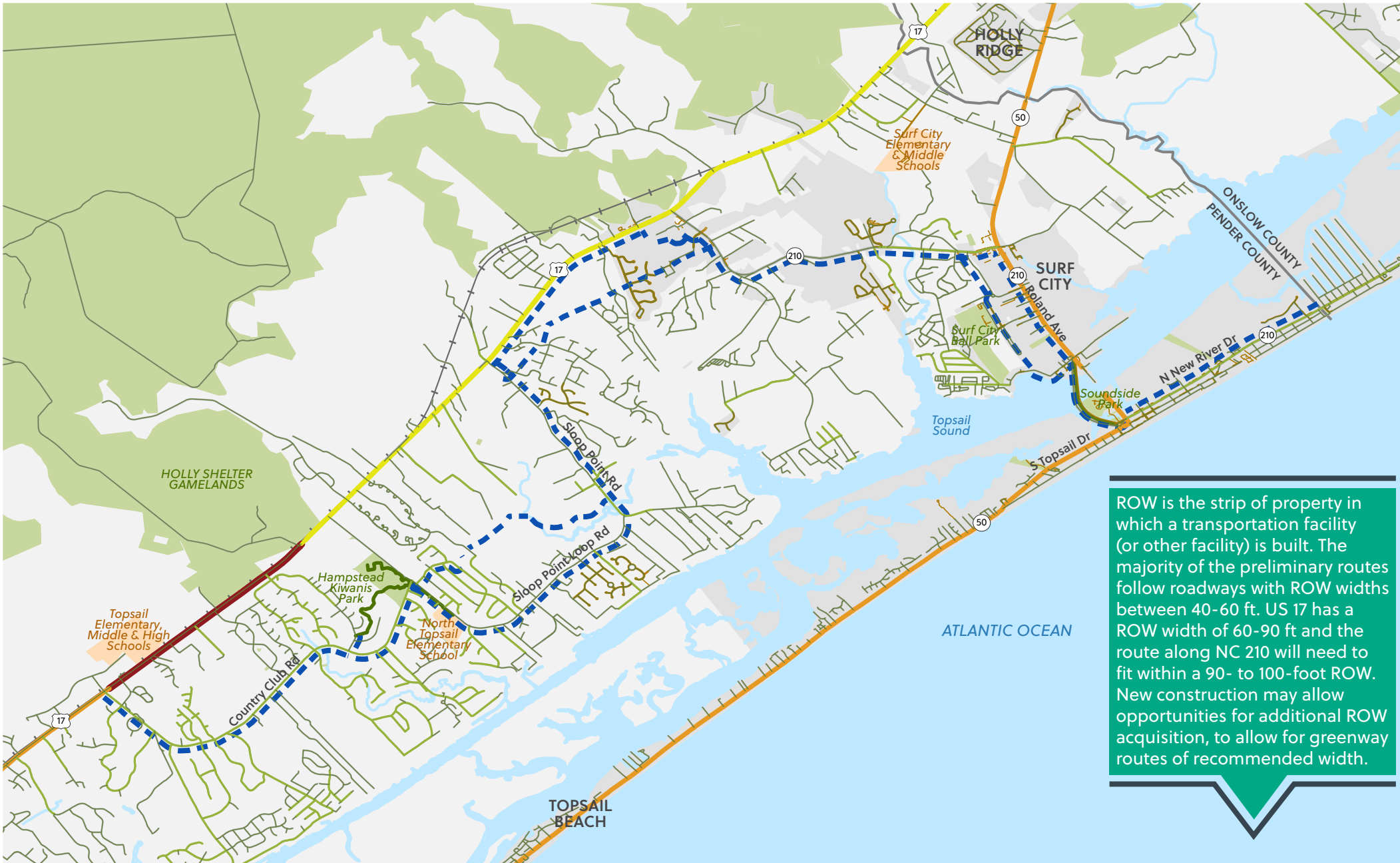
--- Water Bodies

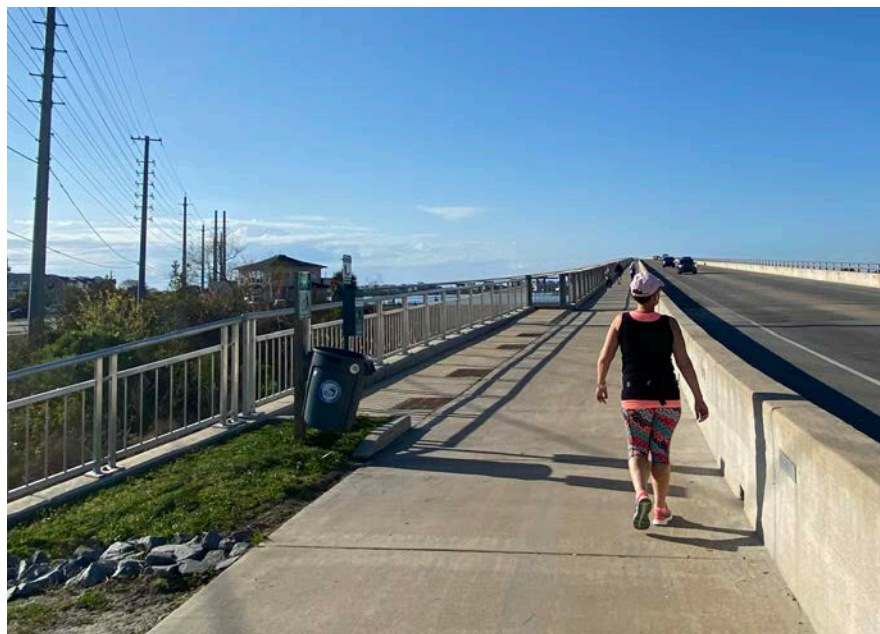
--- Parks

--- Schools

--- Municipalities

--- Counties





Pedestrian Walking on the Surf City Bridge - Surf City, NC

SUMMARY OF FIELD OBSERVATIONS

Fieldwork is an important part of the planning process that helps the study team understand the local culture and existing conditions associated with a site. It also helps the study team evaluate design solutions that respond to the specific needs and characteristics of the site. The project team conducted field work by visiting key destinations (i.e., existing parks, shopping centers, and businesses), existing bicycle and pedestrian facilities, roadways, bridges, environmentally sensitive, and constrained areas.



Existing Bike Repair Station in Surf City



Share the Road Sign on N New River Dr (NC 210)



High-Visibility Crossing Over Atkinson Rd



Power Lines (Duke Easement) Crossing Groves Point Dr



ECG Route Over Surf City Bridge



There is an Existing Greenway in Kiwanis Park in Hampstead



Boardwalk Adjacent to Roland Ave (NC 210)



Boardwalk at Surf City Bark Park

SUMMARY TABLE + MAP OF ALIGNMENTS

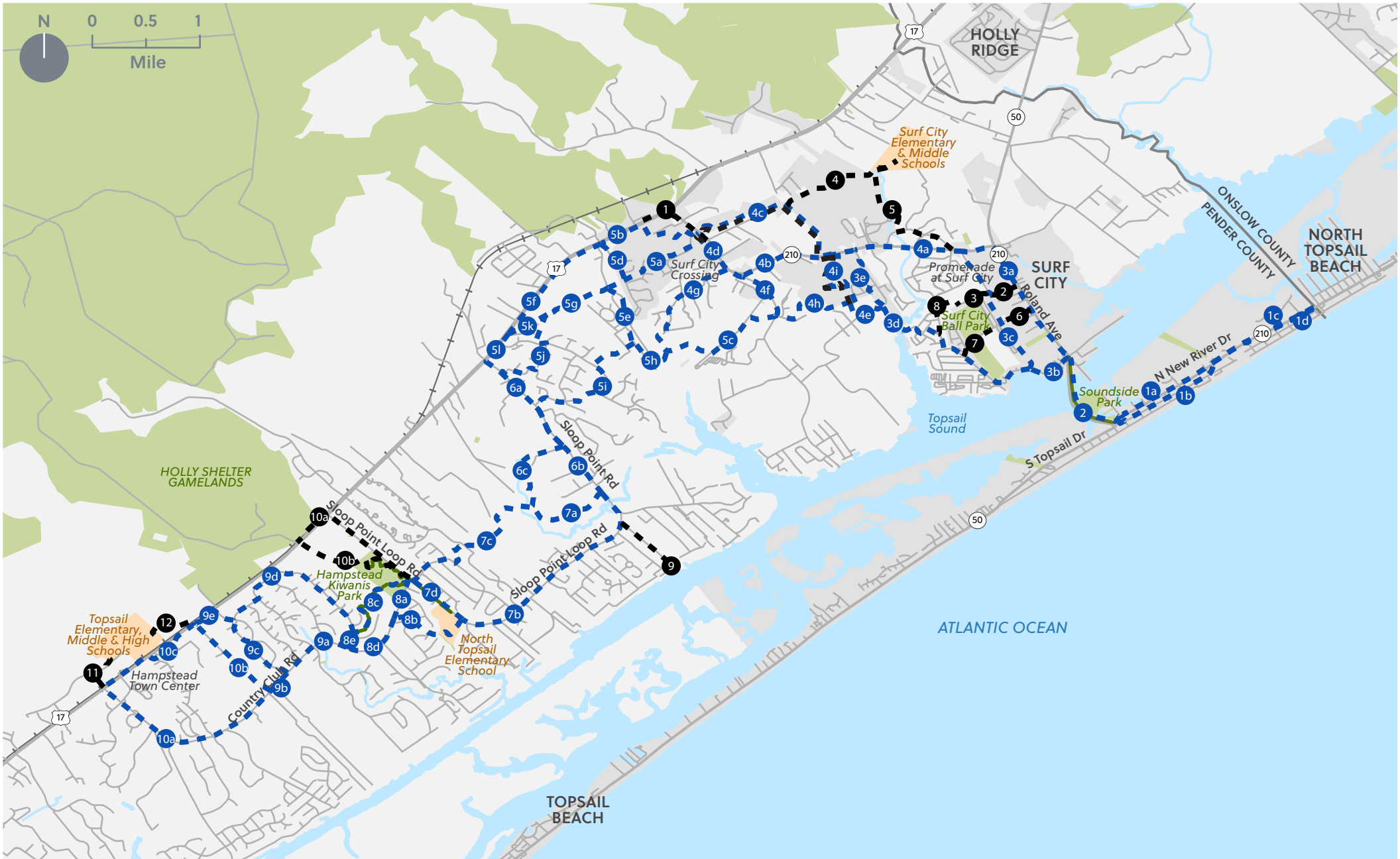
The summary table for the preliminary route segments is provided below and contains information related to segment limits and lengths. Overall, there are 51 segments and 13 connections. A map of the preliminary routes with the segments labeled follows the summary table.

PRELIMINARY ROUTE SEGMENT DETAILS

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)
Segment	1a	NC 210 from Surf City Bridge to Shell Rd	0.86
Segment	1b	N Topsail Dr from Surf City Bridge to NC 210 @ Shell Dr	0.89
Segment	1c	NC 210 from Shell Dr to Onslow County Line (north side)	0.96
Segment	1d	NC 210 from Shell Dr to Onslow County Line (cross to south side at Mecklenburg Ave)	0.93
Segment	2	Surf City Bridge - Existing MUP + Bike Lanes (Not Modeled)	
Segment	3a	NC 210/NC 50 from Surf City Bridge to NC 210 @ Future Connector Road	1.27
Segment	3b	Little Kinston Rd from NC 210 @ Surf City Bridge to Future Connector Road	0.36
Segment	3c	Future Connector Road from Little Kinston Rd to NC 210	1.22
Segment	3d	Off-road from Little Kinston Rd to S Brig Dr	1.63
Segment	3e	S Brig Rd to NC 210 via Saltwater Landing	0.61
Segment	4a	NC 210 from Future Connector Road to Saltwater Landing Dr	0.79
Segment	4b	NC 210 from Saltwater Landing Dr to Watts Landing Rd	0.90
Segment	4c	Off-road (NC 210) from Saltwater Landing Dr to Alston Blvd Ext	1.52
Segment	4d	NC 210 from Watts Landing Rd to Duke Easement	0.43
Segment	4e	Off-road from S Brig Dr to Magnolia Reserve Subdivision	0.36
Segment	4f	Watts Landing Rd from Old Post Office to NC 210	0.48
Segment	4g	King Dr from NC 210 to 5c	1.20
Segment	4h	Off-road from Magnolia Reserve Subdivision to Watts Landing Rd	0.72
Segment	4i	From NC 210 through Magnolia Reserve Subdivision	0.64
Segment	5a	Duke Easement from NC 210 to Cornel Ln	0.88
Segment	5b	NC 210/US 17 from Duke Easement to Cornel Ln	1.01

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)
Segment	5c	Watts Landing Rd to McClamme Dr to first crossing south of King Dr	1.04
Segment	5d	Cornel Ln from US 17 south to Duke easement	0.39
Segment	5e	Groves Point Dr from Duke easement to 5h	0.58
Segment	5f	US 17 from Cornel Ln to Duke Easement	1.10
Segment	5g	Duke Easement from Groves Point Rd to 5k	0.55
Segment	5h	From south of King Dr to Groves Point Rd	0.41
Segment	5i	From Groves Point Rd to Sloop Point Rd via Royal Tern Dr and Crown Pointe Dr	1.67
Segment	5j	From end of 5g at Duke Easement to Sloop Point Rd via Royal Tern Dr and Topsail Lake Dr	0.92
Segment	5k	From end of 5g along Duke Easement to US 17	0.34
Segment	5l	US 17 from Duke Easement to Sloop Point Rd	0.45
Segment	6a	Sloop Point Rd from Topsail Sunset Dr to Sleep Hollow Ln	0.85
Segment	6b	Sloop Point Rd from Sleepy Hollow Ln to Mullet Run	0.52
Segment	6c	Off-road from Sloop Point @ Sleepy Hollow to end of 7a	0.84
Segment	7a	Mullet Run from Sloop Point Rd to Midpoint	0.72
Segment	7b	Sloop Point Rd to Sloop Point Loop Rd to N Topsail Elementary	1.91
Segment	7c	Mullet Run from Midpoint to Country Club Dr	1.51
Segment	7d	Sloop Point Loop Rd from N Topsail Elementary to Country Club Dr	0.53
Segment	8a	Country Club Rd from Sloop Point Loop Rd to north of Yacht Basin Landing	0.38
Segment	8b	Sloop Point Loop to Country Club north of Yacht Basin Landing (off-road)	0.67
Segment	8c	Hampstead Park Greenway upgrade from Sloop Point Loop to Azalea Dr	0.90
Segment	8d	Country Club Rd from north of Yacht Basin Landing to Azalea Dr	0.53
Segment	8e	Azalea Dr from Greenway to Country Club Rd	0.14
Segment	9a	Country Club Rd from Azalea Dr to future subdivision	0.55
Segment	9b	Country Club Rd from future subdivision to transfer station Rd	0.21
Segment	9c	From Country Club through future subdivision to Leeward Ln	0.71
Segment	9d	Azalea Dr from greenway north of Leeward Ln	1.44

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)
Segment	9e	From Leeward Ln to US 17 frontage to Transfer Station	0.35
Segment	10a	Country Club Rd from Transfer Station Rd to US 17	1.56
Segment	10b	Transfer Station Rd from Country Club Rd to US 17	0.86
Segment	10c	US 17 from Transfer Station Rd to Country Club Rd	0.93
Connection	1	From NC 210 @ Duke Easement to M2S Connection Point	0.63
Connection	2	Tortuga Ln from NC 210 to Future Connector Road	0.24
Connection	3	Tortuga Ln from Future Connector Rd to Turtle Center	0.19
Connection	4	From Segment 4c to Surf City Elementary	1.01
Connection	5	From NC 210 @ Pine Needle Way to Surf City Elementary via Becky's Creek	1.36
Connection	6	JH Batts Rd from NC 210 to James Ave/Community Center Dr	0.26
Connection	7	JH Batts Rd from Royal Palm Ave (3d) to Surf City Park	0.40
Connection	8	From Landing Dr to Turtle Center via Cedar Dr	0.48
Connection	9	Sloop Point Loop Rd to Boat Landing	0.61
Connection	10a	Sloop Point Loop Rd from Country Club Dr to Holly Shelter Gamelands (on-road)	1.21
Connection	10b	Sloop Point Loop Rd from Country Club Dr to Holly Shelter Gamelands (off-road)	1.04
Connection	11	From US 17 @ Country Club Dr to Topsail Schools	0.36
Connection	12	Off-road from US 17 @ Transfer Station Rd to Topsail Schools	0.40



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY STUDIED ROUTES + CONNECTORS

LEGEND

NC-210 ECG CORRIDOR

- Studied Routes
- Study Connectors

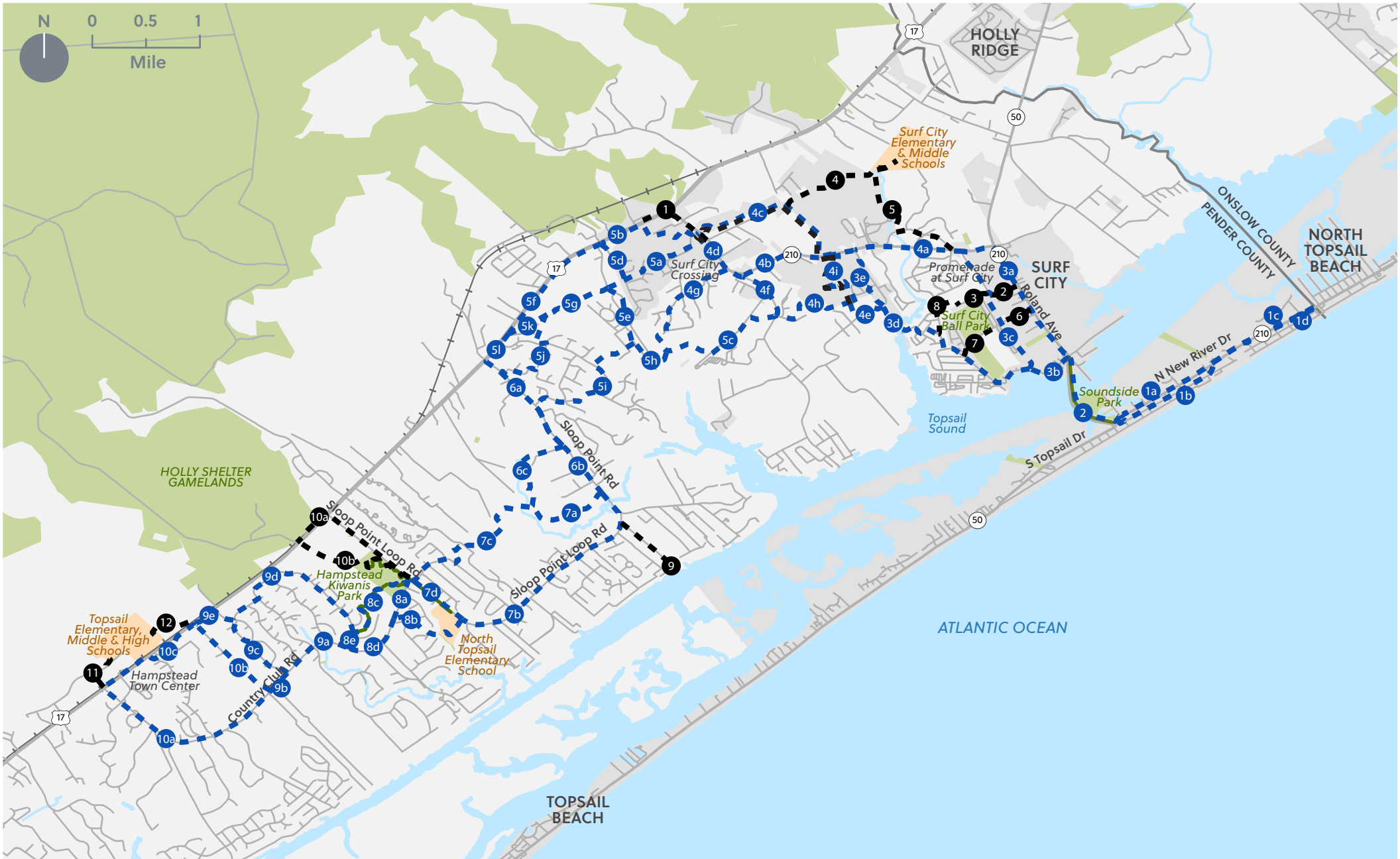
- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

OPPORTUNITIES + CONSTRAINTS ANALYSIS

An Opportunities and Constraints analysis was performed on the studied routes and connectors featured in the map to the right. Following the map is a table that provides the detailed analysis, including information on the segment limits, opportunities, constraints, the jurisdiction the segment falls within, notes, and key stakeholders who will likely be involved if the segment is implemented in the future. This analysis, paired with Steering Committee and public input helped to inform which segments should be removed from consideration.



Opportunity for High-Visibility Crossing at Topsail Elementary School - Hampstead, NC



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY **STUDIED ROUTES + CONNECTORS**

LEGEND

NC-210 ECG CORRIDOR

- Studied Routes
- Study Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

OPPORTUNITIES + CONSTRAINTS

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)	OPPORTUNITIES + CONSTRAINTS
Segment	1a	NC 210/N New River Dr from Surf City Bridge to Shell Rd	0.86	ROW constrained, land on north side of road constrained by intracoastal waterway
Segment	1b	N Topsail Dr from Surf City Bridge to NC 210 @ Shell Dr	0.89	Sufficient ROW, access to commercial destinations, large number of street crossings, NCDOT would prefer to avoid trail crossing at roundabout
Segment	1c	NC 210/N New River Dr from Shell Dr to Onslow County Line (north side)	0.96	ROW constrained, land on north side of road constrained by intracoastal waterway
Segment	1d	NC 210/N New River Dr from Shell Dr to Onslow County Line (cross to south side at Mecklenburg Ave)	0.93	Additional trail crossing needed, large amount of available ROW along majority of segment
Segment	2	Surf City Bridge	0.82	Existing bike lanes + 10' multi-use path
Segment	3a	NC 210/NC 50 from Surf City Bridge to NC 210 @ Future Connector Road	1.27	Existing transmission line cannot be moved, many driveway conflicts, proximity to businesses, widen existing sidewalks, some boardwalk replacement needed
Segment	3b	Little Kinston Rd from NC 210 @ Surf City Bridge to Future Connector Road	0.36	Lack of destinations, sufficient ROW, low volume street
Segment	3c	Future Connector Road from Little Kinston Rd to NC 210	1.22	Dependent on future connector road (not yet built), area is currently wetlands, implementation timeline uncertain
Segment	3d	Off-road from Little Kinston Rd to S Brig Dr	1.63	Off-road route, water views, bridge and boardwalk will be needed for Becky's Creek crossing, low volume neighborhood streets for sidepath segments
Segment	3e	S Brig Rd to NC 210 via Saltwater Landing	0.61	ROW constrained, existing sidewalk could be widened to sidepath, subdivision drainage issues may preclude sidepath development
Segment	4a	NC 210 from Future Connector Road to Northern Pintail Dr	0.79	Creek crossing requires boardwalk, sufficient ROW, high traffic volume along NC 210
Segment	4b	NC 210 from Northern Pintail Dr to Watts Landing Rd	0.90	ROW constrained, new development under construction, high traffic volume along NC 210
Segment	4c	Off-road from NC 210 @ Magnolia Reserve Subdivision to Alston Blvd Ext	1.52	Off-road route, but significant boardwalk sections due to wetlands, opportunity to utilize Duke easement, crossing of NC 210 needed

JURISDICTION	CATEGORY	NOTES	KEY STAKEHOLDERS
Surf City	Constructability Issues	North side of road constrained by intracoastal waterway	NCDOT, Local Businesses
Surf City			NCDOT, Local Businesses
Surf City	Constructability Issues	North side of road constrained by intracoastal waterway	NCDOT, Local Businesses
Surf City			NCDOT, Local Businesses
Surf City	Constructability Issues	Current sidewalk is alongside JOMCE transmission line	NCDOT, Local Businesses
Surf City			NCDOT, Local Residents
Surf City	Lack of Destinations	Segments misses key destinations along the NC 210 corridor	Future Developers, Adjacent Landowners
Surf City, Pender County			NCDOT, Surf City, Local Homeowner Association (HOA), USACE
Surf City	Drainage Issues	Input from Surf City staff indicates drainage issues in this neighborhood	Surf City, Local HOA
Surf City, Pender County			NCDOT
Surf City, Pender County	Undesirable Routing	Preferred routing chose through Magnolia Reserve subdivision	NCDOT
Surf City, Pender County	Connector Route	Not recommended as part of mainline	NCDOT, Local Landowners

OPPORTUNITIES + CONSTRAINTS (continued)

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)	OPPORTUNITIES + CONSTRAINTS
Segment	4d	NC 210 from Watts Landing Rd to Duke Easement	0.43	ROW and utility constraints in the area, high traffic volume along NC 210
Segment	4e	Off-road from S Brig Dr to Magnolia Reserve Subdivision	0.36	Off-road, no roadway ROW available but only a few large parcels to navigate
Segment	4f	Watts Landing Rd from Old Post Office to NC 210	0.48	ROW constrained, curb and gutter likely needed
Segment	4g	King Dr from NC 210 to 5c	1.20	Low volume street, south end unpaved, large boardwalk section needed
Segment	4h	Off-road from Magnolia Reserve Subdivision to Watts Landing Rd	0.72	Greenway route, no public ROW available but only a few large parcels, some wetlands may require boardwalk, coordination with owners needed
Segment	4i	From NC 210 through Magnolia Reserve Subdivision	0.64	Subdivision under construction, widen existing sidewalk to 10 ft sidepath, sufficient ROW
Segment	5a	Duke Easement from NC 210 to Cornel Ln	0.88	Majority off-road, design dependent on Duke Easement regulations, additional outreach needed to coordinate easements with local property owners, wetlands will require boardwalk outside of duke easement
Segment	5b	NC 210/US 17 from Duke Easement to Cornel Ln	1.01	US 17 has high speed/volume, no ROW constraints, some boardwalk needed for wetlands
Segment	5c	Watts Landing Rd to McClamme Dr to first crossing south of King Dr	1.04	Off-road, significant wetland presence, uses ROW where able, significant bridge/boardwalk needed to cross water
Segment	5d	Cornel Ln from US 17 south to Duke easement	0.39	Duke easement to US 17, can tie in to and widen existing sidewalks, low speed/volume street
Segment	5e	Groves Point Dr from Duke easement to 5h	0.58	Duke easement to 5h/l, sufficient ROW, curb and gutter may be needed
Segment	5f	US 17 from Cornel Ln to Duke Easement	1.10	Along US 17, sufficient ROW but some boardwalks needed due to wetlands, traffic speeds/volumes are high
Segment	5g	Duke Easement from Groves Point Rd to 5k	0.55	Boardwalk to be located outside of the Duke easement, neighborhood streets have sufficient ROW

JURISDICTION	CATEGORY	NOTES	KEY STAKEHOLDERS
Surf City, Pender County	Dependent on Infeasible Route	Dependent on use of segments along US 17 and the Duke easement, which have been removed from consideration	NCDOT
Surf City, Pender County	Undesirable Routing		Local Landowners, Local HOA
Pender County	Undesirable Routing		NCDOT
Pender County	Undesirable Routing		NCDOT, Local Landowners
Pender County			Local Landowners
Surf City			Local HOA, NCDOT
Surf City	Property Constraints	Feedback from public meeting indicates routing along easement not preferred	NCDOT, Duke Energy, Local Landowners, Local HOA
Surf City, Pender County	Undesirable Routing	US 17 is not a preferred routing choice	NCDOT, Local Businesses
Pender County			Local Landowners
Surf City, Pender County			Local HOA
Surf City, Pender County	Property Constraints	Feedback from public meeting indicates routing along easement not preferred	Duke Energy, Local Landowners
Pender County	Undesirable Routing	US 17 is not a preferred routing choice	NCDOT, Local Landowners
Pender County	Property Constraints	Feedback from public meeting indicates routing along easement not preferred	Duke Energy, Local Landowners

OPPORTUNITIES + CONSTRAINTS (continued)

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)	OPPORTUNITIES + CONSTRAINTS
Segment	5h	From south of King Dr to Groves Point Rd	0.41	Larger crossing, bridge + boardwalk needed for water crossing, need to coordinate with property owners for easements
Segment	5i	From Groves Point Rd to Sloop Point Rd via Royal Tern Dr and Crown Pointe Dr	1.67	Existing sidewalks on Crowne Point, boardwalk needed for wetland crossing, additional coordination with local HOA needed
Segment	5j	From end of 5g at Duke Easement to Sloop Point Rd via Royal Tern Dr and Topsail Lake Dr	0.92	Local streets provide option that avoids US 17, additional coordination with local HOA needed
Segment	5k	From end of 5g along Duke Easement to US 17	0.34	Clear connection through easement, some residential parcels to cross
Segment	5l	US 17 from Duke Easement to Sloop Point Rd at Topsail Sunset Dr	0.45	Along US 17, sufficient ROW but some boardwalks needed due to wetlands, traffic speeds/volumes are high
Segment	6a	Sloop Point Rd from Topsail Sunset Dr to Sleep Hollow Ln	0.85	Along roadway corridor, sufficient ROW, some curb + gutter needed, traffic speed may be high
Segment	6b	Sloop Point Rd from Sleepy Hollow Ln to Mullet Run	0.52	Along roadway corridor, sufficient ROW, some curb + gutter needed
Segment	6c	Off-road from Sloop Point @ Sleepy Hollow to Mullet Run	0.84	Off-road, some wetlands to cross, only 4 parcels to bypass part of roadway segment
Segment	7a	Mullet Run west from Sloop Point Rd	0.72	Creekside alignment, no wetlands
Segment	7b	Sloop Point Rd from north of Mullet Run to Sloop Point Loop Rd at N Topsail Elementary	1.91	Sufficient ROW, large boardwalk to cross Mullet Run, some topography challenges, curb and gutter likely needed in places, traffic speeds may be high
Segment	7c	Mullet Run from to Country Club Dr via subdivision streets	1.51	Two wetland crossings, tie to existing subdivision sidewalk network and, some ROW available along public streets
Segment	7d	Sloop Point Loop Rd from N Topsail Elementary to Country Club Dr	0.53	Sufficient ROW, existing sidepath on opposite side of road

JURISDICTION	CATEGORY	NOTES	KEY STAKEHOLDERS
Pender County			Local Landowners, USACE
Pender County			Local HOA
Pender County	Dependent on Infeasible Route	Dependent on use of segments along the Duke easement, which have been removed from consideration	Local HOA
Pender County	Property Constraints	Feedback from public meeting indicates routing along easement not preferred.	Duke Energy, Local Landowners
Pender County	Undesirable Routing	US 17 is not a preferred routing choice.	NCDOT
Pender County			NCDOT
Pender County	Dependent on Infeasible Route	Dependent on use of segments along US 17 and the Duke easement, which have been removed from consideration	NCDOT, USACE
Pender County	Constructability Issues	Significant wetland presence, alternative routes provide easier access to natural areas.	Local Landowners
Pender County			Local Landowners, NCDOT, USACE
Pender County	Undesirable Routing	Adds significantly to project length without reaching new destinations.	Local Landowners, NCDOT, USACE
Pender County			Local HOA, USACE
Pender County	Undesirable Routing	This segment is redundant to the existing sidepath along Sloop Point Loop Rd.	NCDOT, Pender County Schools

OPPORTUNITIES + CONSTRAINTS (continued)

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)	OPPORTUNITIES + CONSTRAINTS
Segment	8a	Country Club Rd from Sloop Point Loop Rd to north of Yacht Basin Landing	0.38	Many residential driveways, ROW constraints, curb and gutter needed
Segment	8b	Sloop Point Loop to Country Club north of Yacht Basin Landing (off-road)	0.67	Greenway through natural areas, direct access to elementary school significant wetlands presence and some topography challenges behind school
Segment	8c	Hampstead Park Greenway upgrade from Sloop Point Loop to Azalea Dr	0.90	Existing facility is west of Azalea Dr is 12', could serve as greenway but would need maintenance sooner than other sections, boardwalk and paths within park need upgrade to meet 12' desired width
Segment	8d	Country Club Rd from north of Yacht Basin Landing to Azalea Dr	0.53	Many residential driveways, ROW constraints, curb and gutter needed
Segment	8e	Azalea Dr from Greenway to Country Club Rd	0.14	Sufficient ROW, curb and gutter likely needed, many residential driveways
Segment	9a	Country Club Rd from Azalea Dr to future subdivision	0.55	Sufficient ROW, mostly residential parcels, curb and gutter needed, provides access to local brewery
Segment	9b	Country Club Rd from future subdivision to transfer station Rd	0.21	Sufficient ROW, but long boardwalk section to cross wetlands
Segment	9c	From Country Club through future subdivision to Leeward Ln	0.71	Sufficient ROW through subdivision, tie to proposed sidewalk on frontage road
Segment	9d	Azalea Dr from greenway north of Leeward Ln	1.44	Sufficient ROW, curb and gutter likely needed, many residential driveways
Segment	9e	From Leeward Ln to US 17 frontage to Transfer Station	0.35	Sufficient ROW, curb and gutter likely needed, widen sidewalk along frontage road built by R-3300
Segment	10a	Country Club Rd from Transfer Station Rd to US 17	1.56	Conflict with golf course near Olde Point Rd, crossing proposed at existing golf course crossing, curb and gutter needed to constrained ROW
Segment	10b	Transfer Station Rd from Country Club Rd to US 17	0.86	Large concrete drainage structure, no destinations, passes by landfill, large parcels (one is county-owned)
Segment	10c	US 17 from Transfer Station Rd to Country Club Rd	0.93	R-3300 will build frontage road on south side of US 17 with a sidewalk, NCDOT to encourage crossing at signal in front of school
Connection	1	From NC 210 @ Duke Easement to MST Connection Point	0.63	Proximity to commercial destinations, large driveways and potential conflicts

JURISDICTION	CATEGORY	NOTES	KEY STAKEHOLDERS
Pender County			NCDOT, Local Landowners
Pender County	Connector Route	Wetlands may provide cost prohibitive, however this could be a desirable connection to N Topsail Elementary	NCDOT, Pender County Schools, USACE
Pender County	Constructability Issues	Demolition and reconstruction of existing boardwalk adds significantly to project complexity.	NCDOT, Pender County Parks and Rec, Local HOAs
Pender County			NCDOT, Local Landowners
Pender County	Connector Route	Recommended connection to existing greenway.	Local HOA
Pender County			NCDOT, Ironclad Golf Club
Pender County			NCDOT, Local Landowners
Pender County	Undesirable Routing	Local input preferred routing along Country Club Dr	NCDOT, Future Developer
Pender County	Undesirable Routing	Local input preferred routing along Country Club Dr	Local HOA
Pender County	Undesirable Routing	Local input preferred routing along Country Club Dr	NCDOT, Local HOA
Pender County			NCDOT, Olde Point CC, Local HOAs, USACE
Pender County	Undesirable Routing	Local input preferred routing along Country Club Dr	NCDOT
Pender County	Undesirable Routing	Local input preferred routing along Country Club Dr	NCDOT, Local Businesses
Surf City			NCDOT, Local Businesses

OPPORTUNITIES + CONSTRAINTS (continued)

TYPE	ID	SEGMENT LIMITS	LENGTH (MI)	OPPORTUNITIES + CONSTRAINTS
Connection	2	Tortuga Dr from NC 210 to Future Connector Road	0.24	Sufficient ROW, connectivity to existing sidewalk networks, low speed/volume street
Connection	3	Tortuga Dr from Future Connector Rd to Turtle Center	0.19	Sufficient ROW, connectivity to existing sidewalk networks, low speed/volume street
Connection	4	From Segment 4c to Surf City Elementary	1.01	Only two large parcels to elementary school, some wetlands
Connection	5	From NC 210 @ Pine Needle Way to Surf City Elementary via Becky's Creek	1.36	Uses ROW where able, uses creek corridor, some wetlands
Connection	6	JH Batts Rd from NC 210 to James Ave/Community Center Dr	0.26	Sufficient ROW, connectivity to existing sidewalk networks, low speed/volume street
Connection	7	JH Batts Rd from Royal Palm Ave (3d) to Surf City Park	0.40	ROW constrained, low speed/volume street
Connection	8	From Landing Dr to Turtle Center via Cedar Dr	0.48	Stream crossing, wetlands, multiple boardwalks needed
Connection	9	Sloop Point Loop Rd to Boat Landing	0.61	Conflicts with vehicles pulling boats, unclear if significant demand for bike/ped travel here
Connection	10a	Sloop Point Loop Rd from Country Club to Holly Shelter Gamelands (on-road)	1.21	Sufficient ROW, large number of driveways, additional coordination with NCDOT needed for bike/ped crossing of US 17
Connection	10b	Sloop Point Loop Rd from Country Club to Holly Shelter Gamelands (off-road)	1.04	Wetlands will require boardwalk, no public ROW but only a few large parcels to cross, additional coordination with NCDOT needed for bike/ped crossing of US 17
Connection	11	From US 17 @ Country Club Rd to Topsail Schools Complex	0.36	ROW constrained, but low number of owners, US 17 crossing needed
Connection	12	Off-road from US 17 @ Transfer Station Rd to Topsail Schools Complex	0.40	Potential coordination with Hampstead Bypass (R-3300) along the west side of the Topsail Schools complex

JURISDICTION	CATEGORY	NOTES	KEY STAKEHOLDERS
Surf City			Local Businesses
Surf City			Sea Turtle Rescue Center
Surf City			Local Landowners, Pender County Schools, NCDOT
Surf City, Pender County	Undesirable Routing	Connection 4 preferred due to fewer property impacts, no additional crossing of NC 210	Local Landowners, Pender County Schools, NCDOT
Surf City			Local Businesses, Surf City Parks, Recreation & Tourism
Surf City	Dependent on Infeasible Route	Connection only serves segment 3d, which has been removed from consideration.	Local Landowners, Surf City Parks, Recreation & Tourism
Surf City, Pender County	Dependent on Infeasible Route	Connection only serves segment 3d, which has been removed from consideration.	Sea Turtle Rescue Center, Local Landowners
Pender County	Dependent on Infeasible Route	Connection only serves segment 8b, which has been removed from consideration.	Local Landowners, Sloop Point Marina, NCDOT
Pender County			NCDOT, NC State Parks
Pender County	Deemed Infeasible	Crossing US 17 at Holly Shelter entrance not recommended by NCDOT.	NCDOT, NC State Parks, Local Landowners
Pender County			NCDOT, Pender County Schools, Local Landowners
Pender County	Deemed Infeasible	Construction of R-3300 would prevent this connection from being feasible	NCDOT, Pender County Schools





03. COMMUNITY + STAKEHOLDER INVOLVEMENT



OVERVIEW

Community engagement is an essential part of any planning process. The most effective plans are firmly rooted in the realities and visions of the communities that created them. This study relies on a combination of input from community members, Steering Committee members, supporting agencies, and non-profit organizations to inform the feasibility study for the *NC 210 ECG*.

COMMUNITY INVOLVEMENT

Several engagement events took place throughout the study process: Steering Committee meetings, public meetings, landowner coordination, interjurisdictional meetings, and a public survey. A Steering Committee supported the study and was composed of representatives from local cycling advocacy organizations, local agencies, and institutions who will be key in the implementation of the project. Steering Committee members met four times throughout the duration of the project and provided guidance for the study by reviewing and sharing feedback on relevant data, community engagement efforts, alignment recommendations, and implementation strategies. Members also supported the study by disseminating information and communication materials to the public.

• • • STEERING COMMITTEE MEMBERS • • •

Cape Fear RPO

Patrick Flanagan, Regional Planner

Duke Energy

Pam Hardy, District Manager

East Coast Greenway Alliance

Andrew Meeker, North Carolina Coordinator

Friends of the Mountains-to-Sea Trail

Ben Jones, Coastal Crescent Project Manager

Greater Topsail Area Chamber of Commerce + Tourism

Scott Franko, Board of Directors Chairman

NCDOT

Tony Sumter, IMD Regional Planner

Adrienne Cox, Division 3 Planning Engineer

Nazia Sarder, Transportation Planning
Division, Transportation Engineer

NC State Parks

Smith Raynor, State Trails Planner

Pender County

Travis Henley, Planning Director

Vanessa Lacer, Long Range Planner

Justin Brantley, Planner

Zach White, Parks + Recreation Supervisor

Tammy Proctor, Director of Tourism/Public
Information Officer

Terry Benjey Cycling Foundation

Adrienne Harrington, Member

Eileen McConville, Member

Town of Surf City

Amy Kimes, Town Planner

Lt. Chris Houser, Safety Officer

Michael Rocco, GIS

Derek Arthur, Planning Board Member

Dave McCole, Finance Director

Wilmington Urban Area MPO

Abbey Lorenzo, Transportation Planner

Emma Stogner, Planner

Steve Zinder, Bicycle + Pedestrian Advisory
Committee

Al Schroetel, Bicycle + Pedestrian Advisory
Committee

Carol Stein, Bicycle + Pedestrian Advisory
Committee

STEERING COMMITTEE MEETING #1

The first Steering Committee Meeting occurred on June 13, 2022. At the meeting, the project team provided an overview of the project including the study area, project schedule, and outlined the community engagement timeline. The team also reviewed findings from the existing conditions analysis and reviewed the project alternatives. The Steering Committee participated in a mapping exercise to highlight key opportunities and constraints in the study area. Key findings and takeaways for this meeting are presented below.

Key Findings:

- Steering Committee members prefer a route that runs parallel to Roland Avenue because it sees a lot of traffic during the summer.
- Members voiced preference for a greenway that follows the Duke Energy easement rather than US 17.
- On-island facilities are preferred over off-island facilities.

STEERING COMMITTEE MEETING #3

The third Steering Committee Meeting was held virtually on October 26, 2022. The purpose of the meeting was to discuss community engagement updates, the route selection criteria, the recommended route alignments, prioritization, typical cross sections, intersections, design considerations, as well as policy and maintenance recommendations.

Key Findings:

- The Steering Committee ranked the route selection criteria in the following order (most important to least important): Physical feasibility, community priorities, cost, environmental impacts, accessibility, property impacts, potential funding opportunities, placemaking and user experience, leadership support, traffic impacts, and implementation timeframe.
- The preliminary criteria ranking results showed that Route 2 ranked the highest, followed by Route 3, Route 1, and then Route 4.
- Attendees voiced concern for boardwalk materials and how they will hold up during the hurricane season.

- Grant funding will help to expand the existing greenway at Kiwanis Hampstead Park.

STEERING COMMITTEE MEETING #2

The second Steering Committee Meeting took place on August 24, 2022. The purpose of the meeting was to discuss project goals and define success for the project. The project team reviewed the community engagement survey results and provided an overview on the route alternatives development. The team also discussed potential route selection criteria that will be used to prioritize the preliminary routes in the study. Members provided comments on the route alternatives during a Conceptboard exercise. Key findings are detailed below.

Key Findings:

- The suggested project goals included safety, accessibility and connectivity, environmental protection, regional collaboration, and project feasibility.
- The survey received 1774 responses and the results indicated a desire for safe connections to parks, beaches, and shopping areas, as well as an emphasis on use for health and recreation purposes.
- The Steering Committee would like for the team to explore a hiking trail loop around the current and updated MST route that connects to the study corridor.
- The current MST route runs along the beach near N New River Drive which is not preferred.

STEERING COMMITTEE MEETING #4

The fourth Steering Committee Meeting was held virtually on February 27, 2023. The purpose of the meeting was to review the draft study, discuss the role of the Steering Committee after the conclusion of the study, and to discuss next steps for the project.

Key Findings:

- Steering Committee members are interested in their role following study adoption and hope to serve as champions of the greenway.

LANDOWNER COORDINATION

Landowner coordination letters were distributed in Fall 2022. Some landowners attended public meetings where they submitted forms containing their input on the project. Key findings are outlined below.

- Landowners favored the design concepts with scenic features and with connections to shopping and schools.
- Landowners were concerned about impacts to their privacy along the Duke Transmission Line Easement
- The project team explained that the feasibility study is still in the study phase. Design and construction phases will be dependent on funding availability (likely at least several years from now).

STAKEHOLDER MEETINGS

Stakeholder meetings were held to promote coordination efforts between neighboring jurisdictions, NCDOT, and organizational managers on route preferences and alternatives, maintenance responsibilities, and future project development. The meeting series took place in Summer and Fall of 2022. The meeting series included technical coordination meetings with Duke Energy, Jones-Onslow Electric Membership Corporation, the NC Fish and Wildlife Coastal Ecoregion Area managers for the Holy Shelter Gamelands, Trail Planning Agencies and Organizations (State Trails, FMST, ECG), and NCDOT. The RPO also contacted the Carolina Gullah Geechee Greenway-Blueway Heritage Trail to understand future plans for their project. Both the NCDOT coordination meeting and the interjurisdictional meetings are summarized below.

INTERJURISDICTIONAL MEETINGS

An Interjurisdictional meeting was held on September 23, 2022, with representatives from planning agencies in Surf City, Pender County, Wilmington, and Jacksonville; with the Jacksonville MPO representing Onslow County and the Wilmington Urban Area MPO representing New Hanover County. During the meeting, the project team reviewed the route alternatives and had a working session with the group to provide comments on the maps. Follow-up coordination was conducted with Pender County and Surf City. Key findings are listed below.

- Understanding new and proposed residential areas and future land development projects will be key to making meaningful connections.
- Duke Energy may not be supportive of the greenway within their easement.
- Safe crossing of US 17 is strongly desired and coordination with the Hampstead Bypass will be needed, as well as future coordination with anticipated pedestrian studies in North Topsail and Holly Ridge.
- Several of the roads within the study area are private so residents do not have public access in these areas.

NCDOT COORDINATION MEETING

The study team met with NCDOT virtually on September 26, 2022, to coordinate on the study. Key findings from the meeting are listed below.

- There was concern for crossing improvements on subdivision streets that are maintained by NCDOT.
- In the future, a crossing over US 17 may be viable at the high school.
- US 17 and NC 210 will eventually have a TIP project, so it is important to include pedestrian improvements there.
- The roundabout at S Topsail Drive sees traffic because people come and leave for seasonal visits. It backs up in all directions.
- The Surf City Planning Department may have more information on recent stormwater grants and plans which may influence potential conflict with the proposed greenway and large storm drains on Topsail Island.

PUBLIC MEETING #1

A drop-in style public meeting took place on November 14, 2022, at Surf City Town Hall. Members of the public gathered at the meeting to discuss the four route alternatives and typical cross sections. Members of the Steering Committee distributed flyers and information to the public through local networks and social media platforms. Key findings are listed below.

Key Findings:

- Attendees expressed interest in route alternatives that are safe and avoid traffic on Roland Avenue (Routes 1 and 4).
- Route 4 would allow more school-aged children to bicycle to and from school.
- Members of the public would like to access business areas from the greenway.



Public Meeting #1 - Surf City, NC



Public Meeting #2 - Surf City, NC

PUBLIC MEETING #2

A second drop-in style public meeting took place on February 21, 2023, at Surf City Town Hall. Members of the public gathered at the meeting to review and provide feedback on the preferred route and recommended intersection designs for the NC 210 ECG. Fifteen people attended the meeting. Key findings are listed below.

Key Findings:

- Overall, meeting attendees were supportive of the preferred alignment.
- Some attendees would like to see the route go behind Surf City Ball Park rather than on Caretta Drive (Preferred Cutsheet Segment #2).
- One landowner is planning to build on their parcel located east of Groves Point Road on Preferred Cutsheet Segment #4.

PUBLIC SURVEY

The project team launched a public survey on July 12, 2022, and it was open for public comment through August 8, 2022. The Cape Fear Council of Governments linked the survey on their website as a PublicInput.com survey. The survey attracted 1,774 participants who provided approximately 1,500 comments. The feedback obtained through this survey will support the framework for developing the proposed ECG through Pender County.

The project team distributed the public survey to help accomplish the following:

- Introduce the project and gauge public support.
- Solicit and compile public comment on destinations, opportunities and challenges, user preferences, and route preferences.
- Fulfill requests for information.
- Develop an email contact list for interested parties.

The survey was divided up into the following three sections: project-specific questions, interactive mapping questions, and [optional] personal questions. Public feedback is summarized below by theme or specific comment.

Overall, the comments collected were generally positive and include several different perspectives on the project. Key takeaways from the survey include the following:

- This corridor is a major link in the ECG and will provide safe connections for residents and tourists alike.
- Greenways are a valued community asset currently missing from the area.

- Many people wish they could walk or bike to shopping destinations and the beach and would use a trail if it existed.
- Heavy vehicular traffic and the lack of bicycle and pedestrian facilities on US 17, NC 210, Country Club Rd, and on the island makes walking and biking unsafe.
- NC 210 between US 17 and NC 50 is a top priority and would enable residents of many neighborhoods to reach shopping and entertainment destinations without driving.
- Off-road paths are safer and allow families and people of all ages and abilities to feel comfortable riding and walking.
- Dogwood Lakes residents are concerned over possible land impacts and safety issues from a greenway through their neighborhood.
- Existing sidewalks in the area often end abruptly or do not connect to useful destinations.
- There is a desire for greenway amenities such as pet waste stations, benches, shade trees, and lighting on any proposed trail.
- Access to schools and parks via trails is important, especially for families and young adults.
- Trails in Wilmington and Wrightsville Beach are popular among respondents and should serve as an example for Surf City.
- Sidewalks on Roland Avenue north of the Surf City bridge are difficult to access and poorly maintained.
- Greenway connections to Holly Ridge and Wilmington are also desired.

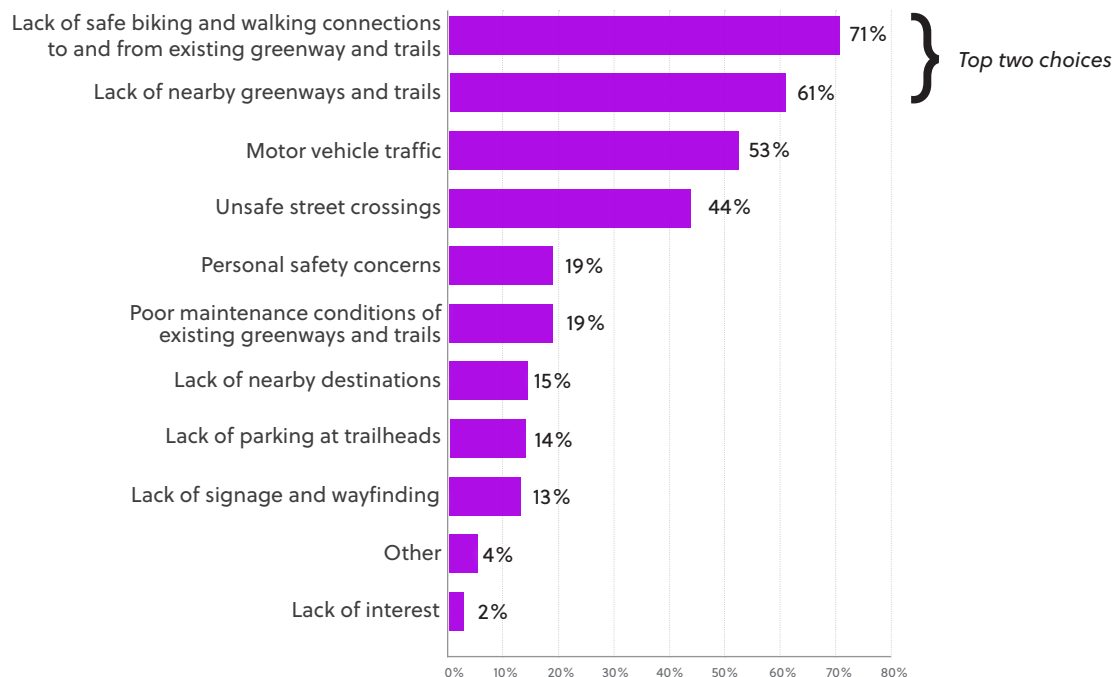
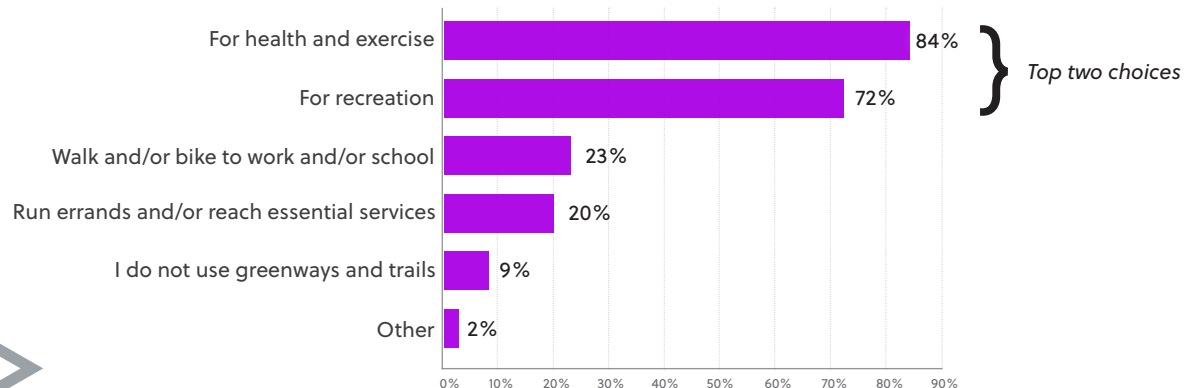
Survey questions are summarized on the following pages. A copy of the survey is provided in Appendix B.





How Do You Currently Use Greenways, Trails, and Multi-use Paths in Hampstead, Surf City, and neighboring Communities?

Select all that apply.

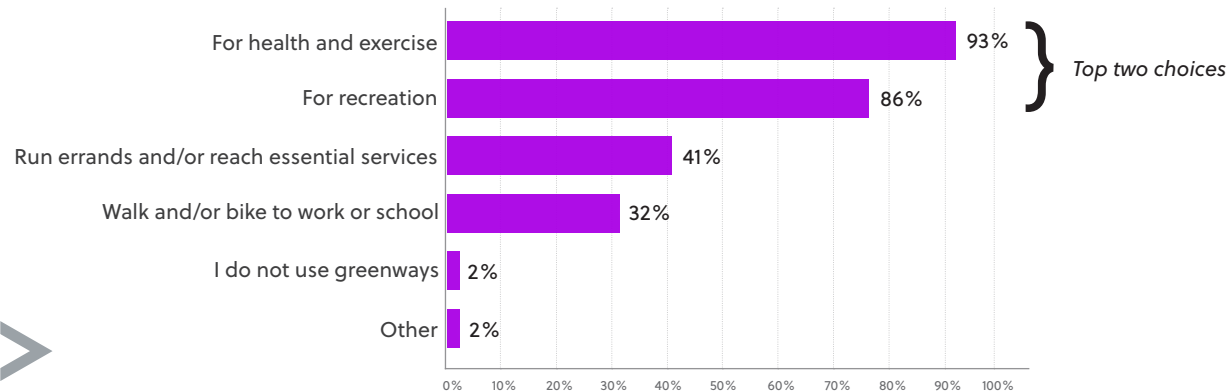


What Factors Discourage You From Using Greenways, Trails, and Multi-use Paths in Hampstead, Surf City, and neighboring Communities?
Select all that apply.

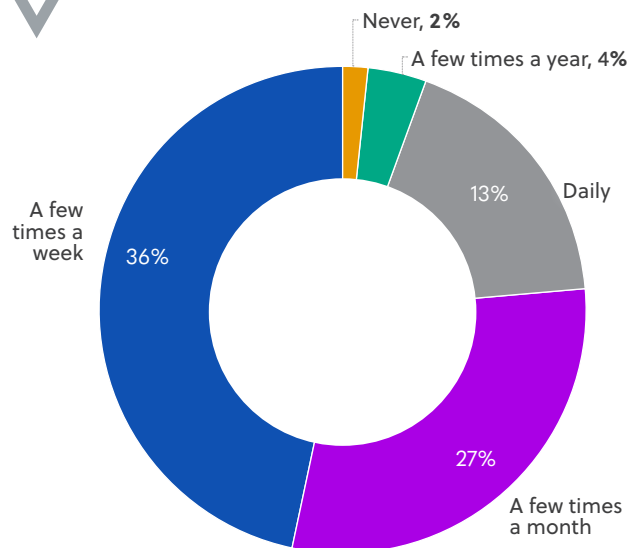


How Would You Use the Proposed NC 210 ECG Corridor (connecting Hamstead, Surf City, and North Topsail Beach) Once the Trail Is Constructed?

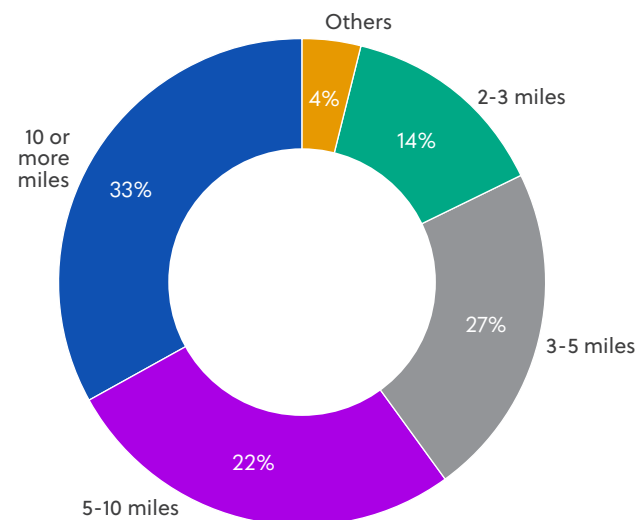
Select all that apply.



How Frequently Would You Use the Proposed NC 210 ECG Corridor (Connecting Hamstead, Surf City, and North Topsail Beach) Once the Trail is Constructed?

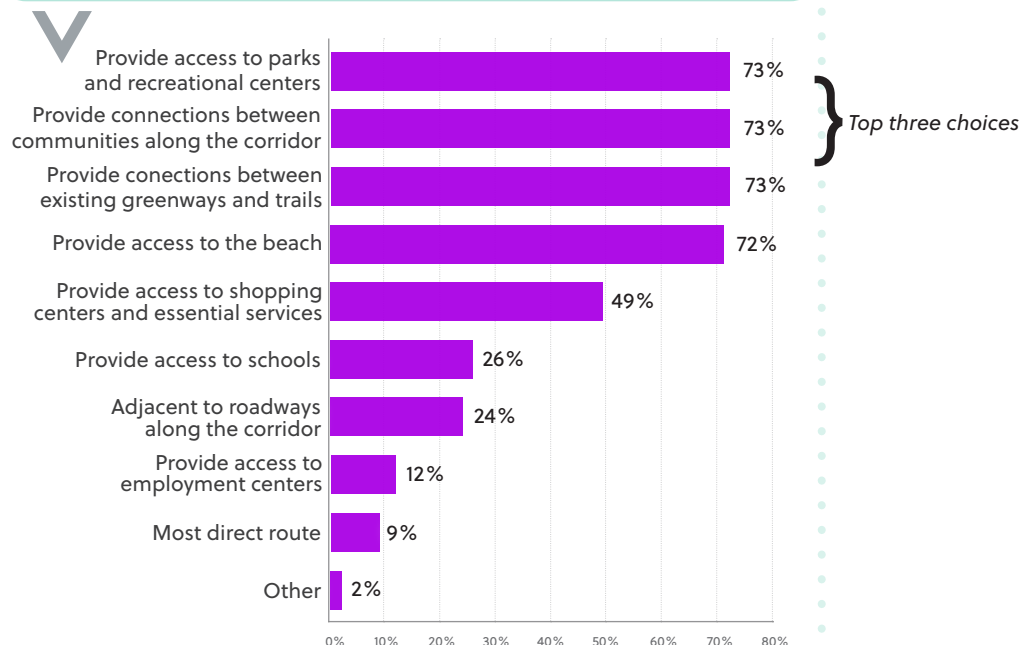


On Average, How Long of a Distance Would You be Willing to Travel Along the Proposed NC 210 ECG Corridor (Connecting Hamstead, Surf City, and North Topsail Beach) As Part of a Trip or Activity?

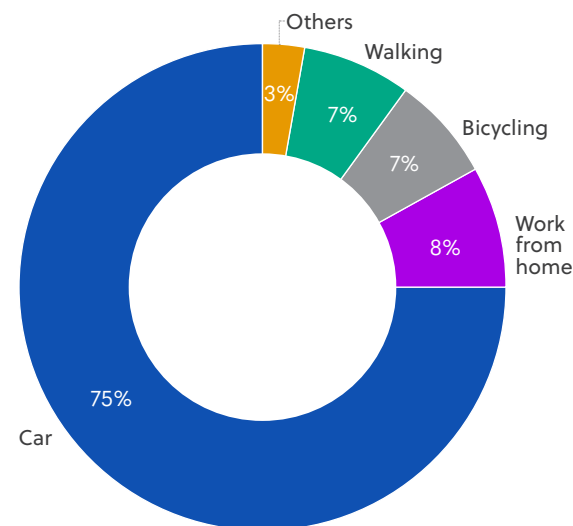




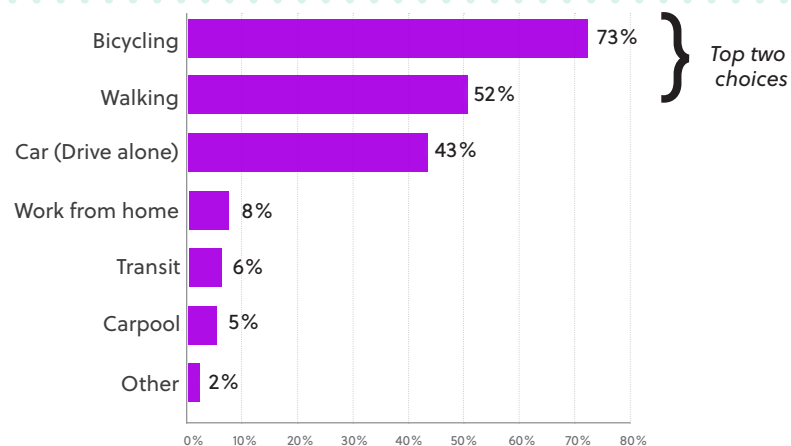
What Are Your Routing Preferences for the Proposed NC 210 ECG Corridor (Connecting Hamstead, Surf City, and North Topsail Beach)? *Select all that apply.*



What is Your Primary Mode of Transportation for Commuting to Work or School and/or Running Errands?



Now Consider Your Desired Commute or Mode for Running Errands in the Future. Which Modes Would You Like to Use? *Select all that apply.*



INTERACTIVE MAPPING QUESTION #1

Survey participants were asked to map their preferred destinations that they would like to access via the proposed NC 210 ECG corridor (connecting Hampstead, Surf City, and North Topsail Beach). Participants could mark preferred destinations for their house, work location, recreational areas, schools, shopping destinations, and others. The updated study routes for the project were placed underneath the markers to provide a comparison between the routes and the survey results. The results are outlined below by category.



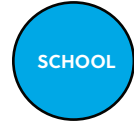
Survey respondents did not identify accessing work from the greenway as a priority when compared to other destination categories. In general, work locations were scattered across the study area.



Several respondents marked that they live between the Topsail schools (Elementary, Middle, and High) and Sloop Point Road. A handful of respondents also marked that they would like to access the greenway from their homes that are located between NC 210 and the Surf City Ballpark.



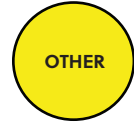
Hampstead Kiwanis Park, Holly Shelter Gamelands, and Soundside Park are considered important recreational areas to survey respondents. Respondents also indicated that they would like to access recreational opportunities within the Town of Surf City's municipal limits (and along NC 210).



According to the survey, Topsail Elementary, Topsail Middle School, Topsail High School, North Topsail Elementary School, and Surf City Elementary School were marked as primary destinations for greenway users.



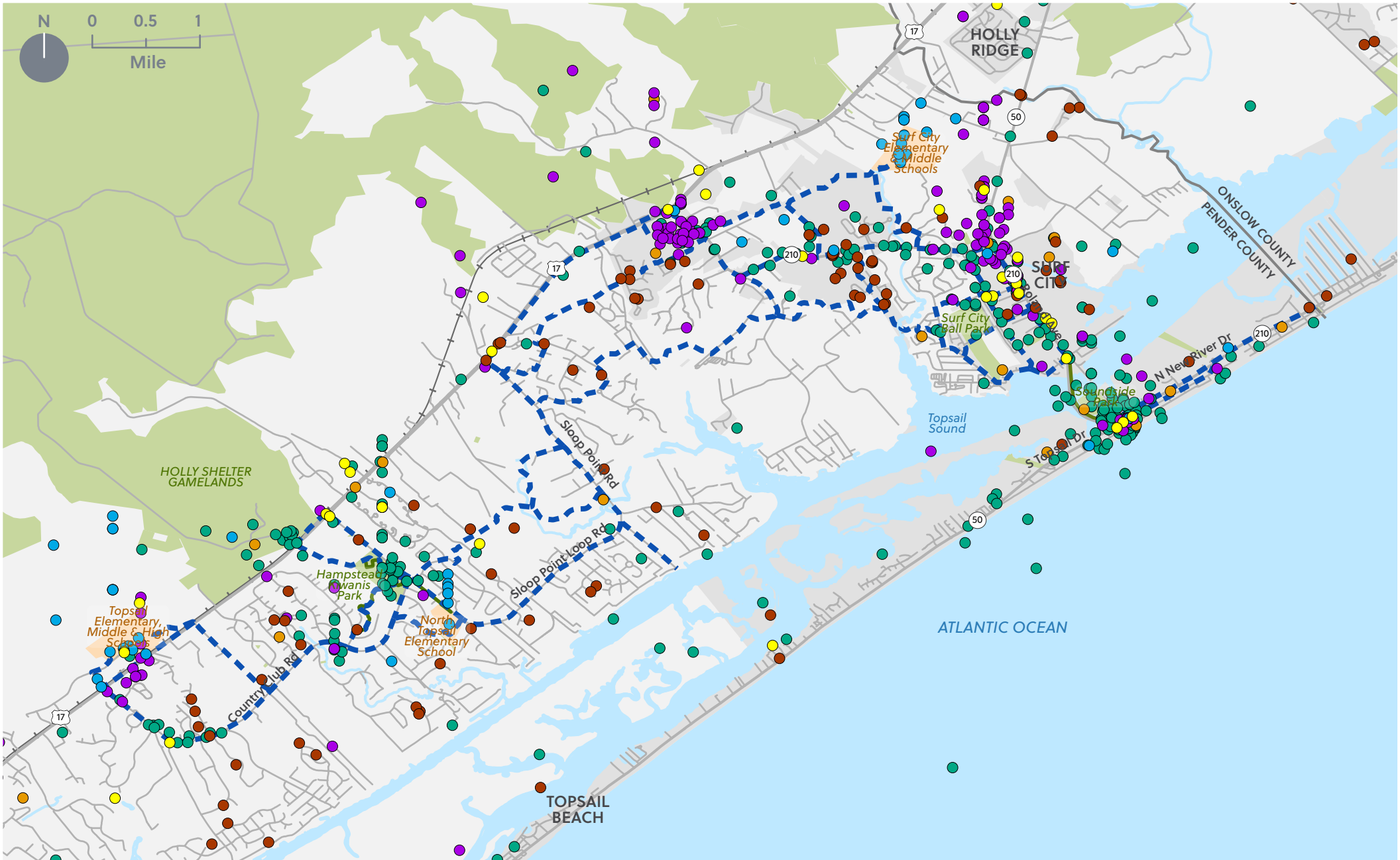
Popular shopping destinations, such as the Lowes Foods and Lowe's Home Improvement store on US 17 were marked multiple times during the mapping exercise. Another popular shopping destination that future greenway users would like to access is the Walmart Neighborhood Market on NC 210.



Several "other" destinations were placed on the map along US 17 and NC 210 in Surf City. Others were scattered throughout the study area.

The following list is a summary of map comments provided by respondents:

- Safe and convenient access for pedestrians and cyclists to shopping, dining, and recreation is highly desired by the community
- A trail connection between Holly Ridge and Surf City is desired
- Respondents do not currently feel safe walking or biking on Topsail Island, especially between Surf City and Topsail Beach
- A lack of sidewalks on the east side of Roland Avenue north of the Surf City Bridge makes it difficult for some people to walk or bike to the beach
- Harris Teeter is frequently mentioned as a specific shopping destination to which access is desired
- Respondents would like to see the western section of the trail provide access to Olde Point Country Club, Ironclad Golf, and Kiwanis Park



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
PREFERRED DESTINATIONS**

LEGEND

Study Routes

Preferred Destinations

- Work
- Home
- Recreation
- School
- Shopping
- Other

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

INTERACTIVE MAPPING QUESTION #2

The second interactive mapping question asked participants to mark areas (e.g., streets, intersections, neighborhoods, etc.) that need the most pedestrian and bicycle infrastructure improvements along the proposed NC 210 ECG Corridor (connecting Hampstead, Surf City, and North Topsail Beach). Again, the updated study routes for the project were placed underneath the markers to provide a comparison between the routes and the survey results.

According to survey respondents, most of the areas identified for bicycle and pedestrian infrastructure fall along US 17, NC 210, and NC 50. Surf City was identified as needing the most bicycle and pedestrian infrastructure, especially along NC 210 (indicated by the red markers). Some roads, including Country Club Road and US 17 were also recognized as areas that could use bicycle and pedestrian infrastructure in the future. In general, the markers placed in the interactive map exercise align with the routes under consideration for the *NC 210 ECG Feasibility Study*.

The following list is a summary of map comments provided by respondents:

- Walking and biking on the island, especially south of Surf City, is unsafe due to a lack of sidewalks and bike paths
- Many major roads including NC 210 are narrow and do not have even a wide shoulder for pedestrians, bicyclists, or joggers
- Safe paths and crosswalks are important for encouraging youth to walk or bike to school
- Country Club Road is unsafe for pedestrians and cyclists yet serves a number of residential neighborhoods
- Pedestrian safety barriers may be needed at US 17
- Traffic on US 17, NC 210, and NC 50 is very high, especially in tourist season





04. EVALUATION + RECOMMENDATIONS



OVERVIEW

Potential routes for the NC 210 ECG route were developed and evaluated using an approach with considerations of the built, natural, social, and economic environments.

Over 60 mainline and connector segments were developed using the study area information, previous planning efforts, policy review, and existing conditions information as presented in Chapters 1 and 2. Routes identified in previous studies and planning efforts were included for evaluation and used to identify potential connection points. The evaluation process combined a desktop analysis and on-the-ground fieldwork to become more familiar with existing conditions and help identify opportunities and constraints along the study corridor. Preliminary three-dimensional corridor modeling of the potential routes was performed to better understand possible construction impacts, confirm longitudinal grades meet accessibility criteria, and provide detailed quantity information for the development of higher quality cost estimates.

Evaluation of the route alternatives was informed by the project Steering Committee as well as feedback gathered during coordination meetings with major stakeholders in the study area. The recommendations presented in this chapter for preferred alignment(s), typical sections, facility amenities, and connections to neighborhoods also reflect the input and feedback received throughout the evaluation process. The following map illustrates the routes studied for feasibility for the NC 210 ECG route.



EVALUATION CRITERIA

The project team identified the evaluation criteria that would be used based on feedback obtained from the project Steering Committee. Additionally, the qualitative scoring factors utilized in the NCDOT SPOT 6.0 process are described below.

NCDOT SPOT 6.0 BICYCLE + PEDESTRIAN QUALITATIVE CRITERIA

There are four criteria utilized in the NCDOT SPOT 6.0 Bicycle and Pedestrian scoring process. These are quantitative factors which utilize geospatial data, demographic data, and details of the proposed bicycle and pedestrian facility type.

- **Safety:** The safety criteria is composed of four components: Number of crashes, crash severity, safety risk, and safety benefit. Safety risk and benefit are described below:
 - » Safety risk takes into consideration the posted speed limit, roadway details, traffic volume, surrounding land uses, and if the project is located within a municipality.
 - » Safety benefit is based on the proposed bicycle and pedestrian facility type. Projects which are mostly pavement markings or secondary amenities which provide little safety benefit score poorly but separated bicycle-pedestrian facilities such as sidepaths or greenways score better.
- **Accessibility/Connectivity:** This metric aims to identify projects that provide access to points of interest, improve connectivity between destinations, provide connections to existing and planned bicycle and pedestrian facilities and improve access to and continuity of designated bicycle routes. The proposed the NC 210 ECG route also includes portions of the MST.
- **Demand/Density:** Demand and density are based on available census data for population and employment near the project. It is defined as areas within 1 mile of the project for pedestrian projects or within 3 miles for bicycle projects. This has implications for implementation through SPOT, as rural sections of the NC 210 ECG route may not score well on this metric.
- **Cost Effectiveness:** This metric is similar to a benefit-cost ratio (BCR) as it is calculated based on the sum of the three other metrics divided by the project cost.

OTHER EVALUATION CRITERIA

Other criteria used in the analysis of potential routes were vetted through the project Steering Committee. Colored items below indicate those criteria which overlap with the NCDOT SPOT 6.0 criteria. These criteria are:

- | | |
|-----------------------------------|-----------------------------------|
| • Cost estimate | • Desired connectivity |
| • Property impacts | • Traffic impacts |
| • Potential funding opportunities | • Implementation timeframe |
| • Environmental impacts | • Accessibility |
| • Physical feasibility | • Leadership support |
| • Community priorities | • Placemaking and user experience |

COST

The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative to implement.



PROPERTY IMPACTS

Real estate acquisition can play a major role in project cost and schedule. The ability of the route alternatives to utilize publicly-owned properties, existing easements, public ROW, and limit impacts to privately property owners is considered.



ENVIRONMENTAL IMPACTS

The ability of each alternative to minimize impacts to streams, wetlands and other jurisdictional features (including associated buffers, floodplain elevations, and other environmental factors) during construction and operation of the proposed facility is also considered.



COMMUNITY PRIORITIES

To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.



DESIRED CONNECTIVITY

In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.



TRAFFIC IMPACTS

The magnitude of the disruption of vehicular traffic by the ultimate design of each route alternative and associated temporary impacts during the construction process is considered.



IMPLEMENTATION TIMEFRAME

The amount of time it takes to plan, fund, design, and ultimately construct each route alternative is important to consider, especially in conjunction with community priorities, as to how long is a tolerable time to wait for project completion.



ACCESSIBILITY

Convenience of use and accommodation for users of all ages and abilities is a significant consideration to ensure the ultimate route alternative is a community amenity designed for universal use.



PLACEMAKING + USER EXPERIENCE

The potential ability of the route alternatives to help drive tourism, contribute to the local economy, and brand the surrounding area by as one that promotes healthy, active lifestyles is also considered.



ALTERNATIVES DEVELOPMENT

The project team began segment identification and alternatives development based on the initial guidance from the project Steering Committee which identified a route which utilized NC 210, Sloop Point Road, and Country Club Drive; avoided US 17 wherever possible as being preferred, with the goal of utilizing the Duke Energy easement which would enable bypassing the section of US 17 from NC 210 to Sloop Point Rd. To provide additional optionality, other existing roadway corridors were assessed including the following: N Topsail Dr, Little Kinston Rd, Driftwood Dr, King Dr, Cornell Ln, Alston Blvd Ext, Azalea Dr, and Transfer Station Rd. Corridors within future developments and the NCDOT STIP project R-3300 (currently under construction) were also analyzed.

To assess trail segments, the project team analyzed Geographic Information Systems (GIS) data for elevation contours, property lines, utility easements, wetlands, floodplains, waterlines, and streams. The combination of this data impacts the routing decision for each individual alignment as there are often trade-offs associated with how an individual segment is routed. For example, routing a segment through the Duke Easement can help minimize earthwork costs but would require negotiation with multiple property owners. Routing a segment along a roadway corridor can help eliminate or minimize ROW needs, but it provides a less pleasant experience compared to that of an off-road greenway trail.



DESIGN CRITERIA

Given the regional nature of the NC 210 ECG route, consistent design standards should be applied for the length of the project. Utilizing consistent facility widths and materials provides a seamless and intuitive user experience and promotes predictable user behavior that contributes to making the facility safe for users of all ages and abilities.

In conjunction with wayfinding and other branding efforts, applying consistent design standards will also increase recognition of the trail not only by users already on the facility but passing motorists as well. Recognition of the facility by the public in multiple locations through the course of their daily lives helps highlight and reinforce the connections the trail makes and may result in individuals considering alternative modes of transportation for some trips or for recreational purposes.

A 12-foot wide, shared use facility type without delineating separate spaces for people walking and/or bicycling is proposed as the default typical section for the NC 210 ECG route. Separation from motor vehicles is key for trail user safety and allows bicyclists to travel longer distances knowing the entire facility is separated from traffic. The selection of this facility type reflects input received from the public, Steering Committee members, and other stakeholders. Providing adequate width and the vision for the trail to serve as both a recreational facility and as a potential commuter route.

Recognizing the impracticality of applying a single typical section for the entire length of the route due to environmental and other design constraints, the following pages detail several additional typical sections and the context in which they should be applied. Material types specified seek to balance up-front construction costs and to minimize maintenance burden and reduce overall life-cycle costs. Images of similar design precedents are also provided for reference. Please find additional design resources in Appendix A.

GREENWAY FACILITY RECOMMENDATIONS

The facility recommendations for the NC 210 ECG project establish a comprehensive greenway system that compliments recent active transportation and park planning efforts in the study area. Recommendations were developed based on community and stakeholder

input, a review of existing conditions, key destinations and connections identified through the planning process, and a prioritization process. The proposed greenway system provides a network of greenways and sidepaths that is accessible and feels safe for people of all ages and abilities.

DESIGN STANDARDS + TYPICAL SECTIONS

The standards and methods in which greenways are designed impact the experience and safety of the diverse set of users that take to greenways for a variety of recreational, utilitarian, health, and transportation purposes. This section illustrates aspects of facility design to help guide future actions by project stakeholders and partners in planning for, designing, constructing, and maintaining greenways that connect to a variety of destinations, promotes a diverse user experience, and is built to a maintainable scale.

SHARED USE GREENWAY

This typical section should be used for areas of the NC 210 ECG route where the alignment does not run along a roadway corridor ROW, and where spatial constraints do not restrict the desired shoulder width of five feet.

A 12 foot, two-way, asphalt (or concrete) shared use path for bicyclists and pedestrians can be directionally separated by a dashed yellow centerline if desired.

Two-foot shy zones/stone shoulders provided on either side of the facility help ensure user safety by limiting adjacent obstructions and allow for use of the full paved width. As an alternative, shoulders may be asphalt or concrete but may increase construction costs from the estimates contained in this report.

The preferred shoulder is five feet on the outside of the greenway, which provides space for a recovery zone and eliminates the need for safety railings in areas where significant grading is needed to tie into the existing topography. If spatial restrictions prevent the use of a five-foot shoulder, a two-foot shoulder can be used; however, this may necessitate safety rails if adjacent grading is too steep and/or high.

Pavement markings and signage can be used to provide visual continuity, inform bicyclists and pedestrians to share the same space, and enhance safety along the proposed NC 210 ECG route.

SHARED USE SIDEPATH

This typical section should be used for areas of the NC 210 ECG route where the alignment runs along a roadway corridor ROW, and where spatial constraints do not restrict the desired shoulder width of five feet.

A 12 foot, two-way, asphalt, shared use path for bicyclists and pedestrians can be directionally separated by a dashed yellow centerline if desired. In some cases, the path may be constructed of concrete, specifically in cases where a sidewalk already exists, adding a concrete panel can increase the width to the desired 12 feet without removing the existing pavement.

In many cases, a five-foot shoulder and accompanying drainage swale will provide separation between the trail and the roadway. In rare cases, a guardrail may be used to provide additional protection for trail users. At a minimum, a two-foot utility strip will be provided between the path and the back of curb along a roadway section.

The preferred shoulder is five feet on the outside of the greenway, which provides space for a recovery zone and eliminates the need for safety railings in areas where significant grading is needed to tie into the existing topography. If spatial restrictions prevent the use of a five-foot shoulder, a two-foot shoulder can be used; however, this may necessitate safety rails if adjacent grading is too steep and/or high.

Pavement markings and signage can be used to provide visual continuity, inform bicyclists and pedestrians to share the same space, and enhance safety along the proposed NC 210 ECG route.

SHARED USE BOARDWALK

This typical section should be used to elevate the NC 210 ECG route in select areas such as wetlands to minimize environmental impacts, along streams to limit flooding on the facility/minimize impacts to the 100-year floodplain elevation, and along areas of natural steep topography to achieve accessible longitudinal grades for users on the trail.

A 12-foot clear width, two-way, shared use path for bicyclists and pedestrians can be directionally separated by a dashed yellow centerline. Pavement markings and signage can enhance safety, provide visual continuity, and inform bicyclists and pedestrians to share the same space.

The deck surface should be concrete (cast-in-place or pre-cast) which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber.

Safety rails and handrails should be provided in accordance with applicable building codes. A variety of materials for railing are available, but it is recommended that a single railing design and material be selected and used throughout the entire NC 210 ECG route to ensure a consistent user experience and streamline any associated maintenance.

Boardwalk substructure design and materials may vary depending upon specific site conditions and geotechnical recommendations.

SHARED USE BRIDGE

This typical section should be used to elevate the NC 210 ECG route over creeks and floodways to connect shared use path sections at either end of the bridge. A 12-foot clear width, two-way, shared use path for bicyclists and pedestrians can be directionally separated by a dashed yellow centerline. Pavement markings and signage can enhance safety, provide visual continuity, and inform bicyclists and pedestrians to share the same space.

Prefabricated steel truss bridges are a common, cost-effective bridge type in this application and are the recommended bridge type for this typical section. A variety of truss designs and finishes are available to choose from. Corten/weathering steel is a finish which should be considered for its ability to blend well with natural surroundings and its minimal maintenance requirements as compared to those for painted finishes.

The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber.

Safety rails and handrails should be provided in accordance with applicable building codes. A variety of materials for railing are available, but it is recommended that a single railing design and material be selected and used throughout the entire NC 210 ECG route to ensure a consistent user experience and streamline any associated maintenance.

Bridge substructure design and materials may vary depending upon bridge design type, specific site conditions, and geotechnical recommendations.

MATERIALS SELECTION

Factors to be considered in the selection of materials for trails projects include anticipated facility type (recreational versus commuter), expected use activities (i.e., walking/bicycling/running/rollerblading),

age and ability of trail users, environmental conditions, construction cost, maintenance burden and costs, and funding source requirements among others. A variety of materials are available as described below and shown in the following photographs.

PAVED SURFACE OPTIONS

Paved trail surfaces such as asphalt or concrete offer great accessibility to accommodate users of all ages and abilities. Asphalt pavement tends to be the most popular and cost effective for paved trails. Concrete pavement is more durable, but costs more than asphalt pavement. As such, concrete trails are typically more common in urban settings (where projected user volumes are high or the trail may be subject to vehicular loading more often) or in areas subject to heavy flooding forces that may cause damage to the trail.



Concrete Trail - Downtown Greenway - Greensboro, NC



Lower McAlpine Greenway - Charlotte, NC

TYPICAL CROSS SECTIONS

MAINLINE (PREFERRED)

A 12-foot wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary. Shoulders or shy zones of 2 feet or greater should be kept clear of any obstacles to ensure full trail width remains usable.



Asphalt Greenway, Mountain Creek Park - Sherrills Ford, NC



MAINLINE WITHIN ROW - CURB + GUTTER

A 12-ft wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations.

Speed limits and traffic volumes will dictate the clear zone and if a curb and gutter section will provide sufficient separation for trail users. A minimum of 2-ft grass utility strip is recommended with a desired width of 5-ft when available ROW allows. In constrained areas, the width of the utility strip and the trail can be reduced to minimize ROW impacts, and if necessary, the trail can be placed directly at the back of the curb face.



Sidepath within ROW - Raleigh, NC

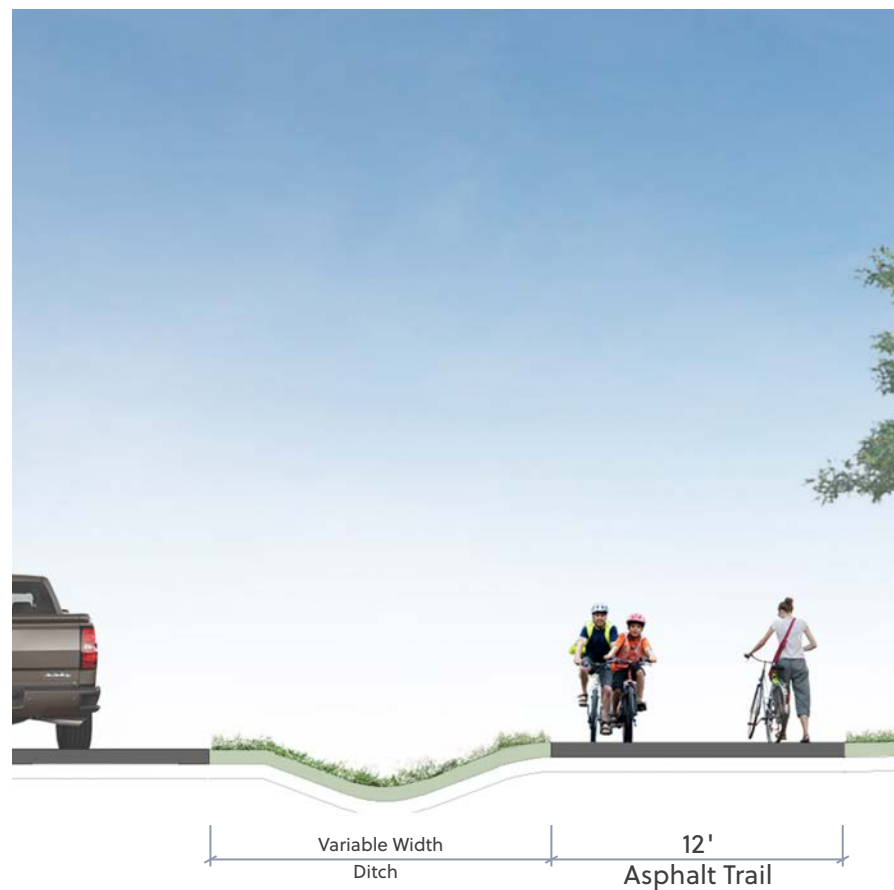


MAINLINE WITHIN ROW - DITCH SECTION (PREFERRED)

A 12-ft wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Speed limits and traffic volumes will dictate the clear zone. If ROW allows, a ditch section between the road and trail is preferred.

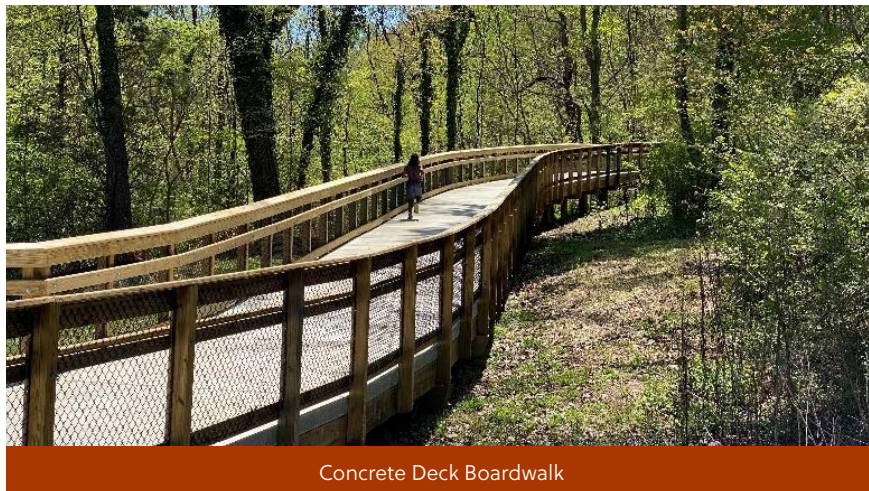
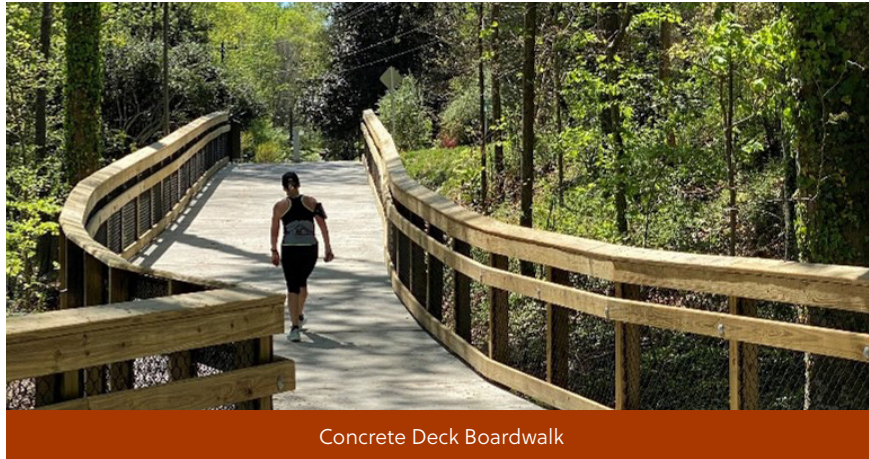


Paved Sidepath within ROW Separated from Roadway by a Ditch



BOARDWALK

A 12-ft clear width elevated boardwalk is recommended in areas where the trail crosses wetlands, approaches bridge crossings in the floodplain/floodway, and/or crosses areas of wet or unstable ground. The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials, such as timber. Timber safety rails and handrails are shown with a timber pile substructure system. Boardwalk substructure design and materials may vary depending upon specific site conditions and geotechnical recommendations.

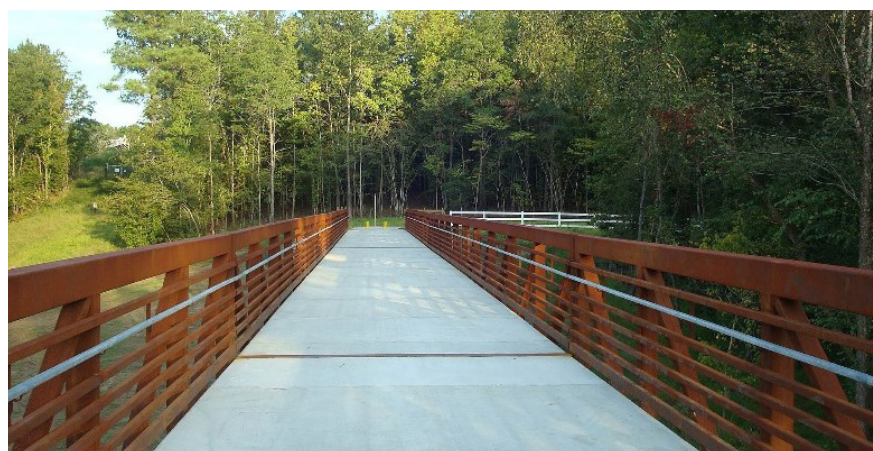


BRIDGE

A 12-ft clear width bridge is recommended where the trail crosses rivers, creeks, or streams. Prefabricated steel truss bridges are a common, cost-effective bridge type in this application and are the recommended bridge type for this typical section. Corten / weathering steel is a finish which should be considered for its ability to blend well with natural surroundings and its minimal maintenance requirements as compared to those for painted finishes. The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Bridge substructure design and materials may vary depending upon bridge design type, specific site conditions, and geotechnical recommendations.



Side Profile of Bridge



Concrete Bridge Deck



12'
Shared Path Bridge

INTERSECTION TREATMENTS + CROSSINGS

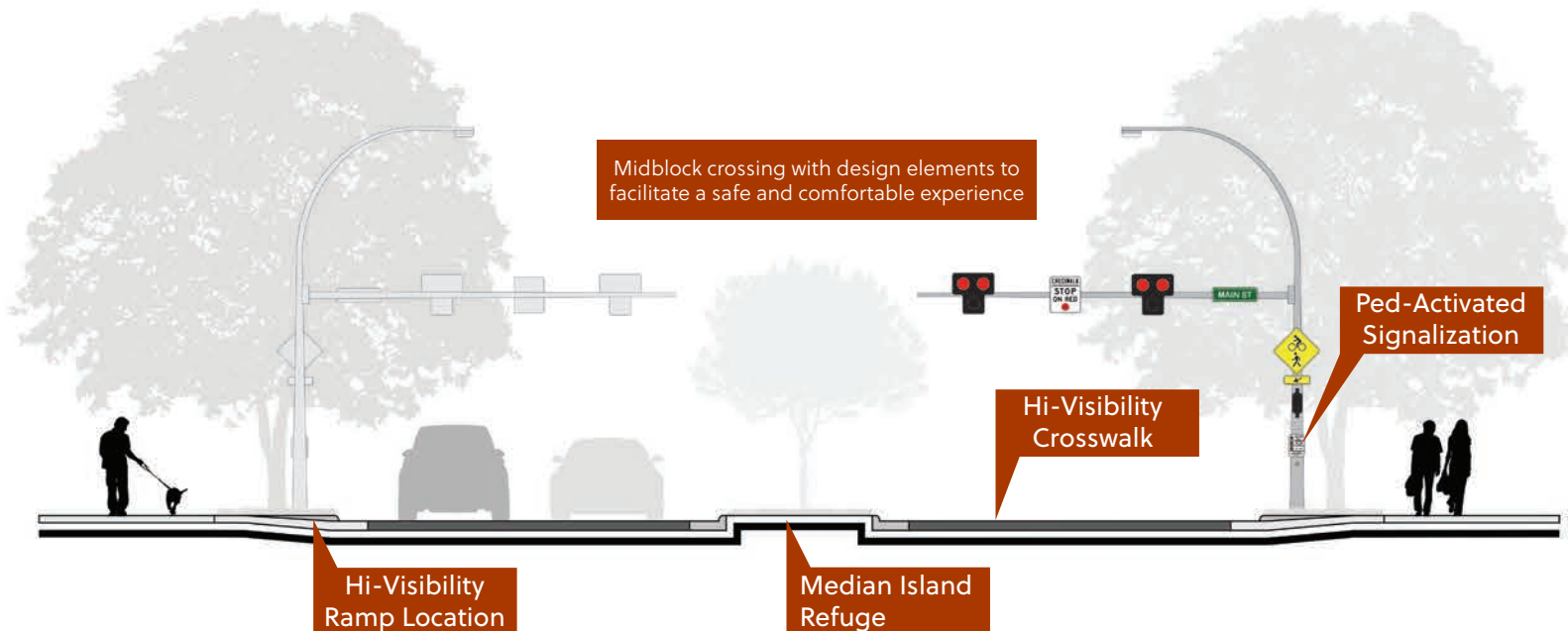
Mixing of transportation modes can often be considered high-stress points when evaluating pedestrian and bicycle level of service (PLOS + BLOS). Safe and comfortable crossings significantly influence perception and usability of a multi-modal network, and one of the factors further complicating intersections is the unpredictability of human behavior. A well-designed system should clearly facilitate safe and comfortable movements between motor vehicles, pedestrians, and active transportation users. Crossings may vary in design, but the following principles should be employed when thinking about safety and the user experience.

- Encourage pedestrians to cross at designated crossing locations
- Making multimodal users within crosswalks highly visible
- Making vehicles highly visible to multi-modal users
- Slowing of vehicular traffic at crossing location
- Minimizing pedestrian time within the roadway by use of various design elements

DESIGN GUIDANCE

Crossing treatments vary by intersection type and are highly situational based on jurisdictional control, number of travel lanes, posted highway traffic speed, and anticipated mixing bicycle and pedestrian uses. For detailed information regarding best practices, consider the following publications for intersection crossing treatments.

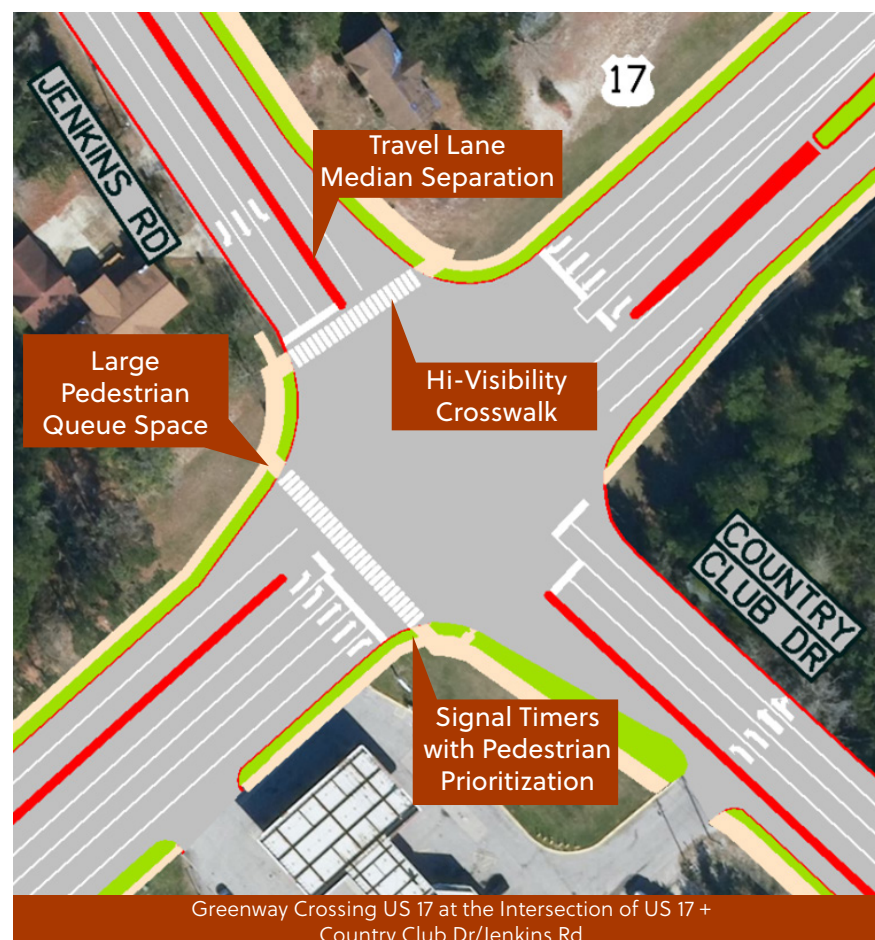
- 2019 National Association of City Transportation Officials (NACTO) Don't Give Up at the Intersection
- Federal Highway Administration (FHWA) Safe Transportation for Every Pedestrian
- 2012 American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities



TYPICAL INTERSECTION TREATMENT - MINOR SIGNALIZED

Crossing principal arterials such as US 17 will require multiple measures to ensure the safety of pedestrians and bicyclists. Below are two conceptual designs of greenway crossings on US 17. These examples provide signalized crossings for all movements across the intersection. One example also shows a pedestrian refuge in the center of US 17 to provide a safe break point for greenway users.

Conceptual Designs Provided by Ramey Kemp Associates



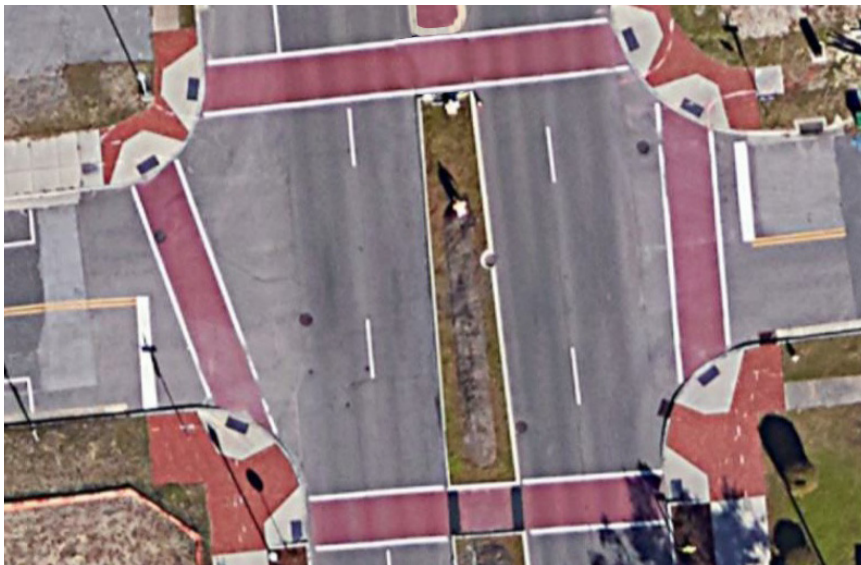
INTERSECTION DESIGN CONSIDERATIONS

Intersection design is often challenged with facilitating movements between various modes of transportation, and as of the date of this publication, intersection design is one of the fastest evolving practices within transportation planning. Few intersections have the same opportunities and constraints, but safe crossings can be achieved by referencing the following elements to improve visibility amongst all transportation modes.

- Pedestrians and bicycles should stage at locations easily visible to motor vehicle traffic
- High-visibility pavement markings should be used where necessary
- Pedestrian crossing signal heads with push button activation should be located at points of crossing
- ADA-compliant curb ramps should be installed at all multimodal facility access points
- Lighting should be installed at intersections to improve visibility amongst all modes
- Where necessary, center medians should be retrofitted to include pedestrian refuge islands
- Signage should be provided to follow local, state, and MUTCD standards

The above design considerations should also be applied to intersection crossings over NC 210. NC 210 is not considered an arterial road; however, 18,500 vehicles per day were recorded on the road in 2021. Given the high traffic volume, pedestrian crossings should be located at either a signalized intersection or with a signalized pedestrian crossing with actuated beacons or Rectangular Rapid Flashing Beacons (RRFB).

Featured below are two pedestrian crossings at intersections in Wilmington, North Carolina.



Pedestrian Crossings at the Intersection of Harnett St + N 3rd St - Wilmington, NC



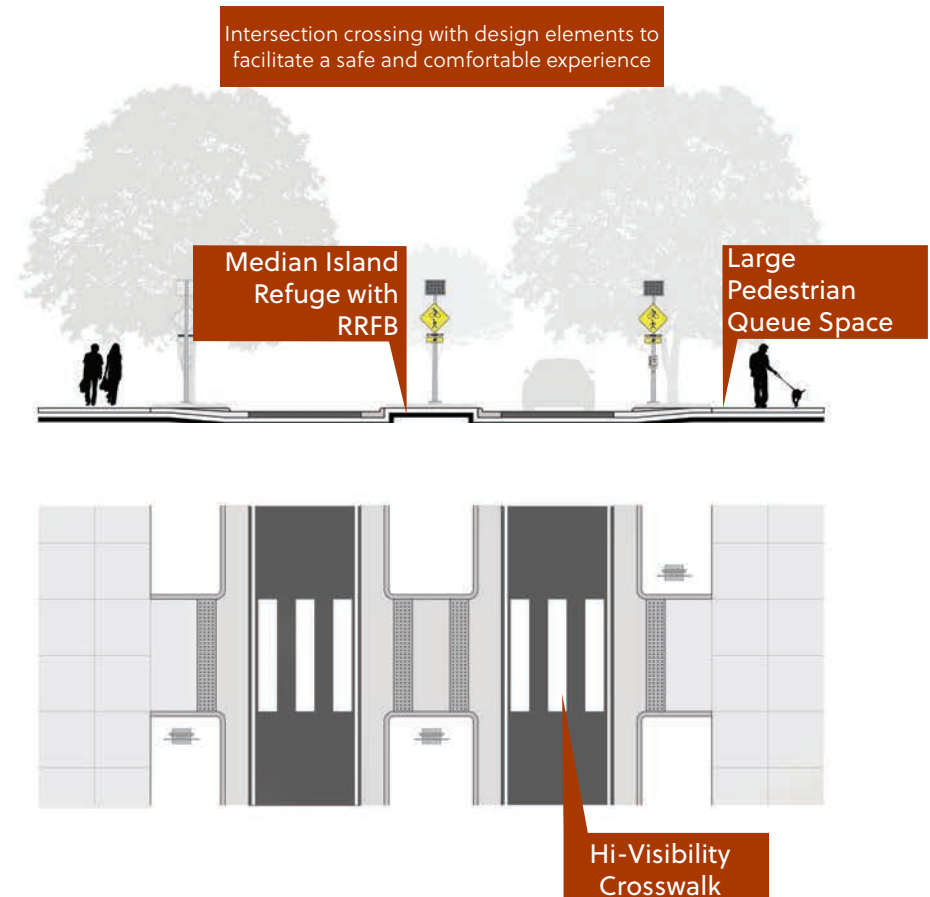
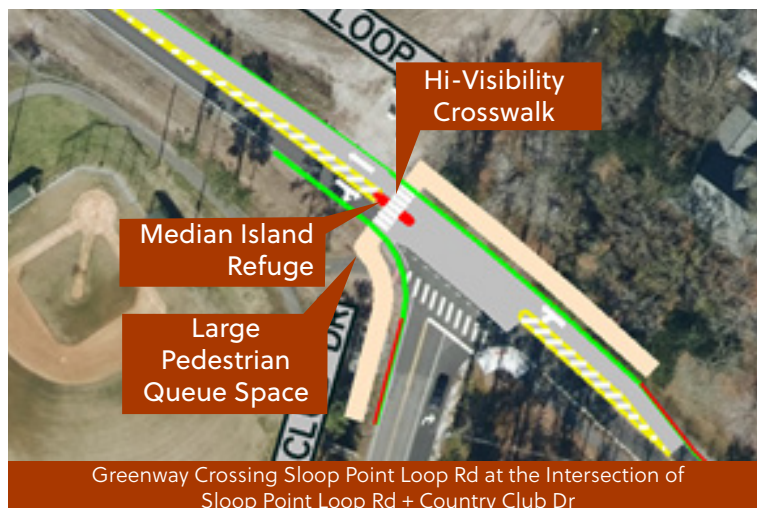
Cross City Greenway Trail Crossing US 17 + US 74 (Eastwood Rd) - Wilmington, NC

LOCAL ROAD CROSSINGS

(SPEEDS 45 MPH + HIGHER)

Greenway crossings at local roads with posted speeds of 45 mph or greater will require careful consideration and safety measures for all users, with the main emphasis on driver awareness and conflicting pedestrian and bicycle traffic. This page features an annotated conceptual design of a mid-block crossing on Sloop Point Loop Road at the intersection of Sloop Point Loop Road and Country Club Drive. The following design components help to achieve high visibility while allowing for a comfortable local roadway crossing.

- High-visibility zebra-crossing pavement markings
- Yellow pedestrian crossing warning signs
- ADA-compliant curb ramps at all multimodal facility access points
- Center medians should be considered for pedestrian refuges
- Signage should be provided to local, state, and MUTCD standards
- Roadway lighting at the intersection to improve pedestrian visibility



LOCAL ROAD CROSSINGS

(SPEEDS BELOW 45 MPH + NEIGHBORHOOD ENTRANCES)

The greenway will cross through several neighborhood entrances and low-speed neighborhood roads. The design for these crossings vary, but the following design principles should still be considered:

- High-visibility pavement markings
- Ensure adequate visibility of pedestrians and vehicles
- Signage should be provided to follow local, state, and MUTCD standards
- ADA-compliant curb ramps at all multimodal facility access points
- Roadway lighting at the intersection to improve pedestrian visibility

DRIVEWAY CROSSINGS

There are many driveway crossings at a variety of scales and types along the corridor. These crossings should include visual cues for vehicle drivers that both pedestrians and cyclists may enter the space.



Cross City Greenway Trail Crossing Mt. Vernon Dr - Wilmington, NC



Continuation of
Materiality Across A
Driveway Designates
Pedestrian Priority

Commercial Driveway Crossing on the Cross Charlotte Trail - Charlotte, NC



Trail Crossing Over a Minor Roadway

ALIGNMENT ALTERNATIVES

Several individual segments were identified to be studied for feasibility. These segments and their locations were determined by a variety of factors, including, but not limited to, ROW availability, directness of route, and connectivity to key destinations. A key piece of the feasibility study is the opportunities and constraints analysis, which identifies any considerations which may enable easier implementation as well as other issues which may create additional barriers to trail development. The following map and table provide an overview of the alignments included in the feasibility study.

ROUTES STUDIED FOR FEASIBILITY

From the segments defined in Chapter 2, the study team developed four recommended routes from combinations of those segments. These routes were based on the opportunities and constraints analysis, input from the Steering Committee, and feedback from jurisdictional coordination meetings. These routes will be analyzed for feasibility in greater detail than those segments previously identified. All routes begin in Surf City on NC 210/N New River Drive at the Onslow/Pender County Line and end in Pender County at the intersection of US 17 at Country Club Drive. These routes are defined as:

Route 1

...Maximize greenways and connect most destinations

This route follows the north side of NC 210, uses the existing Surf City Bridge, then follows Little Kinston Road to local streets before a crossing of Becky's Creek with bridge and boardwalk sections to connect to newly constructed subdivisions. From there, it turns west and navigates north towards NC 210 through the Magnolia Reserve subdivision (widening the sidewalk into a multi-use path). It crosses NC 210 and continues north to the Duke Easement, which it follows west to Alston Drive Extension before crossing NC 210 again to continue along the easement, making connections to local streets and sidewalks that cross it. The route turns south before US 17 and connect to the Royal Tern subdivision. From there it navigates via local streets to Sloop Point Road where it crosses to the west side and continues south. It turns west along Sleepy Hollow Lane before turning south to follow Mullet Run. It connects to subdivision streets at Aurora Place near Moonlight Walk, where it navigates out to Sloop Point Loop Road at Country Club Drive. From there it crosses into the Hampstead Kiwanis Park, where it proposes and upgrade to the existing path and boardwalk to Azalea Drive. The route then follows Azalea Drive north, continuing onto Weathersbee Drive and Leeward Lane, from there it would widen the sidewalk along the frontage road (to be constructed by R-3300) before crossing US 17 at the traffic signal in front of Topsail Schools complex before following the north side of US 17 the project end point.

Route 2

...Minimize cost

This route following the north side of NC 210, crossing at Shell Drive before following N Topsail Drive to the roundabout. Following NC 210 across the Surf City Bridge, it turns onto Little Kinston Road before following the future connector road corridor to NC 210. From there it follows NC 210 to the Duke Easement, which it follows to US 17 then turning west before continuing south along Sloop Point Road to Mullen Run. There it turns west and connects through the natural areas and subdivisions to reach Sloop Point Loop Road at Country Club Road. It continues along the north side of Country Club Road before crossing to the south side of the road east of Olde Point Drive where it remains till the end point at US 17.

Route 3

...Maximize connectivity to destinations

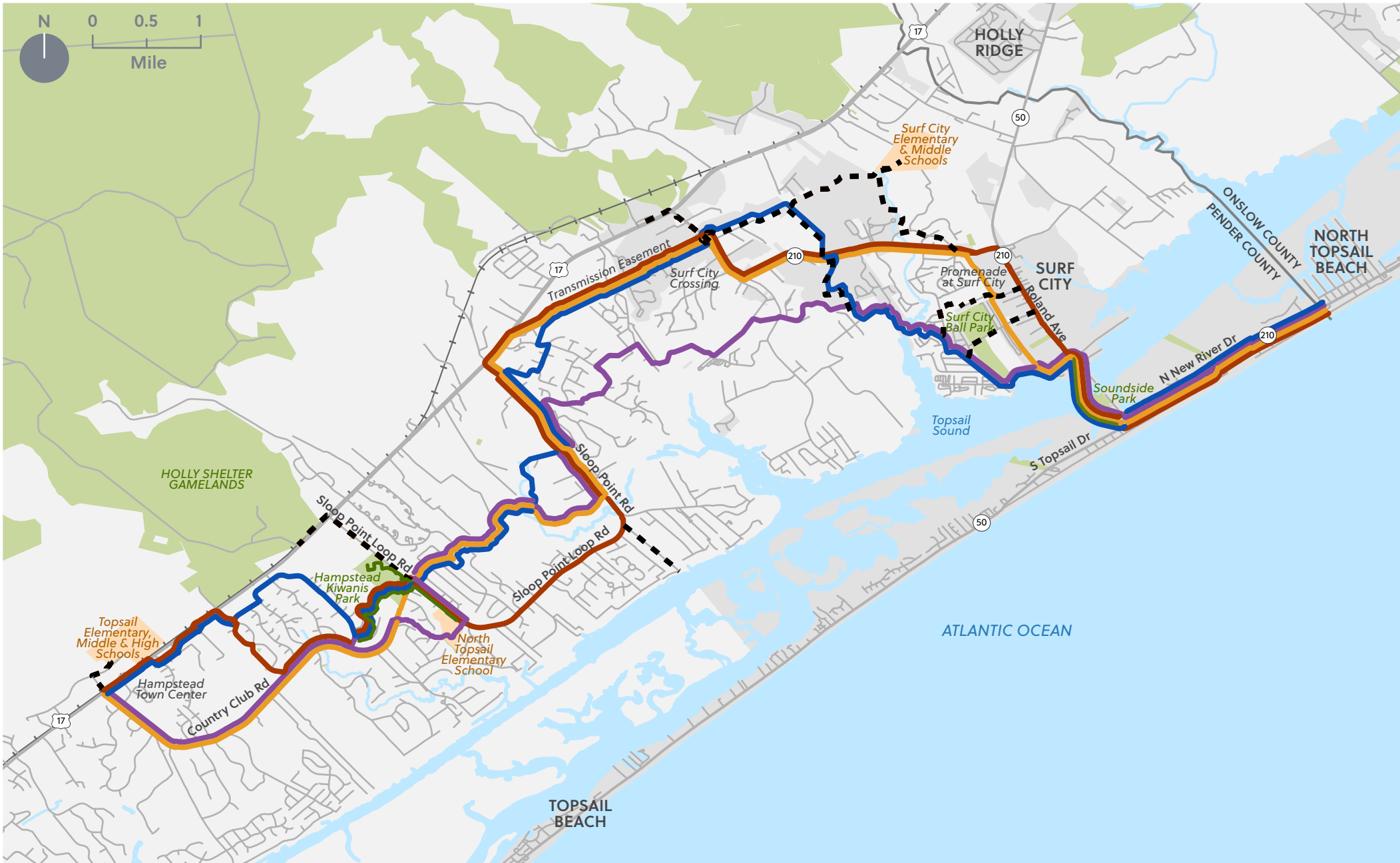
This route begins along the south side of NC 210, crosses to the north side at Mecklenburg Avenue, then crosses at Shell Drive to follow N Topsail Drive to the Surf City Bridge. After crossing the bridge, it continues north along NC 210/50 where it would tie into and widen the existing sidewalks to multi-use paths. It would continue along NC 210 to the Duke Easement, then connect back out to US 17, where it then turns south onto Sloop Point Road before continuing along Sloop Point Loop Road to Country Club Drive. It then connects through the Hampstead Kiwanis Park (same proposed upgrades as Route #1) before following Azalea Drive back to Country Club Drive which it follows to a potential future subdivision, where it turns north. From there, it connects to the sidewalk along the frontage road that will be constructed by R-3300, which it continues on to cross US 17 at the traffic signal in front of the Topsail Schools Complex, before continuing to the endpoint on US 17 at Country Club Dr.

Route 4

...Maximize scenic and natural views

This route begins along the south side of NC 210, crosses to the north side at Mecklenburg Ave, and continues along NC 210 across the Surf City Bridge before turning onto Little Kinston Road to connect to local streets before a crossing of Becky's Creek with bridge and boardwalk sections to connect to newly constructed subdivisions. From there it continues west, connecting to Watts Landing Road via several large parcels. It then turns south, and crosses one large parcel before crossing McClammy Road. Another bridge and boardwalk crossing begins south of King Drive, where it crosses to Groves Point Drive, where it continues north, before crossing to the west and traversing a wetland section with boardwalk to connect to Royal Tern Drive. From there it navigates local streets and some undeveloped parcels to reach Sloop Point Road then continuing south to Mullen Run. There it turns west and connects through the natural areas and subdivisions to reach Sloop Point Loop Road at Country Club Road, where it turns south following the east side of the road before crossing at the south entrance to N Topsail Elementary. It follows the south edge to the school property before navigating natural areas in County and HOA open space parcels to Country Club Drive. It then crosses to the north side of Country Club Road where it heads west before crossing to the south side of the road east of Olde Point Drive where it remains till the end point at US 17.

Maps for these four recommended routes are provided on the following pages.



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY

STUDIED ROUTES + CONNECTORS

LEGEND STUDIED ROUTES

- Route 1
- Route 2
- Route 3
- Route 4
- - - Study Connectors

- Existing Greenways
- Roadways
- + + + Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY **STUDIED ROUTE 1 + CONNECTORS**

LEGEND

NC-210 ECG CORRIDOR

- Studied Route 1
- Study Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY

STUDIED ROUTE 2 + CONNECTORS

LEGEND

NC-210 ECG CORRIDOR

- Studied Route 2
- Study Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY **STUDIED ROUTE 3 + CONNECTORS**

LEGEND

NC-210 ECG CORRIDOR

- Studied Route 3
- Study Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTE 4 + CONNECTORS**

- LEGEND**
- NC-210 ECG CORRIDOR**
- Studied Route 4
 - Study Connectors
- Existing Greenways
 - Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties

DECISION MATRIX

The decision matrix is a qualitative assessment tool utilized by the study team to incorporate feedback from the Steering Committee. The four recommended alignments developed for study are assigned a qualitative ranking (High, Medium, or Low) based on the analysis performed. The members of the Steering Committee were asked to rank the criteria according to priority. Based on the feedback, the preferred route can be identified as the one that best aligns with the priorities of the Steering Committee. The decision matrix table is shown below.

DECISION MATRIX

ROUTE ALTERNATIVE SELECTION CRITERIA	NC 210 East Coast Greenway FEASIBILITY STUDY			
	ALT 1	ALT 2	ALT 3	ALT 4
PHYSICAL FEASIBILITY The ability to successfully engineer and permit each alternative is a critical consideration for determining realistic options for the route alternative.	Low	High	Mid	Low
DESIRED CONNECTIVITY In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.	Mid	Mid	High	Low
COMMUNITY PRIORITIES To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.	Mid	Low	Mid	High
COST The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative to implement.	Low	High	Mid	Mid
ENVIRONMENTAL IMPACTS The ability of each alternative to minimize impacts to streams, wetlands and other jurisdictional features (including associated buffers, floodplain elevations, and other environmental factors) during construction and operation of the proposed facility is also considered.	Low	High	Mid	Low
ACCESSIBILITY Convenience of use and accommodation for users of all ages and abilities is a significant consideration to ensure the ultimate route alternative is a community amenity designed for universal use.	Mid	Mid	High	Low
PROPERTY IMPACTS Real estate acquisition can play a major role in project cost and schedule. The ability of the route alternatives to utilize publicly-owned properties, existing easements, public ROW, and limit impacts to privately property owners is considered.	Mid	High	Mid	Low
POTENTIAL FUNDING OPPORTUNITIES Given the importance of securing funding from a variety of potential sources, the diversity, total amount, and likelihood of receiving funding available to each alternative is considered.	Mid	High	Low	Mid
PLACEMAKING AND USER EXPERIENCE The potential ability of the route alternatives to help drive tourism, contribute to the local economy, and brand the surrounding area by as one that promotes healthy, active lifestyles is also considered.	High	Mid	Mid	Low

DECISION MATRIX (continued)

ROUTE ALTERNATIVE SELECTION CRITERIA	NC 210 East Coast Greenway FEASIBILITY STUDY			
	ALT 1	ALT 2	ALT 3	ALT 4
LEADERSHIP SUPPORT The depth of support from elected officials and agencies for each route alternative as well as whether there is a clear project sponsor to champion the route alternative through implementation, is an important factor for ensuring successful project completion.	Mid	Mid	High	Low
TRAFFIC IMPACTS The magnitude of the disruption of vehicular traffic by the ultimate design of each route alternative and associated temporary impacts during the construction process is considered.	High	Low	Mid	Mid
IMPLEMENTATION TIMEFRAME The amount of time it takes to plan, fund, design, and ultimately construct each route alternative is important to consider, especially in conjunction with community priorities, as to how long is a tolerable time to wait for project completion.	Mid	High	Mid	Low
Preliminary Ranking*	3	1	2	4

(Score: High=Most desirable, Low=Least desirable)

*Preliminary ranking of the routes is based on initial Steering Committee feedback on selection criteria.
 Final ranking will be informed by Steering Committee discussion, landowner conversations, and public meeting feedback.

SEGMENTS REMOVED FROM PREFERRED ROUTE

As part of the creation of the preferred route, segments included in the initial analysis are identified for removal. This can be due to several factors including lack of connectivity, property constraints, environmental factors, or simply being dependent on another segment that was removed. Some other segments have been identified as recommended connections off the NC 210 ECG, but do not serve as part of the preferred mainline route. The table that lists out the segments removed from the preferred route is located on the following pages.

SEGMENTS REMOVED FROM CONSIDERATION

TYPE	ID	CATEGORY	NOTES	KEY STAKEHOLDERS
Segment	1a	Constructability Issues	North side of road constrained by intracoastal waterway.	NCDOT, Local Businesses
Segment	1c	Constructability Issues	North side of road constrained by intracoastal waterway.	NCDOT, Local Businesses
Segment	3d	Undesirable Routing	Segments misses key destinations along the NC 210 corridor.	NCDOT, Surf City, Local HOA, USACE
Segment	3e	Drainage Issues	Input from Surf City staff indicates drainage issues in this neighborhood.	Surf City, Local HOA
Segment	4b	Undesirable Routing	Preferred routing chose through Magnolia Reserve subdivision.	NCDOT
Segment	4d	Dependent on Infeasible Route	Dependent on use of segments along NC 210 and the Duke easement, which have been removed from consideration.	NCDOT
Segment	4e	Dependent on Infeasible Route	Dependent on either segment 3d or 3e, both of which have been deemed infeasible.	Local Landowners, Local HOA
Segment	4f	Undesirable Routing	Local input preferred routing off-road greenway north of NC 210 (Seg 4c) over this segment.	NCDOT
Segment	4g	Dependent on Infeasible Route	Dependent on segments routed along NC 210, which have been deemed infeasible.	NCDOT, Local Landowners
Segment	4h	Dependent on Infeasible Route	Dependent on 5c, which has been removed from consideration.	Local Landowners
Segment	4i	Dependent on Infeasible Route	Dependent on either 4h and 5c, both of which have been removed from consideration.	Local HOA, NCDOT
Segment	5a	Property Constraints	Feedback from public meeting indicates routing along easement not preferred.	NCDOT, Duke Energy, Local Landowners, Local HOA
Segment	5c	Property Constraints	Feedback from local landowner indicates that this is not a desired route.	Local Landowners
Segment	5d	Dependent on Infeasible Route	Dependent on use of segments along US 17 and the Duke easement, which have been removed from consideration.	Local HOA

SEGMENTS REMOVED FROM CONSIDERATION (continued)

TYPE	ID	CATEGORY	NOTES	KEY STAKEHOLDERS
Segment	5e	Property Constraints	Feedback from public meeting indicates routing along easement not preferred.	Duke Energy, Local Landowners
Segment	5g	Property Constraints	Feedback from public meeting indicates routing along easement not preferred.	Duke Energy, Local Landowners
Segment	5h	Dependent on Infeasible Route	Dependent on 5c, which has been removed from consideration.	Local Landowners, USACE
Segment	5j	Dependent on Infeasible Route	Dependent on use of segments along the Duke easement, which have been removed from consideration.	Local HOA
Segment	5k	Property Constraints	Feedback from public meeting indicates routing along easement not preferred.	Duke Energy, Local Landowners
Segment	6b	Dependent on Infeasible Route	Dependent on use of segments along US 17 and the Duke easement, which have been removed from consideration.	NCDOT, USACE
Segment	6c	Constructability Issues	Significant wetland presence, alternative routes provide easier access to natural areas.	Local Landowners
Segment	7b	Undesirable Routing	Adds significantly to project length without reaching new destinations.	Local Landowners, NCDOT, USACE
Segment	7d	Undesirable Routing	This segment is redundant to the existing sidepath along Sloop Point Loop Rd.	NCDOT, Pender County Schools
Segment	8b	Recommended Connector	Not a mainline segment, included as recommended connection to N Topsail Elementary.	NCDOT, Pender County Schools, USACE
Segment	8c	Constructability Issues	Demolition and reconstruction of existing boardwalk adds significantly to project complexity.	NCDOT, Pender County Parks and Rec, Local HOAs
Segment	8e	Recommended Connector	Not a mainline segment, included as recommended connection to existing greenway.	Local HOA
Segment	9c	Undesirable Routing	Local input preferred routing along Country Club Dr for access to existing residential neighborhoods.	NCDOT, Future Developer
Segment	9d	Undesirable Routing	Local input preferred routing along Country Club Dr for access to existing residential neighborhoods.	Local HOA
Segment	9e	Undesirable Routing	Local input preferred routing along Country Club Dr for access to existing residential neighborhoods.	NCDOT, Local HOA
Segment	10b	Undesirable Routing	Local input preferred routing along Country Club Dr for access to existing residential neighborhoods.	NCDOT

SEGMENTS REMOVED FROM CONSIDERATION

TYPE	ID	CATEGORY	NOTES	KEY STAKEHOLDERS
Segment	10c	Undesirable Routing	Local input preferred routing along Country Club Dr for access to existing residential neighborhoods.	NCDOT, Local Businesses
Segment	5	Undesirable Routing	Connection 4 preferred due to fewer property impacts, no additional crossing of NC 210.	Local Landowners, Pender County Schools, NCDOT
Connection	7	Dependent on Infeasible Route	Connection only serves segment 3d, which has been removed from consideration.	Local Landowners, Surf City Parks, Recreation & Tourism
Connection	8	Dependent on Infeasible Route	Connection only serves segment 3d, which has been removed from consideration.	Sea Turtle Rescue Center, Local Landowners
Connection	10b	Deemed Infeasible	Crossing US 17 at Holly Shelter entrance not likely to be approved by NCDOT.	NCDOT, NC State Parks, Local Landowners
Connection	12	Deemed Infeasible	Construction of Hampstead Bypass (R-3300) would prevent this connection from being feasible.	NCDOT, Pender County Schools



Share the Road Sign on N New River Dr (NC 210)

PREFERRED ALIGNMENT

The preferred alignment for the NC 210 ECG was informed by the results of the opportunities and constraints analysis, feedback received from the public, and the decision matrix completed by the Steering Committee. The preferred route is displayed in the map to the right, with all mainline segments (blue) and connector routes (black) labeled. The route spans approximately 16 miles from the Pender County line on NC 210 (N New River Dr) to US 17 along Country Club Dr. This represents the most practical route for implementation which also achieves the overall goals for the project and provides the desired user experience. Due to the project's scale, the preferred alignment was divided up into six segments which are detailed in the next chapter.



Existing Boardwalk at Hampstead Kiwanis Park - Hampstead, NC



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY PREFERRED ROUTE + CONNECTORS

LEGEND

NC 210 ECG Corridor

- Preferred Alignment
- Connectors

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

TRAIL AMENITY GUIDANCE

In tandem with infrastructure and policy recommendations, trail amenities improve user safety and experience and enhance recreational and multi-modal accommodations in a community. A summary of recommended trail amenities are provided below and on subsequent pages.

LIGHTING

WAYFINDING

BRANDING

TRAILHEADS

DATA COLLECTION

LIGHTING

Well-placed and properly maintained lighting can improve visibility, increase overall greenway access, and give users a greater sense of security. Consider the following lighting guidance for the NC 210 ECG:

- Meet the American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities requirements for shared-use paths.
- Light only what is needed and comply with dark-sky requirements to help minimize light pollution, which impacts people, animals, and the environment.
- Be of appropriate scale and spacing to ensure adequate coverage.
- Be placed where recommended for safety at trailheads; bridges; gathering places; along streets; crosswalks; where a greenway crosses another path or sidewalk; and on signage.

A variety of lighting types are available including wired, battery-powered, and solar-powered each of which offers unique advantages or disadvantages regarding cost, maintenance burden, and environmental impacts. Use of colored and/or dynamic lighting schemes in select areas (such as tunnels and bridges) can enhance the user experience, contribute to the overall brand and identity of the greenway network, and raise awareness of the facility to the traveling public.



Dark Sky Lighting Credit: Jim Richardson

WAYFINDING

Wayfinding consists of comprehensive signage, mapping, and marking systems that help inform and educate users as they make their way to, from, and along the NC 210 ECG. A cohesive system across the greenway corridor will enhance access, provide a greater sense of security and comfort, promote desired user behaviors, improve awareness of nearby trail and transit networks, and reinforce the brand and/or identity of the facility.

The following principles should guide the development of the NC 210 ECG wayfinding system:

- **CONSISTENCY** - User experience should feel consistent and continuous across the entire corridor, regardless of jurisdiction.
- **CONNECTIVITY** - A primary function of wayfinding is to connect users to destinations and other routes. It should clearly communicate current locations, access points, adjacent streets, distances, directions, destinations, estimated travel times, and historical/cultural/environmental information where applicable.
- **IDENTITY** - A strong wayfinding identity will make the NC 210 ECG more recognizable and memorable to visitors and residents alike. Custom designs and graphics should be used to create a unique identity which reflects the goals of the NC 210 ECG and the character of the region it will serve.
- **PREDICTABILITY** - Apply wayfinding in a predictable manner (including sign placement, design, and content) to allow users to quickly understand the information being presented. For users, this builds trust, increases comfort, reduces stress, and provides a welcoming and low-stress experience as they navigate the NC 210 ECG.
- **SIMPLICITY** - Present information in a clear, logical, universal way to reach the widest possible demographic. The longer it takes to understand the information presented, the less likely the system will be used or relied upon.



BRANDING

Popular trail and greenway systems establish strong brands and identities to drive recognition at the local level, regional level, and beyond to attract users. A consistent, high-quality user experience may be achieved through repeating brand elements such as typical sections (including materials selection), wayfinding (including logos, graphics, and color palette), lighting, furnishings, and other amenities. At a minimum, proper wayfinding signage will increase the awareness of trails within a community, even outside of the system itself. Effective network signage should strike a balance between establishing a consistent look and feel, promoting the system, and respecting individual greenway corridors.

There are a variety of methods available to improve the branding and wayfinding of a trail network beyond the installation of traditional signage. For example, logos can be painted on greenway surfaces, and smaller signs or stickers can be added to existing streetscape elements like benches, bike racks, trash receptacles, and street signs to catch the attention of passers-by and entice new users into the system. These efforts can complement the installation of dedicated network signage, or in some cases, make more expensive signage unnecessary. A branding study is recommended with community input to establish these elements to be used along the NC 210 ECG.



Greenway Branding (Greensboro, NC) + Trailhead (Cary, NC)

TRAILHEADS

Trailheads provide public access to trails and greenways, and they are typically strategically placed at terminus points where users begin or end their journeys. Trailheads also provide a place for users to orient themselves to the greenway segment or the entire network. While there are minor access points along greenways such as road crossings, within neighborhoods, or where two greenways intersect, trailheads tend to be located on a developed site. These sites are purposefully designed to promote placemaking and provide amenities to greenway users such as parking, signage, information kiosks, restrooms, drinking fountains, bike racks, bike repair stations, seating, public art, landscaping, and trash receptacles.

Guidance for trailhead placement includes:

- Endpoints are natural places to locate trailheads, but any place where a large volume of users is expected should be considered as a possible trailhead location.
- Utilize areas where amenities already exist, such as parks.
- Consider placing a trailhead where greenways intersect.
- Consider placing a trailhead within residential neighborhoods. Trailheads that are located within neighborhoods should be designed to be compatible with their surrounding uses.
- Consult with the community and seek public input on locations. Residents may have insights or preferences for areas that best meet trail user needs.

At all greenway access points, including trailheads, enhance user safety by implementing access management tools. For example, bollards, gates, fences, landscaping, and signage can prevent motorized vehicles from accessing the greenway. These barriers should be accessible for persons with disabilities to ensure that users of all ages and abilities can access the greenway. Barriers should also allow emergency or maintenance vehicles to access the greenway.

DATA COLLECTION

Bicycle and pedestrian count data are an essential tool to justify investments in greenway and active transportation infrastructure and communicate needs with the public, elected officials, and other stakeholders. Collecting this data provides insights into temporal user volume trends (time of day and seasonal), user type trends (biking vs. walking), and user volume trends by geographic location (which sections are most frequently used). This information can also help identify potential areas of need as local governments plan their future pedestrian and bicycling infrastructure projects.

A variety of counting technologies and products are available depending on the specific application and budget. These range from inductive loop detectors, pneumatic tube detectors, and passive infrared detectors among others. Mobile counters provide the flexibility to collect data in one location before moving to another collection location and are typically battery-powered. Fixed counters are used at locations where long-term data collection is desired and may be wired or battery-powered. Some blend in with their surroundings and others utilize real-time display totems to present daily and yearly counts and engage directly with those users being counted.

Depending on the specific product, count data may be retrieved manually from the counter or may streamline the process via wireless transmission, reducing trips to the field. Online, easy-to-use data platforms are also offered to analyze and visualize the data. Features include dashboards and interfaces to provide access to count data for the development of custom websites and mobile applications. The emerging use of “Big Data” crowd-sourced from mobile phone users, via services such as Streetlight and Strava, may also be an option for collecting user count data.



Bicycle + Pedestrian Counter - Dallas, TX



05. IMPLEMENTATION



OVERVIEW

Recommendations outlined in the *NC 210 ECG Feasibility Study* present major investments in greenway infrastructure that will significantly expand recreational and transportation opportunities for Pender County residents, employees, and visitors travel. Successful implementation of this study will require a coordinated and consistent effort with a wide range of community partners. Key agencies and partners include the Cape Fear RPO, Wilmington Urban Area Metropolitan Planning Organization (MPO), Pender County, Town of Surf City, Town of North Topsail Beach, NC State Parks, the North Carolina Department of Transportation (NCDOT), East Coast Greenway Alliance (ECGA), Friends of the Mountains-to-Sea Trail (FMST), private partners, and members of the community.

This chapter outlines action steps, design considerations, and a set of implementation scenarios to guide key agencies and stakeholders in the funding, design, and construction of the NC 210 ECG. Action steps prioritize implementation strategies over a 10-year planning horizon. Cut sheets of the preferred route present design considerations of each corridor segment, defining potential roadway crossings, bicycle and pedestrian connections, ROW, permitting needs, and estimated costs.



Existing Boardwalk at Hampstead Kiwanis Park



The US 17 Superstreet Project (U-5732) will install a median and intersection modifications along US 17 in Hampstead between Washington Acres Rd (not featured on the map far left) and Sloop Point Loop Rd. Construction will begin following the completion of the Hampstead Bypass. Proposed crossings and intersection treatments along US 17 in this study should be carried forward.

**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
PREFERRED ROUTE, CONNECTORS,
+ US 17 SUPERSTREET PROJECT**

PREFERRED ROUTE CUTSHEETS

The preferred alignment was divided up into six segments for the cutsheets. Each segment is highlighted in the map to the right. Project cost estimates are included on each cutsheet and details are provided below.

PROJECT COST ESTIMATES

In addition to understanding if a project is feasible from a technical perspective, understanding project cost is an equally important component to any feasibility study. This information enables communities to make informed decisions related to whether proceeding with the project and may influence funding strategies. There are several types of costs to consider when establishing a project budget including, but not limited to, the following:

BASELINE CONSTRUCTION COST

Baseline construction costs for the current year, 2023, were generated using quantity takeoffs and calculations based on the preliminary design concepts. Detailed line-item estimates for the recommended routes analyzed, as well as for the individual segments which make up those routes can be found in Appendix C. Please note that due to rounding, the sum of individual segments may result in a different estimate than that of the route they combine to form.

BASELINE CONSTRUCTION CONTINGENCY

Project contingencies help address unforeseen costs due to a variety of reasons. They typically range from 5% to 25% or more of the construction cost, depending on how well defined the project scope is and the existing site condition are known at the time of the estimate. A 35% contingency was assumed for the majority of the preferred segments analyzed over the course of this feasibility study. This contingency is assumed to help cover addition costs related to utility relocations, drainage needs, and other site conditions that cannot be determined at the feasibility study level. Please note that for Preferred Segment 1, a 40% contingency (higher than other segments) was assumed due to the additional uncertainty associated with the development of coastal drainage.

Appendix C contains a detailed base year construction estimate for each segment, connection, recommended route, and preferred segment analyzed in this study.

SURVEY/DESIGN SERVICES

Costs were estimated for survey and design services based on project size, design elements, anticipated permitting required, and other activities related to funding source requirements. This cost is assumed to be 12% of the base year construction cost estimate plus contingency.

RIGHT-OF-WAY ACQUISITION

Permanent easement and ROW acquisition costs were not developed as part of the scope for this project. However, the total number of properties anticipated to be impacted has been calculated. These costs should be calculated when individual segments of the preferred route move into design and implementation.

ESCALATED CONSTRUCTION

To account for inflation, the baseline costs were projected five years into the future to a fiscal year of probable construction. The assumed future year for implementation is 2028. This adjustment was performed using a linear compound interest formula assuming an annual inflation rate of 5%.

CONSTRUCTION ENGINEERING + INSPECTION SERVICES

A requirement for many state and federal funding sources, Construction Engineering & Inspection (CEI) services typically range from 9% to 12% of the build year construction cost estimate. This study assumes 12% based on the project size and elements of construction.

TOTAL BUDGET ESTIMATES

Total budget estimates were calculated by adding the aforementioned cost components and contingency for each of the preferred segments and associated connection routes. All calculated values were rounded up to the nearest \$1,000 for the simplicity of this planning-level cost exercise. Please note these are planning-level cost estimates and should be refined as more detailed information becomes available throughout the design process. Actual costs will vary based on final project scope and prevailing market conditions for materials and labor forces used.



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET SEGMENTS

Alternative Route(s): During the late stages of the planning phase, the Town of Surf City decided to evaluate three (3) additional alternative routes as part of the mainline for the greenway. These segments are described and displayed in the cutsheet maps; however, they were not analyzed as part of this feasibility study.

LEGEND

- Preferred Alignment
- Connectors
- Surf City Alternative Route

- Cutsheet Segment 1
- Cutsheet Segment 2
- Cutsheet Segment 3
- Cutsheet Segment 4
- Cutsheet Segment 5
- Cutsheet Segment 6

- Existing Greenways
- Existing Sidewalk
- Roadways
- Rail
- Water Bodies
- Parks
- Municipalities
- Counties
- Parcels

CUTSHEET: SEGMENT 1

The first preferred segment begins at the Onslow County Line in Surf City and runs along the south side of the NC 210/N New River Dr before it crosses to the north side of the road at Mecklenburg Ave. It crosses back to the south at Shell Dr and continues along the north side of N Topsail Dr where it terminates at the roundabout with the Surf City Bridge multi-use path. This segment contains no additional connections; however, small connections to the adjacent sidewalk network may be needed but were not included as part of this study. The Town of Surf City has indicated a locally preferred alternative alignment along N Shore Dr, which was not assessed in the study, as the Town has a water line replacement project on that street. That would provide an opportunity to implement this segment as part of a larger project, which may support construction cost savings that have not been assessed in this study.

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 1
Base Construction Cost Estimate (2023)	\$2,274,090
40% Base Construction Contingency (2023)	\$909,636
Build Year Construction Cost Estimate (2028)	\$4,070,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$489,000
Additional Project Contingency (5% of Build Year Estimate)	\$204,000
Total Construction Cost Estimate (w/CEI)	\$4,763,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$383,000
Total Project Cost Estimate (2028 Construction + Design)	\$5,146,000

*Due to uncertainties associated with drainage on a barrier island, base construction contingency for this section is increased to 40%.

**Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

***Detailed cost information is located in Appendix C.

PROJECT SNAPSHOT

- **Location:** NC 210/N New River Drive, N Topsail Ave
- **Jurisdictions:** Town of Surf City
- **Facility Types:** Shared Use Sidepath
- **Total Length:** 1.95 Miles
- **Structures:** None
- **Roadway Crossings:**
 - » NC 210/N New River Drive @ Mecklenburg Ave
 - » NC 210/N New River Drive @ Shell Dr
 - » Local street intersections along N Topsail Ave

- **Trail Connections:** None
- **Destinations Served:**
 - » Adjacent residents
 - » Local Businesses
 - » Beach Access
- **Potential ROW Needs along roadway corridor:** 144 Parcels, 116 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » Coastal flood model

PRIMARY TYPICAL SECTION



12' Sidepath



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET: PREFERRED SEGMENT #1

Alternative Route: The Town of Surf City has indicated a preference for an alternative route along N Shore Drive, to coordinate trail development with a water line project. This route has not been analyzed by this feasibility study.

- LEGEND

Segment 1 Sidepath

Segment 2 Sidepath

Connector

Proposed Boardwalk

Surf City Alternative Route

Existing Greenways

Existing Sidepath

Roadways

Rail

Water Bodies

Parks

Municipalities

Counties

Parcels

CUTSHEET: SEGMENT 2

This segment begins as at the roundabout with the mainland side of the Surf City Bridge and follows NC 210/50 to the north. It would require demolition and reconstruction of the existing boardwalk, widening of the existing sidewalk to 12 feet, and coordination with Jones-Onslow Electric Membership Corporation (JOEMC) for trail development within their transmission line corridor. Additionally, NCDOT STIP project R-5900 proposes modifications to traffic signals and access points in the vicinity of NC 210/50 @ Belt Road. Coordination with NCDOT and implementation of a portion of this segment through the NCDOT Complete Streets Policy could help reduce the share of construction costs. The Town of Surf City has also indicated a preferred route along Little Kinston Rd through a proposed Town Park to the future Caretta Dr @ Charlie Medlin Dr. That route has not been assessed as part of this study, but it is anticipated to be evaluated as part of the associated park planning effort.

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 2	CONNECTION 6	CONNECTION 3	CONNECTION 6
Base Construction Cost Estimate (2023)	\$2,531,970	\$291,920	\$254,790	\$301,790
35% Base Construction Contingency (2023)	\$886,190	\$102,172	\$89,177	\$105,627
Build Year Construction Cost Estimate (2028)	\$4,370,000	\$510,000	\$440,000	\$530,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$525,000	\$62,000	\$53,000	\$64,000
Additional Project Contingency (5% of Build Year Estimate)	\$219,000	\$26,000	\$22,000	\$27,000
Total Construction Cost Estimate (w/CEI)	\$5,114,000	\$598,000	\$515,000	\$621,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$411,000	\$48,000	\$42,000	\$49,000
Total Project Cost Estimate (2028 Construction + Design)	\$5,525,000	\$646,000	\$557,000	\$670,000

*Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

**Detailed cost information is located in Appendix C.

ALTERNATE ROUTE

The Town of Surf City is independently analyzing an alternate route along Little Kinston Rd and through JH Batts Park. The route may reduce construction costs since the park land is already owned by the Town and construction mobilization efforts for park improvements could be paired with trail construction. This route was not analyzed in this feasibility study.

PROJECT SNAPSHOT

- **Location:** NC 210/50 (Roland Ave)
- **Jurisdictions:** Town of Surf City
- **Facility Types:** Shared Use Sidepath
- **Total Length:**
 - » Segment 2: 1.38 Miles
 - » Connection 6: 0.28 Miles
 - » Connection 2: 0.24 Miles
 - » Connection 3: 0.19 Miles
- **Structures:** Boardwalk, 1 structure (650 LF)
- **Roadway Crossings:**
 - » NC 210/NC 50 @ Surf City Bridge Roundabout (mainland)
 - » J H Batts Rd @ NC 210/NC 50

- » Charlie Medlin Dr @ NC 210/NC 50
- » Kayda Wy @ NC 210
- » Future Caretta Dr @ NC 210
- » Development Driveways along NC 210
- **Trail Connections:**
 - » Connection 6 along J H Batts Rd to NC 210
 - » Connection 2 along Charlie Medlin Dr to NC 210
 - » Connection 3 along Tortuga Ln to Karen Beasley Sea Turtle Center
- **Destinations Served:**
 - » Businesses along NC 210
 - » Surf City Community Park
 - » Karen Beasley Sea Turtle Center
- **Potential ROW Needs along roadway corridor:**
 - » Segment 2: 35 Parcels, 29 Unique Owners
 - » Connection 6: 10 Parcels, 7 Unique Owners
 - » Connection 2: 2 Parcels, 2 Unique Owners
 - » Connection 3: 1 Parcels, 1 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » 401/404 Permitting
 - » JOEMC Encroachment/Coordination



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET: PREFERRED SEGMENT #2

Note(s): Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

Alternative Route: The Town of Surf City is independently analyzing an alternative route along Little Kinston Rd and through the Earl G & Inez Batts Recreation Complex. This route was not analyzed in this feasibility study.

CUTSHEET: SEGMENT 3

This segment begins on the south side of NC 210 at the future intersection with Caretta Dr, continuing west to the Magnolia Reserve subdivision, where it crosses to the north side of NC 210, and continues north through the undeveloped tree farm parcel. It crosses the Duke Energy easement and follows the north side of the easement to Alston Blvd Ext, and ends at the traffic signal with NC 210. There is significant wetland presence through the undeveloped area (based on available GIS data), a conservative assessment assumes boardwalk will be needed here to mitigate impacts. Wetland delineation performed during the design process would refine this estimate further.

PROJECT SNAPSHOT

- **Location:** NC 210, US 17, Alston Blvd Ext
- **Jurisdictions:** Town of Surf City, Pender County
- **Facility Types:** Shared Use Sidepath, Greenway, Boardwalk

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 3	SEGMENT 4C	CONNECTION 1	CONNECTION 4
Base Construction Cost Estimate (2023)	\$5,007,980	\$3,235,840	\$1,025,120	\$2,551,450
35% Base Construction Contingency (2023)	\$1,752,793	\$1,132,544	\$358,792	\$893,008
Build Year Construction Cost Estimate (2028)	\$8,630,000	\$5,580,000	\$1,770,000	\$4,400,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$1,036,000	\$670,000	\$213,000	\$528,000
Additional Project Contingency (5% of Build Year Estimate)	\$432,000	\$279,000	\$89,000	\$220,000
Total Construction Cost Estimate (w/CEI)	\$10,098,000	\$6,529,000	\$2,072,000	\$5,148,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$812,000	\$525,000	\$167,000	\$414,000
Total Project Cost Estimate (2028 Construction + Design)	\$10,910,000	\$7,054,000	\$2,239,000	\$5,562,000

*Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

**Detailed cost information is located in Appendix C.

- **Total Length:**
 - » Preferred Segment 3: 2.45 Miles
 - » Connection 1: 0.62 Miles
 - » Connection 4: 1.02 Miles
- **Structures:**
 - » Preferred Segment 3: Boardwalk, 2 structures (1780 LF)
 - » Connection 4: Boardwalk, 1 structure (1170 LF)
- **Roadway Crossings:**
 - » Mainline: NC 210 @ Northern Pintail Pl, NC 210 @ Alston Blvd Ext, Local Streets along NC 210
 - » Connections: US 17 @ NC 210 + Commercial Driveways along NC 210 near US 17
- **Trail Connections:**
 - » Connection 1: sidepath along NC 210 and US 17 to MST Trail Connection
 - » Connection 4: off-road greenway along Duke Easement to Surf City Elementary
- **Destinations Served:**
 - » Businesses along NC 210
 - » Mountains-to-Sea Trail

- » Surf City Elementary
- » Future Development
- **Potential ROW Needs, along roadway corridor:**
 - » Segment 3: 31 Parcels, 27 Unique Owners
 - » Connection 1: 12 Parcels, 8 Unique Owners
- **Potential ROW Needs non-roadway corridor:**
 - » Connection 4: 4 Parcels, 4 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » 401/404 Permitting
 - » Flood Modelling (Preferred Segment 3, Connection 4)

PRIMARY TYPICAL SECTIONS



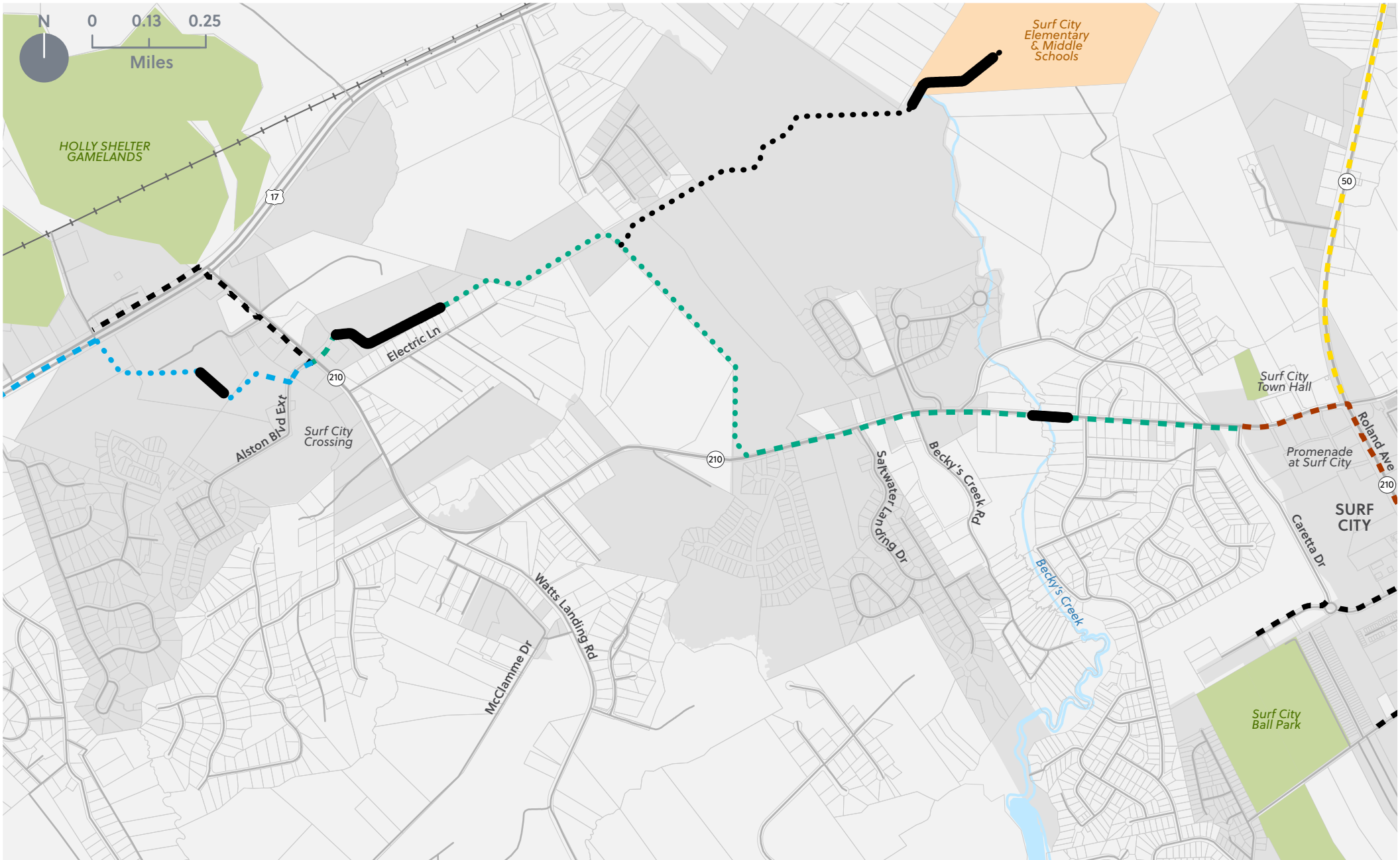
12' Sidepath



12' Greenway



12' Shared Use Boardwalk



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET: PREFERRED SEGMENT #3

Note(s): Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

Alternative Route: The Town of Surf City also expressed interest in developing a trail connection to Holly Ridge. This route was not assessed as part of this feasibility study and should be included in future trail planning efforts.

LEGEND

- Segment 2 Sidepath
- Segment 3 Sidepath
- Segment 4 Sidepath
- Connectors
- Proposed Boardwalk
- Surf City Alternative Route

- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties
- Parcels

CUTSHEET: SEGMENT 4

This segment begins on the east side of NC 210 at the intersection with Alston Blvd Ext and crosses at the signal to the west side of the road. From there, it follows Alston Blvd Ext before turning north to navigate along the undeveloped outparcels within the existing development. Lastly, it exits out the back of the development through the undeveloped space before turning north to US 17. The sidepath continues south on US 17 and south on the west side of Sloop Point Rd.

PROJECT SNAPSHOT

- **Location:** NC 210, US 17, Sloop Point Rd
- **Jurisdictions:** Pender County
- **Facility Types:** Shared Use Sidepath, Greenway, Boardwalk
- **Total Length:** 3.87 Miles
- **Structures:**
 - » Boardwalk, 4 structures (1070 LF total)
- **Roadway Crossings:**
 - » Alston Blvd Ext @ NC 210
 - » Cornel Ln @ US 17
 - » Groves Point Dr @ US 17
 - » Hillview Dr @ US 17
 - » Royal Tern Dr @ US 17
 - » Sloop Point Rd @ US 17
- **Trail Connections:** None

- **Destinations Served:**
 - » Commercial Destinations near NC 210 @ US 17
 - » Subdivisions along US 17, Sloop Point Rd
- **Potential ROW Needs:**
 - » Along roadway corridor: 83 Parcels, 62 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » 401/404 Permitting

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 4
Base Construction Cost Estimate (2023)	\$7,012,860
35% Base Construction Contingency (2023)	\$2,454,501
Build Year Construction Cost Estimate (2028)	\$12,090,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$1,451,000
Additional Project Contingency (5% of Build Year Estimate)	\$605,000
Total Construction Cost Estimate (w/CEI)	\$14,146,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$1,137,000
Total Project Cost Estimate (2028 Construction + Design)	\$15,283,000

*Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

**Detailed cost information is located in Appendix C.

PRIMARY TYPICAL SECTIONS



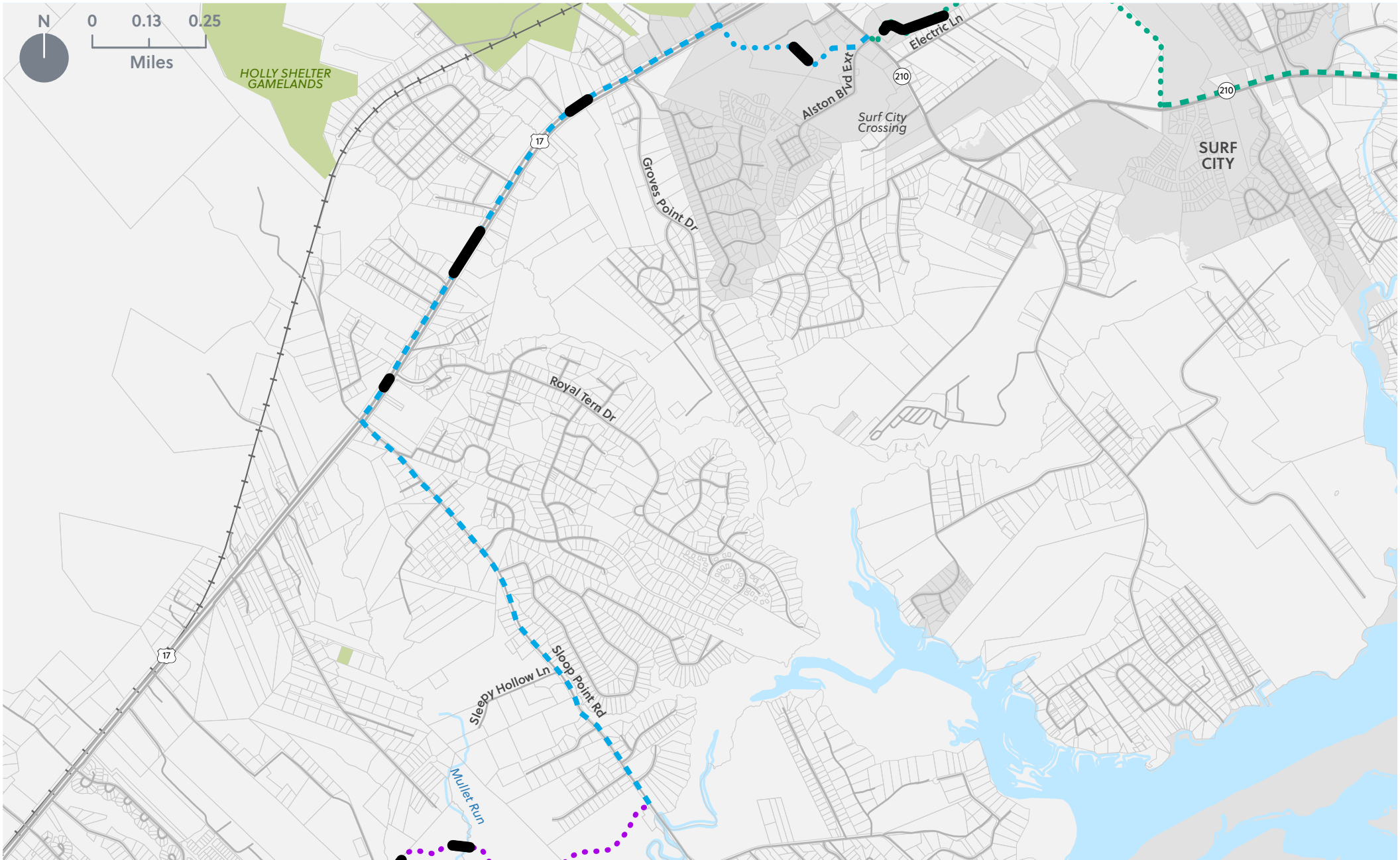
12' Sidepath



12' Greenway



12' Shared Use Boardwalk



NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET: PREFERRED SEGMENT #4

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

- LEGEND**
 - Segment 3 Sidepath
 - Segment 4 Sidepath
 - Segment 5 Sidepath
 - Connectors
 - Proposed Boardwalk
- Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties
 - Parcels

CUTSHEET: SEGMENT 5

This segment begins on Sloop Point Rd at Sleepy Hollow Ln. It continues south to Mullet Run where it turns west to navigate natural areas as a greenway to the back side of the Sloop Point South subdivision. From there, it connects to Aurora Pl near Moonlight Walk. Lastly, it follows local streets as a sidepath, through the Greenway Plantation Subdivision connecting out to Sloop Point Loop Rd at Country Club Dr.

PROJECT SNAPSHOT

- **Location:** Sloop Point Rd, Mullet Run, Sloop Point South Subdivision, Greenway Plantation Subdivision, Sloop Point Loop Rd
- **Jurisdictions:** Pender County
- **Facility Types:** Shared Use Sidepath, Greenway, Boardwalk
- **Total Length:** 2.79 Miles
- **Structures:** Boardwalk, 4 structures (910 LF total)
- **Roadway Crossings:**
 - » Aurora Pl near Moonlight Walk
 - » Residential streets within Sloop Point South and Greenway Plantation Subdivisions
 - » Sloop Point Loop Rd at Country Club Dr
- **Trail Connections:** None
- **Destinations Served:**
 - » Natural Areas
 - » Existing and future subdivisions
 - » Hampstead Kiwanis Park
 - » N Topsail Elementary School
- **Potential ROW Needs:**
 - » Along roadway corridor: 20 Parcels, 14 Unique Owners:
 - » Non-roadway corridor: 7 Parcels, 6 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » Flood Model

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 5
Base Construction Cost Estimate (2023)	\$3,326,960
40% Base Construction Contingency (2023)	\$1,164,436
Build Year Construction Cost Estimate (2028)	\$5,740,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$689,000
Additional Project Contingency (5% of Build Year Estimate)	\$287,000
Total Construction Cost Estimate (w/CEI)	\$6,716,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$540,000
Total Project Cost Estimate (2028 Construction + Design)	\$7,256,000

*Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

**Detailed cost information is located in Appendix C.

PRIMARY TYPICAL SECTIONS



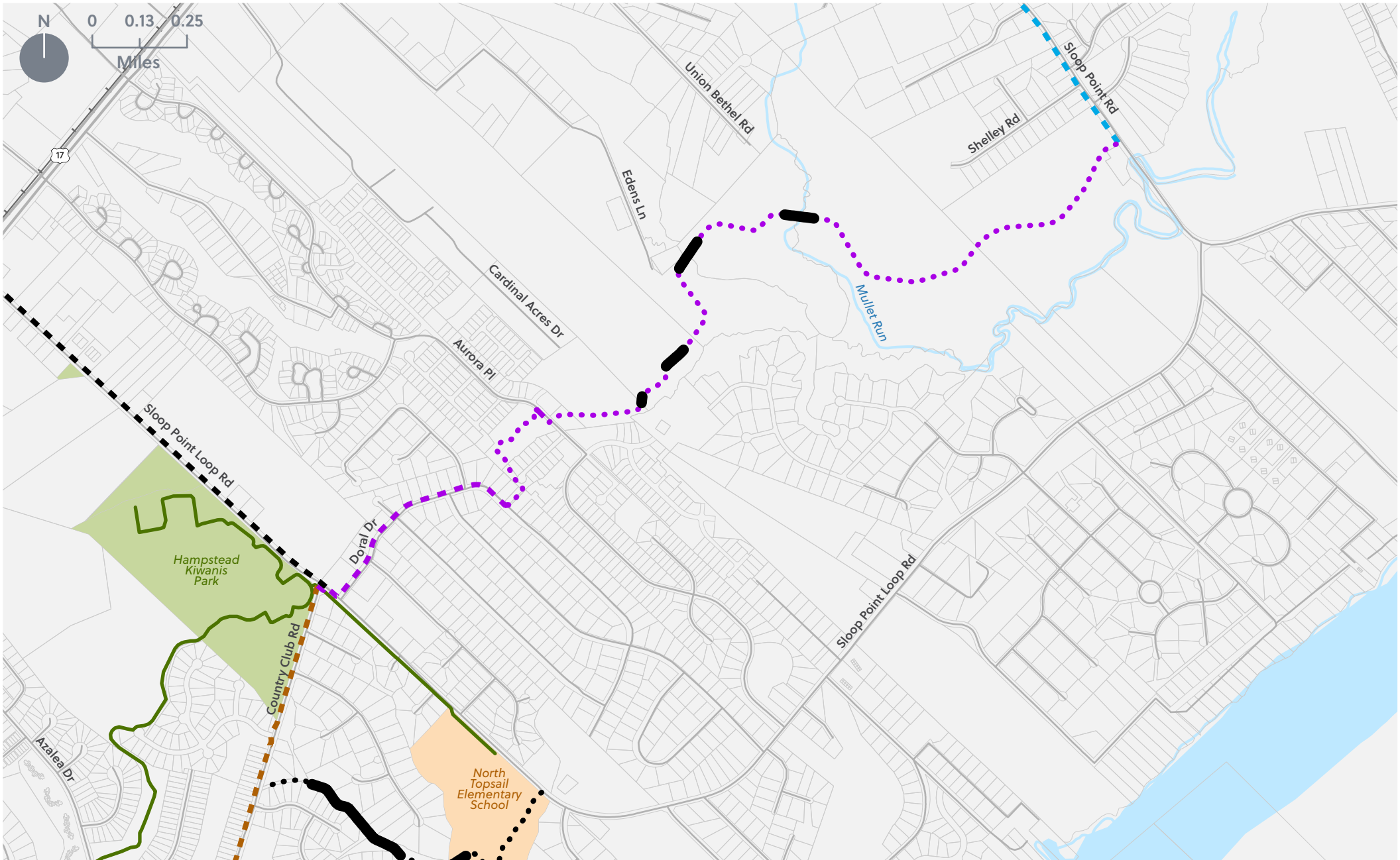
12' Sidepath



12' Shared Use Boardwalk



12' Greenway



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #5**

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

LEGEND

- Segment 4 Sidepath
- Segment 5 Sidepath
- Segment 6 Sidepath
- Connectors
- Proposed Boardwalk

- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties
- Parcels

CUTSHEET: SEGMENT 6

This segment begins on Country Club Dr at Sloop Point Loop Rd, and it follows the north side of the road to the existing golf cart crossing east of Olde Point Dr and crosses to the south side. It continues along Country Club to the endpoint at US 17. There are four optional connections to be considered along with this segment, which provide connections to N Topsail Elementary School, Holly Shelter Gamelands, Topsail High School, and the existing Hampstead Park greenway.

PROJECT SNAPSHOT

- **Location:** NC 210, Northern Pintail Pl, East Yellowstone Dr, US 17, Alston Blvd Ext
- **Jurisdictions:** Pender County
- **Facility Types:** Shared Use Sidepath, Greenway, Boardwalk
- **Total Length:**
 - » Preferred Segment 6: 3.39 Miles
 - » Segment 8e: 0.15 Miles
 - » Segment 8b: 0.67 Miles

- » Connection 10a: 1.25 Miles
- » Connection 11: 0.37 Miles
- **Structures:**
 - » Segment 6: Boardwalk, 1 structure (40 LF) and Retaining Wall, 1 structure (170 SF)
 - » Connection 7: Boardwalk, 1 structure (1370 LF)
- **Roadway Crossings:**
 - » Mainline: Local Streets along Country Club Dr and Country Club Dr at existing Golf Cart Crossing east of Olde Point Dr
 - » Connections: Azalea Dr @ Existing Greenway (Segment 8e), Country Club Dr near Yacht Basin Landing (Segment 8b), US 17 @ Sloop Point Loop Rd (Connection 10a), US 17 @ Country Club Dr (Connection 11), and St Johns Church Rd @ Jenkins Dr (Connection 11)
- **Trail Connections:**
 - » Connection 7: sidepath from Country Club Dr along Azalea Dr to existing greenway
 - » Connection 8: greenway from Country Club Dr through natural areas/open space

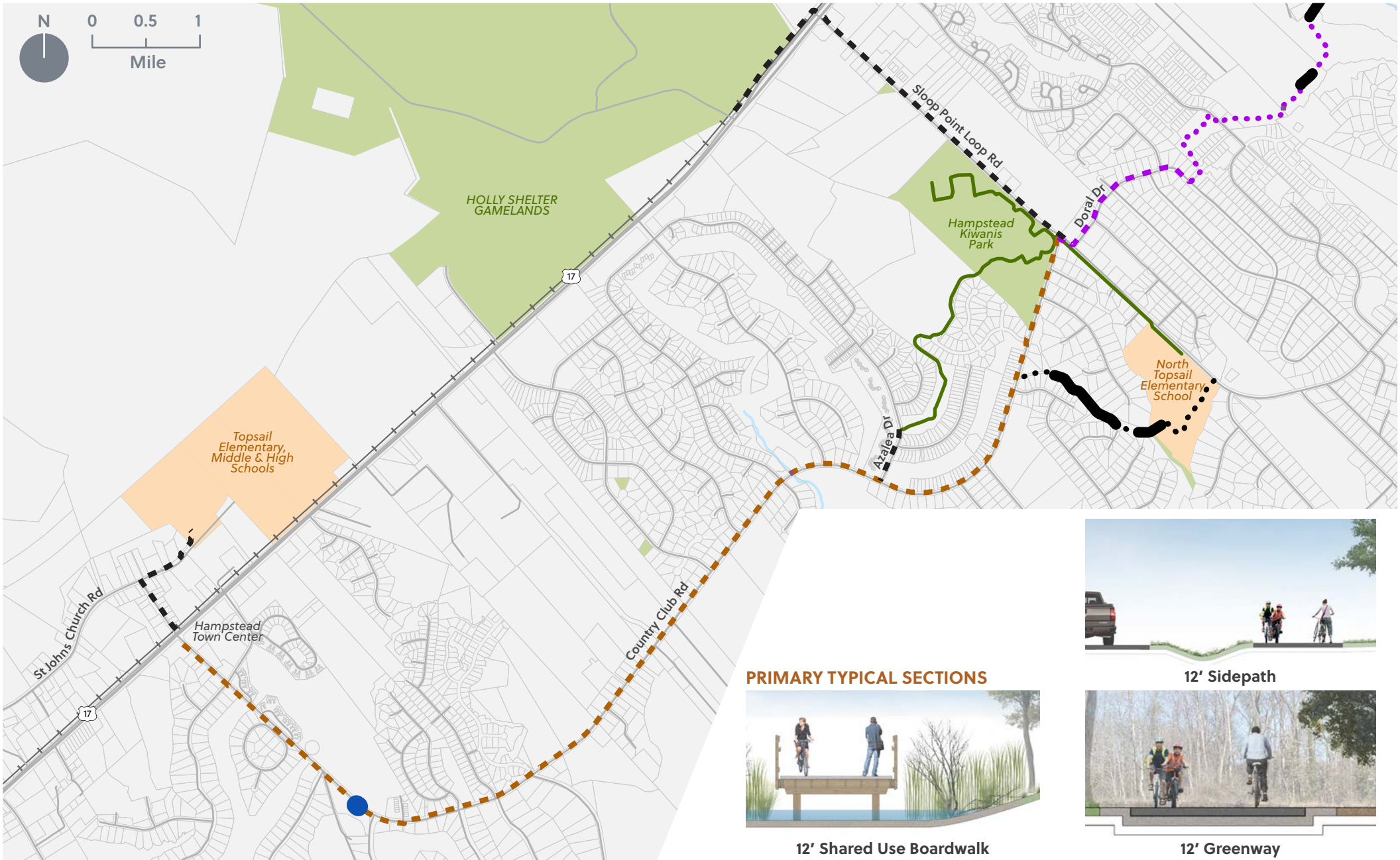
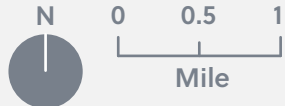
- » parcels to N Topsail Elementary School
- » Connection 9: sidepath along Sloop Point Loop Rd and US 17 to Holly Shelter Gamelands
- **Destinations Served:**
 - » Hampstead Kiwanis Park
 - » Holly Shelter Gamelands
 - » N Topsail Elementary
 - » Topsail High, Middle, and Elementary Schools
 - » Existing and future residential developments
- **Potential ROW Needs, along roadway corridor:**
 - » Segment 6: 131 Parcels, 116 Unique Owners
 - » Connection 8e: 1 Parcel, 1 Unique Owner
 - » Connection 10a: 19 Parcels, 15 Unique Owners
 - » Connection 11: 15 Parcels, 7 Unique Owners
- **Potential ROW Needs non-roadway corridor:** Segment 8b: 5 Parcels, 5 Unique Owners
- **Potential Permitting Needs:**
 - » NCDOT Encroachment
 - » Erosion Control
 - » Flood Modelling (Segments 6 and 8b)

PLANNING LEVEL COST ESTIMATES

COST COMPONENT	SEGMENT 6	SEGMENT 8b	SEGMENT 8e	CONNECTION 10a	CONNECTION 11
Base Construction Cost Estimate (2023)	\$4,379,080	\$2,988,950	\$189,660	\$1,687,620	\$609,550
35% Base Construction Contingency (2023)	\$1,532,678	\$1,046,133	\$66,381	\$590,667	\$213,343
Build Year Construction Cost Estimate (2028)	\$7,550,000	\$5,160,000	\$330,000	\$2,910,000	\$1,060,000
Construction Eng. & Inspection Services Cost Estimate (12% of Build Year Estimate)	\$906,000	\$620,000	\$40,000	\$350,000	\$128,000
Additional Project Contingency (5% of Build Year Estimate)	\$378,000	\$258,000	\$17,000	\$146,000	\$53,000
Total Construction Cost Estimate (w/CEI)	\$8,834,000	\$6,038,000	\$387,000	\$3,406,000	\$1,241,000
Design Services Cost Estimate (12% of Base Const Cost + Contingency)	\$710,000	\$485,000	\$31,000	\$274,000	\$99,000
Total Project Cost Estimate (2028 Construction + Design)	\$9,544,000	\$6,523,000	\$418,000	\$3,680,000	\$1,340,000

*Costs associated with ROW acquisition to be determined during design process and are not included in this estimate.

**Detailed cost information is located in Appendix C.



PRIMARY TYPICAL SECTIONS



12' Shared Use Boardwalk



12' Sidewalk



12' Greenway

NC 210 EAST COAST GREENWAY CORRIDOR FEASIBILITY STUDY CUTSHEET: PREFERRED SEGMENT #6

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

LEGEND

- Segment 5 Sidepath
- Segment 6 Sidepath
- Connectors
- Proposed Boardwalk
- Proposed Retaining Wall
- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties
- Parcels

IMPLEMENTATION PARTNERS

As a multi-jurisdictional project, achieving success in the development of the NC 210 ECG relies on collaboration with community partners and stakeholders at the state, regional, and local levels. Implementation will require both individual and coordinated efforts by all project stakeholders. Key roles in the implementation of the NC 210 ECG are outlined on the following pages. Key partners are listed below.

- Cape Fear Rural Transportation Planning Organization (RPO)
- Wilmington Urban Area Metropolitan Planning Organization (MPO)
- Pender County
- Town of Surf City
- Town of North Topsail Beach
- NC State Parks
- North Carolina Department of Transportation (NCDOT)
- East Coast Greenway Alliance (ECGA)
- Friends of the Mountains-to-Sea Trail (FMST)
- Private Partners
- Community Members + Advocacy Organizations



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TRAILS
STATE
COALITION**



**East Coast
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Town of
NORTH TOPSAIL BEACH
FOUNDED IN 1990 *Nature's Tranquil Beauty* NORTH CAROLINA




**CAPE FEAR
COUNCIL OF GOVERNMENTS**

 **WILMINGTON URBAN AREA
METROPOLITAN PLANNING ORGANIZATION**



**TERRY BENJEY
BICYCLING
FOUNDATION**

north carolina state parks

NC TRAILS

REGIONAL PARTNERS

Cape Fear Rural Transportation Planning Organization (RPO)

About

The Cape Fear Rural Transportation Planning Organization (RPO) is one of twenty multi-county rural transportation planning organizations chartered by the NCDOT. It was established in 2001 through a memorandum of understanding (MOU) between NCDOT, Brunswick, Columbus, and Pender counties, and the Cape Fear Council of Governments. The RPO serves as the intergovernmental organization for local elected officials, NCDOT, and residents of the region to work cooperatively to address transportation issues within the Cape Fear RPO boundary.

The goals and duties of the RPO are to:

- Develop long-range local and regional transportation plans (highways, railways, aviation and ferries) in cooperation with other area planning organizations and NCDOT;
- Provide a forum for public participation in the rural transportation planning process;
- Develop and prioritize transportation projects which the RPO believes should be included in the State Transportation Improvement Program (STIP);
- Provide transportation-related information to local governments and other interested organizations and persons; and
- Conduct transportation related studies and surveys for local governments and other interested entities/organizations.

Anticipated Roles

As a leader, collaborator, and supporting partner of this planning effort and project prioritization in the region, the Cape Fear RPO is responsible for the following roles in project implementation:

- Coordinate with NCDOT to incorporate study recommendations into the Pender County CTP.
- Assist Pender County in facilitating project development and coordination between jurisdictions and non-profit partners along the NC 210 ECG.
- Coordinate with NCDOT on STIP project development to incorporate viable trail segments into roadway improvements.
- Coordinate with the ECGA and FMST to incorporate wayfinding and branding along the NC 210 ECG corridor.

Wilmington Urban Area Metropolitan Planning Organization (MPO)

About

The Wilmington Urban Area Metropolitan Planning Organization (MPO) is a federally mandated and funded entity. The MPO provides a regional and cooperative transportation planning process that serves as the basis for the expenditure of all federal transportation funds in the greater Wilmington area. The MPO prepares long range transportation plans for the planning area with a minimum of a 20-year horizon. It also prepares an annual planning work program and assists with the prioritization of projects for inclusion in the State Transportation Improvement Program which outlines NCDOT's funding for a 10-year period.

The WMPO Planning area includes the following jurisdictions:

- City of Wilmington
- New Hanover County
- Pender County
- Town of Leland
- Brunswick County
- Town of Carolina Beach
- Town of Wrightsville Beach
- Town of Kure Beach
- Town of Belville
- Town of Navassa

Anticipated Roles

As a regional leader and partner of this planning effort and project prioritization in the region, the Wilmington Urban Area MPO is responsible for the following roles in project implementation:

- Coordinate with NCDOT and other project leaders to incorporate study recommendations into the Cape Fear Moving Forward 2045 MTP.
- Support jurisdictions to amend local plans and policies to incorporate the NC 210 ECG in their local bicycle and pedestrian networks.
- Assist project leaders in facilitating project development and coordination between jurisdictions and non-profit partners along the NC 210 ECG.
- Coordinate with NCDOT on STIP project development to incorporate viable trail segments into roadway improvements.
- Coordinate with the ECGA and FMST to incorporate wayfinding and branding along the NC 210 ECG corridor.
- Lead coordination with transit agencies, major employers, and jurisdictions along the corridor to provide multi-modal connections to the NC 210 ECG.

COUNTY-WIDE PARTNERS

Pender County

About

The two key County departments involved in the planning for the ECG are the Planning and Community Development and the Parks and Recreation departments. Pender County's Planning and Community Development Department administers Planning, Land Use, Zoning, Code Enforcement, and Flood Preparedness within the unincorporated areas of the County. The mission of the Planning and Community Development Department is to work with citizens and stakeholders to provide a range of planning and technical services aimed at enhancing the health, safety, and well-being of all citizens and visitors of Pender County. The Parks and Recreation Department plans for recreational programming, develops parks and trails, and conserves local natural areas to provide recreational access to all residents within the county.

Anticipated Roles

As one of the project co-leaders of the NC 210 ECG's development, key implementation responsibilities for Pender County include:

- Lead development of the NC 210 ECG through land acquisition, design, construction, and maintenance.
- Coordinate with NCDOT, NC State Parks, Cape Fear RPO, Wilmington Urban Area MPO, ECGA, FMST on funding opportunities and project phasing.
- Coordinate with the ECGA and FMST to incorporate wayfinding and branding along the NC 210 ECG corridor.

Pender County Tourism Development Authority (TDA)

About

The Pender County Tourism Development Authority (TDA), also known as 'Visit Pender' works to promote tourism within Pender County. The TDA operates a visitor center in the old Pender County Jail in downtown Burgaw.

Anticipated Roles

Pender County is one of the fastest growing counties in North Carolina and has a population of more than 65,000 residents. According to the TDA, the county is positioned for growth and development with strategic priorities related to economic development, expansion of public infrastructure, growth management, quality of life and education.

- The Pender County TDA should partner with local Town staff, the ECGA, FMST, and the Great Trails State Coalition to explore economic development opportunities along the NC 210 ECG.

NC State Parks

About

The North Carolina Division of Parks and Recreation administers a diverse system of state parks, natural and recreational areas, trails, lakes, and natural and scenic rivers. The Division also supports and assists other recreation providers by administering grant programs for park and trail projects, and by offering technical advice for park and trail planning and development. The Division administers the North Carolina Trails System, North Carolina Natural and Scenic Rivers, and the Parks and Recreation Trust Fund.

Anticipated Roles

The NC 210 ECG is the identified corridor for gap segments of designated state trails, Mountains-to-Sea Trail (MST) and East Coast Greenway (ECG). As a state trail corridor, coordination on the NC 210 ECG development is a responsibility of NC State Parks, the managing department of the state trail system. NC State Parks will work with governmental agencies and non-profit partners along the project corridor to provide technical assistance, grant opportunities, and develop partnerships with local landowners to guide implementation of the NC 210 ECG. Key responsibilities for this partner are outlined below:

- Provide technical assistance to regional, county, and municipal partners on trail design, funding, and land acquisition.
- Assist coordination with NCDOT, Cape Fear RPO, Wilmington Urban Area MPO, municipalities, ECGA, FMST on funding opportunities and project phasing.

North Carolina Department of Transportation (NCDOT)

About

The North Carolina Department of Transportation (NCDOT) allocates federal and state funding and establishes policies for transportation improvements in communities across North Carolina. Every two years, NCDOT develops the State Transportation Improvement Program (STIP), which identifies projects that will receive funding during a 10-year period. NCDOT policies, such as Complete Streets and Control of Access, provide guidance and oversight for permitting and implementing projects. The Complete Streets Policy, adopted in August 2019, requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of the state's transportation projects. The Control of Access Policy provides design guidance and defines permitted activities within the ROW for limited, partial, and full control access roadways.

Anticipated Roles

Infrastructure recommendations along NCDOT-maintained roadways would require review and approval by NCDOT Division 3 prior to implementation. NCDOT's Integrated Mobility Division (IMD) will also play a large role since it works with other business units of the NCDOT as well as local municipalities to develop and design active transportation projects.

Since several of the preferred alignments of the NC 210 ECG are within NCDOT ROW, coordination with NCDOT is of critical importance. As the lead state agency allocating funding, guiding implementation of the Complete Streets policy, and approving activities in limited access roadway corridors, NCDOT's responsibilities in the implementation of the NC 210 ECG are outlined below:

- Provide technical assistance to regional, county, and municipal partners on Complete Streets Policy, STI, and other state funding opportunities.
- Provide guidance and technical assistance on the design of the greenway corridor.
- NCDOT Division 3 should support Town staff on a speed limit reduction study targeting areas where the posted speed limit exceeds 35mph.
- NCDOT Division 3 should coordinate with Pender County, the Cape Fear RPO, and the Wilmington Urban Area MPO on the programmed HMIP improvements to incorporate pedestrian facility and intersection enhancements during roadway resurfacing projects.
- NCDOT IMD and Division 3 should lead coordination with regional and municipal partners in Complete Streets implementation for future STIP projects in the corridor.
- Coordinate with the Cape Fear RPO, the Wilmington Urban Area MPO, and Pender County on any required encroachment agreements and Control of Access approval to construct sidepath segments within NCDOT ROW.

MUNICIPAL PARTNERS

Town of Surf City + Town of North Topsail Beach

About

Municipal governments lead or support the development of recreation and transportation projects within their respective jurisdictions. On projects they play a supporting role, municipal staff are the primary coordinators for community engagement, policy development, and maintenance. Jurisdictions along the NC 210 ECG corridor include the Town of Surf City and the Town of North Topsail Beach. Each jurisdiction has established Capital Improvement Programs (CIP) that identify and prioritize projects for funding, and some jurisdictions also have bicycle and pedestrian-friendly policies in their code of ordinances that require facilities identified in locally adopted plans to be developed. Most jurisdictions along the corridor also have established procedures that guide public participation for recreation and transportation projects.

Anticipated Roles

The Town of Surf City acts as one of the project co-leaders with Pender County on the development of the NC 210 ECG. The Town of North Topsail is a supporting partner in this effort as well. Municipal roles in implementation include the following:

- Adopt Resolutions of Support for the *NC 210 ECG Feasibility Study* and amend local plans to incorporate study recommendations.
- Lead development of local segments of the proposed NC 210 ECG.
- Coordinate with Pender County and neighboring municipalities on developing greenway connections across jurisdictional boundaries.
- Municipalities should coordinate with the Cape Fear RPO and NCDOT to identify project phases for implementation.
- Coordinate with Cape Fear RPO and Pender County on outreach program for landowners and developers as projects arise along the corridor.
- Coordinate with Pender County and other municipal partners to develop a maintenance plan for the project corridor.
- Town of Surf City staff should ensure that their land use and transportation policies encourage and/or require developers to construct planned bicycle and pedestrian facilities, amenities, and connections in new developments as the NC 210 ECG expands.
- The Town of Surf City, Town of North Topsail Beach, ECGA, and FMST should coordinate to ensure the greenway is designed and constructed across jurisdictions.

NON-PROFIT PARTNERS

East Coast Greenway Alliance (ECGA) + Friends of Mountains-to-Sea Trail (FMST)

About

The NC 210 corridor is a critical missing link in the regional greenway network and is the proposed corridor for gap segments of the Mountains-to-Sea Trail (MST) and the East Coast Greenway (ECG). The MST is North Carolina's flagship state trail. It stretches from Clingmans Dome on the Tennessee border to Jockey's Ridge State Park on the coast. The route of the MST segment 15, from Burgaw up to Stella through Surf City, North Topsail Beach, Sneads Ferry, and Jacksonville. This corridor will help to bring even more off-road trails to the system.

Additionally, this segment is co-located with the ECG and will provide an off-road link for this national effort. The proposed greenway extension along the NC 210 corridor aims to expand the connected greenway network in the region, connecting from Calabash to South Mills in the state of North Carolina.

Anticipated Roles

The managing entity of these trails, East Coast Greenway Alliance (ECGA) and Friends of the Mountains-to-Sea Trail (FMST) serve a key role in advocating for project investment. These organizations generate support for the project by providing funding, raising awareness amongst the public, advocating to elected officials to prioritize funding for trail development, and fostering collaboration amongst jurisdictional partners. Responsibilities of the non-profit partners in the implementation of the NC 210 ECG include:

- Coordinate with regional agencies, Pender County, and municipalities on developing funding opportunities, project phasing, and building public support for the NC 210 ECG.
- Provide guidance and technical assistance on trail design standards.

PRIVATE SECTOR PARTNERS

Private Landowners + Local Businesses

About

Local businesses adjacent to the preferred route may serve as key destinations and potential generators of bicycle and pedestrian travel along the NC 210 ECG corridor. As a result, they may have the resource capacity to advance phases of the greenway and make the case for increased investment in active transportation infrastructure within the region.

Other private entities along the NC 210 ECG will also play an important role in trail development. Key private sector partners include Duke Energy and developers. Duke Energy manages electric utilities and serves customers throughout North Carolina. An existing transmission easement is located south of US 17 between Sloop Point Road and NC 210.

Anticipated Roles

Key roles of private landowners and local businesses include:

- Landowners and businesses should support regional agencies and municipalities in developing public/private partnerships to fund the design and construction of the NC 210 ECG.
- Landowners and businesses should support marketing efforts and participate in any future fundraising campaigns for the NC 210 ECG.
- Landowners and businesses should participate in the future landowner outreach program to streamline coordination between project stakeholders as development opportunities arise along the project corridor.
- Coordinate with Pender County, NCDOT, and municipalities on the easements, design, and construction of proposed trail segments that cross or parallel Duke Energy easements along the project corridor.

Developers

About

Municipalities may ask developers to construct planned sidepaths and greenways as a requirement to development in municipal limits. For this reason, local municipalities should consider adding developer-built sidepaths and greenways to their ordinances since private developers play an important role in active transportation facility development. Town Planning staff should coordinate with developers to provide guidance on ordinance requirements and processes. Developers should be prepared to include active transportation facilities in future developments that provide connections to Pender County's overall active transportation network.

Anticipated Roles

Key roles of developers include:

- Coordinate with Pender County and municipalities along the project corridor to develop planned trail segments and connector trails as a part of new residential or commercial developments.

COMMUNITY PARTNERS / ADVOCACY ORGANIZATIONS

Advocates for active transportation, including residents and community groups that promote bicycling and walking as viable forms of transportation, serve a key role in advocating for project and program investment. Community members and groups generate support for projects by raising awareness among the public, advocating to elected officials to prioritize funding for active transportation, and fostering collaboration amongst jurisdictional partners. Two key advocacy organizations that may support the implementation of the NC 210 ECG are the Great Trails State Coalition (GTSC) and the Terry Benjey Bicycling Foundation.

Great Trails State Coalition (GTSC)

About

The Great Trails State Coalition (GTSC) is a broad-based group of diverse organizations, agencies and supporters advocating for increased state investment in all types of trails statewide. This group supports the establishment of the Great Trails State Fund (\$50M one time funding opportunity) which will support both natural and paved surface trails in the state. The NC 210 ECG will tie into both the ECG and the MST which are state designated trails.

Terry Benjey Bicycling Foundation

About

The Terry Benjey Bicycling Foundation was founded in honor of a long time cyclist and cycling advocate, Terry Benjey. After Terry's passing, the Foundation was formed to perpetuate his vision and goals for cycling in our region. The mission of the Foundation is to improve bicycling opportunities and safety in the Cape Fear Region of North Carolina.

Anticipated Roles

Key roles of community partners and advocacy organizations include:

- Community groups and advocacy organizations should support Pender County and the Cape Fear RPO in the adoption of the *NC 210 ECG Feasibility Study*.
- Community groups and advocacy organizations should support regional agencies in developing public/private partnerships to fund the design and construction of the NC 210 ECG.
- Community groups and advocacy organizations should coordinate with regional agencies and municipalities on the design of the NC 210 ECG.
- Volunteers from the community or members associated with advocacy groups may assume responsibilities for community volunteer workdays along the NC 210 ECG.

ACTION PLAN

The following table provides a summary of action steps to implement the NC 210 ECG over a 10-year planning horizon. The previously mentioned partners may act as the responsible parties for various actions associated with the project. Action steps are also provided for each cutsheet segment.

STATUS DESCRIPTION		EXPLANATION			
Short-Term	The action item could be initiated in the near future within 2-4 years.				
Medium-Term	The action item could be initiated within the next 4-8 years.				
Long-Term	The action item could be initiated within the next 8+ years.				
Perpetual	The action item does not have an end date. It may be currently under progress and will continue to be implemented in perpetuity of this feasibility study.				

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	Adopt the <i>NC 210 ECG Feasibility Study</i> . This action allows the study to become the official planning document for the ECG corridor through Pender County and demonstrates local intention to support project implementation.	Cape Fear RPO	ECGA, Town of North Topsail, Pender County, Wilmington Urban Area MPO, Town of Surf City	Short-term	Plan Adoption, Minutes
2	Amend the Pender County Comprehensive Transportation Plan (CTP) to include the NC 210 ECG alignment and to reference study recommendations into the CTP.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, Town of North Topsail, NCDOT Div. 3, NCDOT IMD	Short-term	CTP Amendment
3	Amend the Cape Fear Moving Forward 2045 Metropolitan Transportation Plan (MTP) to include the NC 210 ECG alignment and to reference study recommendations into the CTP.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, Town of North Topsail, NCDOT Div. 3, NCDOT IMD	Short-term	MTP Amendment

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
4	Coordinate with the East Coast Greenway Alliance (ECGA) and Friends of the Mountains-to-Sea Trail (FMST) to support interagency coordination and assist project development of the NC 210 ECG. Consider developing an advisory committee that continues the work of the NC 210 ECG Steering Committee.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, Town of North Topsail, NC State Parks, Great Trails State Coalition	Perpetual	Meeting Agendas and Minutes
5	Jurisdictions along the ECG greenway corridor in Pender County should adopt Resolutions of Support for the <i>NC 210 ECG Feasibility Study</i> .	Pender County, Town of North Topsail, Wilmington Urban Area MPO, Town of Surf City	Cape Fear RPO	Short-term	Resolutions of Support and Plan Amendments
6	Consider developing an annual work plan based on opportunities to advance project development. The work plan should include key goals/milestones to make progress on coordination with NCDOT, secure funding, design, permitting, and construction. The work plan should be updated annually.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD, NC State Parks, ECGA, FMST	Short-term	Meeting Agendas and Minutes
7	Coordinate with landowners on acquiring easements for segments of the route (greenways and non-NCDOT roadways).	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	Landowners	Medium-term	Meeting Agendas, Minutes, and Design Plans
8	Coordinate with the Town of Surf City and Pender County on school connections to the proposed connectors of the NC 210 ECG (i.e., Topsail Elementary, Middle, and High School, Surf City Elementary, and North Topsail Elementary).	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD	Short-term Perpetual	Meeting Agendas and Minutes

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
9	Coordinate with the Gullah Geechee Cultural Heritage Corridor Commission and the Wilmington Area Urban MPO on Gullah Geechee Greenway/Blueway Heritage Trail tie ins into the ECG.	Pender County, Cape Fear RPO, Town of Surf City	Gullah Geechee Cultural Heritage Corridor Commission and Wilmington Urban Area MPO	Short-term Perpetual	Meeting Agendas and Minutes
10	Coordinate with NCDOT, Cape Fear RPO, and Wilmington Urban Area MPO to determine project phasing based on the recommended implementation segments in this report. Segments may be constructed in multiple phases as funding and development opportunities arise.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD, Town of Surf City	Short-term Perpetual	Meeting Agendas and Minutes
11	Coordinate with NCDOT, Cape Fear RPO, and Wilmington Urban Area MPO on prioritizing the project corridor to submit through the NCDOT SPOT submittal process. Project segments may be bundled as one submission to ensure competitive scoring.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD	Short-term Perpetual	SPOT Submittal, Meeting Agendas and Minutes
12	Coordinate with NCDOT Division 3 on future STIP projects that may be proposed along Country Club Blvd, Highway 17, NC 210, NC 50, and Sloop Point Rd to ensure that the greenway may be developed through future roadway improvement projects.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD, Town of North Topsail, NC 210 ECG Advisory Committee	Medium-term Perpetual	Meeting Agendas and Minutes

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
13	Develop a landowner outreach program to coordinate with developers and landowners as development opportunities arise along the project corridor. The program should include strategies to work towards acquiring easements from willing landowners and working with developers to coordinate access across the trail and/or build planned segments that may be constructed outside of NCDOT ROW.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 13, NCDOT IMD, NC State Parks, ECGA, FMST	Medium-term Perpetual	Landowner Outreach Program Guiding Document, Meeting Agendas and Minutes
14	Coordinate with NCDOT Division 3 on a speed limit reduction study along Highway 17, NC 210, and NC 50, targeting areas where the posted speed limit exceeds 35mph.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 13, NCDOT IMD	Medium-term	SPOT Submittal, Meeting Agendas and Minutes
15	Coordinate with NCDOT Division 3 on the design of the project corridor. Design plans should be guided by the recommendations developed through this study.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 13, NCDOT IMD	Dependent upon project schedules, Medium-term	SPOT Submittal, Meeting Agendas and Minutes
16	Coordinate with the ECGA and NC State Parks on opportunities to utilize Complete the Trails Funds to design and construct proposed bridges and boardwalks along segments of the project corridor.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Perpetual	Funding Strategies Plan, Meeting Agendas and Minutes
17	Ensure that land use and transportation policies for municipalities within Pender County encourage and/or require developers to construct planned bicycle and pedestrian facilities, amenities, and connections in new developments.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD	Short-term	Code of Ordinances Updates, Meeting Agendas and Minutes

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
18	Develop a community engagement plan to guide project development of the NC 210 ECG.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD, NC State Parks, ECGA, FMST	Short-term	Meeting Agendas and Minutes
19	Coordinate with ECGA and FMST to incorporate ECG and MTS wayfinding and branding along the project corridor. Explore potential areas for greenway access points and trailheads.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NC State Parks, ECGA, FMST, Great Trails State Coalition	Long-term	Meeting Agendas and Minutes
20	Coordinate with NCDOT, ECGA, and FMST to develop a maintenance plan for the project corridor.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	NCDOT Div. 3, NCDOT IMD, NC State Parks, ECGA, FMST	Long-term	Meeting Agendas and Minutes
21	Coordinate with the Pender County Tourism Development Authority (TDA), ECGA, FMST, and the Great Trails State Coalition to explore economic development opportunities along the NC 210 ECG.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	Pender County TDA, ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term Perpetual	Meeting Agendas and Minutes

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
22	Coordinate with the ECGA, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construction of the project corridor. Consider developing a grant procurement and fundraising plan using cost estimates developed through this study to identify steps in securing funding to design and construct the greenway.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term Perpetual	Meeting Agendas and Minutes
23	Coordinate with NCDOT, Wave Transit, major employers, and jurisdictions along the corridor to provide multi-modal connections to the NC 210 ECG.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition, NCDOT, Wave Transit	Long-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #1

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	Coordinate with NCDOT on the development of the proposed sidepath along N New River Dr (NC 210). The project could be developed in conjunction with a future programmed roadway improvement project.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Short-term Perpetual	Meeting Agendas and Minutes
2	Coordinate with the Town of Surf City on the development of the proposed sidepath along N Topsail Dr. The project could be funded using CIP funding and grant funds.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO	Town of Surf City, NCDOT	Short-term Perpetual	Meeting Agendas and Minutes
3	Coordinate with Onslow County, the Town of North Topsail Beach, and ECGA on extending the ECG across the county boundary line.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO	Onslow County, Town of North Topsail Beach, ECGA	Medium-term Perpetual	Meeting Agendas and Minutes
4	Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 1.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
5	Coordinate with NCDOT on general permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #2

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<ul style="list-style-type: none"> Coordinate with the Town of Surf City and businesses at the Promenade at Surf City to design and construct the proposed sidepath along Roland Ave. Coordinate with Pender County and the Town of Surf City to incorporate the design of the proposed sidepath along Roland Ave. Coordinate with future developers along this segment to fund the design and construction of the sidepath. Coordinate with Pender County and the Town of Surf City on developing the proposed connectors between the Surf City Ball Park and Roland Ave. Coordinate with Jones-Onslow Electric Municipal Corporation (JOEMC) for trail development within their transmission line corridor. 	Pender County, Cape Fear RPO, Wilmington Urban Area MPO	Businesses, Developers, Town of Surf City, JOEMC	Short-term Perpetual	Meeting Agendas and Minutes
2	Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 2.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
3	Coordinate with NCDOT on trail development near STIP project R-5900 and general permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #3

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<ul style="list-style-type: none"> Coordinate with NCDOT on the development of the proposed sidepath and boardwalk along NC 210. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. Coordinate with landowners and HOAs on land acquisition and easement needs for the proposed greenway that connects to Preferred Segment #4. Coordinate with landowners and Surf City Elementary on land acquisition and easement needs for the proposed greenway and boardwalk connectors. Coordinate with landowners and Duke Energy on land acquisition and easement needs for the proposed greenway and boardwalk that runs north of Electric Ln and connects to NC 210. Coordinate with NCDOT on the development of the proposed sidepath connector along NC 210 and north of US 17. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. Coordinate with businesses at Surf City Crossing to ensure the design and construction of safe driveway entrance crossings. Coordination will also be required at the intersection of NC 210 and US 17 to ensure a safe crossing is design and constructed for the sidepath users. 	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT, landowners, businesses, HOAs, local schools	Short-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #3

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
2	Coordinate with the ECGA, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construction of boardwalks and bridges across streams and wetlands along the project corridor. Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 3.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
3	Coordinate with NCDOT on permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #4

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<ul style="list-style-type: none"> Coordinate with landowners on land acquisition and easement needs for the proposed greenway and boardwalk that runs northwest from Alston Blvd Ext toward US 17. Coordinate with NCDOT on the development of the proposed sidepath along US 17 and Sloop Point Rd. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. 	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT, landowners	Short-term Perpetual	Meeting Agendas and Minutes
2	Coordinate with the ECGA, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construction of boardwalks across streams and wetlands along the project corridor. Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 4.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
3	Coordinate with NCDOT on general permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #5

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<ul style="list-style-type: none"> Coordinate with landowners on land acquisition and easement needs for the proposed greenway and boardwalk that runs between Sloop Point Loop Rd and Sloop Point Rd. Coordinate with Pender County on the development of the sidepath along Aurora Pl. The project could be funded using CIP funding and grant funds. Coordinate with NCDOT on the development of the proposed sidepath along Doral Dr. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. 	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT, landowners	Short-term Perpetual	Meeting Agendas and Minutes
2	Coordinate with the ECGA, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construction of boardwalks and bridges across streams and wetlands along the project corridor. Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 5.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
3	Coordinate with NCDOT on general permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #6

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<ul style="list-style-type: none"> Coordinate with NCDOT on the development of the proposed sidepath along Sloop Point Loop Rd and over US 17. Coordination will also be required at the intersection of Sloop Point Loop Rd and US 17 to ensure a safe crossing is design and constructed for the sidepath users. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. Coordinate with landowners, HOAs, and North Topsail Elementary School on land acquisition and easement needs for the proposed greenway and boardwalk that runs behind the school. Coordinate with Pender County on the development of the sidepath along Azalea Dr. The project could be funded using CIP funding and grant funds. Coordinate with NCDOT on the development of the proposed sidepath and retaining wall along Country Club Rd. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project. Coordinate with North Topsail Elementary, Middle, High School, and NCDOT on the development of the proposed sidepath connector along Jenkins Rd and St Johns Church Rd. The project could be developed in conjunction with a future programmed roadway improvement project, or it could be submitted as an individual or bundled bicycle and pedestrian improvement project in the STIP as a Safe Routes to School project. Coordinate with Pender County on connections to the Hamstead Kiwanis Park when the mainline sidepath and connector sidepath go into design and construction. 	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT, landowners, HOAs, local schools	Short-term Perpetual	Meeting Agendas and Minutes

PREFERRED SEGMENT #6

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
2	Coordinate with the ECGA, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construction of boardwalks and bridges across streams and wetlands along the project corridor. Pursue design and develop a grant procurement and fundraising plan (using cost estimates in this study) to identify steps in securing funding to construct Preferred Segment 6.	Pender County, Cape Fear RPO, Wilmington Urban Area MPO, Town of Surf City	ECGA, FMST, NC State Parks, Great Trails State Coalition	Short-term	Draft Grant Procurement and Fundraising Plan
3	Coordinate with NCDOT on general permitting needs.	Pender County, Town of Surf City, Cape Fear RPO, Wilmington Urban Area MPO	NCDOT	Medium-term Perpetual	Meeting Agendas and Minutes

TOWN OF SURF CITY ALTERNATIVE ROUTES

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	<p>The Town of Surf City should conduct a feasibility study on the three (3) alternative routes included in the cutsheets:</p> <ul style="list-style-type: none"> Preferred Segment 1: N Shore Dr (coordinate with water line project) Preferred Segment 2: Through the Earl G & Inez Batts Recreation Complex and along Little Kinston Rd Preferred Segment 3: NC 50 to Holly Ridge 	Town of Surf City	Pender County, Cape Fear RPO, Wilmington Urban Area MPO	Short-term	Meeting Agendas and Minutes

FUNDING RESOURCES

Below are several funding sources that can be leveraged to provide the necessary dollars to plan, design, and/or construct bicycle, pedestrian, and greenway facilities. The following sources of funding have been instrumental in the successful development of bicycle and pedestrian networks in North Carolina communities. Funding sources are broken down into the following levels: federal, state, local, and private.

FEDERAL FUNDING

North Carolina communities have partnered with Federal agencies to build multi-use paths, greenways, sidewalks, bike lanes and improve crossings. Federal funding is primarily distributed to municipalities through state agencies and Metropolitan Planning Organizations (MPO), as well as through discretionary grant programs.

The Fixing America's Surface Transportation (FAST) Act authorizes transportation funding for highway, transit, rail, bicycle and pedestrian, and safety programs and infrastructure. FAST Act funding is administered by the Federal Highways Administration (FHWA). FHWA distributes funding to NCDOT and directly to MPOs through the Locally Administered Projects Program (LAPP). Communities wishing to access Federal funding must submit their candidate projects to their MPO or RPO to then be entered into the NCDOT's Strategic Transportation Investment (STI) Mobility Formula. This formula ranks projects and identifies those to be funded in the State Transportation Improvement Program (STIP). These funds require a 20% match from the municipality. Federal transportation funds for bicycle and pedestrian projects are primarily distributed through four programs: Transportation Alternatives (TA), Congestion Mitigation & Air Quality (CMAQ), Recreational Trails Program, (RTP), and Highway Safety Improvement Program (HSIP).

Additional federal funding sources for bicycle and pedestrian projects are administered through the Department of Housing and Urban Development (HUD) with the Community Development Block Grant (CDBG) Program, and several discretionary grant programs administered by the US Department of Transportation (USDOT), National Park Service (NPS), and the National Endowment for the Arts (NEA).

STATE & MPO ADMINISTERED FUNDING

TRANSPORTATION ALTERNATIVES (TA)

Transportation Alternatives provides federal funds for community-based projects that expand travel choices and enhance the transportation experience by integrating modes and improving the cultural, historic, and environmental aspects of our transportation infrastructure. In North Carolina, TA funds are administered by NCDOT. Program-eligible projects must be submitted through STI and require a 20 percent local match.

Project types include:

- On and off-road pedestrian and bicycle facilities;
- Infrastructure projects for improving non-driver access to public transportation and enhanced mobility;
- Community improvement activities;
- Environmental mitigation;
- Safe routes to school projects;
- Streetscape improvements;
- Refurbishment of historic transportation facilities; and
- Other investments that enhance communities.

NCDOT created a bicycle and pedestrian scoping guidance document for local governments that have been awarded Transportation Alternatives funding. The Bike/Ped Project Scoping Guidance for Local Governments provides an overview of the four scoping tools used for locally managed, federally funded transportation projects in North Carolina. The document provides guidance on the project delivery process, scoping, identifying project risks, and project cost estimation. The document is available at the link below.

<https://connect.ncdot.gov/projects/BikePed/Documents/BikePed%20Project%20Scoping%20Guidance%20for%20Local%20Governments.pdf>
https://www.fhwa.dot.gov/environment/transportation_alternatives/

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic procedure that identifies and reviews specific traffic safety concerns throughout the state. The goal of the HSIP process is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential for these incidents on public roadways. Areas with bicycle and pedestrian safety concerns are primarily analyzed based on bicycle and pedestrian crash data.

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

RECREATIONAL TRAILS PROGRAM (RTP)

The Recreational Trails Program provides funds to state agencies to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). In North Carolina, the Recreational Trails Program is a \$1.5 million grant program that funds trails and trail-related recreational needs identified by the Statewide Comprehensive Outdoor Recreation Plan. Grant funding is available for trail planning, construction of new trails; maintenance and repair of existing trails; land acquisition; purchase of trail tools; and legal, environmental, and permitting costs. RTP is a reimbursement grant program. Municipalities must provide project funds upfront and are reimbursed upon completion of deliverables. Eligible applicants are state, federal, or local government agencies or qualified nonprofit organizations. Grants range from \$10,000 - \$100,000 and require a 25% match by the municipality.

https://www.fhwa.dot.gov/environment/recreational_trails/
<https://trails.nc.gov/trail-grants>

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing, suitable living environments, and expanding economic opportunities for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974. CDBG funds are allocated at the federal level by HUD and at the state level by the NC Department of Commerce. All municipalities are eligible to receive State CDBG funds except for entitlement communities, which receive funds directly from HUD. North Carolina's 24 entitlement municipalities are: Asheville, Burlington, Cary, Chapel Hill, Charlotte, Concord, Durham, Fayetteville, Gastonia, Goldsboro, Greensboro, Greenville, Hickory, High Point, Jacksonville, Kannapolis, Lenoir, Morganton, New Bern, Raleigh, Rocky Mount, Salisbury, Wilmington, and Winston-Salem. In addition, all counties are eligible to receive State CDBG funds except Mecklenburg County, Wake County, Union, and Cumberland County, which have been designated by HUD as urban entitlement counties.

CDBG funds may be used for activities which include, but are not limited to:

- Acquisition of real property;
- Relocation and demolition;
- Rehabilitation of residential and non-residential structures;
- Construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes;
- Public services, within certain limits;
- Activities relating to energy conservation and renewable energy resources; and
- Provision of assistance to profit-motivated businesses to carry out economic development and job creation/retention activities.

https://www.hud.gov/program_offices/comm_planning/communitydevelopment

DISCRETIONARY GRANTS

REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE)

The 2021 Consolidated Appropriations Act appropriated \$1 billion to be awarded by the Department of Transportation (DOT) for National Infrastructure Investments, formerly known as TIGER and BUILD Grants and now as Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants. RAISE Grants are for capital investments in surface transportation that will have a significant local or regional impact. Since this program was created, \$8.9 billion has been awarded for capital investments in surface transportation infrastructure over 12 rounds of competitive grants. The FY2021 RAISE Notice has been updated to reflect the current Administration's priorities for creating good-paying jobs, improving safety, applying transformative technology, and explicitly addressing climate change and advancing racial equity. Consistent with the FY 2021 Appropriations Act requirement, the Secretary shall award projects based solely on the selection criteria. The primary selection criteria are safety, environmental sustainability, quality of life, economic competitiveness, and state of good repair, and the secondary selection criteria are partnership and innovation. The Federal share of project costs may not exceed 80 percent for a project located in an urban area. The Secretary may increase the Federal share of costs above 80 percent for projects located in rural areas and for planning projects located in areas of persistent poverty.

Project Awards:

- Total Funding: \$1 billion.
- Minimum Project Awards: Urban Projects: \$5 million, Rural Projects: \$1 million.
- Planning Grants: No project minimum required.
- Maximum Awards: Urban/Rural Projects: \$25 million, Per State: \$100 million.
- Geographic Distribution: 50% of total funds (\$500 million) awarded to both urban and rural projects.

<https://www.transportation.gov/RAISEgrants>

FEDERAL LANDS ACCESS PROGRAM (FLAP)

The Federal Lands Access Program (FLAP) provides funds for projects to improve Federal Lands Access Transportation Facilities that provide access to, are adjacent to, or are located within federal lands. This can include public roads, bridges, paved trails, or transit systems that are owned and/or maintained by the state, county, town, township, tribal, municipal, or local government. Funds may be used for the costs of transportation planning, research, engineering, preventive maintenance, rehabilitation, restoration, construction, and reconstruction of transportation facilities located on or adjacent to, or that provide access to, federal lands. Applicable activities include parking areas; acquisition of scenic easements or historic sites; bicycle and pedestrian provisions; environmental mitigation; public safety; and roadside rest areas. Other eligible activities include the operation and maintenance of transit facilities, and any transportation project that is within, adjacent to, or provides access to federal land. The program requires a minimum 20% local match.

<https://highways.dot.gov/federal-lands/programs-access/nc>

FEDERAL LAND AND WATER CONSERVATION FUND (LWCF)

The Land and Water Conservation Fund was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. The LWCF program is divided into the "State Side" which provides grants to State and local governments for the acquisition and development of public outdoor recreation areas and facilities, and the "Federal Side" which is used to acquire lands, waters, and interests therein necessary to achieve the natural, cultural, wildlife, and recreation management objectives of federal land management agencies. State Side funds are distributed by the State and Local Assistance Programs Division of the National Parks Service. Funding is available as 50/50 matching grants to states and territories to plan, acquire, and develop public lands for outdoor recreation. Projects are selected by states and submitted to NPS for approval. In North Carolina, grants are selected by the Parks and Recreation Division in the NC Department of Cultural and Natural Resources. To be eligible for LWCF assistance, every state must prepare and regularly update a statewide comprehensive outdoor recreation plan (SCORP). Applicants can request a maximum grant of \$500,000. An applicant must match the grant with a minimum of 50 percent. Due to a federal share cap of \$500,000, a greater match is required for projects that exceed total costs of \$1 million.

<https://www.nps.gov/subjects/lwcf/stateside.htm>

<https://www.ncparks.gov/about-us/grants>

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM (RTCA)

The National Parks Service (NPS) Rivers, Trails and Conservation Assistance Program supports community-led natural resource conservation and outdoor recreation projects across the nation. Although RTCA is not a traditional funding program, NPS staff provide planning, design and technical expertise for trails and outdoor recreation projects. Depending on the project scale, RTCA can invest up to four years of planning and project development assistance. Eligible entities include community groups, nonprofit organizations, tribes, and governments.

Technical Assistance Services:

- Define project vision and goals.
- Set priorities and build consensus.
- Inventory and map community resources.
- Identify funding strategies.
- Identify and analyze key issues and opportunities.
- Design community outreach, participation, and partnerships plans.
- Create project management and strategic action plans.
- Develop concept plans for trails, parks, and natural areas.

<https://www.nps.gov/orgs/rtca/index.htm>

NATIONAL ENDOWMENT FOR THE ARTS (NEA) OUR TOWN PROGRAM

Our Town is the National Endowment for the Arts' creative placemaking grants program. Through project-based funding, the NEA supports projects that integrate arts, culture, and design activities into efforts that strengthen communities by advancing local economic, physical, and/or social outcomes. These projects require a partnership between a local government entity and nonprofit organization, one of which must be a cultural organization; and should engage in partnership with other sectors (such as agriculture and food, economic development, education and youth, environment and energy, health, housing, public safety, transportation, and workforce development). Cost share/matching grants range from \$25,000 to \$150,000, with a minimum cost share/match equal to the grant amount.

<https://www.arts.gov/grants/our-town>

STATE FUNDING

North Carolina communities have partnered with state agencies to build bicycle and pedestrian facilities. State agency funding sources for bicycle and pedestrian planning, infrastructure, and programs are administered primarily through the North Carolina Department of Transportation (NCDOT), North Carolina Department of Natural and Cultural Resources, and North Carolina Department of Commerce. Discretionary grant programs focusing on public health and community development are administered by the North Carolina Department of Health and Human Services (DHHS), North Carolina Department of Environmental Quality (NCDEQ), and the North Carolina Department of Agriculture when funding is available.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

STRATEGIC TRANSPORTATION INVESTMENTS (STI)

The Strategic Transportation Investments law, passed in 2013, establishes the Strategic Mobility Formula, which allocates available funding based on data-driven scoring and local input. The Strategic Mobility Formula is used to develop the State Transportation Improvement Program (STIP), which identifies projects that will receive funding during a 10-year period. The STIP is state and federally mandated and updated by NCDOT every 2 years. The Strategic Mobility Formula groups projects in three categories: Division Needs, Regional Impact, and Statewide Mobility.

FUNDING CATEGORY	FUNDING DISTRIBUTION	OVERVIEW
Division Needs	30%	Funding in this category is shared equally between NCDOT's 14 transportation divisions, Project scores are based 50% on data and 50% on rankings by MPOs and RPOs and the NCDOT Divisions.
Regional Impact	30%	Projects on this level compete within regions made up of two NCDOT Divisions with funding based on population, Project scores are based 70% on data and 30% on rankings by MPOs and RPOs and the NCDOT Divisions.
Statewide Mobility	40%	Projects in this category are of statewide significance and are based 100% on data.

Independent bicycle and pedestrian projects are programmed in the Division Needs category. Eligible bicycle and pedestrian projects submitted for prioritization must be included in a locally adopted plan and have a minimum project cost of \$100,000. Eligible activities include ROW acquisition, design, and construction. Additionally, the STI law prohibits the use of state funding for bicycle and pedestrian projects, requiring municipalities to provide the 20% match for federally funded projects.

Bicycle and Pedestrian STI Prioritization Qualitative Scoring:

Local input points represent 50% of the scoring for bicycle and pedestrian projects. 25% of local input points are assigned by MPOs and RPOs, which are determined by municipal and county project priorities and public comment. The remaining 50% of the local input points are assigned by NCDOT Division Engineers.

CRITERIA	MEASURE	DIVISION NEEDS (50%)
Safety	(Number of crashes x 40%) + (Crash severity x 20%) + (Safety risk x 20%) + (Safety benefit x 20%)	20%
Accessibility / Connectivity	Points of interest pts + Connection pts + Route pts	15%
Demand / Density	# of households and employees per square mile near project	10%
Cost Effectiveness	(Safety + Accessibility / Connectivity + Demand / Density) / Cost to NCDOT	5%

Project Bundling:

Multiple bicycle and pedestrian projects can be bundled to better compete with other projects submitted in the Division Needs category. Bundled projects are allowed across geographies and project types. Projects do not have to be contiguous or related, and projects can be in a single or multiple jurisdictions. Bundled projects must be under one project manager, which must be a TAP eligible entity.

<https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx>

INCIDENTAL BICYCLE AND PEDESTRIAN FACILITIES WITH ROADWAY PROJECTS

The NCDOT Complete Streets Policy Update was adopted by the Board of Transportation in August 2019. This policy requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of all transportation projects in North Carolina. The adopted Comprehensive Transportation Plan (CTP) is considered the controlling plan for the identification of non-motorized facilities to be evaluated as part of a roadway project. The CTP may include and/or reference locally adopted plans for public transportation, bicycle and pedestrian facilities, and greenways. Bicycle, pedestrian, and public transportation facilities that appear in the CTP directly or by reference will be included as part of the proposed roadway project, and NCDOT is responsible for the full cost of the project. Bicycle, pedestrian, and transit facilities incidental to a roadway project where a need has been identified through the project scoping process but not identified in an adopted plan may be included in the project. Inclusion of these incidental facilities requires the local jurisdiction to share the incremental cost of constructing the improvements based on population thresholds. Projects that have not completed environmental review prior to August 2019 are subject to the Complete Streets Policy.

<https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx>

STATEWIDE PROJECTS FUNDS

Small Construction Funds: These funds were established in 1985 to fund small projects in and around cities and towns that could not be funded in the Statewide Transportation Improvement Program (STIP). Funds are allocated equally to each of 14 Transportation Divisions. Funds can be used on a variety of transportation projects for municipalities, counties, businesses, schools, and industries throughout the State. Funds projects up to \$250,000 per fiscal year, unless otherwise approved by the Secretary of Transportation. ROW and utility relocations should be provided and accomplished at no cost to NCDOT. Funding requests should be submitted to the Division Engineer providing technical information such as location, improvements being requested, and project timeline.

Statewide Contingency Funds: These funds were created for statewide rural or small urban highway improvements and related transportation enhancements to public roads/public facilities, industrial access roads, and spot safety projects. The President Pro Tempore of the Senate, the Speaker of the House, and the Secretary of Transportation sponsor project requests from this fund. \$12 million in funds are administered by the Secretary of Transportation. Requests can be submitted from municipalities, counties, businesses, schools, citizens, legislative members, and NCDOT staff. Request should include a clear description and justification of the project.

Economic Development Funds: These funds were created to expedite transportation projects that promote commercial growth as well as either job creation or job retention. \$2500 per job (new & retained) allowed unless waived by the Secretary of Transportation. Funds projects up to \$400,000 per fiscal year, unless otherwise approved by the Secretary of Transportation. New access roads must be approved by NCDOT and serve multiple property owners or government owned property; roads will become part of the State Highway System or serve as public roads maintained by a government agency.

High Impact / Low-Cost Funds: This program provides funds 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 of 14 Transportation Divisions. Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program. At a minimum, Divisions must consider all of the following in developing scoring formulas: (1) The AADT of a roadway and whether the proposed project will generate additional traffic. (2) Any restrictions on a roadway. (3) Any safety issues with a roadway. (4) The condition of the lanes, shoulders, and pavement on a roadway. (5) The site distance and radius of any intersection on a roadway. Funds projects up to \$1.5 million per fiscal year, unless otherwise approved by the Secretary. Projects are expected to be under contract within 12 months of funding approval by the BOT.

<https://connect.ncdot.gov/projects/planning/Economic%20Development/Small%20Project%20Fund%20Request.docx>

SPOT SAFETY PROGRAM

The Spot Safety Program is used to develop smaller improvement projects to address safety and potential safety and operational issues. The program is funded with state funds and currently receives approximately \$9 million per fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$400,000. A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

STATE PLANNING & RESEARCH FUNDS (SPR)

The State Planning and Research Program funds States' statewide planning and research activities. This program funds metropolitan and statewide planning for future highway programs and local public transportation systems. The FAST Act expanded the statewide transportation planning process' scope of consideration to include projects, strategies, and services that will improve transportation system resiliency and reliability; reduce (or mitigate) the stormwater impacts of surface transportation; and enhance travel and tourism. In 2017, NCDOT extended the use of SPR funds to Rural Planning Organizations (RPOs) by establishing an annual call for proposals to fund planning and research projects for rural communities. Since the program expansion, RPOs have used SPR funds for a range of transportation planning activities, including to develop greenway and trail feasibility studies. SPR funding requires a 20% local match. However, the local match is 5% for Tier 1 Counties with NCDOT contributing 15% of the local match and 10% for Tier 2 Counties with NCDOT contributing 10% of the local match. RPOs must administer the funds.

<https://connect.ncdot.gov/projects/planning/Pages/Transportation-Planning-Program-and-Services.aspx>

POWELL BILL FUNDS

The State Street Aid to Municipalities Program, also known as Powell Bill Funds, assists local governments with transportation system improvements. The Powell Bill requires municipalities to use the money primarily for street resurfacing, but it can also be used for the construction and maintenance of roads, bridges, drainage systems, sidewalks, and greenways.

Funding amounts for each municipality are based on a formula set by the N.C. General Assembly, with 75 percent of the funds based on population, and 25 percent based on the number of locally maintained street miles.

NORTH CAROLINA DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

PARKS AND RECREATION TRUST FUND (PARTF)

PARTF provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the public. PARTF is the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks.

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

NORTH CAROLINA LAND & WATER FUND (NCLWF)

The NCLWF (formerly known as the Clean Water Management Trust Fund) was created in 1996 by the General Assembly to conserve North Carolina's streams, rivers, and open space. The NCLWF funds land acquisition, stream restoration, stormwater, and planning projects that protect and conserve riparian buffers for the purpose of providing environmental protection for surface waters and urban drinking water supplies and establishing a network of riparian greenways for environmental, educational, and recreational uses. NCLWF also funds mini grants of up to \$25,000 for donated property or the value of the conservation donation to pay transaction costs associated with the donation of property in fee simple, or a permanent conservation agreement. NCLWF has one grant cycle per year. Applications are available in early December and close in February. Final award decisions are made in the fall.

<https://nclwf.nc.gov/apply>

NORTH CAROLINA DEPARTMENT OF COMMERCE

MAIN STREET SOLUTIONS FUND

The Main Street Solutions Fund supports small businesses in designated micropolitans located in Tier 2 and Tier 3 counties or designated North Carolina Main Street communities. The grants assist planning agencies and small businesses with efforts to revitalize downtowns by creating jobs, funding infrastructure improvements and rehabilitating buildings.

<https://www.nccommerce.com/grants-incentives/downtown-development-funds>

RURAL INFRASTRUCTURE PROGRAM

The Rural Economic Development Division provides grants and loans to local government units to support economic development activity that will lead to the creation of new, full-time jobs. The program gives priority to projects located in the 80 most distressed counties in the state; and resident companies as defined in N.C.G.S. 143B-472 (a) 4. The Rural Infrastructure Program funding is available for publicly owned infrastructure including water, sewer, electric, broadband, rail, and road improvements that will lead to the direct creation of new, full-time jobs. Eligible applicants are units of local government with priority given to the Tier 1 and Tier 2 counties. A cash match equivalent to at least 5% of the grant amount is required for all projects.

Eligible project activities include:

- Construct public infrastructure improvements;
- Upgrade or repair of public drinking water or wastewater treatment plants;
- Upgrade, extensions, or repair of public water or sewer lines;
- Publicly owned natural gas lines (requires an executed Pipeline Construction, Operating and Resale Agreement);
- Installation or extension of public broadband infrastructure;
- Construction of public rail spur improvements; and
- Construction of publicly owned access roads not funded or owned by the Department of Transportation.

<https://www.nccommerce.com/grants-incentives/public-infrastructure-funds/infrastructure-state-rural-grants>

NORTH CAROLINA NEIGHBORHOOD REVITALIZATION PROGRAM

The NC Neighborhood Program offers non-entitlement municipalities and counties the opportunity to tailor a project to meet the community development needs specific and most critical to their locality, primarily for their low- and moderate-income residents. NC Neighborhood Program projects must incorporate at least one of the following three livability principles as an area of focus:

- Promote equitable, affordable housing. Expand location and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
- Support existing communities. Target federal funding toward existing communities - through strategies like transit-oriented, mixed-use development, and land recycling - to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
- Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in health, safe, and walkable neighborhoods - rural, urban, or suburban.

All municipalities are eligible to receive State CDBG funds except for entitlement communities, which receive funds directly from HUD. The maximum grant amount is \$750,000 per grantee with some restrictions for specific activities. There is no minimum grant amount, and the program does not have a matching fund requirement.

<https://www.nccommerce.com/grants-incentives/community-housing-grants#neighborhood-revitalization-/federal-cdbg>

LOCAL FUNDING

BONDS

Wake County, City of Raleigh, City of Wilmington, Town of Chapel Hill, Town of Cornelius, and City of Greenville have all passed bonds to protect open space corridors and build greenway networks. Multi-use paths and greenways are also frequently included in municipal transportation bond packages. Successful bond campaigns require a well-defined plan with specific projects supported by the community. Bond campaigns should be well organized with a community's public affairs department and thoroughly coordinated across all internal departments. Public outreach during the campaign is essential to educate residents about the benefits of infrastructure investment and to understand which projects garner the highest community support.

DEVELOPER BUILT TRAILS/IN-LIEU FEES

The Town of Cary built its first greenway 40 years ago and now has more than 80 miles of greenway trails. A significant portion of their network development has been the result of developer-built trails. The Town of Cary requires developers to set aside important open space providing trail connectivity, wildlife habitat corridors, and water quality protection. Per the Cary Land Use Ordinance, developers must dedicate land or make payment in-lieu of public park and/or greenway development to serve the recreational needs of residents. Land dedications for greenways are required for both residential and commercial development for those locations indicated in the Town's greenway master plan.

IMPACT FEES

Impact fees represent financial payments made to a local government by a developer to fund certain off-site capital improvements needed to accommodate future growth. Many communities impose impact fees for transportation, parks and recreation, and open space facility needs. The City of Durham imposes transportation impact fees to fund for a portion of the costs for new streets and sidewalks, paving, grading, resurfacing, and widening of existing streets, traffic control signals and markings, lighting, and crosswalks. The City's development fees for open space and parks and recreation are used for the acquisition of park land and the provision of facilities, including athletic fields, parks, playgrounds, courts, recreation centers, shelters, stadiums, arenas, swimming pools, lighting, trail construction, and bike paths.

CAPITAL IMPROVEMENT PROGRAM (CIP)

A Capital Improvement Program (CIP) is one element in a municipality's long-term planning process. It is a bridge between the municipality's Comprehensive Plan and short-term planning for infrastructure and operations. A Capital Improvement Program analyzes major facility and equipment needs, establishes priorities, estimates fiscal resources, and schedules the development of funded projects. The City of Raleigh funds parks, greenways, and active transportation facilities through the city's Capital Improvement Program. The Parks, Recreation and Cultural Resources Department's CIP primary sources of funding come from Parks and Recreation Bonds, Facility Fees, General Fund (Tax Base), grants, and donations.

MUNICIPAL SERVICE DISTRICTS (MSD)

Municipal Service Districts provide an equitable method for funding special improvements to public ROW areas because property owners share in the cost. The Town of Morrisville uses Municipal Service Districts in several neighborhoods to perform pavement, curb and gutter, and sidewalk enhancements and repairs on the public streets throughout neighborhoods in the MSD.

PUBLIC/PRIVATE PARTNERSHIPS

The City of Greensboro is leading North Carolina in leveraging public-private partnerships to complete their Downtown Greenway Loop. Through the Action Greensboro Foundation, the project has raised over \$10 M in private funds by working with foundations and private givers. This money leverages over \$21 M in local and federal funds.

PRIVATE FUNDING

NORTH CAROLINA LAND TRUSTS AND CONSERVANCIES

North Carolina land trusts partner with landowners and local communities to permanently protect natural resources with agricultural, cultural, recreational, ecological, and scenic value across the state. In Watauga County, the Blue Ridge Conservancy is leading the effort to develop the Middle Fork Greenway along the Middle Fork New River to connect Boone and Blowing Rock via trail. The Blue Ridge Conservancy has purchased property and easements along the Middle Fork New River to preserve the corridor and develop the greenway in partnership with Watauga County, the Town of Blowing Rock, and the Town of Boone. The conservancy is also leading planning, design, and construction of each phase of the greenway's development.

Provided below is a list of Land Trusts & Conservation Organizations active in eastern North Carolina: Conservation Trust for North Carolina;

- Land Trust for Central North Carolina;
- NC Coastal Land Trust; and
- Tar River Land Conservancy.

<https://www.presnc.org/nc-land-trusts-conservation-organizations/>

NORTH CAROLINA COMMUNITY FOUNDATION (NCCF)

The NCCF is the statewide community foundation serving North Carolina and sustains more than 1,200 endowments established to provide long-term support of a broad range of community needs, nonprofit organizations, institutions, and scholarships. The NCCF partners with a network of affiliate foundations to provide local resource allocation and community assistance across the state. NCCF's community grantmaking programs are advised by its network of affiliate foundations. Each affiliate is advised by a local board who help to assemble resources through their unique knowledge and understanding of local needs and opportunities. Organizations must be qualified as tax-exempt public charities under Section 501(c)(3) of the Internal Revenue Code or be classified as a unit of local government or public school.

<https://www.nccommunityfoundation.org/apply/grants>

THE CONSERVATION FUND

The Conservation Fund works with public, private, and nonprofit partners to protect land and water resources through land acquisition, sustainable community and economic development, and leadership training. The City of Durham partnered with the Conservation Fund to assist with negotiations to purchase the Durham Belt Line rail corridor from Norfolk Southern to convert the rail line into an urban trail. In 2017 the Conservation Fund successfully purchased the property as the interim owner while the city secured the necessary funding. The property was transferred to the City of Durham in 2018, which allowed for the rail-trail's development.

<https://www.conservationfund.org/where-we-work/north-carolina>

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION

The Blue Cross Blue Shield of North Carolina Foundation funds a range of programs from targeted, mini grants to multi-year partnerships. Their grantmaking supports initiatives that focus on early childhood, healthy communities, healthy food, and oral health. The Foundation does not operate regular grant cycles. Instead, the Foundation invites applications based on specific strategic objectives or announces broader opportunities to apply for funding on a periodic basis.

<https://www.bcbsncfoundation.org/grants-programs/grantmaking-overview/>

NATIONAL ASSOCIATION OF REALTORS SMART GROWTH AND PLACEMAKING GRANTS

The National Association of Realtors (NAR) funds placemaking and smart growth grants to make communities better places to live by transforming unused or underutilized sites into welcoming destinations accessible to everyone in a community.

Smart Growth Grants: Smart Growth Grants fund efforts to engage in local land-use, growth, and transportation policy issues with other stakeholders and elected officials. Eligible projects include Better Block events, placemaking visioning processes, charettes, pop-up workshops, project mock-ups, developer open houses, public open houses, utility roundtables, Main Street analysis, walkable community workshops/audits, assistance with updating land use ordinances and codes and community plans, and hosting conferences and webinars. Applications can only be submitted by a state or local REALTOR® association, and grants provide up to \$5,000 per award.

Placemaking Grants: Placemaking Grants fund the creation of new, outdoor public spaces and destinations in a community. Funds can be used for amenities such as street furniture, paint, signage, materials, landscaping, murals, site preparation, and artist fees. Applications can only be submitted by a state or local REALTOR® association, and grants provide up to \$5,000 per award.

<https://realtorparty.realtor/community-outreach/>

GOLDEN LEAF FOUNDATION

The Golden LEAF Foundation is a nonprofit organization established in 1999 to receive a portion of North Carolina's funding received from the 1998 Master Settlement Agreement with cigarette manufacturers. Golden LEAF works to increase economic opportunity in North Carolina's rural and tobacco-dependent communities through leadership in grantmaking, collaboration, innovation, and stewardship as an independent and perpetual foundation. Golden LEAF's grantmaking focuses on the following priorities: Job creation and economic investment; workforce preparedness; agriculture; and community competitiveness, capacity, and vitality. Golden LEAF has two standard programs open to eligible entities seeking grants: Open Grants Program and Economic Catalyst Program. These programs complement other ongoing initiatives of the Foundation, such as the Community-Based Grants Initiative.

Open Grants Program: The Open Grants Program is open to all governmental entities and 501(c)(3) organizations that propose projects in Golden LEAF's priority areas. This program funds economic development projects aligned with the Golden LEAF priority areas. Most awards will be for \$200,000 or less.

Economic Catalyst Program: The Economic Catalyst process is open to governmental entities and 501(c)(3) organizations with projects that will create jobs at risk without Golden LEAF funding. Grants include funds for public infrastructure, job training, upfit for buildings owned by governmental or nonprofit entities, or equipment acquisition where the building or equipment will be leased or sold at fair-market value to a company creating jobs. Grants are available only for projects that include a specific company's commitment to create full-time jobs in NC.

Community-Based Grants Initiative: Each year, the Golden LEAF Foundation invites organizations from counties from a different Prosperity Zone to participate in the Community-Based Grant Initiative (CBGI). The process is competitive, but organizations from all counties within the Prosperity Zone will have an opportunity to apply. The CBGI is designed to identify projects with the potential to have a significant impact. It is a focused process with grants targeted toward investments in the building blocks of economic growth. Funds are limited to projects that address economic development, agriculture, workforce preparedness, infrastructure, and capital costs necessary to create health care jobs. County managers serve a key role in the process. Each county manager will submit a slate of up to four projects for consideration. Applicants must be 501(c)(3) organizations or governmental entities (county and municipal governments, community colleges, universities, etc.). Funds do not have to be administered or implemented by the county government. Awards are limited to no more than three projects per county and will total no more than \$1.5 million per county.

<https://www.goldenleaf.org/>

AARP COMMUNITY CHALLENGE GRANT

The AARP Community Challenge provides small grants to fund quick-action projects that can help communities become more livable for people of all ages. Applications are accepted for projects to improve public spaces, housing, transportation, civic engagement, coronavirus recovery, diversity, and inclusion, and more. Project types include those that provide permanent physical improvements in the community, temporary demonstrations that lead to long-term change, and innovative programming or services. The program is open to 501(C)(3), 501(C)(4) and 501(c)(6) nonprofits and government entities. Grants can range from several hundred dollars for smaller, short-term activities to several thousand or tens of thousands of dollars for larger projects.

<https://www.aarp.org/livable-communities/community-challenge/info-2021/2021-challenge.html>

MAINTENANCE RECOMMENDATIONS

Maintenance of greenways is essential to the long-term viability of the network. Greenways that are consistently maintained have lower costs over time and provide a safe and positive trail user experience than greenways that require major rehabilitation work from a lack of consistent maintenance. Good maintenance practices also prolong the useful life of greenways, promote positive relationships with adjacent landowners, and create a sense of stewardship in the community. This plan recommends a comprehensive approach to maintenance with the development of a maintenance plan to prioritize funding and responsibilities amongst jurisdictions. The maintenance plan should be reviewed and updated annually, responding to lessons learned and changes in tasks, operational policies, standards, and maintenance goals.

Key considerations for a sidepath maintenance plan include:

- Understanding the anticipated needs of the greenway system and assessing the capacity of local government staff to meet those maintenance needs.
- Developing a facility inventory to understand the routine and substantial maintenance needs of greenway signs, amenities, bridges, culverts, and pavement conditions.
- Estimation of baseline maintenance costs by determining necessary maintenance activities, such as mowing, edging, landscaping, trash removal, debris clearing, lighting, drainage, seasonal maintenance needs, sealcoating, repaving, patching, and bridge repair.
- Consideration of labor costs based on which maintenance activities can be completed in-house versus contracted out.
- Assessment of available technologies to collect data on facility conditions and facilitate maintenance functions.
- Developing methodology to prioritize annual maintenance needs based on facility conditions and available funding.
- Consideration of emergency services including designated ingress/egress locations, mile-marker signage along the facility for location identification, and emergency notification systems.

COASTAL ENVIRONMENT CONSIDERATIONS

Most greenway structures such as boardwalks and bridges are designed to either withstand or be constructed above 100-year flood levels; however, due to the coastal environment surrounding the study area, the NC 210 ECG may require some unique considerations for maintenance. The following should be considered for future maintenance of the facility:

- Consider the selection of appropriate hardware and fasteners for marine conditions during structure design.
- Consider the life-time costs of materials such as precast concrete which may have greater upfront costs but may weather better in extreme sun, flooding, and wind (during structure design).
- Consider budgeting for purchase, maintenance, and training for appropriate equipment to remove large volumes of sand and debris from pavement and structures.
- Consider budgeting for more frequent maintenance or repair of wood structures and budgeting for landscape or pavement restoration of areas prone to erosion.

BUDGETING FOR ROUTINE MAINTENANCE OF TRAILS

Some of the factors which managers should consider in budgeting for future trail maintenance could include:

- Trail surface material
- Number of visitors
- Number and type of amenities like bathrooms, trash cans, lawns, or special plantings
- Number and length of structures such as bridges or boardwalks
- Frequency of flooding events

According to a 2022 study by the Rails to Trails Conservancy (RTC), the maintenance costs of multi-use trails has not been well documented. While none of the RTC study projects were coastal, those in suburban and rural areas with asphalt or concrete pavement reported annual per mile maintenance costs of anywhere from \$679 for a trail with low amenities and volunteer maintenance support to \$7,819 for a trail with a large number of visitors, restrooms, and dedicated staff maintenance support.

MAINTENANCE TASK	TASK TYPE	RECOMMENDED FREQUENCY
Tree / Bush trimming	Routine	On-Going / Anually
Mowing		
Trail sweeping		
Signage / Map / Kiosk Updates / Replacement		
Trash removal / Litter clean-up		
Planting, pruning, landscaping		
Flooding repairs		
Repainting / Restriping		
Minor patching		
Minor bridge repairs		
Lighting replacement		
Bollard locks / Replacement		
Pest management		
Greenway and sidepath sealcoating	Minor Repairs	Every 5 Years
Greenway and sidepath resurfacing:	Major Reconstruction	Every 10-15 Years Every 20 Years 10 Years
• Asphalt		
• Concrete		
• Boardwalk		
Complete greenway and sidepath replacement, regrading, and resurfacing	Major Reconstruction	Every 20 Years

Source: *Best Practices in Trail Maintenance: A Manual by the Ohio River Greenway*, Perdue University



Precast Concrete Deck at Campbell Creek Greenway Ext. - Charlotte, NC
Credit: Permatrak.com



Access Ramp with Slatted Precast Concrete Deck and Sand Accumulation at Coquina Beach - Nags Head, NC



East Coast



Greenway
MAINE TO FLORIDA



NO
JUMPING
OR
DIVING
FROM
BRIDGE

SURF CITY
BRIDGE

WE ♥ OUR
COMMUNITY
Please Help Keep it
CLEAN!



APPENDICES



APPENDIX A: DESIGN RESOURCES

OVERVIEW

Below are several design resources that can be used to inform bicycle and pedestrian design decisions. Organizations such as Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), National Association of City Transportation Officials (NACTO), and North Carolina Department of Transportation (NCDOT) offer general guidelines and project-specific tools to help professionals make design decisions. These guidelines promote flexibility to ensure context-sensitive applications.

AASHTO GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES

The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities provides guidance for pedestrian facilities along streets and highways. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whom make decisions on a daily basis that affect pedestrians. The guide focuses on identifying effective measures for accommodating pedestrians on public ROW, and it recognizes the effect that land use planning and site design have on pedestrian mobility and addresses these topics as well.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

The Manual on Uniform Traffic Control Devices for Streets and Highways, or MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. The MUTCD is published by the Federal Highway Administration (FHWA) and is a compilation of national standards for all traffic control devices, including road markings, roadway signs, and traffic signals.

NCDOT ROADWAY DESIGN GUIDE

The North Carolina Department of Transportation (NCDOT) Roadway Design Guide defines standards for roadways owned and maintained by NCDOT, including typical sections for roadways. Typical sections establish design elements that emphasize safety, mobility, complete streets, and accessibility for multiple modes of travel. Typical sections also provide guidelines for comprehensive transportation planning, project planning, and project design activities.

NCDOT COMPLETE STREETS IMPLEMENTATION GUIDANCE

The North Carolina Department of Transportation (NCDOT) Complete Streets Implementation Guide is designed to assist NCDOT staff engineers, project managers and designers in implementing the Complete Streets Policy adopted by the Board of Transportation in August 2019. This document provides comprehensive guidance for incorporating a complete streets approach into NCDOT's planning, programming, design, and maintenance processes.

NACTO URBAN BIKEWAY DESIGN GUIDE

The NACTO Urban Bikeway Design Guide provides cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. Design treatments included in the guide offer required, recommended, and optional design elements to address the complexity of individual streetscape situations. In August 2013, the FHWA issued a memorandum officially supporting the use of this document. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

NACTO URBAN STREETS DESIGN GUIDE

The Urban Street Design Guide charts the principles and practices of the nation's foremost engineers, planners, and designers working in cities today. A blueprint for designing 21st century streets, the guide unveils the toolbox and the tactics cities use to make streets safer, more livable, and more economically vibrant. The Guide outlines both a clear vision for complete streets and a basic road map for how to bring them to fruition.

NACTO URBAN STREET STORMWATER GUIDE

The Urban Street Stormwater Guide advances the discussion about how to design and construct sustainable streets. The guide provides cities with national best practices for sustainable stormwater management in the public ROW, including core principles about the purpose of streets, strategies for building inter-departmental partnerships around sustainable infrastructure, technical design details for siting and building bioretention facilities, and a visual language for communicating the benefits of such projects. The guide sheds light on effective policy and programmatic approaches to starting and scaling up green infrastructure, provides insight on innovative street design strategies, and proposes a framework for measuring performance of streets comprehensively.

FHWA SMALL TOWN & RURAL MULTIMODAL NETWORKS

The Federal Highway Administration (FHWA) Small Town and Rural Multimodal Networks applies existing national design guidelines in a rural setting and highlights small town and rural case studies. It addresses challenges that are specific to rural areas and focuses on opportunities to make improvements despite the geographic, fiscal, and other challenges that many rural communities face. It also includes several design concepts applicable to National Scenic and Historic Trails.

FHWA BIKEWAY SELECTION GUIDE

A resource to help transportation practitioners consider the trade-offs relating to the selection of bikeway types. The document builds upon other FHWA resources that promote design flexibility and support connected, safe, and comfortable bicycle networks. This guide outlines a process for identifying the desired bikeway type and assessing and refining potential options based on real-world conditions and decision-making factors. This process is intended to accelerate the delivery of high-quality multimodal projects that improve safety for everyone and meet the transportation needs of people of all ages and abilities.

FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE

The Separated Bike Lane Planning and Design Guide outlines planning considerations for separated bike lanes and provides a menu of design options covering typical one and two-way scenarios. It highlights different options for providing separation, while also documenting intersection treatments and mid-block design considerations for driveways, transit stops, accessible parking, and loading zones. Case studies highlight best practices and lessons learned.

FHWA ACHIEVING MULTIMODAL NETWORKS: APPLYING DESIGN FLEXIBILITY AND REDUCING CONFLICTS

This publication is resource for practitioners seeking to build multimodal transportation networks. It highlights ways that planners and designers can apply the design flexibility found in current national design guidance to address common roadway design challenges and barriers. It focuses on reducing multimodal conflicts and achieving connected networks so that walking and bicycling are safe, comfortable, and attractive options for people of all ages and abilities.

RAILS TO TRAILS CONSERVANCY (RTC) RAIL WITH TRAILS: BEST PRACTICES AND LESSONS LEARNED

This updated USDOT Rails-with-Trails: Lessons Learned report documents how the state of the practice, perspectives, and context for rails-with-trails have evolved since the first report in 2002 and includes updated effective practices. Best practices are based on extensive research into existing and planned rails with-trails that involved interviews with railroad officials and trail managers; a literature review of previous rail-with-trail studies; a review of trail planning guidance documents; and input from various railroad and trail professionals.

ADA STANDARDS FOR ACCESSIBLE DESIGN

This guide explains requirements in the current editions of the Americans with Disabilities Act (ADA) Standards issued by the Department of Justice (DOJ) and the Department of Transportation (DOT). It provides the scoping and technical requirements for new construction and alterations resulting from the adoption of revised 2010 Standards in the final rules for Title II and Title III.

RESOURCES:

AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES
https://nacto.org/wp-content/uploads/2015/04/AASHTO_Bicycle-Facilities-Guide_2012-toc.pdf

AASHTO GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES
<https://highways.dot.gov/safety/pedestrian-bicyclist/safety-tools/43-guide-planning-design-and-operation-pedestrian>

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
<https://mutcd.fhwa.dot.gov/>

NCDOT ROADWAY DESIGN GUIDE
<https://connect.ncdot.gov/projects/Roadway/pages/roadway-design-manual.aspx>

NCDOT COMPLETE STREETS IMPLEMENTATION GUIDANCE
<https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx>

NACTO URBAN BIKEWAY DESIGN GUIDE
<https://nacto.org/publication/urban-bikeway-design-guide/>

NACTO URBAN STREETS DESIGN GUIDE
<https://nacto.org/publication/urban-street-design-guide/>

NACTO URBAN STREET STORMWATER GUIDE
<https://nacto.org/publication/urban-street-stormwater-guide/>

FHWA SMALL TOWN & RURAL MULTIMODAL NETWORKS
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

FHWA BIKEWAY SELECTION GUIDE
https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm

FHWA ACHIEVING MULTIMODAL NETWORKS: APPLYING DESIGN FLEXIBILITY & REDUCING CONFLICTS
https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt2021/

RTC RAIL WITH TRAILS: BEST PRACTICES AND LESSONS LEARNED
https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt2021/

ADA STANDARDS FOR ACCESSIBLE DESIGN
https://www.ada.gov/2010ADASTandards_index.htm

APPENDIX B: COMMUNITY ENGAGEMENT

STEERING COMMITTEE MEETING #1

June 13, 2022



NC-210 EAST COAST GREENWAY

FEASIBILITY STUDY

STEERING COMMITTEE MEETING #1 – JUNE 13, 2022



Meeting Agenda

- Introductions
- Project Overview
 - Study Area
 - Project Schedule
 - Community Engagement
- Existing Conditions / Study Considerations
 - Map Review
 - Opportunities + Constraints
- Group Discussion
 - Mapping Assessment
 - Defining Project Success



Regional Context



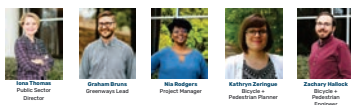
- Hampstead to Topsail Island
 - 16.2 miles
- Connectivity + Accessibility
 - Co-located with East Coast Greenway & Mountains to Sea Trail
 - Future Connections to Wilmington and Jacksonville
- Regional Themes
 - Conservation
 - Scenic Outdoors
 - Quality of Life
 - Tourism / Economic Dev.



Regional Context: MPOs + RPOs



Project Team Introductions



Steering Committee Members as of June 8, 2022

Community or Organization	Name	Role
Cape Fear RPO	Patrick Flanagan	Regional Planner
Duke Energy	Paul Hardy	District Manager
East Coast Greenway Alliance	Andrew Meeker	North Carolina Coordinator
NCDOT Div 3	Adrienne Cox	Planning Engineer
NCDOT MD	Tony Jumper	MPO Regional Planner
NCDOT Planning	Nadia Sandler	Wilmington MPO Supervisor
Pender County - Parks & Rec	Zach White	Long Range Planner
Pender County - Planning	Vanessa Lacer	State Trails Planner
State Trails	Smith Raynor	State Trails Planner
Surf City - Chamber of Commerce	Tamela Paris	Town Planner
Surf City - Planning	Amy Kimes	Safety Officer
Surf City - Police	U. Chris Hooper	Senior Transportation Planner
Wilmington MPO	Abby Lorenzo	
Smart Moves Consulting	Adrienne Harrington, MPA	
Terry Benjey Bicycling Found.	Eileen McConville	
Wilmington MPO BRAC	Steve Zinder	
Wilmington MPO BRAC	Carol Stoen	
Surf City	Dave McCole	Finance Director



Study Area



- Pender County and Surf City
- Country Club Drive at NC210 to Albany Recreation Area
- Potential segments on:
 - Slopp Point Road
 - US-17
 - NC-210
 - Duke Energy Corridor



Project Schedule



Community Engagement

STEERING COMMITTEE MEETINGS:

- **Committee Meeting #1 – Project Kick-Off & Study Considerations (Today)**
 - Project Schedule, Existing Conditions, Opportunities & Constraints, Mapping Exercise, Project Success
- **Committee Meeting #2 – Route Development + Selection Criteria (Late August 2022)**
 - Review of Community Survey Results, Route Alternatives Development, Refine Route Selection Criteria
- **Committee Meeting #3 – Study Recommendations (October 2022)**
 - Review of Community Input, Recommended Route Alignments, Typical Cross Sections + Design Considerations, Recommended Policies + Maintenance
- **Committee Meeting #4 – Draft Study Review (December 2022 / January 2023)**
 - Draft Study Review, Project Cut Sheets & Cost Estimates, Implementation Strategy



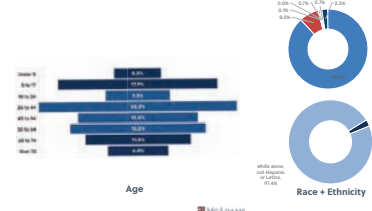
Community Engagement

SURVEY + PUBLIC MEETINGS:

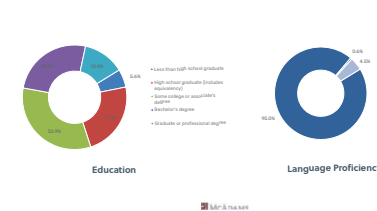
- **Community Survey – (June - July 2022)**
 - Gather public input on support of the project and solicit user and corridor preferences
 - **Community Input Meeting #1 – Study Recommendations (October 2022)**
 - Project Overview, Review of Community Input, Recommended Route Alignments, Typical Cross Sections + Design Considerations, Recommended Policies + Maintenance
 - **Community Input Meeting #2 – Draft Study Review (December 2022 / January 2023)**
 - Draft Study Review, Project Cut Sheets & Cost Estimates, Implementation Strategy
- STAKEHOLDER MEETINGS:**
- **Stakeholder Meetings (July - September 2022)**
 - NCDOT Division 3, Pender, New Hanover, Onslow Counties, Town of Surf City, Town of North Topsail Beach, Wilmington MPO
 - **Private Stakeholder Meetings (July - September 2022)**
 - Landowners, Developers, etc.



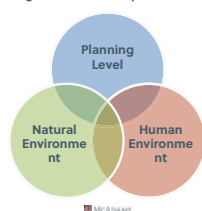
Study Area Demographics



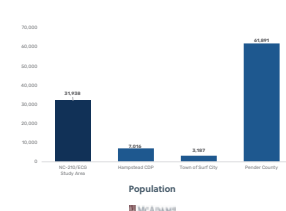
Study Area Demographics



Existing Conditions & Study Considerations



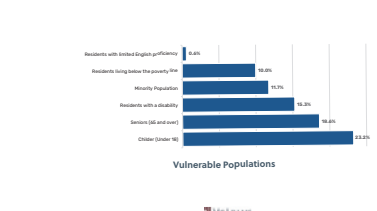
Study Area Demographics



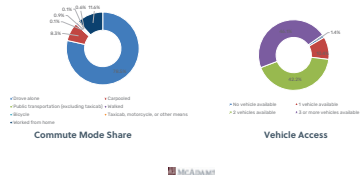
Study Area Demographics



Study Area Demographics



Study Area Demographics



Previous Planning Efforts

- LOCAL PLANS:**
- Pender County Parks and Recreation Master Plan (2002)** identifies routes of both the East Coast Greenway and the Mountains to Sea Trail as valuable recreation facilities
 - Pender County Collector Streets Plan (2002)** includes requirements such as multi-use path width and clear zone width. Recommends a collector street that would intersect US 17 at Long Leaf Drive, which may provide future trail connectivity options.
 - Pender 2.0 Comprehensive Land Use Plan (2016)** includes a series of Goals, Objectives, Policies, and Recommended Actions relevant to greenway development.
 - Surf City Bicycle and Pedestrian Master Plan (2007)** Recommended multi-use paths overlapping with the proposed NC 210/ECG route, along portions of NC 210, NC 50, along the Duke Energy transmission easement, on side streets connecting to the Surf City Community Center, and along planned connector roads. Includes design standards
 - US 17/NC 210 Corridor Study (2002)** Included two potential greenway routes along the US 17 corridor using the Progress Energy easement from NC 210 in Surf City to NC 210 near Island Creek Drive or the abandoned rail line north of US 17

Previous Planning Efforts
Surf City Comprehensive Bicycle and Pedestrian Master Plan, 2016

EXISTING BICYCLE + PEDESTRIAN FACILITIES



Previous Planning Efforts

REGIONAL & STATEWIDE PLANS:

- NC DOT Green Trails State Plan (2022)**
 - NC's Statewide Trails Plan - Plan identifies segment 3H in Pender County which runs along US 17 from NC 210 in Surf City, south to the New Hanover County Line.
- Cape Fear Regional Bicycle Plan (2007)** identifies portions of route in use by local cyclists, recommendations for assessment of East Coast Greenway alignment, potential connection to Holly Shelter Game Lands
- Mountains-to-Sea Master Plan (2010)** identifies portions of route in use by local and thru-hikers, recommendations for assessment of Mountains-to-Sea Trail.
- Topsoil Area Comprehensive Transportation Plan (2010)** identified the need for off-road bicycle facilities to parallel US 17 from NC 210 to Sloop Point Road. The plan includes recommendations for off-road bicycle facilities both within the US 17 corridor and along a parallel route

Previous Planning Efforts
Cape Fear Regional Bicycle Plan, 2017

PLANNED BICYCLE + PEDESTRIAN FACILITIES



ROADWAY SPEED LIMIT



ROADWAY TRAFFIC VOLUME



PEDESTRIAN CRASHES



ADJACENT PARCELS



WETLANDS & FLOODPLAIN



BICYCLE CRASHES



ROADWAY RIGHT-OF-WAY (ROW)



TOPOGRAPHY



OPPORTUNITIES & CONSTRAINTS

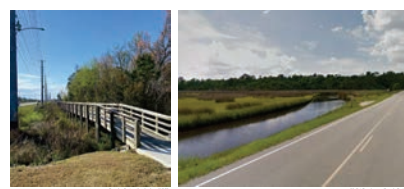
- Topography
- Jurisdictional Features
- FEMA Floodway / Floodplain
- Structures (Walls/Bridges/Boardwalks)
- Traffic Context (Volume/Speeds/Signals)
- Right-of-Way / Property Impacts
- Building Setbacks
- Driveways / Conflict Points
- Utility Impacts
- Drainage Impacts
- Constructability
- Cost Effective
- Long-Term Maintenance

TOPOGRAPHY



MCADAMS

JURISDICTIONAL FEATURES / FLOODPLAIN



MCADAMS

DRIVEWAYS / CONFLICT POINTS



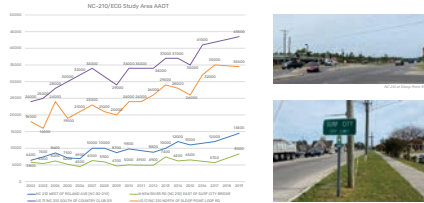
MCADAMS

UTILITY / DRAINAGE IMPACTS



MCADAMS

TRAFFIC CONTEXT



BUILDING SETBACKS / BUSINESS / PROPERTY IMPACTS



Mapping Assessment and Project Success: CONCEPT BOARD

1. Click on link in chat box
<https://app.conceptboard.com/board/9d8a-112e-90m-7xam-0a1k>

2. Select Guest Access

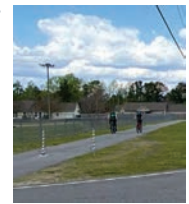


3. Select "post it note" to share your input.



Mapping Assessment

- Where are the Opportunities & Constraints?
- Where are there:
 - Unique places
 - Key Connections
 - Upcoming Projects
 - Key Landowners, Developers or Institutions
 - Other



Defining Project Success

- What does project success look like?
- What are the biggest obstacles?
- What are the opportunities?



MCADAMS

What's Next

- Review draft survey questions
- Recommend key stakeholder contacts to participate in the project (e.g. schools)
- Share data sources (plans, studies, future developments and projects)
- Expect an Email update on:
 - Finalized survey to share with your network
 - Coordinating the next meetings of this group



MCADAMS

Thank you!



Questions?

Contact Us:
 Nia Rodgers
rodders@mcadamsco.com

Kathryn Zeringue
zeringue@mcadamsco.com

Graham Bruns
bruns@mcadamsco.com

STEERING COMMITTEE MEETING #2 August 24, 2022



NC-210 EAST COAST GREENWAY FEASIBILITY STUDY

STEERING COMMITTEE MEETING #2 – AUGUST 24, 2022



Meeting Agenda

- **Greetings**
- **Defining Success and Project Goals**
- **Community Engagement**
 - Survey Results
 - Stakeholder Meetings To date
- **Route Alternatives Development**
- **Route Selection Criteria**
- **Next Steps**



Defining Success Exercise

- What does success look like?**
- Accessible to all user groups (8 to 80)
 - Planning Guidance
 - Inform future NCDOT work on US 17 and NC 210
 - A foundational plan for local communities
 - Safety
 - Comprehensive safety priorities
 - Improvements to drastically reduce bike/ped accidents
- What are the biggest obstacles?**
- Fast pace of land development
 - Funding sources
 - Limited right of way
 - Cost of right of way
 - Impacts to scenic routes



Defining Success Exercise

- What are the opportunities?**
- High priority area for conservation from land trusts and the military for buffering (REPP program)
 - Establish a trail corridor before future development
 - Lots of great businesses and places of interest to connect with bike/ped facilities
 - Community has a focus on tourism and thus incentive to prioritize bike/ped development
 - Opportunity to avoid weekend car traffic going into Topsail/Surf City
 - Local environmental beauty
 - Consider and define "motorized vehicles" in advance of ordinance or deed restrictions
 - Do not aim small, get multiple options adopted



Greetings!

Welcome Committee Members:

- **Todd Blumrich**
Chief Officer for Organizational Development
Pender County Schools
- **Derek Arthur**
Surf City Planning Board

Welcome McAdams Team Member:

- **Haley Nafisi**
Bicycle + Pedestrian Planner



Meeting Agenda

- **Greetings**
- **Defining Success and Project Goals**
- **Community Engagement**
 - Survey Results
 - Stakeholder Meetings To date
- **Route Alternatives Development**
- **Route Selection Criteria**
- **Next Steps**



Draft Goals

- Safety** - Provide safe access points, road crossings, and paths for bikers, walkers and hikers of all ages and abilities.
- Accessibility & Connectivity** - Provide easy access for a range of user groups to parks, shopping, schools, places of interest and outdoor recreation areas.
- Environmental Protection** - Prioritize the development of a route and design solutions that balance potential impacts on environmental features with the desire for access to natural scenery and outdoor recreation opportunities.
- Regional Collaboration** - Collaborate with government entities and other regional stakeholders to identify priorities and concerns. Coordinate to support future funding, design, construction and maintenance.
- Project Feasibility** - Prioritize the development of a route that is a permitable, solves right of way challenges, and generates public excitement that can be focused towards future construction and maintenance funding efforts.



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Community Survey

Overview:

- Launch date: July 12, 2022
- Open for comments until August 6, 2022
- The survey attracted 1,774 participants who provided approximately 1,500 comments.
- The feedback obtained through this survey will support the framework for developing the proposed East Coast Greenway through Pender County.

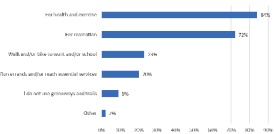
Survey Purpose:

- Introduce the project and gauge public support.
- Solicit and compile public comment on destinations, opportunities and challenges, user preferences, and route preferences.
- Fulfill requests for information.
- Develop an email contact list for interested parties.



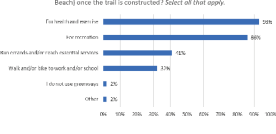
Survey Results

Question 1. How do you currently use greenways, trails, and multi-use paths in Hampstead, Surf City, and neighboring communities? Select all that apply.



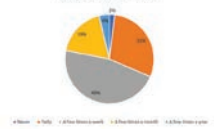
Survey Results

Question 4. How would you like to use the proposed NC-210 East Coast Greenway corridor (connecting Hampstead, Surf City, and North Topsail Beach) once the trail is constructed? Select all that apply.



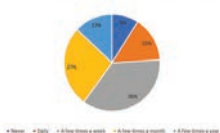
Survey Results

Question 5. How frequently would you use the proposed NC-210 East Coast Greenway corridor (connecting Hampstead, Surf City, and North Topsail Beach) once the trail is constructed?



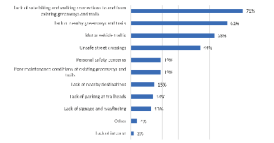
Survey Results

Question 2. How frequently do you use greenways, trails, and multi-use paths in Hampstead, Surf City, and neighboring communities?



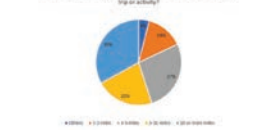
Survey Results

Question 3. What factors discourage you from using greenways, trails, and multi-use paths in Hampstead, Surf City, and neighboring communities? Select all that apply.



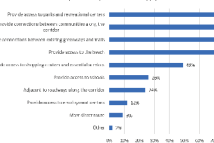
Survey Results

Question 6. On average, how long of a distance would you be willing to travel along the proposed NC-210 East Coast Greenway corridor (connecting Hampstead, Surf City, and North Topsail Beach) as a part of a trip or activity?

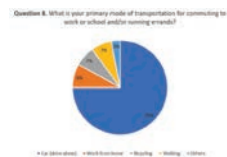


Survey Results

Question 7. What are your riding preferences for the proposed NC-210 East Coast Greenway corridor (connecting Hampstead, Surf City, and North Topsail Beach)? Select all that apply.

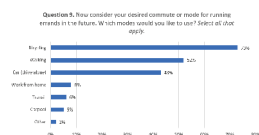


Survey Results



McANAMAR

Survey Results



McANAMAR

Stakeholder Meetings

Coordination between neighboring jurisdictions, NCDOT, and landowners on route preferences, maintenance, and project development.

Completed

- Duke Energy
- Jones-Onslow EMC
- State Trails, East Coast Greenway, G. Friends of Mountains-to-Sea
- Fish and Wildlife Coordination Call

Upcoming

- Interjurisdictional
- NCDOT
- Landowners to be determined



McANAMAR

Meeting Agenda

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McANAMAR



- Safe and convenient access for pedestrians and cyclists is highly desired by the community
- A trail connection between Holly Ridge and Surf City is desired
- Respondents do not currently feel safe walking or biking on Topical Island (between Surf City and Topical Beach)
- A lack of sidewalks on the east side of Roland Ave north of the Surf City Bridge makes it difficult to walk/bike to the beach
- Access desired to Harris Teeter
- Respondents would like to see the western section of the trail provide access to Olde Point Country Club, Ironclad Golf, and Francis Park



- Walking and biking on the island, especially south of Surf City, is unsafe due to a lack of sidewalks and bike paths
- Many major roads including NC 210 are narrow and do not have even a wide shoulder for pedestrians, bicyclists, or joggers
- Safe paths and crosswalks are important for encouraging youth to walk or bike to school
- Country Club Rd is unsafe for pedestrians and cyclists yet serves several residential neighborhoods
- Pedestrian safety barriers may be needed at US 17
- Traffic on US 17, NC 210, and NC 50 is very high, especially in tourist season

McANAMAR

Route Alternatives Development

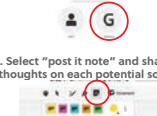
Routes derived from:

- Preliminary Corridor Alignment
- GIS Existing Conditions Analysis
- Steering Committee Meeting #1 Mapping Comments:
 - Possible alternate routes and desired destinations
 - Related projects (e.g., Mountains-to-Sea Trail Route, new development)
 - Unique concerns (e.g., gated communities, conditions changed from GIS data, etc.)

McANAMAR

Concept Board

- 1. Click on link in chat box
<https://app.conceptboard.com/board/shrf-m03-gnld-x7as-gtbn>
- 2. Select Guest Access
- 3. Select "post it note" and share your thoughts on each potential solution.



McANAMAR



Opportunities & Constraints – On Road Alignments

- Ditches Vs. Curb & Gutter
 - Curb and gutter with closed drainage systems
 - Clear Zone
 - Utilities
- Right of Way
 - Can utilize the roadway ROW and only require some easement
- Roadway Characteristics
 - Posted Speed
 - Traffic Volume
 - # Lanes and Roadway Geometry

McANAMAR

Drainage – Ditches



McANAMAR

Meeting Agenda

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Opportunities & Constraints

- Topography
- Jurisdictional Features
- FEMA Floodway / Floodplain
- Structures (Walls/Bridges/Boardwalks)
- Traffic Context (Volume/Speeds/Signals)
- Right-of-Way / Property Impacts
- Building Setbacks
- Driveways / Conflict Points
- Utility Impacts
- Drainage Impacts
- Constructability
- Cost Effective
- Long-Term Maintenance

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Drainage – Curb & Gutter

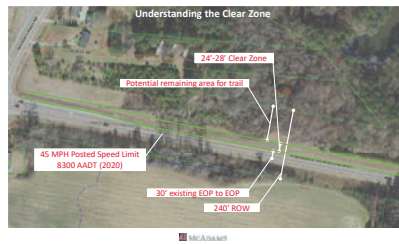


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Understanding the Clear Zone

CLEAR ZONE WIDTH (feet)			
ADDITIONAL CLEAR ZONE WIDTH	MINIMUM CLEAR ZONE WIDTH	MINIMUM CLEAR ZONE WIDTH	MINIMUM CLEAR ZONE WIDTH
100	100	100	100
150	150	150	150
200	200	200	200
250	250	250	250
300	300	300	300
350	350	350	350
400	400	400	400
450	450	450	450
500	500	500	500
550	550	550	550
600	600	600	600
650	650	650	650
700	700	700	700
750	750	750	750
800	800	800	800
850	850	850	850
900	900	900	900
950	950	950	950
1000	1000	1000	1000

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Opportunities & Constraints – Environmental Considerations

- Streams
 - River Crossings
 - Stream and tributary crossings
 - Jurisdictional Permitting
 - Construction Access
- Wetlands
 - Delineations
 - Permitting
 - Boardwalks
 - Constructability
- Flood Plain



Route Selection Methodology Discussion

Topic 1: Public Policy and the Role of Government

1. **Definition of Public Policy:** Public policy refers to the actions and decisions made by the government to address a specific issue or problem. It involves the formulation, implementation, and evaluation of government programs and initiatives.

2. **Types of Public Policy:** Public policy can be categorized into several types, including economic policy, social policy, environmental policy, and foreign policy. Each type addresses different aspects of public life and government intervention.

3. **Formulation of Public Policy:** The process of formulating public policy involves identifying a problem, gathering information, and developing a plan of action. This process often involves consultation with various stakeholders, including experts, interest groups, and the public.

4. **Implementation of Public Policy:** Once a policy is formulated, it must be implemented. This involves the allocation of resources, the establishment of institutions, and the execution of the policy's provisions.

5. **Evaluation of Public Policy:** The effectiveness of public policy is often evaluated using various criteria, such as its impact on the economy, society, and the environment. Evaluation helps to identify areas for improvement and to ensure that the policy is achieving its intended goals.

Topic 2: The Role of Government in the Economy

1. **Market Failure:** The concept of market failure refers to the inability of the free market to allocate resources efficiently. This can occur due to externalities, public goods, and imperfect information.

2. **Government Intervention:** The government often intervenes in the economy to address market failures. This can be done through a variety of means, including taxation, regulation, and the provision of public services.

3. **Monetary Policy:** Monetary policy refers to the actions of the central bank to manage the money supply and interest rates. This policy is used to achieve macroeconomic goals, such as price stability and full employment.

4. **Fiscal Policy:** Fiscal policy refers to the government's use of taxation and spending to influence the economy. This policy is used to address issues such as budget deficits and economic growth.

5. **Public Goods:** Public goods are goods that are non-excludable and non-rivalrous. The government often provides public goods, such as infrastructure and education, to ensure that they are available to all citizens.

Topic 3: Social Policy and the Role of Government

1. **Social Welfare:** Social welfare refers to the overall well-being of the population. The government often plays a role in promoting social welfare through the provision of social services and the implementation of social policies.

2. **Healthcare:** The government often provides or subsidizes healthcare services to ensure that all citizens have access to medical care. This can be done through the establishment of public health systems or the regulation of private healthcare providers.

3. **Education:** The government often provides or subsidizes education services to ensure that all citizens have access to quality education. This can be done through the establishment of public schools or the regulation of private educational institutions.

4. **Income Redistribution:** The government often uses taxation and social welfare programs to redistribute income and reduce income inequality. This can be done through the establishment of progressive tax systems and the provision of social security benefits.

5. **Environmental Policy:** The government often implements environmental policies to protect the environment and promote sustainable development. This can be done through the regulation of polluting activities and the establishment of environmental protection agencies.

Topic 4: Environmental Policy and the Role of Government

1. **Environmental Degradation:** Environmental degradation refers to the deterioration of the natural environment. This can be caused by a variety of factors, including human activities and natural processes.

2. **Government Regulation:** The government often implements regulations to protect the environment and prevent environmental degradation. This can be done through the establishment of environmental protection agencies and the implementation of environmental laws.

3. **Environmental Impact Assessment:** Environmental impact assessment (EIA) is a process used to evaluate the potential environmental impacts of a proposed project or development. This process often involves the collection of data, the analysis of potential impacts, and the development of mitigation measures.

4. **Green Policy:** Green policy refers to policies that promote sustainable development and the use of renewable resources. This can be done through the establishment of green tax systems and the promotion of green technologies.

5. **Climate Change:** Climate change is a global environmental issue that is caused by the increase in greenhouse gas emissions. The government often implements policies to reduce greenhouse gas emissions and mitigate the effects of climate change.

Topic 5: Foreign Policy and the Role of Government

1. **International Relations:** International relations refers to the interactions between different countries. The government often plays a role in managing international relations through diplomacy and the negotiation of treaties.

2. **Trade Policy:** Trade policy refers to the government's policies regarding international trade. This can include the negotiation of trade agreements and the implementation of trade regulations.

3. **Foreign Aid:** Foreign aid refers to the provision of financial assistance to other countries. The government often provides foreign aid to promote economic development and to support international peace and stability.

4. **Globalization:** Globalization refers to the increasing interconnectedness of the world. The government often plays a role in managing globalization through the implementation of trade and investment policies.

5. **Security:** Security refers to the protection of a country's interests and the well-being of its citizens. The government often implements security policies to protect against threats from other countries and to maintain domestic security.

Topic 6: The Role of Government in the Healthcare System

1. **Healthcare Access:** Healthcare access refers to the ability of individuals to obtain necessary medical services. The government often plays a role in ensuring healthcare access through the provision of public health services and the regulation of private healthcare providers.

2. **Health Insurance:** Health insurance is a system of pooling financial risk to cover the cost of medical care. The government often plays a role in the provision of health insurance through the establishment of public health insurance systems.

3. **Medical Research:** Medical research is the process of discovering new treatments and technologies for medical conditions. The government often plays a role in funding medical research through the establishment of research agencies and the provision of research grants.

4. **Public Health:** Public health refers to the promotion of health and the prevention of disease. The government often plays a role in public health through the implementation of health promotion programs and the regulation of public health services.

5. **Healthcare Costs:** Healthcare costs are the expenses incurred by individuals and the government for medical services. The government often plays a role in managing healthcare costs through the implementation of cost containment policies and the regulation of healthcare providers.

Topic 7: The Role of Government in the Education System

1. **Education Quality:** Education quality refers to the effectiveness of the education system in providing a high-quality education. The government often plays a role in ensuring education quality through the implementation of education standards and the regulation of educational institutions.

2. **Education Access:** Education access refers to the ability of individuals to obtain a quality education. The government often plays a role in ensuring education access through the provision of public education services and the regulation of private educational institutions.

3. **Teacher Training:** Teacher training refers to the process of preparing individuals to become teachers. The government often plays a role in teacher training through the establishment of teacher training programs and the provision of teacher training grants.

4. **Education Funding:** Education funding refers to the financial resources used to support the education system. The government often plays a role in education funding through the implementation of education financing policies and the provision of education grants.

5. **Education Reform:** Education reform refers to the process of making changes to the education system to improve its effectiveness. The government often plays a role in education reform through the implementation of education reform policies and the provision of education reform grants.

Topic 8: The Role of Government in the Labor Market

1. **Labor Rights:** Labor rights refer to the rights of workers to organize and negotiate with employers. The government often plays a role in protecting labor rights through the implementation of labor laws and the regulation of labor unions.

2. **Minimum Wage:** The minimum wage is the lowest wage that employers are allowed to pay their workers. The government often sets the minimum wage to protect workers from exploitation and to ensure a fair standard of living.

3. **Unemployment Insurance:** Unemployment insurance is a system of providing financial assistance to workers who are unemployed. The government often plays a role in the provision of unemployment insurance through the establishment of unemployment insurance systems.

4. **Worker Safety:** Worker safety refers to the protection of workers from workplace accidents and injuries. The government often plays a role in worker safety through the implementation of workplace safety regulations and the establishment of workplace safety agencies.

5. **Labor Market Regulation:** Labor market regulation refers to the government's policies regarding the hiring and firing of workers. This can include the implementation of anti-discrimination laws and the regulation of hiring practices.

Topic 9: The Role of Government in the Housing Market

1. **Housing Affordability:** Housing affordability refers to the ability of individuals to afford a decent standard of housing. The government often plays a role in ensuring housing affordability through the implementation of housing policies and the provision of housing subsidies.

2. **Housing Quality:** Housing quality refers to the condition and safety of housing units. The government often plays a role in ensuring housing quality through the implementation of housing standards and the regulation of housing providers.

3. **Housing Access:** Housing access refers to the ability of individuals to obtain a decent standard of housing. The government often plays a role in ensuring housing access through the provision of public housing services and the regulation of private housing providers.

4. **Housing Finance:** Housing finance refers to the financial resources used to support the housing market. The government often plays a role in housing finance through the implementation of housing financing policies and the provision of housing grants.

5. **Housing Reform:** Housing reform refers to the process of making changes to the housing market to improve its effectiveness. The government often plays a role in housing reform through the implementation of housing reform policies and the provision of housing reform grants.

Topic 10: The Role of Government in the Transportation System

1. **Transportation Infrastructure:** Transportation infrastructure refers to the physical facilities and systems used for transportation. The government often plays a role in the development of transportation infrastructure through the implementation of transportation policies and the provision of transportation grants.

2. **Transportation Safety:** Transportation safety refers to the protection of individuals from transportation accidents and injuries. The government often plays a role in transportation safety through the implementation of transportation safety regulations and the establishment of transportation safety agencies.

3. **Transportation Access:** Transportation access refers to the ability of individuals to obtain necessary transportation services. The government often plays a role in ensuring transportation access through the provision of public transportation services and the regulation of private transportation providers.

4. **Transportation Funding:** Transportation funding refers to the financial resources used to support the transportation system. The government often plays a role in transportation funding through the implementation of transportation financing policies and the provision of transportation grants.

5. **Transportation Reform:** Transportation reform refers to the process of making changes to the transportation system to improve its effectiveness. The government often plays a role in transportation reform through the implementation of transportation reform policies and the provision of transportation reform grants.

Topic 11: The Role of Government in the Energy Sector

1. **Energy Policy:** Energy policy refers to the government's policies regarding the production, distribution, and use of energy. This can include the implementation of energy conservation policies and the promotion of renewable energy sources.

2. **Energy Security:** Energy security refers to the assurance of a reliable and stable supply of energy. The government often plays a role in ensuring energy security through the implementation of energy security policies and the provision of energy security grants.

3. **Energy Access:** Energy access refers to the ability of individuals to obtain necessary energy services. The government often plays a role in ensuring energy access through the provision of public energy services and the regulation of private energy providers.

4. **Energy Finance:** Energy finance refers to the financial resources used to support the energy sector. The government often plays a role in energy finance through the implementation of energy financing policies and the provision of energy grants.

5. **Energy Reform:** Energy reform refers to the process of making changes to the energy sector to improve its effectiveness. The government often plays a role in energy reform through the implementation of energy reform policies and the provision of energy reform grants.

Topic 12: The Role of Government in the Environment

1. **Environmental Protection:** Environmental protection refers to the actions taken to prevent or reduce environmental degradation. The government often plays a role in environmental protection through the implementation of environmental protection policies and the establishment of environmental protection agencies.

2. **Environmental Monitoring:** Environmental monitoring refers to the process of collecting data on the state of the environment. The government often plays a role in environmental monitoring through the establishment of environmental monitoring systems and the provision of environmental monitoring grants.

3. **Environmental Education:** Environmental education refers to the process of teaching individuals about the environment and the importance of environmental protection. The government often plays a role in environmental education through the implementation of environmental education programs and the provision of environmental education grants.

4. **Environmental Policy:** Environmental policy refers to the government's policies regarding the environment. This can include the implementation of environmental protection policies and the promotion of sustainable development.

5. **Environmental Reform:** Environmental reform refers to the process of making changes to the environment to improve its health and sustainability. The government often plays a role in environmental reform through the implementation of environmental reform policies and the provision of environmental reform grants.

Topic 13: The Role of Government in the Social Services Sector

1. **Social Services:** Social services refer to the services provided to individuals and families in need. The government often plays a role in the provision of social services through the establishment of social service agencies and the provision of social service grants.

2. **Social Welfare:** Social welfare refers to the overall well-being of the population. The government often plays a role in promoting social welfare through the provision of social services and the implementation of social policies.

3. **Social Insurance:** Social insurance is a system of pooling financial risk to cover the cost of social services. The government often plays a role in the provision of social insurance through the establishment of social insurance systems.

4. **Social Policy:** Social policy refers to the government's policies regarding social services. This can include the implementation of social service policies and the promotion of social welfare.

5. **Social Reform:** Social reform refers to the process of making changes to the social services sector to improve its effectiveness. The government often plays a role in social reform through the implementation of social reform policies and the provision of social reform grants.

Topic 14: The Role of Government in the Cultural Sector

1. **Cultural Policy:** Cultural policy refers to the government's policies regarding the arts, culture, and heritage. This can include the implementation of cultural protection policies and the promotion of cultural activities.

2. **Cultural Access:** Cultural access refers to the ability of individuals to obtain necessary cultural services. The government often plays a role in ensuring cultural access through the provision of public cultural services and the regulation of private cultural providers.

3. **Cultural Finance:** Cultural finance refers to the financial resources used to support the cultural sector. The government often plays a role in cultural finance through the implementation of cultural financing policies and the provision of cultural grants.

4. **Cultural Reform:** Cultural reform refers to the process of making changes to the cultural sector to improve its effectiveness. The government often plays a role in cultural reform through the implementation of cultural reform policies and the provision of cultural reform grants.

5. **Cultural Education:** Cultural education refers to the process of teaching individuals about the arts, culture, and heritage. The government often plays a role in cultural education through the implementation of cultural education programs and the provision of cultural education grants.

Topic 15: The Role of Government in the Sports Sector

1. **Sports Policy:** Sports policy refers to the government's policies regarding sports and recreation. This can include the implementation of sports promotion policies and the regulation of sports activities.

2. **Sports Access:** Sports access refers to the ability of individuals to obtain necessary sports services. The government often plays a role in ensuring sports access through the provision of public sports services and the regulation of private sports providers.

3. **Sports Finance:** Sports finance refers to the financial resources used to support the sports sector. The government often plays a role in sports finance through the implementation of sports financing policies and the provision of sports grants.

4. **Sports Reform:** Sports reform refers to the process of making changes to the sports sector to improve its effectiveness. The government often

Opportunities & Constraints – Off Road Alignments

- Structures
 - Boardwalks
 - Retaining walls
 - Bridges
- Utility Corridors
 - Already cleared and rough graded
 - Typically, no houses or buildings
 - Limited Structures for trail
- Right of Way
 - Will need full easements



Structures



Meeting Agenda

- Greetings
- Defining Success and Project Goals
- Public Engagement
 - Survey Results
 - Stakeholder Meetings To date
- Route Alternatives Development
- Route Selection Criteria
- **Next Steps**



Next Steps: Project Schedule



Thank you!



Contact Us:

Nia Rodgers

rodgers@mcadamsco.com

Kathryn Zeringue

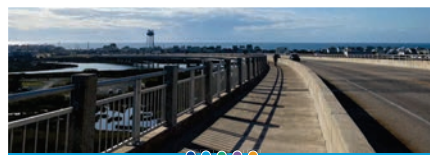
zeringue@mcadamsco.com

Graham Bruns

bruns@mcadamsco.com



STEERING COMMITTEE MEETING #3 October 26, 2022



NC-210 EAST COAST GREENWAY

FEASIBILITY STUDY

STEERING COMMITTEE MEETING #3 – OCTOBER 26, 2022

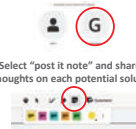


Meeting Agenda

- Community Engagement
 - Stakeholder Meetings to date
 - Public Meeting November 14
- Route Selection Criteria
- Recommended Route Alignments & Prioritization
- Typical Cross Sections, Intersections & Design Considerations
- Policy & Maintenance

Provide Your Input in Conceptboard

- Click on link in chat box
<https://app.conceptboard.com/board/nc210-east-coast-greenway-feasibility-study>
- Select Guest Access
- Select "post it note" and share your thoughts on each potential solution.



TIP: Include your name in your comment if you want to be identified or need follow up. Ask



Studied Routes + Connectors

- Stakeholder Meetings**
- Coordination between neighboring jurisdictions, NCDOT, and landowners on route preferences, maintenance, and project development.
- Completed Meetings:**
- Duke Energy
 - Jones-Orndorff EMC
 - State Trails, East Coast Greenway, & Friends of Mountains-to-Sea
 - Fish and Wildlife Coordination Call
 - Interjurisdictional
 - NCDOT
- Upcoming Meetings:**
- Landowners
 - 1:1 Consultations with Pender County Staff
 - Mailed Notice of Public Meeting
 - Talk with landowners along preferred route
 - Routes selected through large parcels held by the same entity
 - Gauge level of interest in working with the COG
 - Gather feedback and document concerns



Public Meeting #1

The first of four public meetings is a key step in the NC-210 East Coast Greenway Feasibility Study. It is a chance to hear about project updates, share the reports, and provide input.

For more info, please visit: <https://www.ncdot.gov/nc210/>

Monday, November 14th

5:00 PM - 7:30 PM

East City Town Hall
1114 N. Second Street
Wilmington, NC 28401



Studied Routes + Connectors



Studied Routes + Connectors



Route 2 + Connectors



Route 3 + Connectors



Decision Matrix Methodology

Score (High = Most Desirable, Low = Least Desirable)	NC-210/225 FEASIBILITY STUDY			
ROUTE ALTERNATIVE SELECTION CRITERIA	Route 1	Route 2	Route 3	Route 4
Physical Feasibility The ability to successfully engineer and permit each alternative is a critical consideration for determining viable options for the route alternative.	Low	High	Mid	Low
Desired Connectivity In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.	Mid	Mid	High	Low
Community Priorities To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.	Mid	Low	Mid	High
Cost The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative is implemented.	Low	High	Mid	Mid



Decision Matrix Methodology

Score (High = Most Desirable, Low = Least Desirable)	NC-210/225 FEASIBILITY STUDY			
ROUTE ALTERNATIVE SELECTION CRITERIA	Route 1	Route 2	Route 3	Route 4
Environmental Impacts The ability of each alternative to minimize impacts to streams, wetlands and other protected features (including associated buffers, floodplain alterations, and other environmental factors) during construction and operation of the proposed facility is considered.	Low	High	Mid	Low
Accessibility A consideration of use and accommodation for users of all ages and abilities is a significant consideration to ensure the ultimate route alternative is a community-oriented design for universal use.	Mid	High	Mid	Low
Property Impacts Real estate acquisition can play a major role in project cost and schedule. The ability of the route alternative to utilize publicly-owned properties, existing easements, public rights-of-way, and land parcels to prioritize property owners is considered.	Low	High	Mid	Mid
Potential Funding Opportunities Given the importance of securing funding from a variety of potential sources, the diversity, total amount, and likelihood of receiving funding available to each alternative is considered.	Mid	High	Low	Mid



Route 4 + Connectors



Decision Matrix Methodology Discussion

ROUTE ALTERNATIVE SELECTION CRITERIA	Route 1	Route 2	Route 3	Route 4
Physical Feasibility The ability to successfully engineer and permit each alternative is a critical consideration for determining viable options for the route alternative.	Low	High	Mid	Low
Desired Connectivity In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.	Mid	Mid	High	Low
Community Priorities To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.	Mid	Low	Mid	High
Cost The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative is implemented.	Low	High	Mid	Mid

Decision Matrix Methodology

Score (High = Most Desirable, Low = Least Desirable)	NC-210/225 FEASIBILITY STUDY			
ROUTE ALTERNATIVE SELECTION CRITERIA	Route 1	Route 2	Route 3	Route 4
Physical Feasibility The ability to successfully engineer and permit each alternative is a critical consideration for determining viable options for the route alternative.	Low	High	Mid	Low
Desired Connectivity In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.	Mid	Mid	High	Low
Community Priorities To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.	Mid	Low	Mid	High
Cost The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative is implemented.	Low	High	Mid	Mid



TYPES OF FACILITIES



Most Protected

Least Protected

TYPICAL CROSS SECTIONS

MAINLINE (PREFERRED)

A 12' wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources.

Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary.

Shoulders or shy zones of 2' or greater should be kept clear of any obstacles to ensure full trail width remains usable.



McANAMAR

TYPICAL CROSS SECTIONS

MAINLINE WITHIN ROW – CURB AND GUTTER

A 12' wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources.

Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Speed limits and traffic volumes will dictate the clear zone and if a curb and gutter section will provide sufficient separation for trail users.

A minimum of 2-ft grass utility strip is recommended with a desired width of 5-ft when available ROW allows. In constrained areas, the width of the utility strip and the trail can be reduced to minimize ROW impacts, and if necessary, the trail can be placed directly at the back of the curb face.



McANAMAR

TYPICAL CROSS SECTIONS

BRIDGE

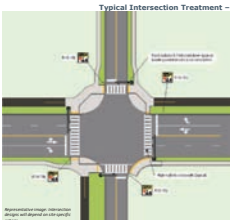
A 12' clear width bridge is recommended in where the trail crosses the river or streams.

Prefabricated steel truss bridges are a common, cost-effective bridge type in this application and are the recommended bridge type for this typical section. Corrosion / weathering steel is a finish which should be considered for its ability to blend well with natural surroundings and its minimal maintenance requirements as compared to those for painted finishes.

The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Bridge substructure design and materials may vary depending upon bridge design type, specific site conditions, and geotechnical recommendations.



McANAMAR



Typical Intersection Treatment – Minor Signalized

Provides signalized crossings for all movements across the intersection. Depending on the intersection, there also may be a pedestrian refuge in the center of the main road.

- Potential intersections to be used:
- US 17 @ NC 210
 - US 17 @ Vista Ln/Topsail High School
 - US 17 @ Country Club Dr
 - NC 210 @ Anton Blvd Exit

Recommendations specific to this study will be made for key intersections once a recommended route has been selected.

TYPICAL CROSS SECTIONS

MAINLINE WITHIN ROW – DITCH SECTION (PREFERRED)

A 12' wide paved trail is recommended for the mainline trail as it will require the least amount of long-term maintenance and has greater eligibility from the widest variety of funding sources.

Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Speed limits and traffic volumes will dictate the clear zone. If ROW allows, a ditch section between the road and trail is preferred.



McANAMAR

TYPICAL CROSS SECTIONS

BOARDWALK

A 12' clear width elevated boardwalk is recommended in areas where the trail:

- crosses wetlands;
- approaches bridge crossings in the floodplain/floodway; and
- crosses areas of wet or unstable ground.

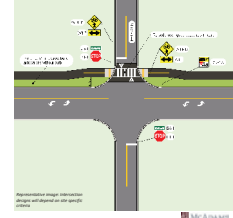
The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber.

Timber safety rails and handrails are shown with a timber pile substructure system. Boardwalk substructure design and materials may vary depending upon specific site conditions and geotechnical recommendations.



McANAMAR

Typical Intersection Treatments – Stop Controlled

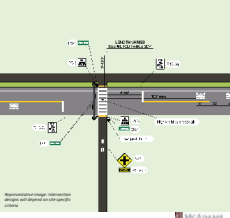


Provides signed crossings for trail movements across the minor road. Stop bar and sign would be moved back from current location so that the trail crosswalk would be between the intersection and stopped vehicle.

Potential intersections include but are not limited to:

- NC 210 @ J.H. Batts Rd
- NC 210 @ Saltwater Landing Dr
- US 17 @ Canal Ln
- US 17 @ Royal Tern Dr
- Shop Point Loop Rd @ W Craftsmen Way
- Country Club Rd @ Avalon Dr
- Country Club Rd @ Ravenswood Rd

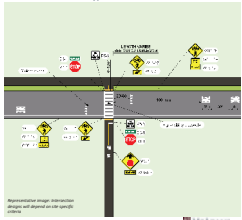
Typical Intersection Treatments – Major Mid-Block Crossing



Provides signalized crossings for trail movements across the road using a HAWK with pad activation.

- Potential intersections to be used:
- Shop Point Loop Rd @ North Topsail Elementary
 - Country Club Dr east of Chiles Point Rd

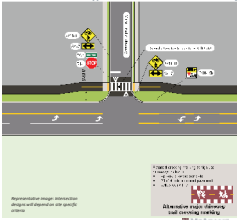
Typical Intersection Treatments – Minor Mid-Block Crossing



Provides signed crossings for trail movements across the road using a Rectangular Rapid Flashing Beacons (RRFB) with pad activation.

- Potential intersections to be used:
- Duke Esplanade @ Anton Blvd Exit
 - Duke Esplanade @ Groves Point Dr
 - Avalon Dr @ Existing Homestead Greenway
 - Country Club Dr east of Tycha Basin Landing

Typical Intersection Treatments – Major Driveway Crossing



Provides signed crossings for trail movements across the commercial driveway.

- Potential intersections to be used:
- NC 210 @ Walmart Neighborhood Mkt
 - NC 210 @ Lowe's Home Improvement

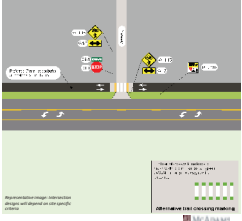
Maintenance Discussion - Tasks

MAINTENANCE TASK	TASK TYPE	RECOMMENDED FREQUENCY
Trail / Bush trimming	Regular	On-going / Annually
Signage / Way Marking	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually
Trail surface / Repair	Regular	On-going / Annually

Maintenance Discussion - Responsibilities

Maintenance responsibilities are currently open for discussion to determine which stakeholders will oversee each segment of the proposed trail.	
• Typical: A County with responsibility for recreational facilities, countywide, may assume maintenance for the greenway in unincorporated areas or in municipalities where it already provides maintenance of facilities.	
• Typical: Municipalities may assume responsibility for segments within their respective jurisdictional boundaries.	
• Specific Conditions: A private entity may assume responsibility for a specific element or segment based on municipal agreements.	

Typical Intersection Treatments – Minor Driveway Crossing



Provides signed crossings for trail movements across the commercial driveway.

- Potential intersections to be used:
- Future US 17 Frontage Rd driveways
 - W Topsail Dr commercial entrances
 - NC 210/N New River Dr commercial entrances

Future Project Specific Intersection Design

Recommendations specific to this study will be made after a recommended route has been selected.	
• Additional Key Intersections on the recommended route	
• Additional Typical Intersection – Minor Unsignalized, applicable locations include:	
• NC 210 @ New River Rd @ Shell Rd	
• NC 210 @ Atlantic Loop Rd	
• NC 210 @ Magnolia Reserve	
• Shop Point Rd @ Topsail Lake Dr	
• Werts Landing Rd @ Old Post Office Rd	
• Finalized List of Recommended Crossing Locations (recommendations included in this presentation may change)	

Policies

Recommendations	
• The multi-jurisdictional nature of the project corridor, all jurisdictions along the NC 210 ECG Corridor should consider modifying their existing ordinances and design guidelines to incorporate standards for greenways. Four key recommendations for greenway-related policies and design improvements are included below:	
• Include definitions for active transportation facilities (i.e., bike facilities, sidewalks, and greenways).	
• Encourage/require developer-built greenways, multi-use paths, or other bicycle/pedestrian facilities.	
• Incorporate design guidelines for greenways and multi-use paths.	
• Adopt a Complete Streets ordinance.	

Policies

Comparison of Policies	
The project team reviewed the existing policies and design guidelines for each jurisdiction along the NC 210 ECG corridor. The table below compares the existing policies and guidelines from each jurisdiction to the recommendations provided on the previous slide.	

Next Steps: Project Schedule



Thank you!



Contact Us:

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rodgers@mcadamsco.com

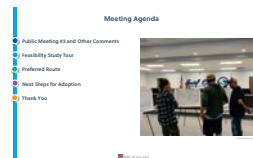
Kathryn Zeringue
zeringue@mcadamsco.com

Graham Bruns
bruns@mcadamsco.com

STEERING COMMITTEE MEETING #4 February 27, 2023



- Public Meeting #2 Summary**
- 15 attendees and 3 completed comment sheets
 - Comments Received:
 - Concerns about the proposed route along US 17 with implementation challenges. US 17 is designated in the future as a multi-use path for bicycle and pedestrian use. The proposed route is a 1.5-mile-long, multi-use path that would connect the proposed route to the existing multi-use path along US 17.
 - Concerns about the proposed route along US 17 with implementation challenges. US 17 is designated in the future as a multi-use path for bicycle and pedestrian use. The proposed route is a 1.5-mile-long, multi-use path that would connect the proposed route to the existing multi-use path along US 17.
 - Comments Received:
 - Concerns about the proposed route along US 17 with implementation challenges. US 17 is designated in the future as a multi-use path for bicycle and pedestrian use. The proposed route is a 1.5-mile-long, multi-use path that would connect the proposed route to the existing multi-use path along US 17.
 - Concerns about the proposed route along US 17 with implementation challenges. US 17 is designated in the future as a multi-use path for bicycle and pedestrian use. The proposed route is a 1.5-mile-long, multi-use path that would connect the proposed route to the existing multi-use path along US 17.



- Additional Study Comments**
- Reference Future Surf City waterline project on North Shore which will make way for a multi-use path.
 - Consider a connector to Holly Ridge if appropriate.



Feasibility Study Tour



McKinnon

Feasibility Study Tour



McKinnon

Feasibility Study Tour



McKinnon

Feasibility Study Tour

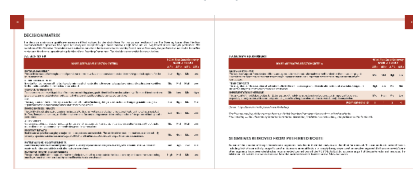


McKinnon

Feasibility Study Tour (Intersection Design - Update in Progress)



Feasibility Study Tour



McKinnon

Feasibility Study Tour



McKinnon

Feasibility Study Tour



McKinnon

Feasibility Study Tour



McKinnon

Feasibility Study Tour



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Feasibility Study Tour



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Feasibility Study Tour



McKinnon

Feasibility Study Tour

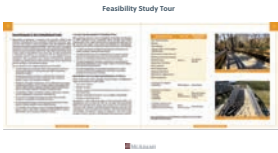


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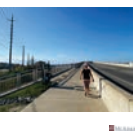
Feasibility Study Tour



McKinnon



- Next Steps for Adoption
- Final study revisions in coordination with:
 - Cape Fear RPO
 - Surf City
 - Pender County
 - Cape Fear RPO Adoption - Anticipated Spring 2023
 - Municipal Adoption timeframe TBD
 - Steering Committee support is key!



Contact Us:

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Graham Bruns
brunsgraham@peconk.com

STAKEHOLDER MEETINGS

Fall 2022

Meetings were held with the following groups:

- Duke Energy
- Fish and Wildlife Coastal Ecoregion Area managers for the Holy Shelter Gamelands
- Trail Planning Agencies and Organizations (State Trails, FMST, ECG) and NCDOT
- Carolina Gullah Geechee Greenway-Blueway Heritage Trail

INTERJURISDICTIONAL MEETINGS

September 23, 2022

Meetings were held with the following groups:

- Surf City
- Pender County
- Wilmington
- Jacksonville; with the Jacksonville MPO representing Onslow County and the Wilmington Urban Area MPO representing New Hanover County

PUBLIC MEETING #1
November 14, 2022

PUBLIC MEETING

NC 210 EAST COAST GREENWAY FEASIBILITY STUDY



WELCOME
THANK YOU TO
OUR PARTNERS

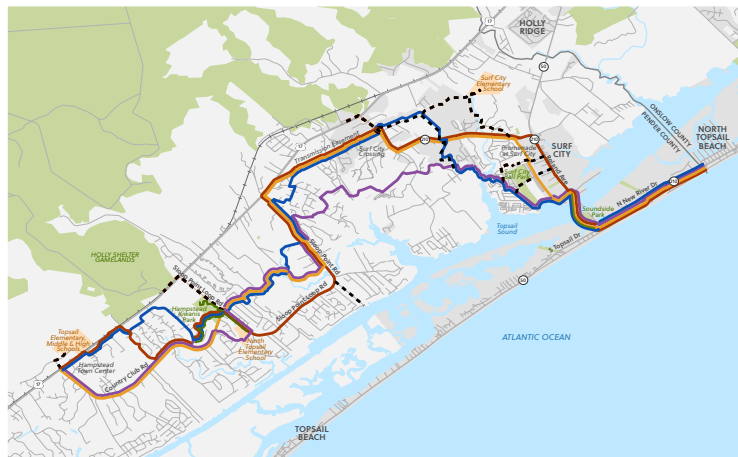


SCAN TO
VIEW THE
PROJECT
WEBPAGE



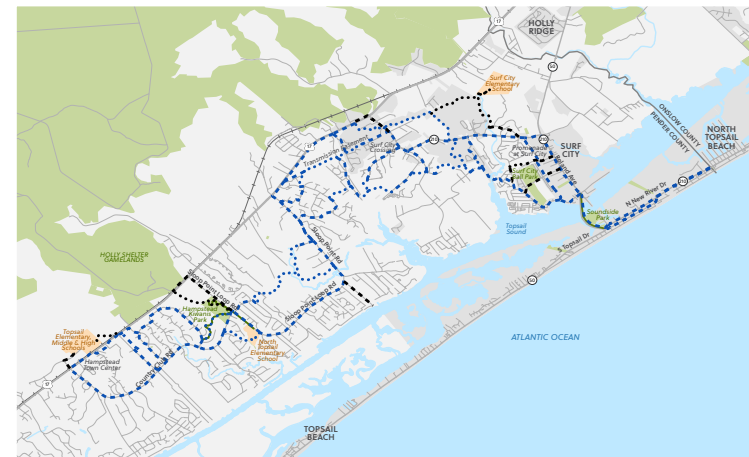
**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTES + CONNECTORS**

LEGEND
NC-210 ECG CORRIDOR
Studied Routes
Study Connectors
Existing Greenways
Roadways
Rail
Water Bodies
Parks
Schools
Municipalities
Counties



**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTES + CONNECTORS**

LEGEND
STUDIED ROUTES
Route 1
Route 2
Route 3
Route 4
Study Connectors
Existing Greenways
Roadways
Rail
Water Bodies
Parks
Schools
Municipalities
Counties



**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTES + CONNECTORS
FACILITY TYPES**

LEGEND
NC-210 ECG CORRIDOR
Studied Routes (Sidepath)
Studied Routes (Greenway)
Study Connectors (Sidepath)
Study Connectors (Greenway)
Existing Greenways
Roadways
Rail
Water Bodies
Parks
Schools
Municipalities
Counties



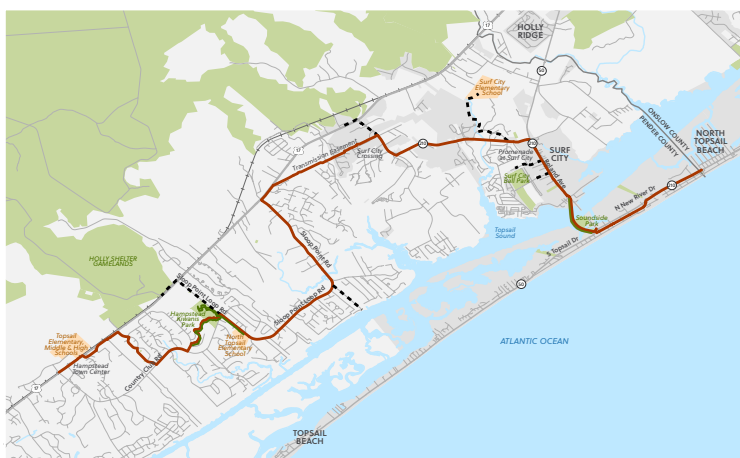
**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTE 1 + CONNECTORS**

LEGEND
NC-210 ECG CORRIDOR
— Studied Route 1
--- Study Connectors
— Existing Greenways
— Roadways
— Rail
— Water Bodies
— Parks
— Schools
— Municipalities
— Counties



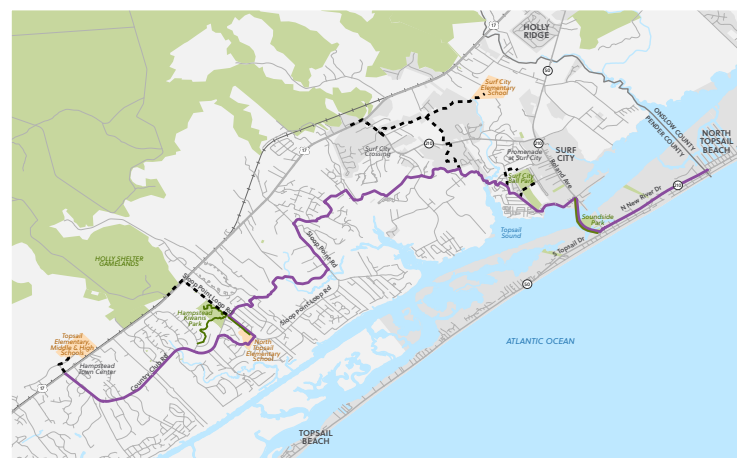
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FEASIBILITY STUDY
STUDIED ROUTE 2 + CONNECTORS**

LEGEND
NC-210 ECG CORRIDOR
— Studied Route 2
--- Study Connectors
— Existing Greenways
— Roadways
— Rail
— Water Bodies
— Parks
— Schools
— Municipalities
— Counties



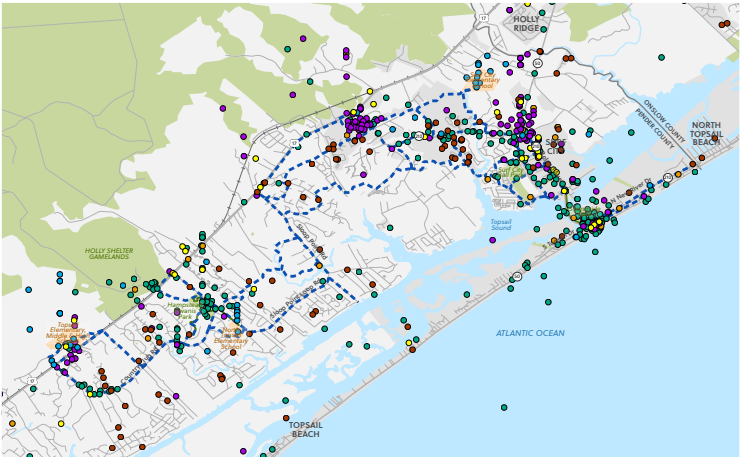
**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTE 3 + CONNECTORS**

LEGEND
NC-210 ECG CORRIDOR
— Studied Route 3
--- Study Connectors
— Existing Greenways
— Roadways
— Rail
— Water Bodies
— Parks
— Schools
— Municipalities
— Counties



**NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
STUDIED ROUTE 4 + CONNECTORS**

LEGEND
NC-210 ECG CORRIDOR
— Studied Route 4
--- Study Connectors
— Existing Greenways
— Roadways
— Rail
— Water Bodies
— Parks
— Schools
— Municipalities
— Counties



NC-210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
PREFERRED DESTINATIONS

- LEGEND**
- Study Routes
 - Preferred Destinations
 - Work
 - Home
 - Recreation
 - School
 - Shopping
 - Other
 - Existing Greenways
 - Roadways
 - Rail
 - Water Bodies
 - Parks
 - Schools
 - Municipalities
 - Counties

NC 210 EAST COAST GREENWAY TYPICAL SECTIONS

BOARDWALK

Facility Type: Multi-use Elevated Boardwalk

Materials: The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Timber safety rails and handrails are shown with a timber pile substructure system.

Preferred Width: 12 ft

Design Considerations: This facility is recommended in areas where the trail crosses wetlands, approaches bridge crossings in the floodplain/floodway, and/or crosses areas of steep topography (reduces limits of clearing/grading). Boardwalk substructure design and materials may vary depending upon specific site conditions and geotechnical recommendations.



BRIDGE

Facility Type: Multi-use Bridge

Materials: The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber. Timber safety rails and handrails are shown with a timber pile substructure system.

Prefabricated steel truss bridges are a cost-effective bridge type in this application and are the recommended bridge type for this typical section. Corten/weathering steel is a finish which should be considered for its ability to blend well with natural surroundings and its minimal maintenance requirements as compared to those for painted finishes.

The deck surface should be concrete which provides greater friction to reduce the risks of slips and falls and reduces long-term maintenance burdens compared to those associated with other materials such as timber.

Preferred Width: 12 ft

Design Considerations: This facility is recommended where the trail crosses rivers or streams. Bridge substructure design and materials may vary depending upon bridge design type, specific site conditions, and geotechnical recommendations.



NC 210 EAST COAST GREENWAY TYPICAL SECTIONS

MAINLINE (PREFERRED)

Facility Type: Multi-use Path

Materials: Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary.

Preferred Width: 12 ft



MAINLINE WITHIN ROW DITCH SECTION (PREFERRED)

Facility Type: Multi-use Path

Materials: Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations.

Preferred Width: 12 ft

Design Considerations: Speed limits and traffic volumes will dictate the clear zone. If right of way allows, a ditch section between the road and trail is preferred.



MAINLINE WITHIN ROW CURB + GUTTER

Facility Type: Multi-use Path

Materials: Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations.

Preferred Width: 12 ft

Design Considerations: Speed limits and traffic volumes will dictate the clear zone and if a curb and gutter section will provide sufficient separation for trail users a minimum of 2-ft grass utility strip is recommended with a desired width of 5 ft when available right of way allows.



PUBLIC MEETING #2
February 21, 2023

PUBLIC MEETING #2

NC 210 EAST COAST GREENWAY FEASIBILITY STUDY



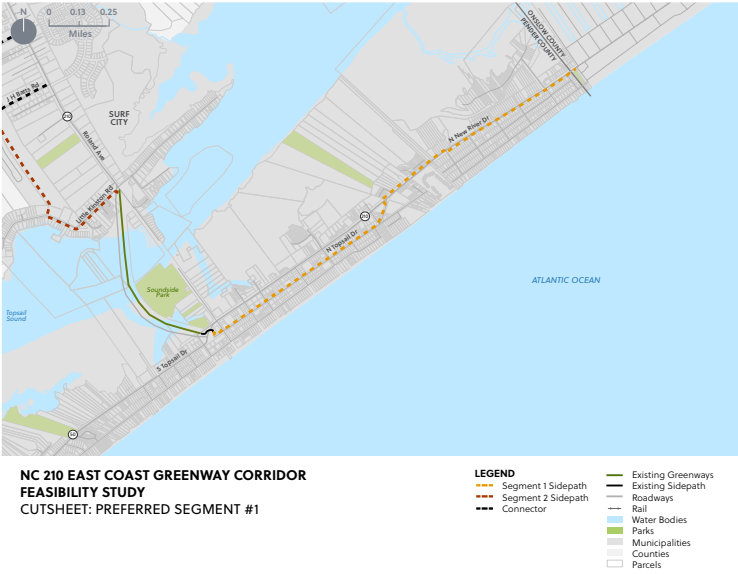
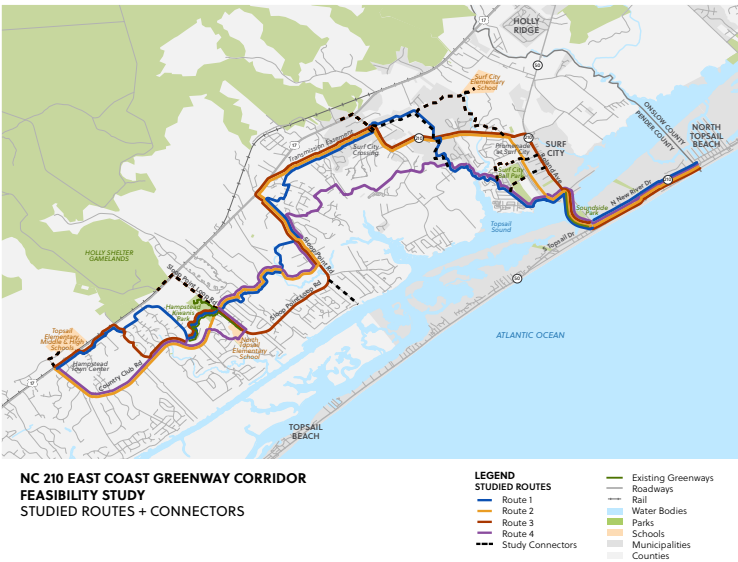
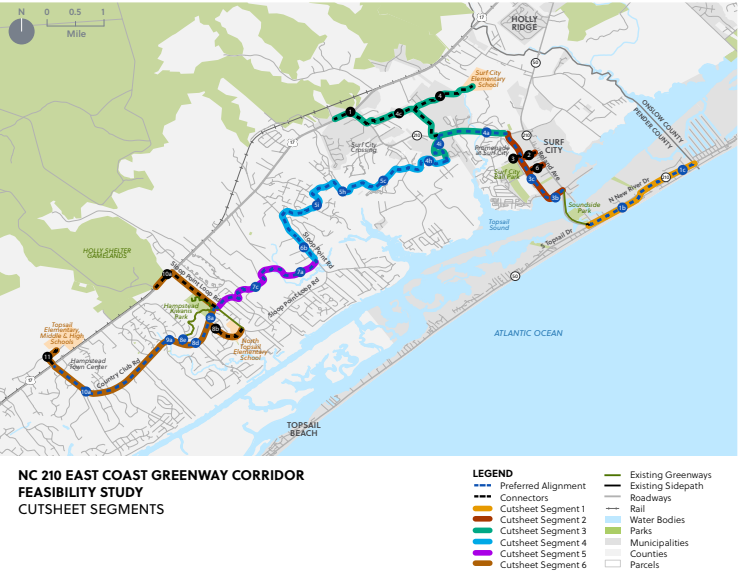
WELCOME

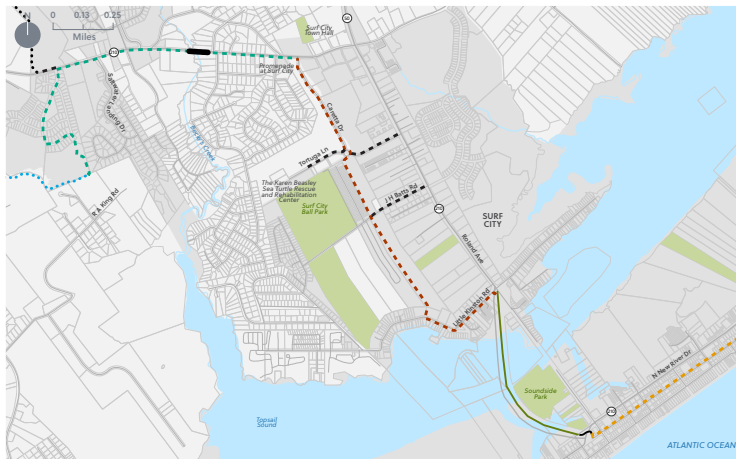
THANK YOU TO OUR PARTNERS



SCAN TO VIEW THE PROJECT WEBPAGE

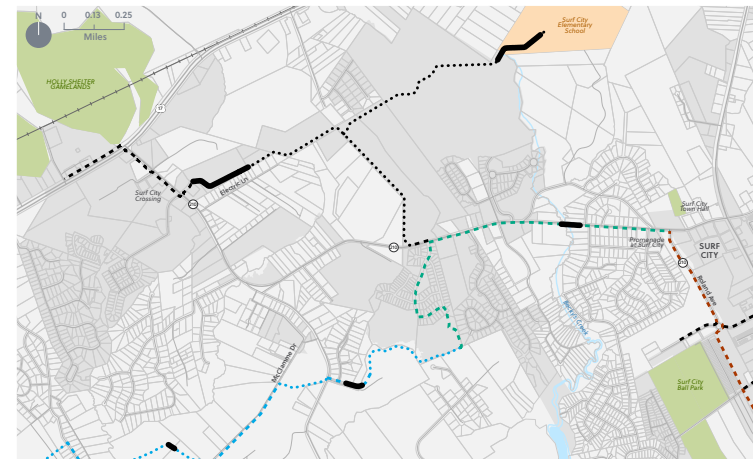
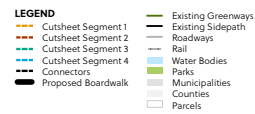






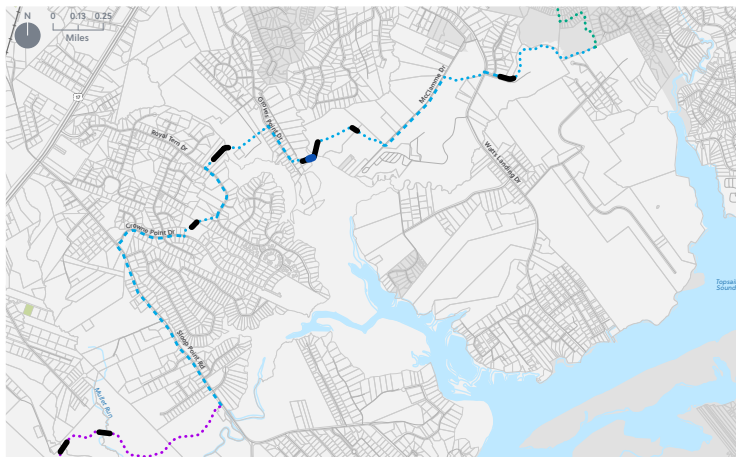
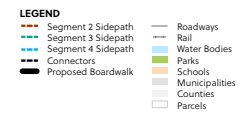
**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #2**

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.



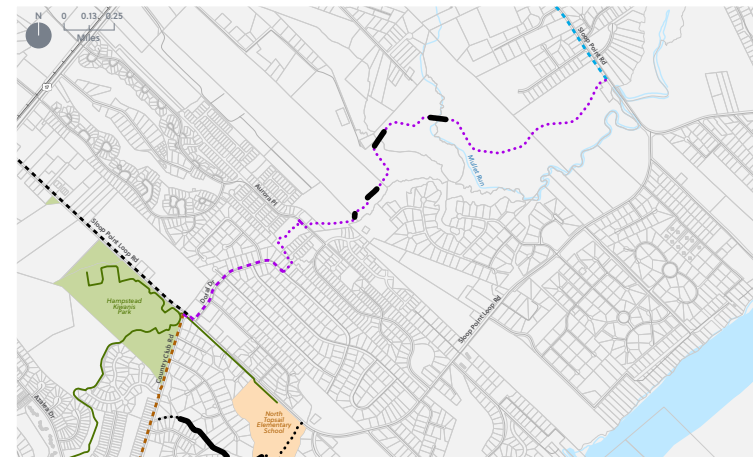
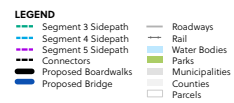
**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #3**

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #4**

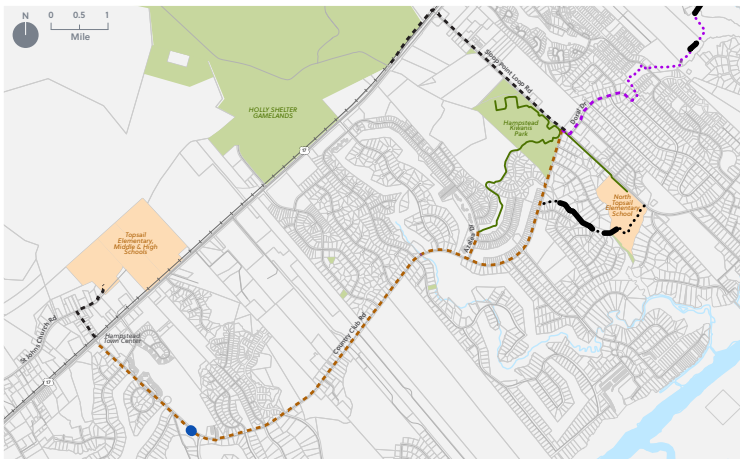
Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.



**NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #5**

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.



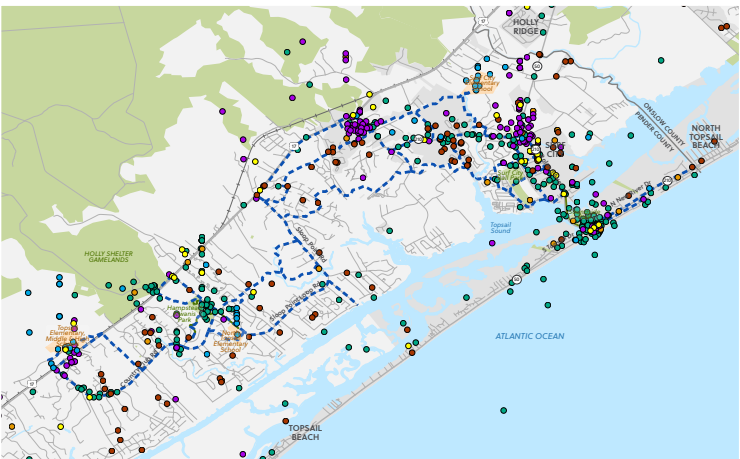


NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
CUTSHEET: PREFERRED SEGMENT #6

Note: Greenways are represented by dotted lines and sidepaths are represented by dashed lines. The colors correspond with the segment or connector of interest.

LEGEND

- Segment 5 Sidepath
- Segment 6 Sidepath
- Connector
- Proposed Boardwalk
- Proposed Retaining Wall
- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties
- Parcels



NC 210 EAST COAST GREENWAY CORRIDOR
FEASIBILITY STUDY
PREFERRED DESTINATIONS

LEGEND

- Study Routes
- Preferred Destinations
- Work
- Home
- Recreation
- School
- Shopping
- Other
- Existing Greenways
- Roadways
- Rail
- Water Bodies
- Parks
- Schools
- Municipalities
- Counties

INTERSECTION RECOMMENDATIONS

MAJOR SIGNALIZED
Includes major, divided roadways, with signals.



US 17 at US 17 + NC 210

MID-BLOCK CROSSING
Includes roads that do not have enough traffic for signals.



Sloop Point Loop Rd at Country Club Dr

MINOR STOP-CONTROLLED
Includes low-speed, neighborhood roads with stop signs.



Detailed example of a trail crossing over a minor roadway



US 17 at Country Club Dr / Jenkins Rd (Future NCDOT Road Improvements Shown)



Rectangular Rapid Flashing Beacon (RRFB)
Source: Federal Highway Administration



Minor typical roadway crossing concept drawing



PUBLIC MEETING #2

OVERVIEW

Welcome to the second Public Meeting for the NC 210 East Coast Greenway (ECG) Feasibility Study. This study assesses existing conditions, evaluates potential routes for opportunities and constraints, develops detailed cost estimates, and provides strategies for implementation. The study also provides insight into previous planning efforts such as the Mountains-to-Sea Trail (MST), the ECG, and the Gullah Geechee Trail. Prior to today's meeting, the project team assessed several routes along roadways in Pender County and the Town of Surf City, mainly along NC 210. Today, we are seeking your input on the preferred greenway alignment that includes potential connector routes.

We look forward to receiving more community input from this project. For more information, please visit the project webpage at <https://capefearcog.org/nc210ecg/>.

64 Segments
- Studied for Feasibility

~50 Miles Modeled
- in 3D Using CAD Software

13 Meetings
- Held with Major Stakeholders

Thank you for taking the time to provide your feedback on this study!

PUBLIC MEETING #1 SUMMARY

The first Public Meeting for the project was held in November 2022. During this meeting, the project team presented maps on the studied routes, recommended routes, and typical sections detailing design standards for the proposed facilities along the project corridor. The following list includes key findings from this meeting:

- Attendees expressed concern for alignments along the existing Duke Energy transmission easement.
- Attendees preferred routes that avoided US 17.
- General feedback on comment cards indicated preference for greenway connections to local shopping centers and recreational areas.



Please flip the page to view the preferred route map.

APPENDIX C: COST ESTIMATES



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 1						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 205,000.00	\$ 205,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 65,000.00	\$ 65,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	10910	SY	\$ 4.00	\$ 43,640.00
520	1121000000-E	AGGREGATE BASE COURSE	4020	TON	\$ 50.00	\$ 201,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	1130	TON	\$ 115.00	\$ 129,950.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	70	TON	\$ 650.00	\$ 45,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2380	LF	\$ 50.00	\$ 119,000.00
848	2605000000-N	CONCRETE CURB RAMPS	39	EA	\$ 3,000.00	\$ 117,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	2	EA	\$ 4,000.00	\$ 8,000.00
SP		EROSION CONTROL	1	LS	\$ 245,000.00	\$ 245,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 350,000.00	\$ 350,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1270	SY	\$ 100.00	\$ 127,000.00
SP		BOLLARD, PERMANENT	126	EA	\$ 500.00	\$ 63,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 1	1	LS	\$ 240,000.00	\$ 240,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	3	EA	\$ 50,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	11	EA	\$ 15,000.00	\$ 165,000.00

SUBTOTAL \$2,274,090.00

CONTINGENCY @ 40% \$909,636.00

CONSTRUCTION COST SAY \$3,184,000

Notes:

- Cost opinion does not include costs for easement or ROW acquisition.
- Cost opinion does not include engineering, geotech, design survey, or construction administration.
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- Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.

8. Construction costs do not include any costs or impacts associated with adjacent roadway resurfacing.

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 2						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 120,000.00	\$ 120,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	210	SY	\$ 4.00	\$ 840.00
520	1121000000-E	AGGREGATE BASE COURSE	90	TON	\$ 50.00	\$ 4,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	30	TON	\$ 115.00	\$ 3,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
848	2605000000-N	CONCRETE CURB RAMPS	24	EA	\$ 3,000.00	\$ 72,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	24	EA	\$ 4,000.00	\$ 96,000.00
SP		EROSION CONTROL	1	LS	\$ 95,000.00	\$ 95,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 325,000.00	\$ 325,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	650	LF	\$ 1,500.00	\$ 975,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	3950	SY	\$ 100.00	\$ 395,000.00
SP		BOLLARD, PERMANENT	110	EA	\$ 500.00	\$ 55,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 2	1	LS	\$ 105,000.00	\$ 105,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00
SP		STRUCTURE REMOVAL	3900	SF	\$ 28.70	\$ 111,930.00

SUBTOTAL \$2,531,970.00

CONTINGENCY @ 35% \$886,189.50

CONSTRUCTION COST SAY \$3,419,000

Notes:

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- Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 3						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 235,000.00	\$ 235,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 140,000.00	\$ 140,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	14820	SY	\$ 4.00	\$ 59,280.00
520	1121000000-E	AGGREGATE BASE COURSE	5200	TON	\$ 50.00	\$ 260,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1530	TON	\$ 115.00	\$ 175,950.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	95	TON	\$ 650.00	\$ 61,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4850	LF	\$ 50.00	\$ 242,500.00
848	2605000000-N	CONCRETE CURB RAMPS	12	EA	\$ 3,000.00	\$ 36,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 315,000.00	\$ 315,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 275,000.00	\$ 275,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1780	LF	\$ 1,500.00	\$ 2,670,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	350	SY	\$ 100.00	\$ 35,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	33	EA	\$ 500.00	\$ 16,500.00
SP		BOLLARD, COLLAPSIBLE	6	EA	\$ 1,000.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 3	1	LS	\$ 325,000.00	\$ 325,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$5,007,980.00

CONTINGENCY @ 35% \$1,752,793.00

CONSTRUCTION COST SAY \$6,761,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 4						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 325,000.00	\$ 325,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 195,000.00	\$ 195,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	28090	SY	\$ 4.00	\$ 112,360.00
520	1121000000-E	AGGREGATE BASE COURSE	9900	TON	\$ 50.00	\$ 495,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2900	TON	\$ 115.00	\$ 333,500.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	175	TON	\$ 650.00	\$ 113,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	8025	LF	\$ 50.00	\$ 401,250.00
848	2605000000-N	CONCRETE CURB RAMPS	16	EA	\$ 3,000.00	\$ 48,000.00
SP		EROSION CONTROL	1	LS	\$ 525,000.00	\$ 525,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 1,995,000.00	\$ 1,995,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1070	LF	\$ 1,500.00	\$ 1,605,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	130	SY	\$ 100.00	\$ 13,000.00
SP		METAL SAFETY RAIL	80	LF	\$ 100.00	\$ 8,000.00
SP		BOLLARD, PERMANENT	42	EA	\$ 500.00	\$ 21,000.00
SP		BOLLARD, COLLAPSIBLE	12	EA	\$ 1,000.00	\$ 12,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 4	1	LS	\$ 635,000.00	\$ 635,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	5	EA	\$ 15,000.00	\$ 75,000.00

SUBTOTAL \$7,012,860.00

CONTINGENCY @ 35% \$2,454,501.00

CONSTRUCTION COST SAY \$9,468,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 5						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 155,000.00	\$ 155,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 95,000.00	\$ 95,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	15490	SY	\$ 4.00	\$ 61,960.00
520	1121000000-E	AGGREGATE BASE COURSE	5500	TON	\$ 50.00	\$ 275,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1600	TON	\$ 115.00	\$ 184,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	100	TON	\$ 650.00	\$ 65,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	200	LF	\$ 50.00	\$ 10,000.00
848	2605000000-N	CONCRETE CURB RAMPS	7	EA	\$ 3,000.00	\$ 21,000.00
SP		EROSION CONTROL	1	LS	\$ 295,000.00	\$ 295,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 95,000.00	\$ 95,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	910	LF	\$ 1,500.00	\$ 1,365,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	110	SY	\$ 100.00	\$ 11,000.00
SP		METAL SAFETY RAIL	1440	LF	\$ 100.00	\$ 144,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		BOLLARD, COLLAPSIBLE	5	EA	\$ 1,000.00	\$ 5,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 5	1	LS	\$ 335,000.00	\$ 335,000.00
SP		TRAIL CROSSING IMPROVEMENTS - SLOOP POINT LOOP @ COUNTRY CLUB	1	EA	\$ 175,000.00	\$ 175,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$3,326,960.00

CONTINGENCY @ 35% \$1,164,436.00

CONSTRUCTION COST SAY \$4,492,000

Notes:

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Preferred Segment 6						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 205,000.00	\$ 205,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 125,000.00	\$ 125,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	23770	SY	\$ 4.00	\$ 95,080.00
520	1121000000-E	AGGREGATE BASE COURSE	8400	TON	\$ 50.00	\$ 420,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2450	TON	\$ 115.00	\$ 281,750.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	150	TON	\$ 650.00	\$ 97,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	16750	LF	\$ 50.00	\$ 837,500.00
848	2605000000-N	CONCRETE CURB RAMPS	36	EA	\$ 3,000.00	\$ 108,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 430,000.00	\$ 430,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 820,000.00	\$ 820,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	50	LF	\$ 1,500.00	\$ 75,000.00
SP		METAL SAFETY RAIL	110	LF	\$ 100.00	\$ 11,000.00
SP		RETAINING WALL	170	SF	\$ 225.00	\$ 38,250.00
SP		BOLLARD, PERMANENT	72	EA	\$ 500.00	\$ 36,000.00
SP		BOLLARD, COLLAPSIBLE	10	EA	\$ 1,000.00	\$ 10,000.00
SP		COMPREHENSIVE GRADING, PREFERRED SEGMENT 6	1	LS	\$ 490,000.00	\$ 490,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	13	EA	\$ 15,000.00	\$ 195,000.00

SUBTOTAL \$4,379,080.00

CONTINGENCY @ 35% \$1,532,678.00

CONSTRUCTION COST SAY \$5,912,000

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NC 210-ECG Feasibility Study

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Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 1						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 50,000.00	\$ 50,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4080	SY	\$ 4.00	\$ 16,320.00
520	1121000000-E	AGGREGATE BASE COURSE	1510	TON	\$ 50.00	\$ 75,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	420	TON	\$ 115.00	\$ 48,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	350	LF	\$ 50.00	\$ 17,500.00
848	2605000000-N	CONCRETE CURB RAMPS	10	EA	\$ 3,000.00	\$ 30,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 83,000.00	\$ 83,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 300,000.00	\$ 300,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	310	SY	\$ 100.00	\$ 31,000.00
SP		BOLLARD, PERMANENT	30	EA	\$ 500.00	\$ 15,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 1	1	LS	\$ 95,000.00	\$ 95,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

SUBTOTAL \$1,025,120.00

CONTINGENCY @ 35% \$358,792.00

CONSTRUCTION COST SAY \$1,384,000

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Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 2						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	860	SY	\$ 4.00	\$ 3,440.00
520	1121000000-E	AGGREGATE BASE COURSE	340	TON	\$ 50.00	\$ 17,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	90	TON	\$ 115.00	\$ 10,350.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	750	LF	\$ 50.00	\$ 37,500.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 32,000.00	\$ 32,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	310	SY	\$ 100.00	\$ 31,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 2	1	LS	\$ 25,000.00	\$ 25,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$301,790.00

CONTINGENCY @ 35% \$105,626.50

CONSTRUCTION COST SAY \$408,000

- Notes:
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 - Cost opinion does not include cost for private or public utility relocations.
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 - Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.
 - Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: xxx Date: 7/26/2021
 Checked By: xxx Date: 7/26/2021
 McAdams Project No: XXX



Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 3						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1210	SY	\$ 4.00	\$ 4,840.00
520	1121000000-E	AGGREGATE BASE COURSE	470	TON	\$ 50.00	\$ 23,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	130	TON	\$ 115.00	\$ 14,950.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1000	LF	\$ 50.00	\$ 50,000.00
848	2605000000-N	CONCRETE CURB RAMPS	3	EA	\$ 3,000.00	\$ 9,000.00
SP		EROSION CONTROL	1	LS	\$ 25,000.00	\$ 25,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 48,000.00	\$ 48,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 3	1	LS	\$ 30,000.00	\$ 30,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$254,790.00

CONTINGENCY @ 35% \$89,176.50

CONSTRUCTION COST SAY \$344,000

Notes:

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7. Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.
8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 4						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 120,000.00	\$ 120,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5100	SY	\$ 4.00	\$ 20,400.00
520	1121000000-E	AGGREGATE BASE COURSE	1890	TON	\$ 50.00	\$ 94,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	520	TON	\$ 115.00	\$ 59,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 134,000.00	\$ 134,000.00
SP		TRAFFIC CONTROL	1	LS	\$ -	\$ -
SP		TIMBER PILE CONCRETE BOARDWALK	1180	LF	\$ 1,500.00	\$ 1,770,000.00
SP		METAL SAFETY RAIL	120	LF	\$ 100.00	\$ 12,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 4	1	LS	\$ 215,000.00	\$ 215,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$2,551,450.00

CONTINGENCY @ 35% \$893,007.50

CONSTRUCTION COST SAY \$3,445,000

Notes:

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8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization
Client Project No.

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 5						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 165,000.00	\$ 165,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 100,000.00	\$ 100,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6900	SY	\$ 4.00	\$ 27,600.00
520	1121000000-E	AGGREGATE BASE COURSE	2560	TON	\$ 50.00	\$ 128,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	710	TON	\$ 115.00	\$ 81,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	450	LF	\$ 50.00	\$ 22,500.00
848	2605000000-N	CONCRETE CURB RAMPS	5	EA	\$ 3,000.00	\$ 15,000.00
SP		EROSION CONTROL	1	LS	\$ 180,000.00	\$ 180,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 130,000.00	\$ 130,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1530	LF	\$ 1,500.00	\$ 2,295,000.00
SP		METAL SAFETY RAIL	120	LF	\$ 100.00	\$ 12,000.00
SP		BOLLARD, PERMANENT	17	EA	\$ 500.00	\$ 8,500.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 5	1	LS	\$ 200,000.00	\$ 200,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$3,478,500.00

CONTINGENCY @ 35% \$1,217,475.00

CONSTRUCTION COST SAY \$4,696,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 6						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1330	SY	\$ 4.00	\$ 5,320.00
520	1121000000-E	AGGREGATE BASE COURSE	520	TON	\$ 50.00	\$ 26,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	140	TON	\$ 115.00	\$ 16,100.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	350	LF	\$ 50.00	\$ 17,500.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 35,000.00	\$ 35,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 67,000.00	\$ 67,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	180	SY	\$ 100.00	\$ 18,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, CONNECTION 6	1	LS	\$ 35,000.00	\$ 35,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$291,920.00

CONTINGENCY @ 35% \$102,172.00

CONSTRUCTION COST SAY \$395,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 7						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2440	SY	\$ 4.00	\$ 9,760.00
520	1121000000-E	AGGREGATE BASE COURSE	950	TON	\$ 50.00	\$ 47,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	250	TON	\$ 115.00	\$ 28,750.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1900	LF	\$ 50.00	\$ 95,000.00
848	2605000000-N	CONCRETE CURB RAMPS	5	EA	\$ 3,000.00	\$ 15,000.00
SP		EROSION CONTROL	1	LS	\$ 53,000.00	\$ 53,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 101,000.00	\$ 101,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	70	SY	\$ 100.00	\$ 7,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, CONNECTION 7	1	LS	\$ 45,000.00	\$ 45,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$504,260.00

CONTINGENCY @ 35% \$176,491.00

CONSTRUCTION COST SAY \$681,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 8						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 70,000.00	\$ 70,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2300	SY	\$ 4.00	\$ 9,200.00
520	1121000000-E	AGGREGATE BASE COURSE	900	TON	\$ 50.00	\$ 45,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	240	TON	\$ 115.00	\$ 27,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	400	LF	\$ 50.00	\$ 20,000.00
SP		EROSION CONTROL	1	LS	\$ 63,000.00	\$ 63,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 47,000.00	\$ 47,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	640	LF	\$ 1,500.00	\$ 960,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	32	EA	\$ 500.00	\$ 16,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 8	1	LS	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	5	EA	\$ 15,000.00	\$ 75,000.00

SUBTOTAL \$1,442,550.00

CONTINGENCY @ 35% \$504,892.50

CONSTRUCTION COST SAY \$1,948,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 9						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3920	SY	\$ 4.00	\$ 15,680.00
520	1121000000-E	AGGREGATE BASE COURSE	1460	TON	\$ 50.00	\$ 73,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	400	TON	\$ 115.00	\$ 46,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 81,000.00	\$ 81,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 77,000.00	\$ 77,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 9	1	LS	\$ 85,000.00	\$ 85,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00

SUBTOTAL \$501,930.00

CONTINGENCY @ 35% \$175,675.50

CONSTRUCTION COST SAY \$678,000

Notes:

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Prepared By: xxx Date: 7/26/2021
Checked By: xxx Date: 7/26/2021
McAdams Project No: XXX

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 10A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 80,000.00	\$ 80,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 50,000.00	\$ 50,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	7780	SY	\$ 4.00	\$ 31,120.00
520	1121000000-E	AGGREGATE BASE COURSE	2890	TON	\$ 50.00	\$ 144,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	800	TON	\$ 115.00	\$ 92,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	50	TON	\$ 650.00	\$ 32,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4350	LF	\$ 50.00	\$ 217,500.00
848	2605000000-N	CONCRETE CURB RAMPS	18	EA	\$ 3,000.00	\$ 54,000.00
SP		EROSION CONTROL	1	LS	\$ 160,000.00	\$ 160,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 304,000.00	\$ 304,000.00
SP		BOLLARD, PERMANENT	54	EA	\$ 500.00	\$ 27,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 10A	1	LS	\$ 190,000.00	\$ 190,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	7	EA	\$ 15,000.00	\$ 105,000.00

SUBTOTAL \$1,687,620.00

CONTINGENCY @ 35% \$590,667.00

CONSTRUCTION COST SAY \$2,279,000

Notes:

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- Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.
- Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 10B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 115,000.00	\$ 115,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 70,000.00	\$ 70,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5590	SY	\$ 4.00	\$ 22,360.00
520	1121000000-E	AGGREGATE BASE COURSE	2080	TON	\$ 50.00	\$ 104,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	570	TON	\$ 115.00	\$ 65,550.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMPS	10	EA	\$ 3,000.00	\$ 30,000.00
SP		EROSION CONTROL	1	LS	\$ 138,000.00	\$ 138,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 40,000.00	\$ 40,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	920	LF	\$ 1,500.00	\$ 1,380,000.00
SP		METAL SAFETY RAIL	200	LF	\$ 100.00	\$ 20,000.00
SP		BOLLARD, PERMANENT	36	EA	\$ 500.00	\$ 18,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 10B	1	LS	\$ 160,000.00	\$ 160,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00
SP		STRUCTURE REMOVAL	180	SF	\$ 28.70	\$ 5,166.00

SUBTOTAL \$2,424,826.00

CONTINGENCY @ 35% \$848,689.10

CONSTRUCTION COST SAY \$3,274,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 11						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2300	SY	\$ 4.00	\$ 9,200.00
520	1121000000-E	AGGREGATE BASE COURSE	900	TON	\$ 50.00	\$ 45,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	240	TON	\$ 115.00	\$ 27,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	850	LF	\$ 50.00	\$ 42,500.00
848	2605000000-N	CONCRETE CURB RAMPS	5	EA	\$ 3,000.00	\$ 15,000.00
SP		EROSION CONTROL	1	LS	\$ 48,000.00	\$ 48,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 90,000.00	\$ 90,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, CONNECTION 11	1	LS	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$609,550.00

CONTINGENCY @ 35% \$213,342.50

CONSTRUCTION COST SAY \$823,000

Notes:

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- Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079



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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 12						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2530	SY	\$ 4.00	\$ 10,120.00
520	1121000000-E	AGGREGATE BASE COURSE	980	TON	\$ 50.00	\$ 49,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	260	TON	\$ 115.00	\$ 29,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 53,000.00	\$ 53,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 16,000.00	\$ 16,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	40	LF	\$ 1,500.00	\$ 60,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 12	1	LS	\$ 50,000.00	\$ 50,000.00

SUBTOTAL \$319,020.00

CONTINGENCY @ 35% \$111,657.00

CONSTRUCTION COST SAY \$431,000

- Notes:
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 7. Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Recommended Route 1						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 1,045,200.00	\$ 1,045,200.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 627,100.00	\$ 627,100.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	75080	SY	\$ 4.00	\$ 300,320.00
520	1121000000-E	AGGREGATE BASE COURSE	26400	TON	\$ 50.00	\$ 1,320,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	8030	TON	\$ 115.00	\$ 923,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	485	TON	\$ 650.00	\$ 315,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	24815	LF	\$ 50.00	\$ 1,240,750.00
848	2605000000-N	CONCRETE CURB RAMPS	132	EA	\$ 3,000.00	\$ 396,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	14	EA	\$ 4,000.00	\$ 56,000.00
SP		EROSION CONTROL	1	LS	\$ 1,709,000.00	\$ 1,709,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 1,825,000.00	\$ 1,825,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	5500	LF	\$ 1,500.00	\$ 8,250,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	5290	SY	\$ 100.00	\$ 529,000.00
SP		METAL SAFETY RAIL	3180	LF	\$ 100.00	\$ 318,000.00
SP		BOLLARD, PERMANENT	361	EA	\$ 500.00	\$ 180,500.00
SP		BOLLARD, COLLAPSIBLE	39	EA	\$ 1,000.00	\$ 39,000.00
SP		COMPREHENSIVE GRADING, RECOMMENDED ROUTE 1	1	LS	\$ 2,130,000.00	\$ 2,130,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	7	EA	\$ 50,000.00	\$ 350,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	37	EA	\$ 15,000.00	\$ 555,000.00
SP		STRUCTURE REMOVAL	11000	SF	\$ 28.70	\$ 315,700.00

SUBTOTAL \$22,575,270.00

CONTINGENCY @ 35% \$7,901,344.50

CONSTRUCTION COST SAY \$30,477,000

- Notes:
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 8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079



Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Recommended Route 2						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 940,000.00	\$ 940,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 565,000.00	\$ 565,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	102070	SY	\$ 4.00	\$ 408,280.00
520	1121000000-E	AGGREGATE BASE COURSE	35800	TON	\$ 50.00	\$ 1,790,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	10510	TON	\$ 115.00	\$ 1,208,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	635	TON	\$ 650.00	\$ 412,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	38375	LF	\$ 50.00	\$ 1,918,750.00
848	2605000000-N	CONCRETE CURB RAMPS	135	EA	\$ 3,000.00	\$ 405,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	3	EA	\$ 4,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 1,925,000.00	\$ 1,925,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 2,663,000.00	\$ 2,663,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	2780	LF	\$ 1,500.00	\$ 4,170,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1860	SY	\$ 100.00	\$ 186,000.00
SP		METAL SAFETY RAIL	1810	LF	\$ 100.00	\$ 181,000.00
SP		BOLLARD, PERMANENT	368	EA	\$ 500.00	\$ 184,000.00
SP		BOLLARD, COLLAPSIBLE	30	EA	\$ 1,000.00	\$ 30,000.00
SP		COMPREHENSIVE GRADING, RECOMMENDED ROUTE 2	1	LS	\$ 2,255,000.00	\$ 2,255,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	7	EA	\$ 50,000.00	\$ 350,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	41	EA	\$ 15,000.00	\$ 615,000.00

SUBTOTAL \$20,219,430.00

CONTINGENCY @ 30% \$6,065,829.00

CONSTRUCTION COST SAY \$26,286,000

Notes:

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NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Recommended Route 3						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 1,170,000.00	\$ 1,170,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 705,000.00	\$ 705,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	88440	SY	\$ 4.00	\$ 353,760.00
520	1121000000-E	AGGREGATE BASE COURSE	31000	TON	\$ 50.00	\$ 1,550,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5B	9400	TON	\$ 115.00	\$ 1,081,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	565	TON	\$ 650.00	\$ 367,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	43175	LF	\$ 50.00	\$ 2,158,750.00
848	2605000000-N	CONCRETE CURB RAMPS	144	EA	\$ 3,000.00	\$ 432,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	34	EA	\$ 4,000.00	\$ 136,000.00
SP		EROSION CONTROL	1	LS	\$ 2,017,000.00	\$ 2,017,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 3,278,000.00	\$ 3,278,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	4860	LF	\$ 1,500.00	\$ 7,290,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	7990	SY	\$ 100.00	\$ 799,000.00
SP		METAL SAFETY RAIL	1200	LF	\$ 100.00	\$ 120,000.00
SP		BOLLARD, PERMANENT	431	EA	\$ 500.00	\$ 215,500.00
SP		BOLLARD, COLLAPSIBLE	27	EA	\$ 1,000.00	\$ 27,000.00
SP		COMPREHENSIVE GRADING, RECOMMENDED ROUTE 3	1	LS	\$ 1,965,000.00	\$ 1,965,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	10	EA	\$ 50,000.00	\$ 500,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	35	EA	\$ 15,000.00	\$ 525,000.00
SP		STRUCTURE REMOVAL	14900	SF	\$ 28.70	\$ 427,630.00

SUBTOTAL \$25,267,890.00

CONTINGENCY @ 35% \$8,843,761.50

CONSTRUCTION COST SAY \$34,112,000

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079



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McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 65,000.00	\$ 65,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4920	SY	\$ 4.00	\$ 19,680.00
520	1121000000-E	AGGREGATE BASE COURSE	1810	TON	\$ 50.00	\$ 90,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	510	TON	\$ 115.00	\$ 58,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4550	LF	\$ 50.00	\$ 227,500.00
848	2605000000-N	CONCRETE CURB RAMPS	20	EA	\$ 3,000.00	\$ 60,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	2	EA	\$ 4,000.00	\$ 8,000.00
SP		EROSION CONTROL	1	LS	\$ 114,000.00	\$ 114,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 218,000.00	\$ 218,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	770	SY	\$ 100.00	\$ 77,000.00
SP		METAL SAFETY RAIL	1100	LF	\$ 100.00	\$ 110,000.00
SP		BOLLARD, PERMANENT	66	EA	\$ 500.00	\$ 33,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 1A	1	LS	\$ 120,000.00	\$ 120,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$1,329,080.00

CONTINGENCY @ 35% \$465,178.00

CONSTRUCTION COST SAY \$1,795,000

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 7. Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.
 8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 65,000.00	\$ 65,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4920	SY	\$ 4.00	\$ 19,680.00
520	1121000000-E	AGGREGATE BASE COURSE	1810	TON	\$ 50.00	\$ 90,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	510	TON	\$ 115.00	\$ 58,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4550	LF	\$ 50.00	\$ 227,500.00
848	2605000000-N	CONCRETE CURB RAMPS	20	EA	\$ 3,000.00	\$ 60,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	2	EA	\$ 4,000.00	\$ 8,000.00
SP		EROSION CONTROL	1	LS	\$ 114,000.00	\$ 114,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 218,000.00	\$ 218,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	770	SY	\$ 100.00	\$ 77,000.00
SP		METAL SAFETY RAIL	1100	LF	\$ 100.00	\$ 110,000.00
SP		BOLLARD, PERMANENT	66	EA	\$ 500.00	\$ 33,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 1A	1	LS	\$ 120,000.00	\$ 120,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$1,329,080.00

CONTINGENCY @ 35% \$465,178.00

CONSTRUCTION COST SAY \$1,795,000

- Notes:
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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079



Prepared By: xxx Date: 7/26/2021
 Checked By: xxx Date: 7/26/2021
 McAdams Project No: XXX

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 45,000.00	\$ 45,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4400	SY	\$ 4.00	\$ 17,600.00
520	1121000000-E	AGGREGATE BASE COURSE	1620	TON	\$ 50.00	\$ 81,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	460	TON	\$ 115.00	\$ 52,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	800	LF	\$ 50.00	\$ 40,000.00
		DRAINAGE	1	LS	\$ -	\$ -
SP		EROSION CONTROL	1	LS	\$ 118,000.00	\$ 118,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 113,000.00	\$ 113,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	980	SY	\$ 100.00	\$ 98,000.00
SP		BOLLARD, PERMANENT	81	EA	\$ 500.00	\$ 40,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 1B	1	LS	\$ 110,000.00	\$ 110,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	5	EA	\$ 15,000.00	\$ 75,000.00

SUBTOTAL \$940,500.00

CONTINGENCY @ 35% \$329,175.00

CONSTRUCTION COST SAY \$1,270,000

Notes:

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8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 65,000.00	\$ 65,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6830	SY	\$ 4.00	\$ 27,320.00
520	1121000000-E	AGGREGATE BASE COURSE	2520	TON	\$ 50.00	\$ 126,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	710	TON	\$ 115.00	\$ 81,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	5050	LF	\$ 50.00	\$ 252,500.00
		DRAINAGE	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	1	LS	\$ 127,000.00	\$ 127,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 242,000.00	\$ 242,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	220	SY	\$ 100.00	\$ 22,000.00
SP		METAL SAFETY RAIL	700	LF	\$ 100.00	\$ 70,000.00
SP		BOLLARD, PERMANENT	30	EA	\$ 500.00	\$ 15,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 1C	1	LS	\$ 130,000.00	\$ 130,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$1,312,720.00

CONTINGENCY @ 35% \$459,452.00

CONSTRUCTION COST SAY \$1,773,000

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 55,000.00	\$ 55,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 35,000.00	\$ 35,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6520	SY	\$ 4.00	\$ 26,080.00
520	1121000000-E	AGGREGATE BASE COURSE	2400	TON	\$ 50.00	\$ 120,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	680	TON	\$ 115.00	\$ 78,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1600	LF	\$ 50.00	\$ 80,000.00
848	2605000000-N	CONCRETE CURB RAMPS	14	EA	\$ 3,000.00	\$ 42,000.00
SP		EROSION CONTROL	1	LS	\$ 124,000.00	\$ 124,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 236,000.00	\$ 236,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	290	SY	\$ 100.00	\$ 29,000.00
SP		BOLLARD, PERMANENT	45	EA	\$ 500.00	\$ 22,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 1D	1	LS	\$ 125,000.00	\$ 125,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	6	EA	\$ 15,000.00	\$ 90,000.00

SUBTOTAL \$1,142,030.00

CONTINGENCY @ 35% \$399,710.50

CONSTRUCTION COST SAY \$1,542,000

Notes:

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8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 120,000.00	\$ 120,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	210	SY	\$ 4.00	\$ 840.00
520	1121000000-E	AGGREGATE BASE COURSE	90	TON	\$ 50.00	\$ 4,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	30	TON	\$ 115.00	\$ 3,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
848	2605000000-N	CONCRETE CURB RAMPS	24	EA	\$ 3,000.00	\$ 72,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	24	EA	\$ 4,000.00	\$ 96,000.00
SP		EROSION CONTROL	1	LS	\$ 168,000.00	\$ 168,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 321,000.00	\$ 321,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	650	LF	\$ 1,500.00	\$ 975,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	3950	SY	\$ 100.00	\$ 395,000.00
SP		BOLLARD, PERMANENT	70	EA	\$ 500.00	\$ 35,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 3A	1	LS	\$ 100,000.00	\$ 100,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00
SP		STRUCTURE REMOVAL	3900	SF	\$ 28.70	\$ 111,930.00

SUBTOTAL \$2,575,970.00

CONTINGENCY @ 35% \$901,589.50

CONSTRUCTION COST SAY \$3,478,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079



Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 20,000.00	\$ 20,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2640	SY	\$ 4.00	\$ 10,560.00
520	1121000000-E	AGGREGATE BASE COURSE	1020	TON	\$ 50.00	\$ 51,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	280	TON	\$ 115.00	\$ 32,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMPS	7	EA	\$ 3,000.00	\$ 21,000.00
SP		EROSION CONTROL	1	LS	\$ 48,000.00	\$ 48,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 46,000.00	\$ 46,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	70	SY	\$ 100.00	\$ 7,000.00
SP		BOLLARD, PERMANENT	20	EA	\$ 500.00	\$ 10,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 3B	1	LS	\$ 60,000.00	\$ 60,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$343,760.00

CONTINGENCY @ 35% \$120,316.00

CONSTRUCTION COST SAY \$465,000

Notes:

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NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 45,000.00	\$ 45,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	9300	SY	\$ 4.00	\$ 37,200.00
520	1121000000-E	AGGREGATE BASE COURSE	3430	TON	\$ 50.00	\$ 171,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	960	TON	\$ 115.00	\$ 110,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	60	TON	\$ 650.00	\$ 39,000.00
848	2605000000-N	CONCRETE CURB RAMPS	10	EA	\$ 3,000.00	\$ 30,000.00
SP		EROSION CONTROL	1	LS	\$ 161,000.00	\$ 161,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 19,000.00	\$ 19,000.00
SP		BOLLARD, PERMANENT	20	EA	\$ 500.00	\$ 10,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 3C	1	LS	\$ 240,000.00	\$ 240,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$938,100.00

CONTINGENCY @ 35% \$328,335.00

CONSTRUCTION COST SAY \$1,267,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 130,000.00	\$ 130,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 80,000.00	\$ 80,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	10670	SY	\$ 4.00	\$ 42,680.00
520	1121000000-E	AGGREGATE BASE COURSE	3940	TON	\$ 50.00	\$ 197,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1100	TON	\$ 115.00	\$ 126,500.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	70	TON	\$ 650.00	\$ 45,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	3500	LF	\$ 50.00	\$ 175,000.00
848	2605000000-N	CONCRETE CURB RAMPS	12	EA	\$ 3,000.00	\$ 36,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	2	EA	\$ 4,000.00	\$ 8,000.00
SP		EROSION CONTROL	1	LS	\$ 216,000.00	\$ 216,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 182,000.00	\$ 182,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	120	LF	\$ 3,500.00	\$ 420,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	530	LF	\$ 1,500.00	\$ 795,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	90	SY	\$ 100.00	\$ 9,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	44	EA	\$ 500.00	\$ 22,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 3D	1	LS	\$ 230,000.00	\$ 230,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$2,769,680.00

CONTINGENCY @ 35% \$969,388.00

CONSTRUCTION COST SAY \$3,740,000

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	50	SY	\$ 4.00	\$ 200.00
520	1121000000-E	AGGREGATE BASE COURSE	20	TON	\$ 50.00	\$ 1,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	10	TON	\$ 115.00	\$ 1,150.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	50	LF	\$ 50.00	\$ 2,500.00
848	2605000000-N	CONCRETE CURB RAMPS	1	EA	\$ 3,000.00	\$ 3,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	3	EA	\$ 4,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 82,000.00	\$ 82,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 78,000.00	\$ 78,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1790	SY	\$ 100.00	\$ 179,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 3E	1	LS	\$ 45,000.00	\$ 45,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$484,600.00

CONTINGENCY @ 35% \$169,610.00

CONSTRUCTION COST SAY \$655,000

Notes:

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 80,000.00	\$ 80,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 50,000.00	\$ 50,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6260	SY	\$ 4.00	\$ 25,040.00
520	1121000000-E	AGGREGATE BASE COURSE	2310	TON	\$ 50.00	\$ 115,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	650	TON	\$ 115.00	\$ 74,750.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	40	TON	\$ 650.00	\$ 26,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	650	LF	\$ 50.00	\$ 32,500.00
848	2605000000-N	CONCRETE CURB RAMPS	7	EA	\$ 3,000.00	\$ 21,000.00
SP		EROSION CONTROL	1	LS	\$ 127,000.00	\$ 127,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 242,000.00	\$ 242,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	430	LF	\$ 1,500.00	\$ 645,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	200	SY	\$ 100.00	\$ 20,000.00
SP		BOLLARD, PERMANENT	21	EA	\$ 500.00	\$ 10,500.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4A	1	LS	\$ 125,000.00	\$ 125,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$1,641,290.00

CONTINGENCY @ 35% \$574,451.50

CONSTRUCTION COST SAY \$2,216,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 75,000.00	\$ 75,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 45,000.00	\$ 45,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4940	SY	\$ 4.00	\$ 19,760.00
520	1121000000-E	AGGREGATE BASE COURSE	1820	TON	\$ 50.00	\$ 91,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	510	TON	\$ 115.00	\$ 58,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	3150	LF	\$ 50.00	\$ 157,500.00
848	2605000000-N	CONCRETE CURB RAMPS	5	EA	\$ 3,000.00	\$ 15,000.00
SP		EROSION CONTROL	1	LS	\$ 96,000.00	\$ 96,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 183,000.00	\$ 183,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	420	LF	\$ 1,500.00	\$ 630,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 4B	1	LS	\$ 95,000.00	\$ 95,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$1,526,160.00

CONTINGENCY @ 35% \$534,156.00

CONSTRUCTION COST SAY \$2,061,000

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 150,000.00	\$ 150,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 90,000.00	\$ 90,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	8560	SY	\$ 4.00	\$ 34,240.00
520	1121000000-E	AGGREGATE BASE COURSE	3150	TON	\$ 50.00	\$ 157,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	890	TON	\$ 115.00	\$ 102,350.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	55	TON	\$ 650.00	\$ 35,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	700	LF	\$ 50.00	\$ 35,000.00
SP		EROSION CONTROL	1	LS	\$ 188,000.00	\$ 188,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 32,000.00	\$ 32,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1350	LF	\$ 1,500.00	\$ 2,025,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	160	SY	\$ 100.00	\$ 16,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4C	1	LS	\$ 235,000.00	\$ 235,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00

SUBTOTAL \$3,235,840.00

CONTINGENCY @ 35% \$1,132,544.00

CONSTRUCTION COST SAY \$4,369,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 45,000.00	\$ 45,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2590	SY	\$ 4.00	\$ 10,360.00
520	1121000000-E	AGGREGATE BASE COURSE	1000	TON	\$ 50.00	\$ 50,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	270	TON	\$ 115.00	\$ 31,050.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1000	LF	\$ 50.00	\$ 50,000.00
848	2605000000-N	CONCRETE CURB RAMP	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 58,000.00	\$ 58,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 110,000.00	\$ 110,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	240	LF	\$ 1,500.00	\$ 360,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	190	SY	\$ 100.00	\$ 19,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4D	1	LS	\$ 60,000.00	\$ 60,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00

SUBTOTAL \$910,410.00

CONTINGENCY @ 35% \$318,643.50

CONSTRUCTION COST SAY \$1,230,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 20,000.00	\$ 20,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2520	SY	\$ 4.00	\$ 10,080.00
520	1121000000-E	AGGREGATE BASE COURSE	980	TON	\$ 50.00	\$ 49,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	260	TON	\$ 115.00	\$ 29,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMPS	5	EA	\$ 3,000.00	\$ 15,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 47,000.00	\$ 47,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 42,000.00	\$ 42,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	80	SY	\$ 100.00	\$ 8,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4E	1	LS	\$ 70,000.00	\$ 70,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$345,980.00

CONTINGENCY @ 35% \$121,093.00

CONSTRUCTION COST SAY \$468,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4F						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3640	SY	\$ 4.00	\$ 14,560.00
520	1121000000-E	AGGREGATE BASE COURSE	1340	TON	\$ 50.00	\$ 67,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	380	TON	\$ 115.00	\$ 43,700.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2200	LF	\$ 50.00	\$ 110,000.00
848	2605000000-N	CONCRETE CURB RAMPS	3	EA	\$ 3,000.00	\$ 9,000.00
SP		EROSION CONTROL	1	LS	\$ 63,000.00	\$ 63,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 121,000.00	\$ 121,000.00
SP		BOLLARD, PERMANENT	9	EA	\$ 500.00	\$ 4,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 4F	1	LS	\$ 80,000.00	\$ 80,000.00

SUBTOTAL \$579,010.00

CONTINGENCY @ 35% \$202,653.50

CONSTRUCTION COST SAY \$782,000

Notes:

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McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4G						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 125,000.00	\$ 125,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	8040	SY	\$ 4.00	\$ 32,160.00
520	1121000000-E	AGGREGATE BASE COURSE	2960	TON	\$ 50.00	\$ 148,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	830	TON	\$ 115.00	\$ 95,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	50	TON	\$ 650.00	\$ 32,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4300	LF	\$ 50.00	\$ 215,000.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 158,000.00	\$ 158,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 254,000.00	\$ 254,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	760	LF	\$ 1,500.00	\$ 1,140,000.00
SP		METAL SAFETY RAIL	160	LF	\$ 100.00	\$ 16,000.00
SP		BOLLARD, PERMANENT	18	EA	\$ 500.00	\$ 9,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4G	1	LS	\$ 240,000.00	\$ 240,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$2,607,110.00

CONTINGENCY @ 35% \$912,488.50

CONSTRUCTION COST SAY \$3,520,000

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4H						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 50,000.00	\$ 50,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4990	SY	\$ 4.00	\$ 19,960.00
520	1121000000-E	AGGREGATE BASE COURSE	1840	TON	\$ 50.00	\$ 92,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	520	TON	\$ 115.00	\$ 59,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMPS	1	EA	\$ 3,000.00	\$ 3,000.00
SP		EROSION CONTROL	1	LS	\$ 96,000.00	\$ 96,000.00
SP		TRAFFIC CONTROL	1	LS	\$	\$
SP		TIMBER PILE CONCRETE BOARDWALK	370	LF	\$ 1,500.00	\$ 555,000.00
SP		BOLLARD, PERMANENT	4	EA	\$ 500.00	\$ 2,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4H	1	LS	\$ 130,000.00	\$ 130,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$1,077,510.00

CONTINGENCY @ 35% \$377,128.50

CONSTRUCTION COST SAY \$1,455,000

Notes:

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4I						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	440	SY	\$ 4.00	\$ 1,760.00
520	1121000000-E	AGGREGATE BASE COURSE	170	TON	\$ 50.00	\$ 8,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	50	TON	\$ 115.00	\$ 5,750.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
SP		EROSION CONTROL	1	LS	\$ 85,000.00	\$ 85,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 161,000.00	\$ 161,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1710	SY	\$ 100.00	\$ 171,000.00
SP		BOLLARD, PERMANENT	24	EA	\$ 500.00	\$ 12,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4I	1	LS	\$ 45,000.00	\$ 45,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

SUBTOTAL \$603,260.00

CONTINGENCY @ 35% \$211,141.00

CONSTRUCTION COST SAY \$815,000

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 65,000.00	\$ 65,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6200	SY	\$ 4.00	\$ 24,800.00
520	1121000000-E	AGGREGATE BASE COURSE	2290	TON	\$ 50.00	\$ 114,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	640	TON	\$ 115.00	\$ 73,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	40	TON	\$ 650.00	\$ 26,000.00
848	2605000000-N	CONCRETE CURB RAMPS	7	EA	\$ 3,000.00	\$ 21,000.00
SP		EROSION CONTROL	1	LS	\$ 117,000.00	\$ 117,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 162,000.00	\$ 162,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	300	LF	\$ 1,500.00	\$ 450,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	60	SY	\$ 100.00	\$ 6,000.00
SP		METAL SAFETY RAIL	120	LF	\$ 100.00	\$ 12,000.00
SP		BOLLARD, PERMANENT	26	EA	\$ 500.00	\$ 13,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5A	1	LS	\$ 205,000.00	\$ 205,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$1,378,900.00

CONTINGENCY @ 35% \$482,615.00

CONSTRUCTION COST SAY \$1,862,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 90,000.00	\$ 90,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 55,000.00	\$ 55,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6910	SY	\$ 4.00	\$ 27,640.00
520	1121000000-E	AGGREGATE BASE COURSE	2550	TON	\$ 50.00	\$ 127,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	720	TON	\$ 115.00	\$ 82,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 134,000.00	\$ 134,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 551,000.00	\$ 551,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	350	LF	\$ 1,500.00	\$ 525,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	130	SY	\$ 100.00	\$ 13,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	6	EA	\$ 1,000.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5B	1	LS	\$ 160,000.00	\$ 160,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$1,899,190.00

CONTINGENCY @ 35% \$664,716.50

CONSTRUCTION COST SAY \$2,564,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 60,000.00	\$ 60,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 40,000.00	\$ 40,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	7740	SY	\$ 4.00	\$ 30,960.00
520	1121000000-E	AGGREGATE BASE COURSE	2850	TON	\$ 50.00	\$ 142,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	800	TON	\$ 115.00	\$ 92,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	50	TON	\$ 650.00	\$ 32,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 138,000.00	\$ 138,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 105,000.00	\$ 105,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	170	LF	\$ 1,500.00	\$ 255,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	6	EA	\$ 1,000.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5C	1	LS	\$ 335,000.00	\$ 335,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$1,284,960.00

CONTINGENCY @ 35% \$449,736.00

CONSTRUCTION COST SAY \$1,735,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2100	LF	\$ 50.00	\$ 105,000.00
848	2605000000-N	CONCRETE CURB RAMP	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 51,000.00	\$ 51,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 98,000.00	\$ 98,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1140	SY	\$ 100.00	\$ 114,000.00
SP		BOLLARD, PERMANENT	4	EA	\$ 500.00	\$ 2,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5D	1	LS	\$ 20,000.00	\$ 20,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$453,000.00

CONTINGENCY @ 35% \$158,550.00

CONSTRUCTION COST SAY \$612,000

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NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 35,000.00	\$ 35,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 25,000.00	\$ 25,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4410	SY	\$ 4.00	\$ 17,640.00
520	1121000000-E	AGGREGATE BASE COURSE	1630	TON	\$ 50.00	\$ 81,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	460	TON	\$ 115.00	\$ 52,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	3100	LF	\$ 50.00	\$ 155,000.00
848	2605000000-N	CONCRETE CURB RAMP	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 77,000.00	\$ 77,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 146,000.00	\$ 146,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5E	1	LS	\$ 80,000.00	\$ 80,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$728,540.00

CONTINGENCY @ 35% \$254,989.00

CONSTRUCTION COST SAY \$984,000

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5F						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 115,000.00	\$ 115,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 70,000.00	\$ 70,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	7680	SY	\$ 4.00	\$ 30,720.00
520	1121000000-E	AGGREGATE BASE COURSE	2830	TON	\$ 50.00	\$ 141,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	790	TON	\$ 115.00	\$ 90,850.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	50	TON	\$ 650.00	\$ 32,500.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 146,000.00	\$ 146,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 832,000.00	\$ 832,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	500	LF	\$ 1,500.00	\$ 750,000.00
SP		METAL SAFETY RAIL	160	LF	\$ 100.00	\$ 16,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	6	EA	\$ 1,000.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5F	1	LS	\$ 160,000.00	\$ 160,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

SUBTOTAL \$2,459,570.00

CONTINGENCY @ 35% \$860,849.50

CONSTRUCTION COST SAY \$3,321,000

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5G						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 45,000.00	\$ 45,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3880	SY	\$ 4.00	\$ 15,520.00
520	1121000000-E	AGGREGATE BASE COURSE	1430	TON	\$ 50.00	\$ 71,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	400	TON	\$ 115.00	\$ 46,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
SP		EROSION CONTROL	1	LS	\$ 73,000.00	\$ 73,000.00
SP		TRAFFIC CONTROL	1	LS	\$ -	\$ -
SP		TIMBER PILE CONCRETE BOARDWALK	240	LF	\$ 1,500.00	\$ 360,000.00
SP		METAL SAFETY RAIL	80	LF	\$ 100.00	\$ 8,000.00
SP		BOLLARD, PERMANENT	4	EA	\$ 500.00	\$ 2,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5G	1	LS	\$ 255,000.00	\$ 255,000.00

SUBTOTAL \$924,270.00

CONTINGENCY @ 35% \$323,494.50

CONSTRUCTION COST SAY \$1,248,000

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5H						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 80,000.00	\$ 80,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 50,000.00	\$ 50,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2050	SY	\$ 4.00	\$ 8,200.00
520	1121000000-E	AGGREGATE BASE COURSE	800	TON	\$ 50.00	\$ 40,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	220	TON	\$ 115.00	\$ 25,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 54,000.00	\$ 54,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 28,000.00	\$ 28,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	110	LF	\$ 3,500.00	\$ 385,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	630	LF	\$ 1,500.00	\$ 945,000.00
SP		METAL SAFETY RAIL	80	LF	\$ 100.00	\$ 8,000.00
SP		BOLLARD, PERMANENT	8	EA	\$ 500.00	\$ 4,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5H	1	LS	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL **\$1,712,250.00**

CONTINGENCY @ 35% **\$599,287.50**

CONSTRUCTION COST SAY **\$2,312,000**

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5I						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 120,000.00	\$ 120,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	9780	SY	\$ 4.00	\$ 39,120.00
520	1121000000-E	AGGREGATE BASE COURSE	3600	TON	\$ 50.00	\$ 180,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1010	TON	\$ 115.00	\$ 116,150.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	65	TON	\$ 650.00	\$ 42,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	150	LF	\$ 50.00	\$ 7,500.00
848	2605000000-N	CONCRETE CURB RAMPS	12	EA	\$ 3,000.00	\$ 36,000.00
SP		EROSION CONTROL	1	LS	\$ 221,000.00	\$ 221,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 184,000.00	\$ 184,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	710	LF	\$ 1,500.00	\$ 1,065,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	770	SY	\$ 100.00	\$ 77,000.00
SP		METAL SAFETY RAIL	80	LF	\$ 100.00	\$ 8,000.00
SP		BOLLARD, PERMANENT	28	EA	\$ 500.00	\$ 14,000.00
SP		BOLLARD, COLLAPSIBLE	14	EA	\$ 1,000.00	\$ 14,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5I	1	LS	\$ 245,000.00	\$ 245,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	5	EA	\$ 15,000.00	\$ 75,000.00

SUBTOTAL **\$2,569,020.00**

CONTINGENCY @ 35% **\$899,157.00**

CONSTRUCTION COST SAY **\$3,469,000**

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5J						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 90,000.00	\$ 90,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 55,000.00	\$ 55,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6120	SY	\$ 4.00	\$ 24,480.00
520	1121000000-E	AGGREGATE BASE COURSE	2250	TON	\$ 50.00	\$ 112,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	630	TON	\$ 115.00	\$ 72,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	40	TON	\$ 650.00	\$ 26,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	150	LF	\$ 50.00	\$ 7,500.00
848	2605000000-N	CONCRETE CURB RAMP	12	EA	\$ 3,000.00	\$ 36,000.00
SP		EROSION CONTROL	1	LS	\$ 122,000.00	\$ 122,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 83,000.00	\$ 83,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	630	LF	\$ 1,500.00	\$ 945,000.00
SP		METAL SAFETY RAIL	80	LF	\$ 100.00	\$ 8,000.00
SP		BOLLARD, PERMANENT	28	EA	\$ 500.00	\$ 14,000.00
SP		BOLLARD, COLLAPSIBLE	14	EA	\$ 1,000.00	\$ 14,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5J	1	LS	\$ 135,000.00	\$ 135,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	5	EA	\$ 15,000.00	\$ 75,000.00

SUBTOTAL \$1,869,930.00

CONTINGENCY @ 35% \$654,475.50

CONSTRUCTION COST SAY \$2,525,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5K						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2620	SY	\$ 4.00	\$ 10,480.00
520	1121000000-E	AGGREGATE BASE COURSE	1010	TON	\$ 50.00	\$ 50,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	270	TON	\$ 115.00	\$ 31,050.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMP	1	EA	\$ 3,000.00	\$ 3,000.00
SP		EROSION CONTROL	1	LS	\$ 46,000.00	\$ 46,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 44,000.00	\$ 44,000.00
SP		BOLLARD, PERMANENT	2	EA	\$ 500.00	\$ 1,000.00
SP		BOLLARD, COLLAPSIBLE	1	EA	\$ 1,000.00	\$ 1,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5K	1	LS	\$ 90,000.00	\$ 90,000.00

SUBTOTAL \$315,030.00

CONTINGENCY @ 35% \$110,260.50

CONSTRUCTION COST SAY \$426,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5L						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 55,000.00	\$ 55,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 35,000.00	\$ 35,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3100	SY	\$ 4.00	\$ 12,400.00
520	1121000000-E	AGGREGATE BASE COURSE	1140	TON	\$ 50.00	\$ 57,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	320	TON	\$ 115.00	\$ 36,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	800	LF	\$ 50.00	\$ 40,000.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 264,000.00	\$ 264,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	230	LF	\$ 1,500.00	\$ 345,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	6	EA	\$ 1,000.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 5L	1	LS	\$ 75,000.00	\$ 75,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL **\$1,103,200.00**

CONTINGENCY @ 35% **\$386,120.00**

CONSTRUCTION COST SAY **\$1,490,000**

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 6A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 40,000.00	\$ 40,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 25,000.00	\$ 25,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6460	SY	\$ 4.00	\$ 25,840.00
520	1121000000-E	AGGREGATE BASE COURSE	2380	TON	\$ 50.00	\$ 119,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	670	TON	\$ 115.00	\$ 77,050.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	650	LF	\$ 50.00	\$ 32,500.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 112,000.00	\$ 112,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 214,000.00	\$ 214,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 6A	1	LS	\$ 135,000.00	\$ 135,000.00

SUBTOTAL **\$818,640.00**

CONTINGENCY @ 35% **\$286,524.00**

CONSTRUCTION COST SAY **\$1,106,000**

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 6B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3960	SY	\$ 4.00	\$ 15,840.00
520	1121000000-E	AGGREGATE BASE COURSE	1460	TON	\$ 50.00	\$ 73,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	410	TON	\$ 115.00	\$ 47,150.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	250	LF	\$ 50.00	\$ 12,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 69,000.00	\$ 69,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 131,000.00	\$ 131,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 6B	1	LS	\$ 105,000.00	\$ 105,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$552,740.00

CONTINGENCY @ 35% \$193,459.00

CONSTRUCTION COST SAY \$747,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 6C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 85,000.00	\$ 85,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 50,000.00	\$ 50,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5370	SY	\$ 4.00	\$ 21,480.00
520	1121000000-E	AGGREGATE BASE COURSE	1980	TON	\$ 50.00	\$ 99,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	560	TON	\$ 115.00	\$ 64,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMPS	1	EA	\$ 3,000.00	\$ 3,000.00
SP		EROSION CONTROL	1	LS	\$ 111,000.00	\$ 111,000.00
SP		TRAFFIC CONTROL	1	LS	\$	\$
SP		TIMBER PILE CONCRETE BOARDWALK	730	LF	\$ 1,500.00	\$ 1,095,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		BOLLARD, COLLAPSIBLE	3	EA	\$ 1,000.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 6C	1	LS	\$ 235,000.00	\$ 235,000.00

SUBTOTAL \$1,798,630.00

CONTINGENCY @ 35% \$629,520.50

CONSTRUCTION COST SAY \$2,429,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 7A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5490	SY	\$ 4.00	\$ 21,960.00
520	1121000000-E	AGGREGATE BASE COURSE	2020	TON	\$ 50.00	\$ 101,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	570	TON	\$ 115.00	\$ 65,550.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMP	1	EA	\$ 3,000.00	\$ 3,000.00
SP		EROSION CONTROL	1	LS	\$ 95,000.00	\$ 95,000.00
SP		TRAFFIC CONTROL	1	LS	\$ -	\$ -
SP		BOLLARD, PERMANENT	2	EA	\$ 500.00	\$ 1,000.00
SP		BOLLARD, COLLAPSIBLE	1	EA	\$ 1,000.00	\$ 1,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 7A	1	LS	\$ 120,000.00	\$ 120,000.00

SUBTOTAL \$471,260.00

CONTINGENCY @ 35% \$164,941.00

CONSTRUCTION COST SAY \$637,000

Notes:

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 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 7B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 160,000.00	\$ 160,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 95,000.00	\$ 95,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	13200	SY	\$ 4.00	\$ 52,800.00
520	1121000000-E	AGGREGATE BASE COURSE	4860	TON	\$ 50.00	\$ 243,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1360	TON	\$ 115.00	\$ 156,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	85	TON	\$ 650.00	\$ 55,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	700	LF	\$ 50.00	\$ 35,000.00
848	2605000000-N	CONCRETE CURB RAMP	8	EA	\$ 3,000.00	\$ 24,000.00
SP		EROSION CONTROL	1	LS	\$ 253,000.00	\$ 253,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 483,000.00	\$ 483,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	980	LF	\$ 1,500.00	\$ 1,470,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	16	EA	\$ 500.00	\$ 8,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 7B	1	LS	\$ 285,000.00	\$ 285,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

SUBTOTAL \$3,388,450.00

CONTINGENCY @ 35% \$1,185,957.50

CONSTRUCTION COST SAY \$4,575,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 7C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 135,000.00	\$ 135,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 85,000.00	\$ 85,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	13200	SY	\$ 4.00	\$ 52,800.00
520	1121000000-E	AGGREGATE BASE COURSE	4860	TON	\$ 50.00	\$ 243,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1360	TON	\$ 115.00	\$ 156,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	85	TON	\$ 650.00	\$ 55,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	700	LF	\$ 50.00	\$ 35,000.00
848	2605000000-N	CONCRETE CURB RAMPS	8	EA	\$ 3,000.00	\$ 24,000.00
SP		EROSION CONTROL	1	LS	\$ 200,000.00	\$ 200,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 91,000.00	\$ 91,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	980	LF	\$ 1,500.00	\$ 1,470,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	16	EA	\$ 500.00	\$ 8,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 7B	1	LS	\$ 285,000.00	\$ 285,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

SUBTOTAL \$2,908,450.00

CONTINGENCY @ 35% \$1,017,957.50

CONSTRUCTION COST SAY \$3,927,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 7D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 25,000.00	\$ 25,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4050	SY	\$ 4.00	\$ 16,200.00
520	1121000000-E	AGGREGATE BASE COURSE	1490	TON	\$ 50.00	\$ 74,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	420	TON	\$ 115.00	\$ 48,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 70,000.00	\$ 70,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 67,000.00	\$ 67,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 7D	1	LS	\$ 85,000.00	\$ 85,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

Item Codes & Unit Costs

SUBTOTAL \$468,500.00

CONTINGENCY @ 35% \$163,975.00

CONSTRUCTION COST SAY \$633,000

Notes:

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 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2930	SY	\$ 4.00	\$ 11,720.00
520	1121000000-E	AGGREGATE BASE COURSE	1080	TON	\$ 50.00	\$ 54,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	310	TON	\$ 115.00	\$ 35,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2050	LF	\$ 50.00	\$ 102,500.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 51,000.00	\$ 51,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 97,000.00	\$ 97,000.00
SP		BOLLARD, PERMANENT	9	EA	\$ 500.00	\$ 4,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 8A	1	LS	\$ 60,000.00	\$ 60,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

Item Codes & Unit Costs

SUBTOTAL \$554,370.00

CONTINGENCY @ 35% \$194,029.50

CONSTRUCTION COST SAY \$749,000

Notes:

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 140,000.00	\$ 140,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 85,000.00	\$ 85,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2950	SY	\$ 4.00	\$ 11,800.00
520	1121000000-E	AGGREGATE BASE COURSE	1090	TON	\$ 50.00	\$ 54,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	310	TON	\$ 115.00	\$ 35,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 89,000.00	\$ 89,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 58,000.00	\$ 58,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1490	LF	\$ 1,500.00	\$ 2,235,000.00
SP		BOLLARD, PERMANENT	14	EA	\$ 500.00	\$ 7,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8B	1	LS	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00

Item Codes & Unit Costs

SUBTOTAL \$2,988,950.00

CONTINGENCY @ 35% \$1,046,132.50

CONSTRUCTION COST SAY \$4,036,000

Notes:

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McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 150,000.00	\$ 150,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 90,000.00	\$ 90,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3160	SY	\$ 4.00	\$ 12,640.00
520	1121000000-E	AGGREGATE BASE COURSE	1170	TON	\$ 50.00	\$ 58,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	620	TON	\$ 115.00	\$ 71,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	40	TON	\$ 650.00	\$ 26,000.00
848	2605000000-N	CONCRETE CURB RAMPS	8	EA	\$ 3,000.00	\$ 24,000.00
SP		EROSION CONTROL	1	LS	\$ 120,000.00	\$ 120,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 36,000.00	\$ 36,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1370	LF	\$ 1,500.00	\$ 2,055,000.00
SP		METAL SAFETY RAIL	120	LF	\$ 100.00	\$ 12,000.00
SP		BOLLARD, PERMANENT	14	EA	\$ 500.00	\$ 7,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8C	1	LS	\$ 110,000.00	\$ 110,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00
SP		STRUCTURE REMOVAL	11000	SF	\$ 28.70	\$ 315,700.00

Item Codes & Unit Costs

SUBTOTAL \$3,170,140.00

CONTINGENCY @ 35% \$1,109,549.00

CONSTRUCTION COST SAY \$4,280,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4050	SY	\$ 4.00	\$ 16,200.00
520	1121000000-E	AGGREGATE BASE COURSE	1490	TON	\$ 50.00	\$ 74,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	420	TON	\$ 115.00	\$ 48,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2850	LF	\$ 50.00	\$ 142,500.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 71,000.00	\$ 71,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 134,000.00	\$ 134,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8D	1	LS	\$ 75,000.00	\$ 75,000.00

Item Codes & Unit Costs

SUBTOTAL \$640,000.00

CONTINGENCY @ 35% \$224,000.00

CONSTRUCTION COST SAY \$864,000

Notes:

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NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 10,000.00	\$ 10,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1090	SY	\$ 4.00	\$ 4,360.00
520	1121000000-E	AGGREGATE BASE COURSE	420	TON	\$ 50.00	\$ 21,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	120	TON	\$ 115.00	\$ 13,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	800	LF	\$ 50.00	\$ 40,000.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 19,000.00	\$ 19,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 36,000.00	\$ 36,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8E	1	LS	\$ 25,000.00	\$ 25,000.00

Item Codes & Unit Costs

SUBTOTAL \$194,660.00

CONTINGENCY @ 35% \$68,131.00

CONSTRUCTION COST SAY \$263,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 9A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 35,000.00	\$ 35,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 25,000.00	\$ 25,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4110	SY	\$ 4.00	\$ 16,440.00
520	1121000000-E	AGGREGATE BASE COURSE	1520	TON	\$ 50.00	\$ 76,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	430	TON	\$ 115.00	\$ 49,450.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1550	LF	\$ 50.00	\$ 77,500.00
848	2605000000-N	CONCRETE CURB RAMPS	8	EA	\$ 3,000.00	\$ 24,000.00
SP		EROSION CONTROL	1	LS	\$ 73,000.00	\$ 73,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 138,000.00	\$ 138,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	50	LF	\$ 1,500.00	\$ 75,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	14	EA	\$ 500.00	\$ 7,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 9A	1	LS	\$ 90,000.00	\$ 90,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	3	EA	\$ 15,000.00	\$ 45,000.00

Item Codes & Unit Costs

SUBTOTAL \$758,890.00

CONTINGENCY @ 35% \$265,611.50

CONSTRUCTION COST SAY \$1,025,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 9B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1610	SY	\$ 4.00	\$ 6,440.00
520	1121000000-E	AGGREGATE BASE COURSE	630	TON	\$ 50.00	\$ 31,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	170	TON	\$ 115.00	\$ 19,550.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1050	LF	\$ 50.00	\$ 52,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
SP		EROSION CONTROL	1	LS	\$ 28,000.00	\$ 28,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 54,000.00	\$ 54,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 9B	1	LS	\$ 25,000.00	\$ 25,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

Item Codes & Unit Costs

SUBTOTAL **\$288,740.00**

CONTINGENCY @ 35% **\$101,059.00**

CONSTRUCTION COST SAY **\$390,000**

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 - Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 9C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 55,000.00	\$ 55,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 35,000.00	\$ 35,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	6640	SY	\$ 4.00	\$ 26,560.00
520	1121000000-E	AGGREGATE BASE COURSE	2450	TON	\$ 50.00	\$ 122,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	690	TON	\$ 115.00	\$ 79,350.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	45	TON	\$ 650.00	\$ 29,250.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	3750	LF	\$ 50.00	\$ 187,500.00
848	2605000000-N	CONCRETE CURB RAMPS	8	EA	\$ 3,000.00	\$ 24,000.00
SP		EROSION CONTROL	1	LS	\$ 94,000.00	\$ 94,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 179,000.00	\$ 179,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	670	SY	\$ 100.00	\$ 67,000.00
SP		BOLLARD, PERMANENT	14	EA	\$ 500.00	\$ 7,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 9C	1	LS	\$ 85,000.00	\$ 85,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00

Item Codes & Unit Costs

SUBTOTAL **\$1,095,160.00**

CONTINGENCY @ 35% **\$383,306.00**

CONSTRUCTION COST SAY **\$1,479,000**

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 9D						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 85,000.00	\$ 85,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 55,000.00	\$ 55,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	11020	SY	\$ 4.00	\$ 44,080.00
520	1121000000-E	AGGREGATE BASE COURSE	4060	TON	\$ 50.00	\$ 203,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1140	TON	\$ 115.00	\$ 131,100.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	70	TON	\$ 650.00	\$ 45,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	7650	LF	\$ 50.00	\$ 382,500.00
848	2605000000-N	CONCRETE CURB RAMPS	22	EA	\$ 3,000.00	\$ 66,000.00
SP		EROSION CONTROL	1	LS	\$ 191,000.00	\$ 191,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 364,000.00	\$ 364,000.00
SP		BOLLARD, PERMANENT	24	EA	\$ 500.00	\$ 12,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 9D	1	LS	\$ 175,000.00	\$ 175,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

Item Codes & Unit Costs

SUBTOTAL \$1,814,180.00

CONTINGENCY @ 35% \$634,963.00

CONSTRUCTION COST SAY \$2,450,000

Notes:

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 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 9E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 20,000.00	\$ 20,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1250	SY	\$ 4.00	\$ 5,000.00
520	1121000000-E	AGGREGATE BASE COURSE	480	TON	\$ 50.00	\$ 24,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	130	TON	\$ 115.00	\$ 14,950.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	870	LF	\$ 50.00	\$ 43,500.00
848	2605000000-N	CONCRETE CURB RAMPS	3	EA	\$ 3,000.00	\$ 9,000.00
SP		EROSION CONTROL	1	LS	\$ 47,000.00	\$ 47,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 89,000.00	\$ 89,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	670	SY	\$ 100.00	\$ 67,000.00
SP		BOLLARD, PERMANENT	9	EA	\$ 500.00	\$ 4,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 9E	1	LS	\$ 30,000.00	\$ 30,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00

Item Codes & Unit Costs

SUBTOTAL \$425,450.00

CONTINGENCY @ 35% \$148,907.50

CONSTRUCTION COST SAY \$575,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 10A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 95,000.00	\$ 95,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 55,000.00	\$ 55,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	11080	SY	\$ 4.00	\$ 44,320.00
520	1121000000-E	AGGREGATE BASE COURSE	4090	TON	\$ 50.00	\$ 204,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1140	TON	\$ 115.00	\$ 131,100.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	70	TON	\$ 650.00	\$ 45,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	5150	LF	\$ 50.00	\$ 257,500.00
848	2605000000-N	CONCRETE CURB RAMP	20	EA	\$ 3,000.00	\$ 60,000.00
SP		EROSION CONTROL	1	LS	\$ 206,000.00	\$ 206,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 393,000.00	\$ 393,000.00
SP		METAL SAFETY RAIL	50	LF	\$ 100.00	\$ 5,000.00
SP		RETAINING WALL	170	SF	\$ 225.00	\$ 38,250.00
SP		BOLLARD, PERMANENT	31	EA	\$ 500.00	\$ 15,500.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 10A	1	LS	\$ 240,000.00	\$ 240,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	9	EA	\$ 15,000.00	\$ 135,000.00

Item Codes & Unit Costs

SUBTOTAL \$1,977,670.00

CONTINGENCY @ 35% \$692,184.50

CONSTRUCTION COST SAY \$2,670,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 10B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 50,000.00	\$ 50,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5530	SY	\$ 4.00	\$ 22,120.00
520	1121000000-E	AGGREGATE BASE COURSE	2050	TON	\$ 50.00	\$ 102,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	570	TON	\$ 115.00	\$ 65,550.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1850	LF	\$ 50.00	\$ 92,500.00
848	2605000000-N	CONCRETE CURB RAMP	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 114,000.00	\$ 114,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 216,000.00	\$ 216,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 10B	1	LS	\$ 105,000.00	\$ 105,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00

Item Codes & Unit Costs

SUBTOTAL \$993,420.00

CONTINGENCY @ 35% \$347,697.00

CONSTRUCTION COST SAY \$1,342,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 10C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 50,000.00	\$ 50,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2640	SY	\$ 4.00	\$ 10,560.00
520	1121000000-E	AGGREGATE BASE COURSE	1020	TON	\$ 50.00	\$ 51,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	280	TON	\$ 115.00	\$ 32,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
848	2605000000-N	CONCRETE CURB RAMPS	12	EA	\$ 3,000.00	\$ 36,000.00
SP		EROSION CONTROL	1	LS	\$ 123,000.00	\$ 123,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 234,000.00	\$ 234,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	1760	SY	\$ 100.00	\$ 176,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, SEGMENT 10C	1	LS	\$ 95,000.00	\$ 95,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

Item Codes & Unit Costs

SUBTOTAL \$1,068,260.00

CONTINGENCY @ 35% \$373,891.00

CONSTRUCTION COST SAY \$1,443,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
 Checked By: GDB Date: 1/19/2023
 McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
 Project Description: Paved Multi-Use Path
 Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 1						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 50,000.00	\$ 50,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 30,000.00	\$ 30,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	4080	SY	\$ 4.00	\$ 16,320.00
520	1121000000-E	AGGREGATE BASE COURSE	1510	TON	\$ 50.00	\$ 75,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	420	TON	\$ 115.00	\$ 48,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	350	LF	\$ 50.00	\$ 17,500.00
848	2605000000-N	CONCRETE CURB RAMPS	10	EA	\$ 3,000.00	\$ 30,000.00
848	2613000000-N	REMOVE AND REPLACE CURB RAMPS	1	EA	\$ 4,000.00	\$ 4,000.00
SP		EROSION CONTROL	1	LS	\$ 83,000.00	\$ 83,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 300,000.00	\$ 300,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	310	SY	\$ 100.00	\$ 31,000.00
SP		BOLLARD, PERMANENT	30	EA	\$ 500.00	\$ 15,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 1	1	LS	\$ 95,000.00	\$ 95,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	4	EA	\$ 15,000.00	\$ 60,000.00

SUBTOTAL \$1,025,120.00

CONTINGENCY @ 35% \$358,792.00

CONSTRUCTION COST SAY \$1,384,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 2						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	860	SY	\$ 4.00	\$ 3,440.00
520	1121000000-E	AGGREGATE BASE COURSE	340	TON	\$ 50.00	\$ 17,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	90	TON	\$ 115.00	\$ 10,350.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	750	LF	\$ 50.00	\$ 37,500.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 32,000.00	\$ 32,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	310	SY	\$ 100.00	\$ 31,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 2	1	LS	\$ 25,000.00	\$ 25,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	2	EA	\$ 15,000.00	\$ 30,000.00

SUBTOTAL \$301,790.00

CONTINGENCY @ 35% \$105,626.50

CONSTRUCTION COST SAY \$408,000

Notes:

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8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: xxx Date: 7/26/2021
Checked By: xxx Date: 7/26/2021
McAdams Project No: XXX

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 3						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1210	SY	\$ 4.00	\$ 4,840.00
520	1121000000-E	AGGREGATE BASE COURSE	470	TON	\$ 50.00	\$ 23,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	130	TON	\$ 115.00	\$ 14,950.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1000	LF	\$ 50.00	\$ 50,000.00
848	2605000000-N	CONCRETE CURB RAMPS	3	EA	\$ 3,000.00	\$ 9,000.00
SP		EROSION CONTROL	1	LS	\$ 25,000.00	\$ 25,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 48,000.00	\$ 48,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 3	1	LS	\$ 30,000.00	\$ 30,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$254,790.00

CONTINGENCY @ 35% \$89,176.50

CONSTRUCTION COST SAY \$344,000

Notes:

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Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 4						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 120,000.00	\$ 120,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 75,000.00	\$ 75,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	5100	SY	\$ 4.00	\$ 20,400.00
520	1121000000-E	AGGREGATE BASE COURSE	1890	TON	\$ 50.00	\$ 94,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	520	TON	\$ 115.00	\$ 59,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
SP		EROSION CONTROL	1	LS	\$ 134,000.00	\$ 134,000.00
SP		TRAFFIC CONTROL	1	LS	\$ -	\$ -
SP		TIMBER PILE CONCRETE BOARDWALK	1180	LF	\$ 1,500.00	\$ 1,770,000.00
SP		METAL SAFETY RAIL	120	LF	\$ 100.00	\$ 12,000.00
SP		BOLLARD, PERMANENT	10	EA	\$ 500.00	\$ 5,000.00
SP		BOLLARD, COLLAPSIBLE	2	EA	\$ 1,000.00	\$ 2,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 4	1	LS	\$ 215,000.00	\$ 215,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$2,551,450.00

CONTINGENCY @ 35% \$893,007.50

CONSTRUCTION COST SAY \$3,445,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 6						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,000.00	\$ 15,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1330	SY	\$ 4.00	\$ 5,320.00
520	1121000000-E	AGGREGATE BASE COURSE	520	TON	\$ 50.00	\$ 26,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	140	TON	\$ 115.00	\$ 16,100.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	350	LF	\$ 50.00	\$ 17,500.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
SP		EROSION CONTROL	1	LS	\$ 35,000.00	\$ 35,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 67,000.00	\$ 67,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	180	SY	\$ 100.00	\$ 18,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, CONNECTION 6	1	LS	\$ 35,000.00	\$ 35,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$291,920.00

CONTINGENCY @ 35% \$102,172.00

CONSTRUCTION COST SAY \$395,000

Notes:

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Prepared By: xxx Date: 7/26/2021
Checked By: xxx Date: 7/26/2021
McAdams Project No: XXX

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 10A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 80,000.00	\$ 80,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 50,000.00	\$ 50,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	7780	SY	\$ 4.00	\$ 31,120.00
520	1121000000-E	AGGREGATE BASE COURSE	2890	TON	\$ 50.00	\$ 144,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	800	TON	\$ 115.00	\$ 92,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	50	TON	\$ 650.00	\$ 32,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	4350	LF	\$ 50.00	\$ 217,500.00
848	2605000000-N	CONCRETE CURB RAMP	18	EA	\$ 3,000.00	\$ 54,000.00
SP		EROSION CONTROL	1	LS	\$ 160,000.00	\$ 160,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 304,000.00	\$ 304,000.00
SP		BOLLARD, PERMANENT	54	EA	\$ 500.00	\$ 27,000.00
SP		COMPREHENSIVE GRADING, CONNECTION 10A	1	LS	\$ 190,000.00	\$ 190,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	7	EA	\$ 15,000.00	\$ 105,000.00

SUBTOTAL \$1,687,620.00
CONTINGENCY @ 35% \$590,667.00
CONSTRUCTION COST SAY \$2,279,000

- Notes:
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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Connection 11						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 30,000.00	\$ 30,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2300	SY	\$ 4.00	\$ 9,200.00
520	1121000000-E	AGGREGATE BASE COURSE	900	TON	\$ 50.00	\$ 45,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	240	TON	\$ 115.00	\$ 27,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	850	LF	\$ 50.00	\$ 42,500.00
848	2605000000-N	CONCRETE CURB RAMP	5	EA	\$ 3,000.00	\$ 15,000.00
SP		EROSION CONTROL	1	LS	\$ 48,000.00	\$ 48,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 90,000.00	\$ 90,000.00
SP		BOLLARD, PERMANENT	15	EA	\$ 500.00	\$ 7,500.00
SP		COMPREHENSIVE GRADING, CONNECTION 11	1	LS	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	1	EA	\$ 50,000.00	\$ 50,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MAJOR STREET	1	EA	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - LOCAL STREET	1	EA	\$ 15,000.00	\$ 15,000.00

SUBTOTAL \$609,550.00
CONTINGENCY @ 35% \$213,342.50
CONSTRUCTION COST SAY \$823,000

- Notes:
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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 150,000.00	\$ 150,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 90,000.00	\$ 90,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	8560	SY	\$ 4.00	\$ 34,240.00
520	1121000000-E	AGGREGATE BASE COURSE	3150	TON	\$ 50.00	\$ 157,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	890	TON	\$ 115.00	\$ 102,350.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	55	TON	\$ 650.00	\$ 35,750.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	700	LF	\$ 50.00	\$ 35,000.00
SP		EROSION CONTROL	1	LS	\$ 188,000.00	\$ 188,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 32,000.00	\$ 32,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1350	LF	\$ 1,500.00	\$ 2,025,000.00
SP		6" MICRO-FIBER REINFORCED CONCRETE	160	SY	\$ 100.00	\$ 16,000.00
SP		METAL SAFETY RAIL	60	LF	\$ 100.00	\$ 6,000.00
SP		BOLLARD, PERMANENT	12	EA	\$ 500.00	\$ 6,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 4C	1	LS	\$ 235,000.00	\$ 235,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00

SUBTOTAL \$3,235,840.00

CONTINGENCY @ 35% \$1,132,544.00

CONSTRUCTION COST SAY \$4,369,000

Notes:

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Prepared By: ZEH Date: 1/19/2023
Checked By: GDB Date: 1/19/2023
McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 140,000.00	\$ 140,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 85,000.00	\$ 85,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2950	SY	\$ 4.00	\$ 11,800.00
520	1121000000-E	AGGREGATE BASE COURSE	1090	TON	\$ 50.00	\$ 54,500.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	310	TON	\$ 115.00	\$ 35,650.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
SP		EROSION CONTROL	1	LS	\$ 89,000.00	\$ 89,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 58,000.00	\$ 58,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1490	LF	\$ 1,500.00	\$ 2,235,000.00
SP		BOLLARD, PERMANENT	14	EA	\$ 500.00	\$ 7,000.00
SP		BOLLARD, COLLAPSIBLE	4	EA	\$ 1,000.00	\$ 4,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8B	1	LS	\$ 150,000.00	\$ 150,000.00
SP		BIKE/PED INTERSECTION TREATMENTS - MINOR STREET	2	EA	\$ 50,000.00	\$ 100,000.00

SUBTOTAL \$2,988,950.00

CONTINGENCY @ 35% \$1,046,132.50

CONSTRUCTION COST SAY \$4,036,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private or public utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on GIS and feasibility study alignments by McAdams dated October 2022 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.
7. Drainage costs are not included as a separate line item, but are assumed to be covered by the construction contingency.
8. Cost opinion does not include any costs or impacts associated with adjacent roadway resurfacing.



Prepared By: ZEH Date: 1/19/2023
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McAdams Project No: SPEC22079

NC 210-ECG Feasibility Study

Project Location: Pender County, NC
Project Description: Paved Multi-Use Path
Client: Cape Fear Rural Planning Organization

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 8E						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 10,000.00	\$ 10,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 5,000.00	\$ 5,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1090	SY	\$ 4.00	\$ 4,360.00
520	1121000000-E	AGGREGATE BASE COURSE	420	TON	\$ 50.00	\$ 21,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	120	TON	\$ 115.00	\$ 13,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	800	LF	\$ 50.00	\$ 40,000.00
SP		EROSION CONTROL	1	LS	\$ 19,000.00	\$ 19,000.00
SP		TRAFFIC CONTROL	1	LS	\$ 36,000.00	\$ 36,000.00
SP		BOLLARD, PERMANENT	6	EA	\$ 500.00	\$ 3,000.00
SP		COMPREHENSIVE GRADING, SEGMENT 8E	1	LS	\$ 25,000.00	\$ 25,000.00

SUBTOTAL \$189,660.00

CONTINGENCY @ 35% \$66,381.00

CONSTRUCTION COST SAY \$257,000

- Notes:
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 - 2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
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NC 210
East Coast Greenway
Feasibility Study



— 2023 —