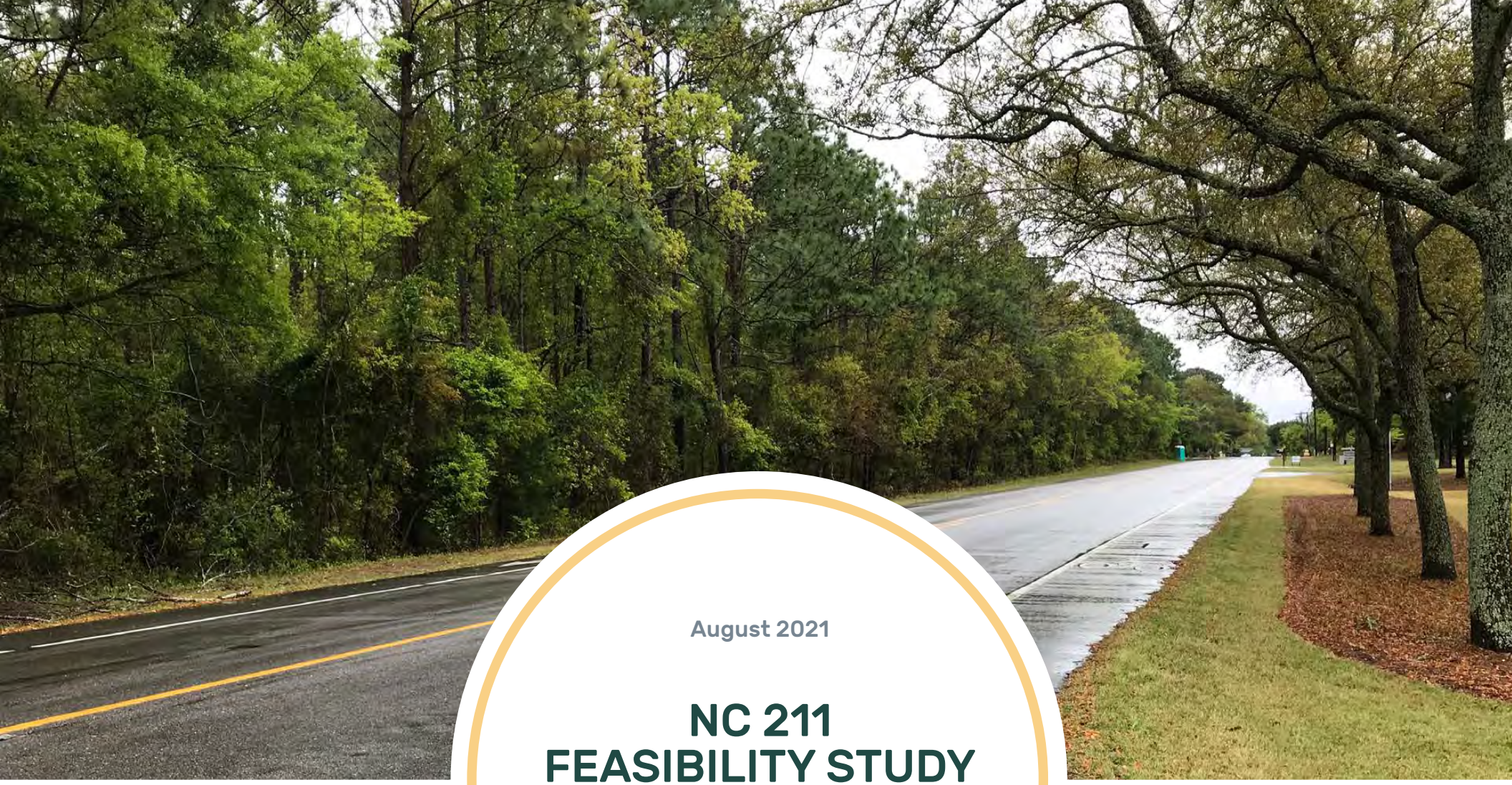

August 2021

NC 211 FEASIBILITY STUDY

Brunswick County, North Carolina

“THIS FEASIBILITY STUDY WILL PROVIDE THE FRAMEWORK FOR THE NC 211 CORRIDOR TO DEVELOP A TRANSPORTATION NETWORK THAT WILL WORK FOR ALL USERS.”

- **Patrick Flanagan**
RPO Director
Cape Fear Council of Governments

ACKNOWLEDGMENTS

CAPE FEAR COUNCIL OF GOVERNMENTS

Cape Fear Rural Planning Organization

Patrick Flanagan, RPO Director

Stakeholders Committee

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Bruce Oakley, City of Southport
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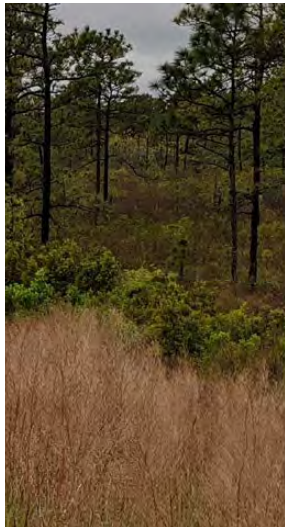
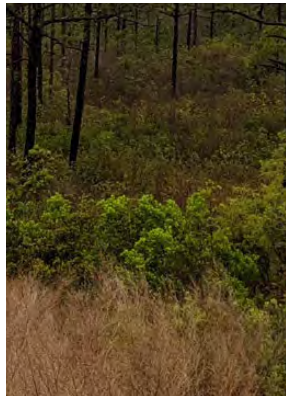
CAPE FEAR
COUNCIL OF GOVERNMENTS

McAdams

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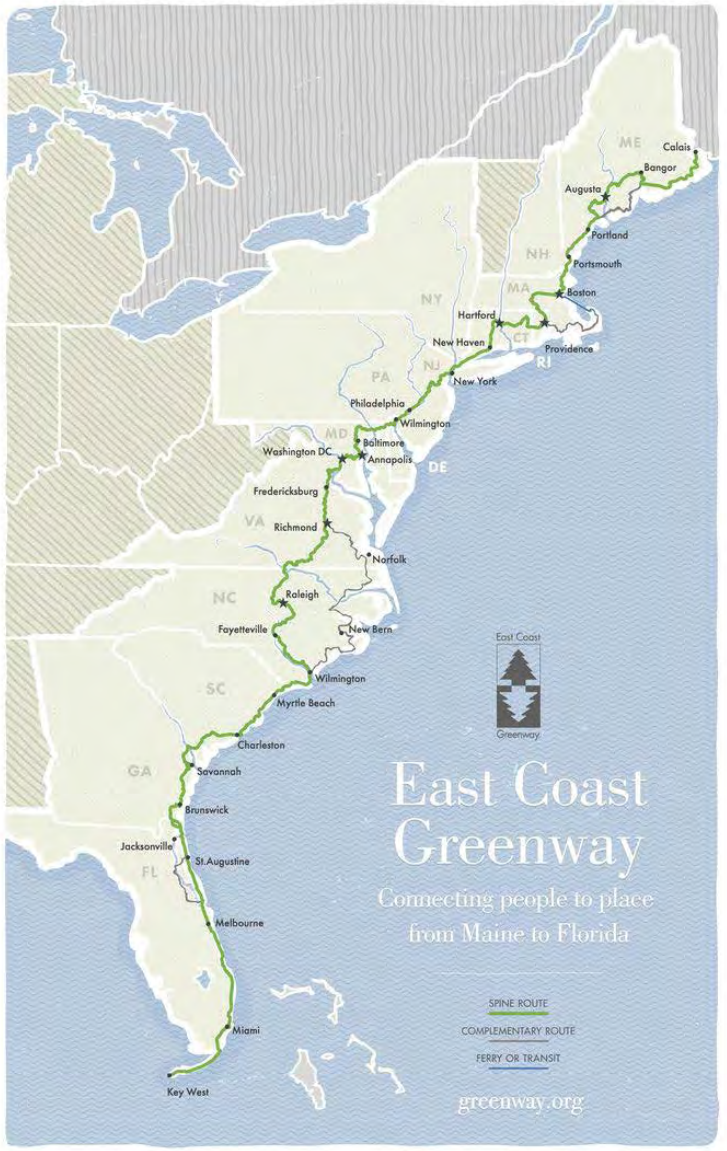
INTRODUCTION

OVERVIEW

The purpose of this report is to assess the feasibility of bicycle and pedestrian facilities along the NC 211 corridor (Southport-Supply Road) and to develop an implementation plan that fits the overall vision of incorporating alternative modes of transportation in eastern North Carolina. Brunswick County is one of the fastest growing counties in the state and is experiencing intense development challenges. The 17-mile NC 211 corridor proposed for this study is currently a two to three lane Minor Arterial that stretches from Fort Fisher Ferry, in Southport, to Stone Chimney Road. Proposed plans for this road include widening to a four-lane facility funded by the NC Department of Transportation.

This study also considers the overarching goal of connecting the East Coast Greenway (ECG) through coastal North Carolina. The ECG is a 3,000-mile greenway corridor stretching from Maine to Florida with a vision to provide fun, safe and accessible infrastructure for everything from a local commute to a long adventure. The Greenway will foster healthy, sustainable, and prosperous communities throughout the Eastern Seaboard.[1] The ECG corridor will connect the Brunswick County Beaches with the City of Wilmington to the north and with Myrtle Beach, SC to the south. Recognition of this corridor for off-street bike and pedestrian facilities is supported by following previous planning efforts:

- Cape Fear Regional Bicycle Plan
- Brunswick County Greenway, Bikeway, & Paddle Trail Plan
- Brunswick County Parks and Recreation Comprehensive Plan
- East Coast Greenway Plan
- NC Bike Route 3
- Gullah Geechee Cultural Heritage Corridor
- NCDOT NC 211 Widening Project (R 5021)
- Southport Bike Map



PROCESS

The feasibility study process is one of transparency, community engagement, and data driven recommendations developed through an analytical, need-based approach. From the initial inventory and analysis through the implementation plan, the project team engaged the community, stakeholders, and Cape Fear Rural Transportation Planning Organization (Cape Fear RPO) staff.

The project team began with an intensive exploration phase to develop a detailed understanding of how residents want to move and where they want to go. This phase also included specific work undertaken by surrounding municipal agencies to create a coordinated approach to creating a connected, safe network.

The analysis phase of the project examined the overall network, context, current planning efforts by other agencies, and project team site visits to areas considered for potential corridor options. The network analysis resulted in a plan that connects desired destinations with a mix of greenway trails, side paths along roadways, and improvements to existing roadways that currently do not support separated bike and pedestrian facilities. The project team investigated each proposed corridor alternative to determine ideal alignment of trails, location of supplemental facilities, as well as constraints that will need to be overcome.

Finally, the project team, in conjunction with RPO staff, developed and prioritized recommendations to improve the pedestrian and bicycle facility offerings. The study includes:

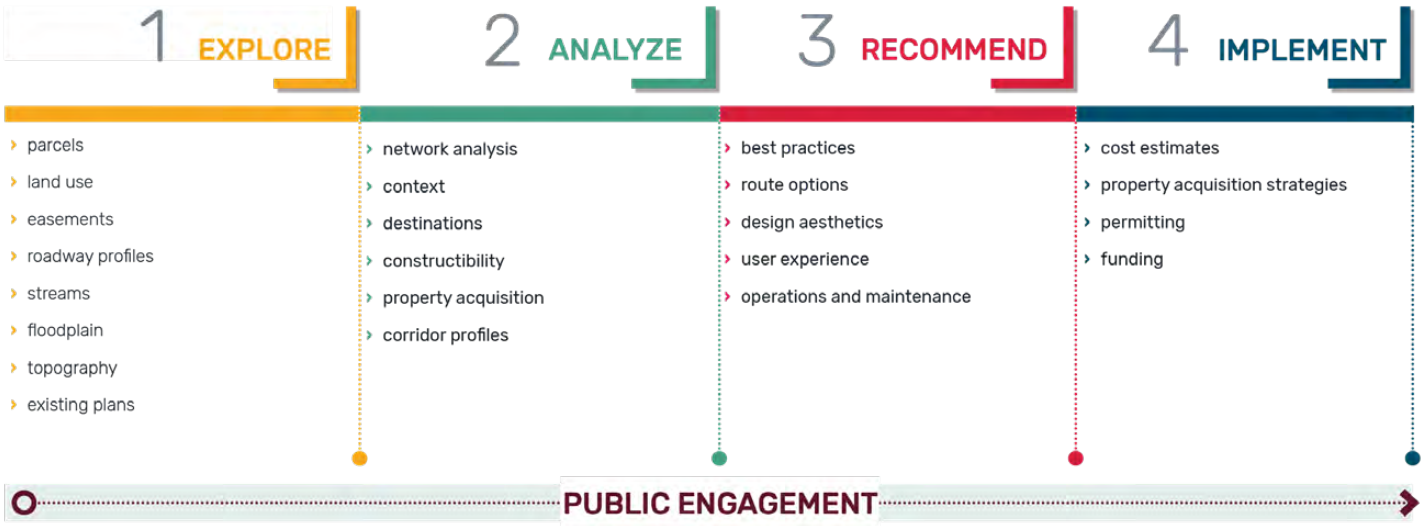
- Existing conditions evaluation
- Identification of opportunities and constraints
- Trail alignment, trail surfacing, and access point recommendations
- Identification of opportunities for new passive open spaces along recommended trail alignments
- Potential acquisition opportunities
- Identification of connection opportunities with roads, sidewalks, bicycle routes, neighborhoods, and business hubs
- Development of preliminary design and cost estimates
- Creation of an achievable plan with prioritized phasing

PROJECT VISION

This feasibility study is intended to evaluate the corridor's ability to accommodate dedicated bicycle and pedestrian facilities and to maximize its potential as an integral segment of the East Coast Greenway and the state bike route system.

GOALS

- Fill in the significant gap that currently exists in developing the East Coast Greenway corridor through coastal North Carolina area.
- Provide regional connections to parks, commercial destinations, local businesses and community recreation resources (such as beaches, the lighthouse and historic district) within the downtown Southport area.
- Provide opportunities for users to experience the flora and fauna within the diverse habitats of the coastal environment.
- Enable the County to achieve their vision of a connected pedestrian and bicycle transportation network by identifying feasible, constructible routes.
- Establish specific connectivity recommendations.
- Create an implementation strategy that aims to reduce vehicular congestion by providing desirable pedestrian and bicycle connections to safely move users to desired destinations.
- Provide recommendations to construct a multi-modal transportation system that augments tourism efforts, giving visitors more opportunity to explore and experience Brunswick County.
- Convey recommendations to aid in communication, coordination, collaboration, and prioritization of planning efforts and initiatives that fill the gaps to avoid transportation silos.
- Inform development and infrastructure investment decisions that support the integrated and connected multi-modal transportation system.



OBJECTIVES

To achieve the goals set forth by this feasibility study, the project team identified the following objectives:

- Utilize previous planning efforts and precedent studies to ensure consistency in considering proposed corridor routes.
- Recommend possible trail alignments that connect diverse destinations.
- Seek opportunities to create small area trail loops (such as the downtown Southport loop) to connect historic district, other tourist destinations, and downtown businesses.
- Recommend trail surfacing and access points.
- Identify opportunities for new open spaces along the trail alignments.
- Identify opportunities for environmental education along sensitive coastal environments.
- Identify potential acquisition opportunities.
- Develop preliminary designs and cost estimates.
- Create an achievable plan with prioritized phasing.
- Provide recommendations that support desired infrastructure and economic development as well as environmental needs and requests.
- Foster a healthy community by providing resources that aid in the development of recreational opportunities and access to open space.

PROJECT CONTEXT

NC 211 is the primary route from the Town of Aberdeen in Moore County to the City of Southport in Brunswick County. It traverses the Sandhills and Coastal Plain region of the state in a southeast/northwest direction. Some of the major destinations along this route include Pinehurst, Aberdeen, Raeford, and Lumberton to the Southport area and the surrounding beaches.

NC 211 (Southport-Supply Road) is currently classified by NCDOT as a minor arterial road. Starting at the project area off Highway 17, this 17-mile corridor provides connections to St. James, Holden Beach (Via Sabbath Home Road link to Stone Chimney Road), Varnamtown (via Stone Chimney Road), Oak Island, Caswell Beach, and Southport. Land use along the corridor varies and includes a mix of businesses, residential subdivisions, schools, community facilities, agricultural uses, and vacant properties. Predominant features along the corridor include a Duke Energy easement that runs parallel to the road and the presence of wetlands and stormwater conveyance swales in certain areas. The roadway typical cross section generally includes two-lane traffic and narrow shoulder areas, with major intersections expanded to accommodate turn lanes and associtated medians. This section of NC 211 is also considered an evacuation route for coastal communities.

NCDOT has funded a portion of NC 211 for expansion from a two-lane to a four-lane highway to alleviate traffic congestion. The approved plans show sidewalks along the route but no dedicated facility for bicyclists. Considering the heavy traffic on this route, the project team and stakeholders decided to expand the study area to include alternative routes south of NC 211 and evaluate the feasibility of dedicated off-street pedestrian and bike facilities. As shown in the full build out exhibit, the area around NC 211 is facing challenges that come with new developments and population growth.

EXISTING CONDITIONS INVENTORY + ANALYSIS

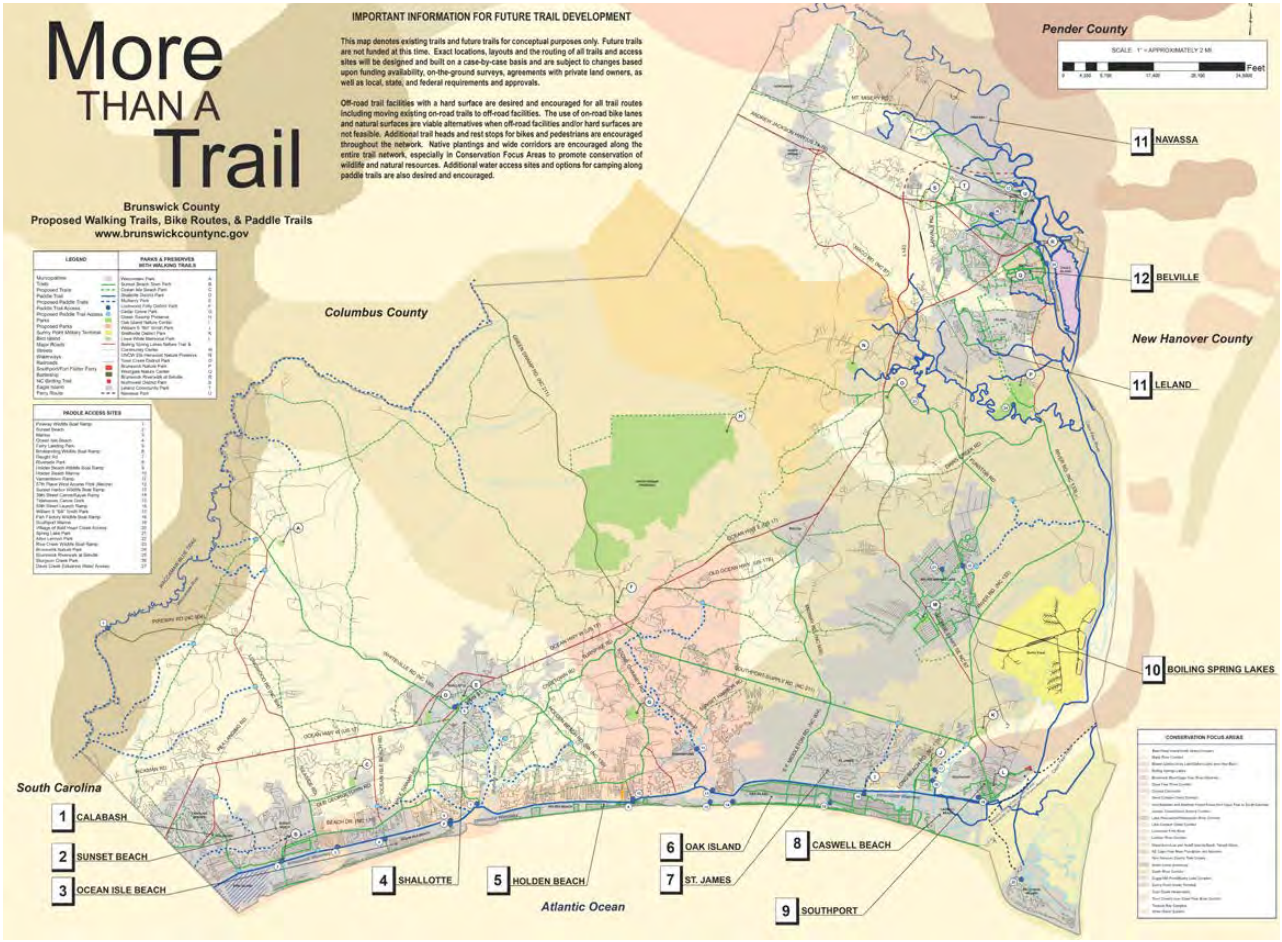

8570

PREVIOUS PLANNING EFFORTS

Brunswick County and the Cape Fear Council of Governments (CFCOG) have clearly articulated their commitment to becoming more pedestrian and bicycle-friendly communities. This vision of a connected, safe, multi-modal transportation system is evident in all planning efforts over the past decade. Review of previous planning documents capitalizes on previous efforts to draw inspiration and analyze the history of planning efforts regarding connectivity proposals. These documents provide insights that may inform recommendations for the creation of a pedestrian and bicycle transportation system.

BRUNSWICK COUNTY GREENWAY, BIKEWAY, & PADDLE TRAIL PLAN

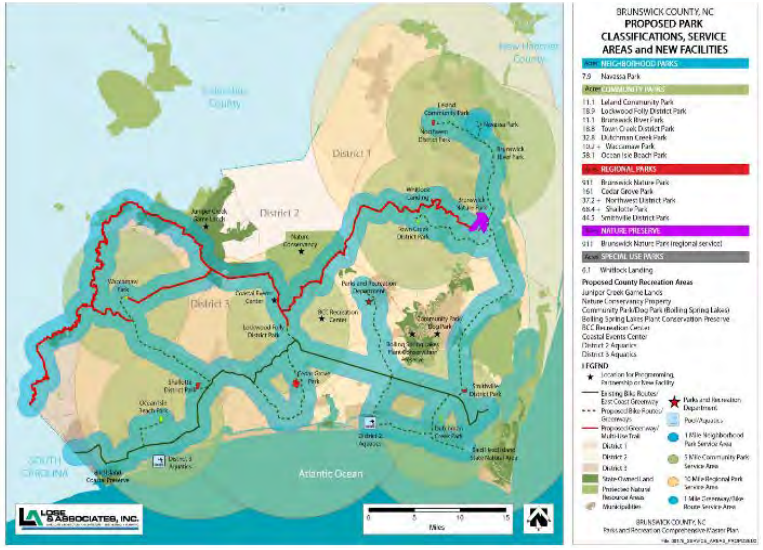
This plan considers existing greenway and bikeway routes through local municipalities to create a cohesive network of trails. The mapping exhibit shows greenway trails along NC 211 connected by trails from Oak Island, Caswell Beach, and Boiling Spring Lakes.



CAPE FEAR REGIONAL BICYCLE PLAN

The Cape Fear Council of Governments led the development of this regional bicycle transportation plan with a planning grant from the North Carolina Department of Transportation (NCDOT). The purpose was to identify opportunities and constraints for bicycling and establish recommendations for improvement. The study area covered Brunswick, Columbus, New Hanover, and Pender Counties, as well as parts of Bladen, Onslow, and Sampson Counties.

The NC 211 corridor is recognized within the plan as the East Coast Greenway corridor with the assumption that the NCDOT widening project could serve as an opportunity to construct a sidepath.



BRUNSWICK COUNTY PARKS AND RECREATION COMPREHENSIVE PLAN

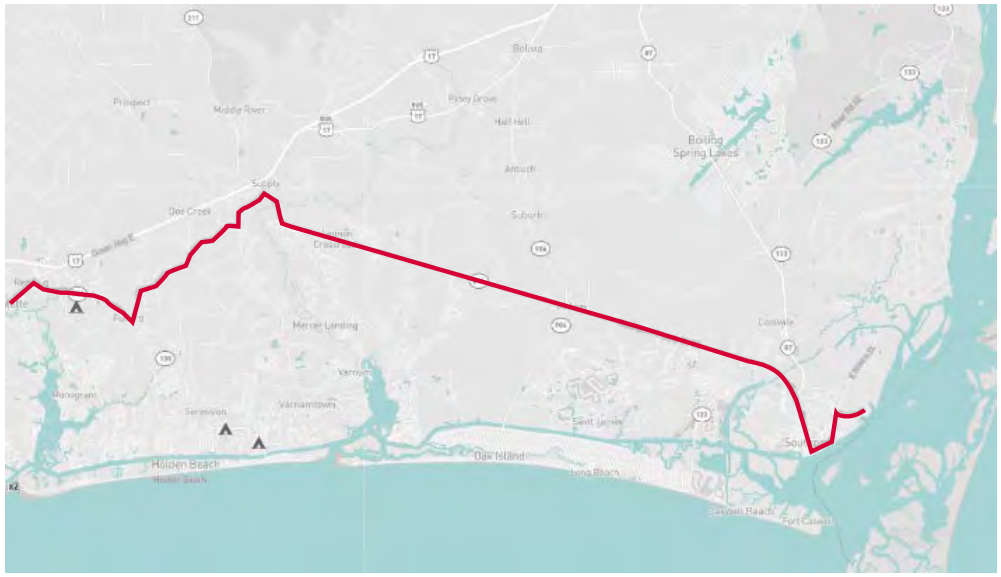
This county-wide plan shows NC 211 corridor as part of the East Coast Greenway that provides connectivity to parks like Lockwood Folly District Park, BCC Recreation Center, Parks and Recreation Department, Smithville District Park, Dutchman Creek Park, District 2 Aquatics, and Baldhead Island State Natural Area.

EAST COAST GREENWAY PLAN

While the spine route of East Coast Greenway route connects to Wilmington and Southport area via City of Raleigh, there is a complementary route from Richmond that connects the coastal areas. The project's vision is to connect the country's most populated corridor from Maine to Florida by a safe walking and biking route. The route also connects the national heritage area of the Gullah Geechee Cultural Heritage Corridor.

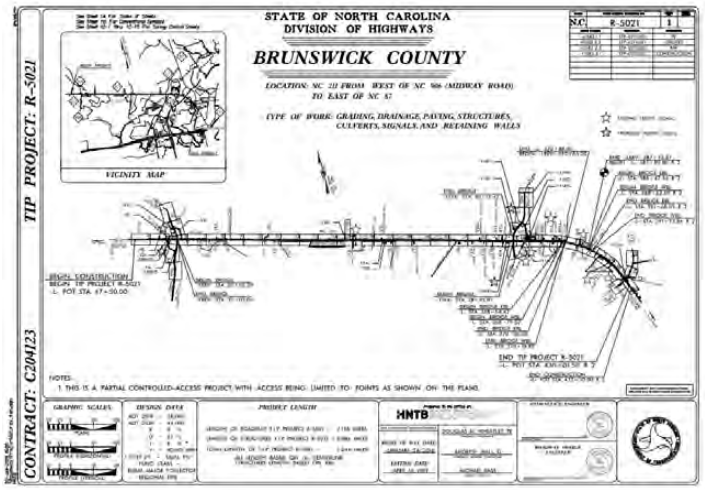
NC BIKE ROUTE 3

This route traverses North Carolina's long and varied coastline including two major sounds – the Pamlico and Albemarle Sounds. The ~300 mile route from Virginia to South Carolina passes through the major ports of the colonial era; Edenton, Bath, New Bern, Wilmington, and Southport among numerous other coastal communities.



GULLAH GEECHEE CULTURAL HERITAGE CORRIDOR

The Gullah Geechee Cultural Heritage Corridor is a National Heritage Area (NHA) managed by the Gullah Geechee Cultural Heritage Corridor Commission. The purpose of the Gullah Geechee Cultural Heritage Corridor NHA is to preserve, share, and interpret the history, traditional cultural practices, heritage sites, and natural resources associated with Gullah Geechee people of coastal North Carolina, South Carolina, Georgia and Florida.



NCDOT NC 211 WIDENING PROJECT (R 5021)

This NC 211 road widening project extends between Midway Road and River Road (NC 87). The approved plans show four lane road with divided median in some sections. The shoulder includes six foot sidewalk in most areas for pedestrians, but no dedicated bike lane or separated bike facility.

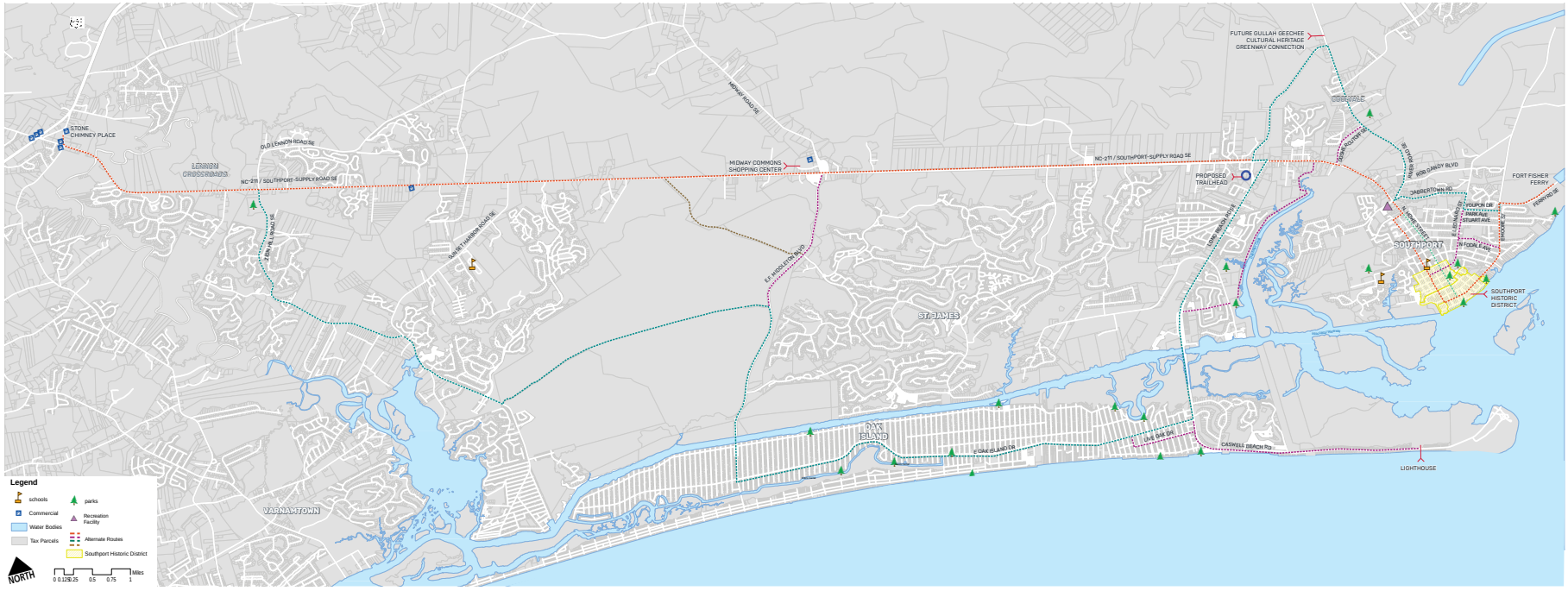
SOUTHPORT BICYCLE MAP

Biking is a popular tourist activity in the coastal towns, including Southport. There are three main bike routes recognized in the map connected to various tourist destination places within the downtown area and beyond. The identified routes are on-road facilities going through some of the high traffic roads within the downtown area.

INVENTORY + ANALYSIS

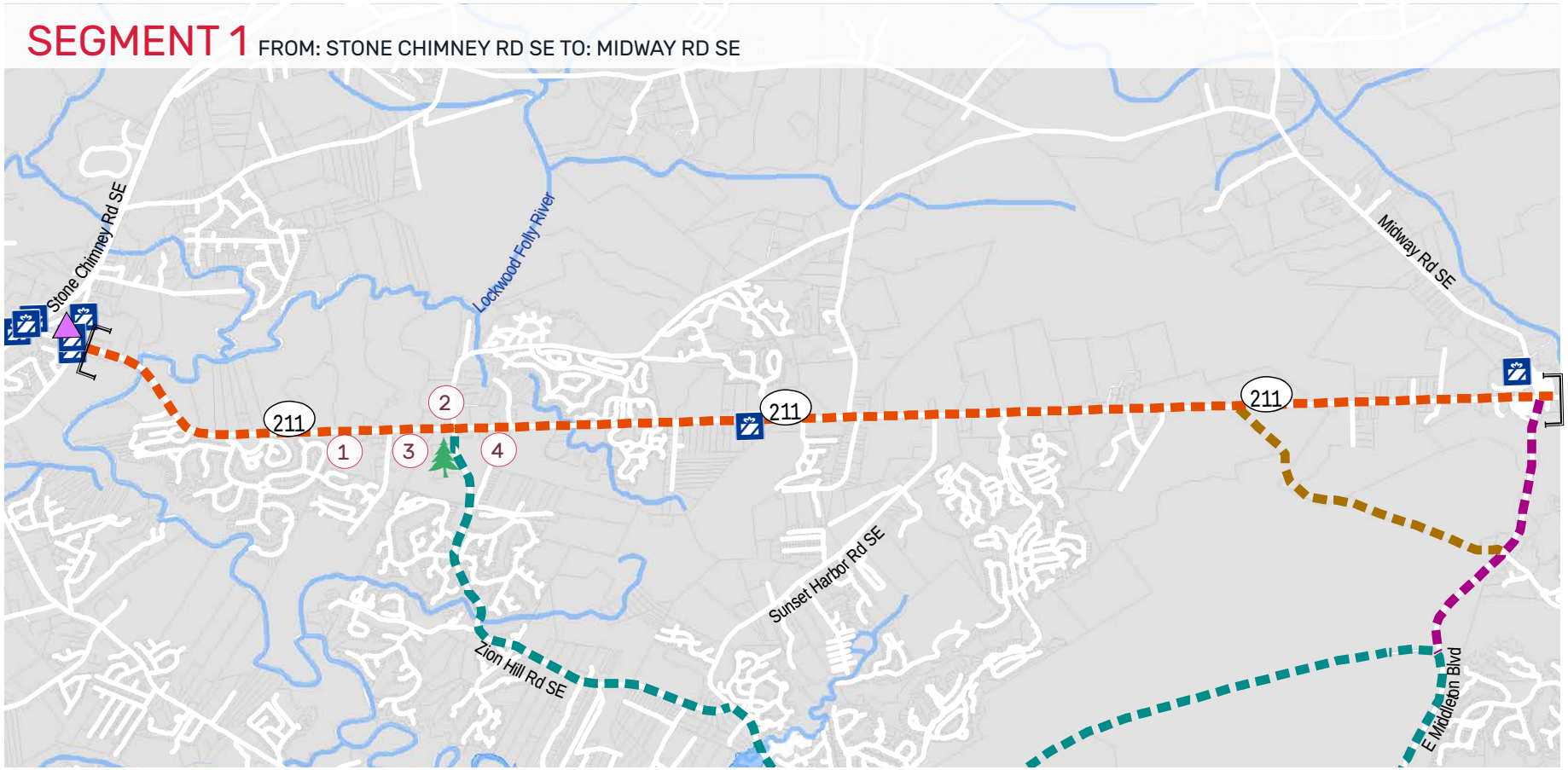
The project team spent time touring the region of Southport, Oak Island, St. James, Caswell Beach, and South of NC 211 area within Brunswick County to understand the context, the ground conditions of roads, connectivity between above-mentioned Towns, and opportunities and challenges associated with developing bike-ped facility.

During the first stakeholder meeting, a concern regarding heavy traffic on NC 211 was raised and as a result the project team investigated low-traffic roads that provide connectivity, but also connect to local destinations and provide scenic routes for bicyclists and pedestrians to enjoy the coastal environments. The following cut sheets illustrate the opportunities and challenges observed by the project team.



Overall Project Map and Alternative Routes

SEGMENT 1 FROM: STONE CHIMNEY RD SE TO: MIDWAY RD SE



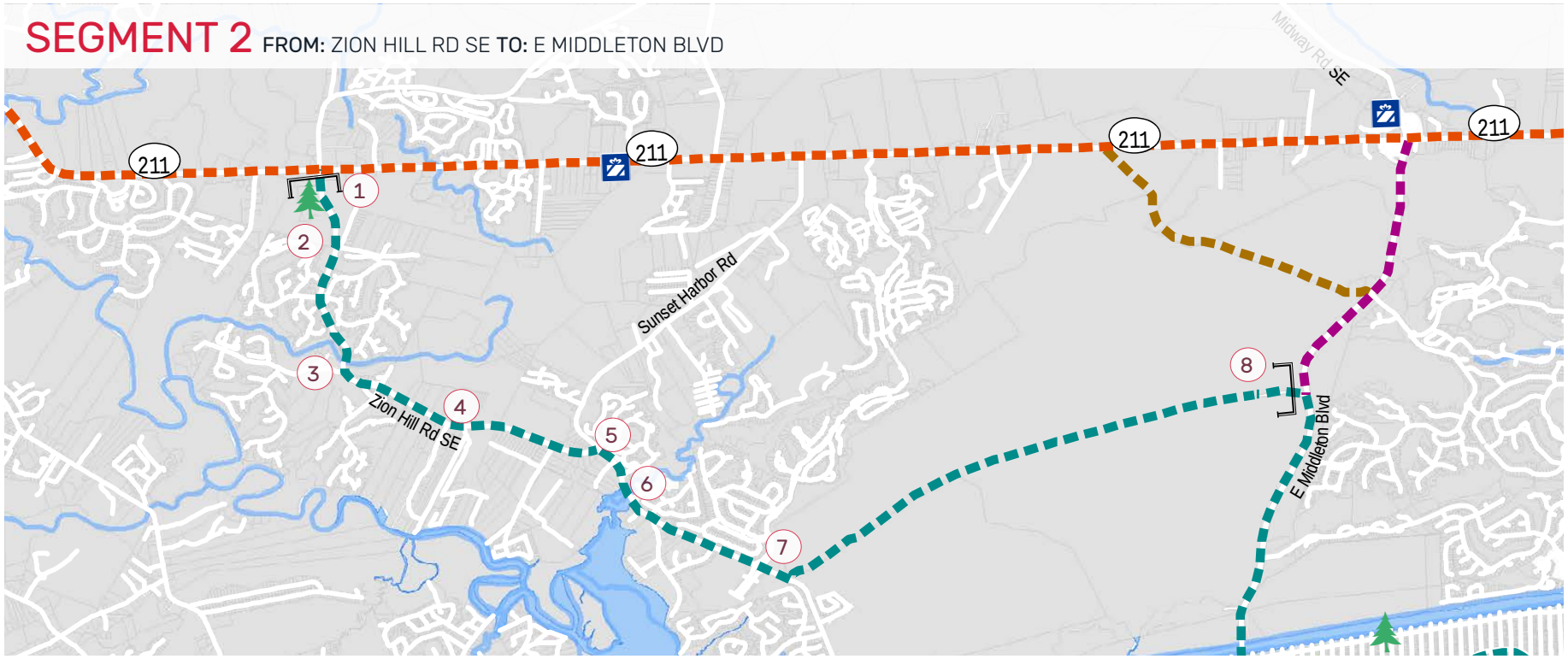
OBSERVATIONS

1. Duke Energy easement on south
2. Potential conflict with Winding River sign monument
3. At Zion Hill Rd intersection- Duke easement on west side of street
4. Challenge with Duke easement and swale on plan south side

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Water Bodies
- Tax Parcels
- Streams
- Historic Southport
- Alternative Routes
  - purple_route
  - red_route
  - blue_route
  - brown_route
  - cyan_route

SEGMENT 2 **FROM:** ZION HILL RD SE **TO:** E MIDDLETON BLVD



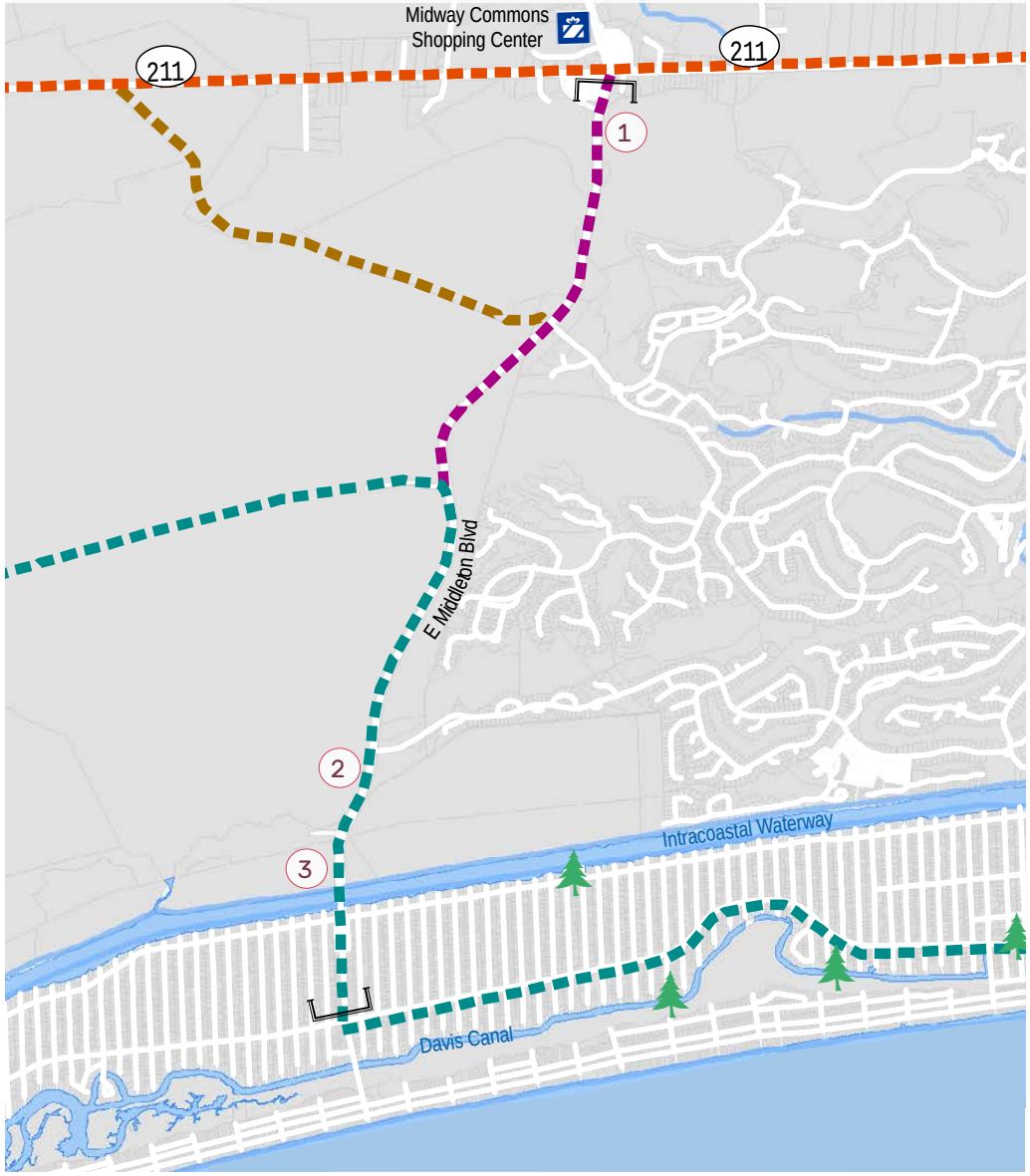
NC 211 AT ZION HILL RD

ZION HILL RD

OBSERVATIONS

1. Duke Energy easement on west side of Zion Hill Road
2. Wide easement, relatively flat land with some swales and drainage pipes in front of school
3. Sidepath along west side of street at the Country Club. Intended as golf cart path with wooden bridges. Confirm with owner on connecting this path to public greenway trail. Challenges with topography and achieving ADA compliance.
4. Utility boxes conflict and narrow ROW close to Sunset Harbor Road.
5. Access road behind utility poles on west side of Sunset Harbor Road.
6. Narrow bridge on Sunset Harbor Road
7. Wide utility easement on west side, access paths along west side to Lockwood Folly intersection
8. Segment off of Sunset Harbor Rd through private property- challenge with wet areas, absence of any existing paths, dense vegetation cover.

SEGMENT 3 FROM: NC 211 TO: E OAK ISLAND DR ALONG: E MIDDLETON BLVD




E F MIDDLETON BLVD

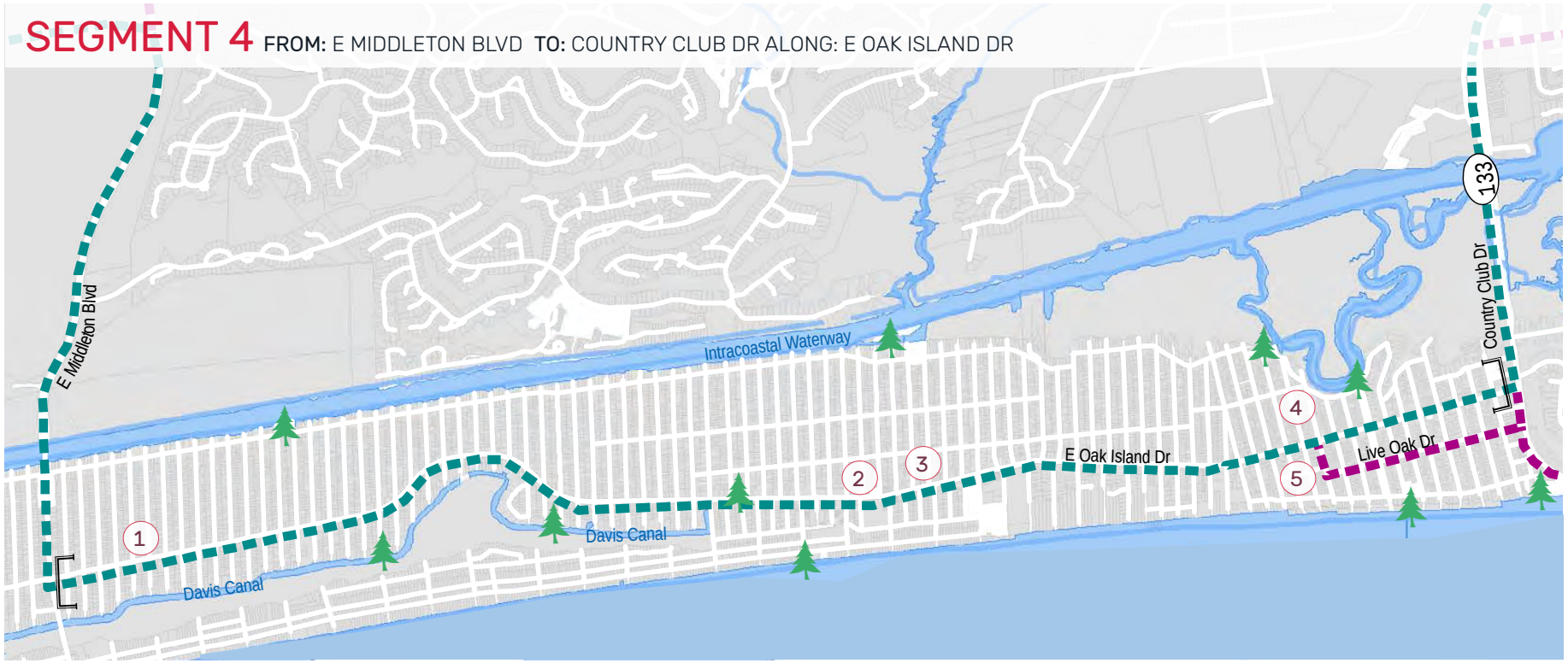
OBSERVATIONS

1. E Middleton Rd is four-lane high speed road (45-55 mph)
2. Existing bridge has 5' shoulder, but feels unsafe.
3. Potential road diet opportunity to convert one lane into future side path.

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Water Bodies
- Tax Parcels
- Streams
- Historic Southport
- Alternative Routes
  - purple_route
  - red_route
  - blue_route
  - brown_route
  - cyan_route

SEGMENT 4 **FROM:** E MIDDLETON BLVD **TO:** COUNTRY CLUB DR ALONG: E OAK ISLAND DR

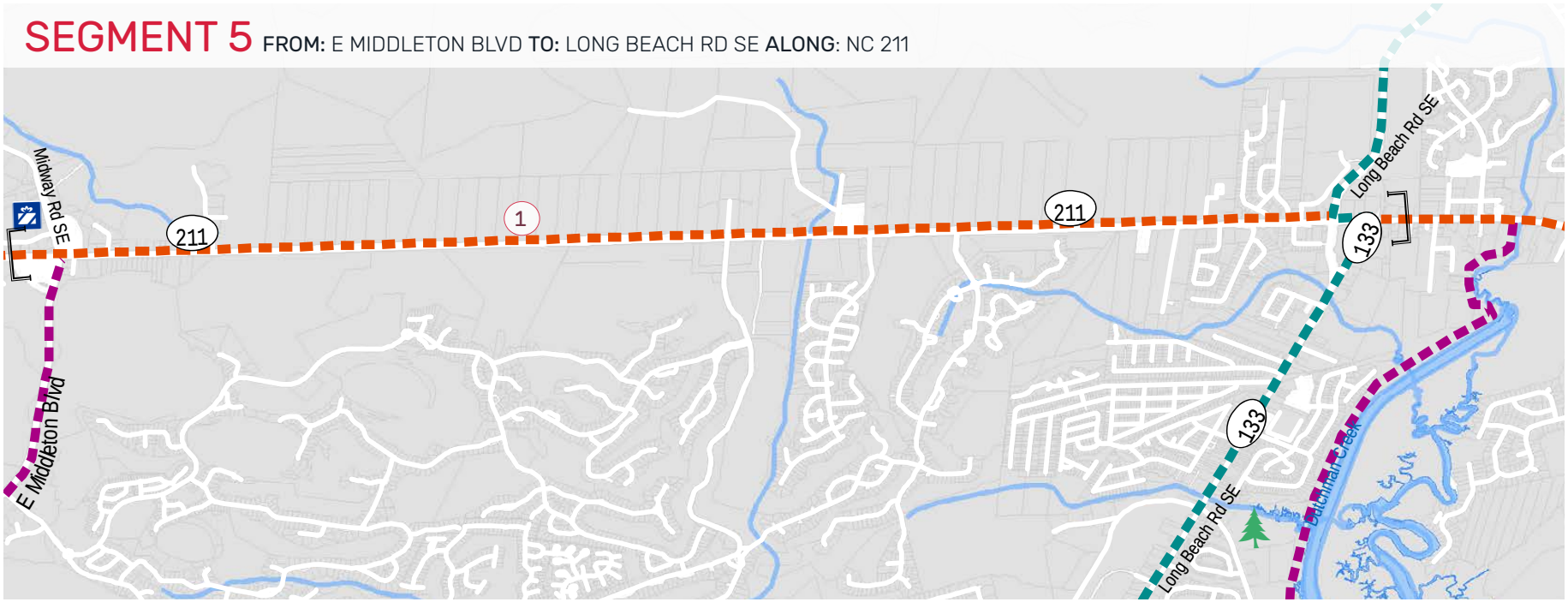



OAK ISLAND DR

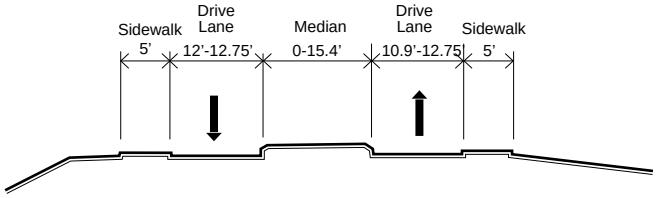
OBSERVATIONS

1. Existing 4.5’ sidewalk and approximately 16’ of right-of-way for future sidepath.
2. Minimal vegetation and/or barriers for remainder of right-of-way heading west.
3. Some live oaks within right-of-way, but still adequate space to accomodate facility.
4. Sidewalk begins on north side of road and crosses to south side of road near Crowell St
5. Live Oak Dr has lower traffic volumes and wider right-of-way. Existing sidewalk on south side of E Oak Island Dr ends at 79th St.

SEGMENT 5 FROM: E MIDDLETON BLVD TO: LONG BEACH RD SE ALONG: NC 211



NC 211 AT MIDDLETON BLVD



NC 211 PROPOSED NCDOT PLANS (SOURCE: NCDOT TIP PROJECT R-5021)

PROPOSED PLANS DESCRIPTION

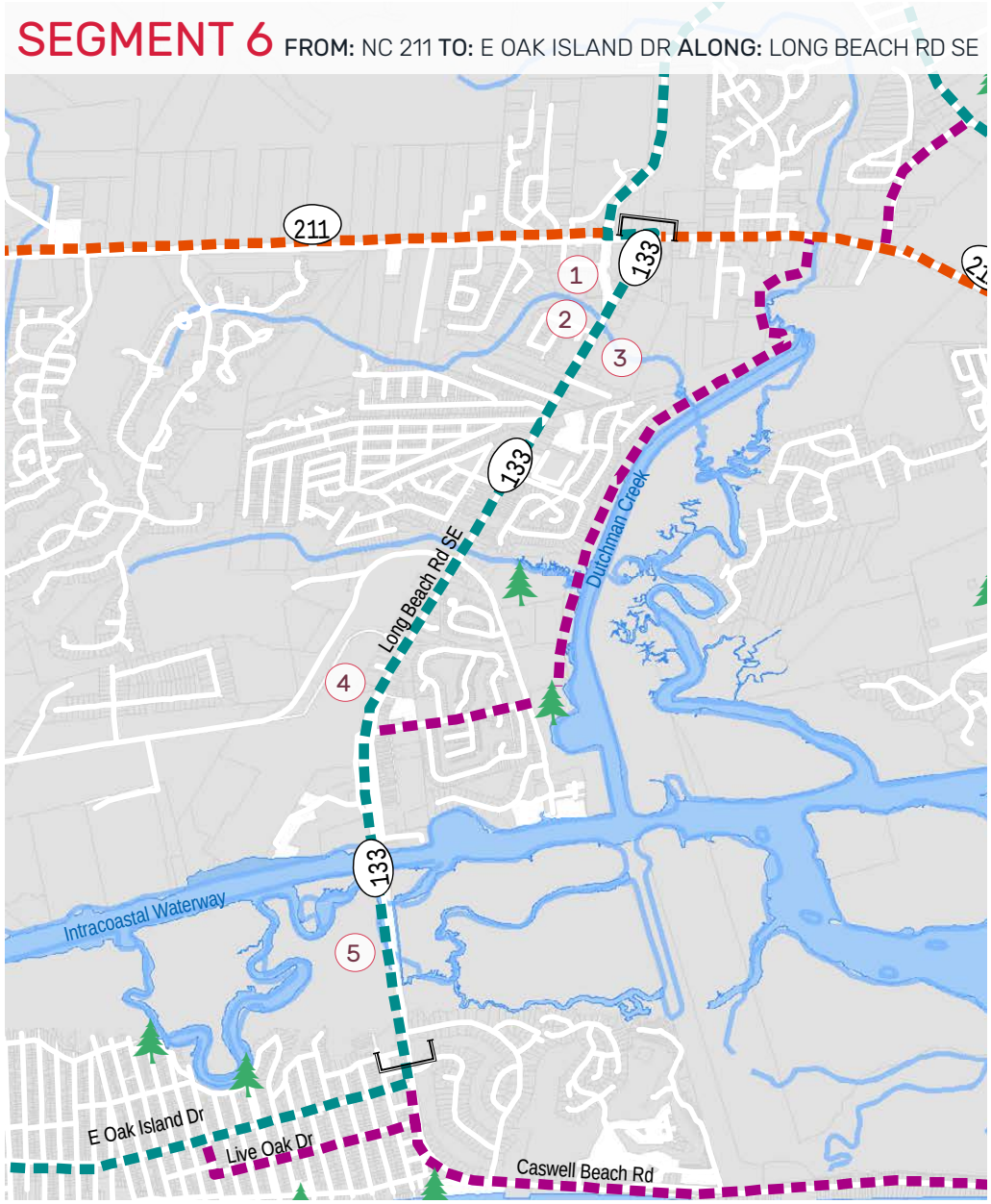
1 Proposed plans show several cross sections along the corridor and each typical cross section includes a 5' sidewalk. There are no bike facilities or sharrows included on these plans.

NOTE: This illustration shows one of the proposed typical cross sections for this segment of NC 211 corridor which is also funded by NCDOT from E Middleton Blvd to Long Beach Rd SE.

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Water Bodies
- Tax Parcels
- Streams
- Historic Southport
- Alternative Routes
- purple_route
- red_route
- blue_route
- brown_route
- cyan_route

SEGMENT 6 **FROM:** NC 211 **TO:** E OAK ISLAND DR **ALONG:** LONG BEACH RD SE



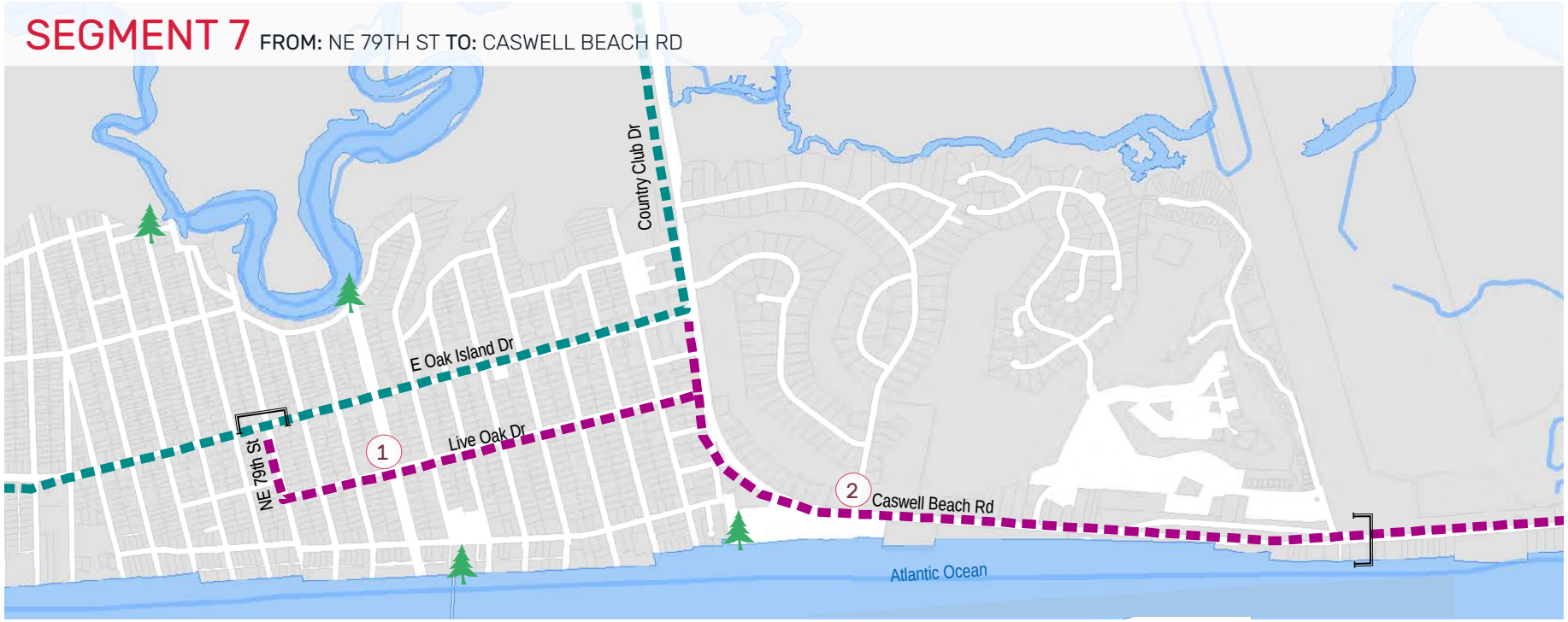
NC 211 AT LONG BEACH ROAD

LONG BEACH ROAD

OBSERVATIONS

1. Possible trailhead location in front of commercial area.
2. Preferred trail location is on the east side of Long Beach Rd to avoid impacts to utilities on the west side.
3. Existing bridge, close to NC 211 is not wide enough to accommodate a sidepath.
4. Bench under the bridge to cross the road.
5. Evaluate possible road diet to accommodate sidepath. Wide shoulder of the existing bridge can be delineated with vertical tubular barriers.

SEGMENT 7 FROM: NE 79TH ST TO: CASWELL BEACH RD



CASWELL BEACH RD

LIVE OAK RD

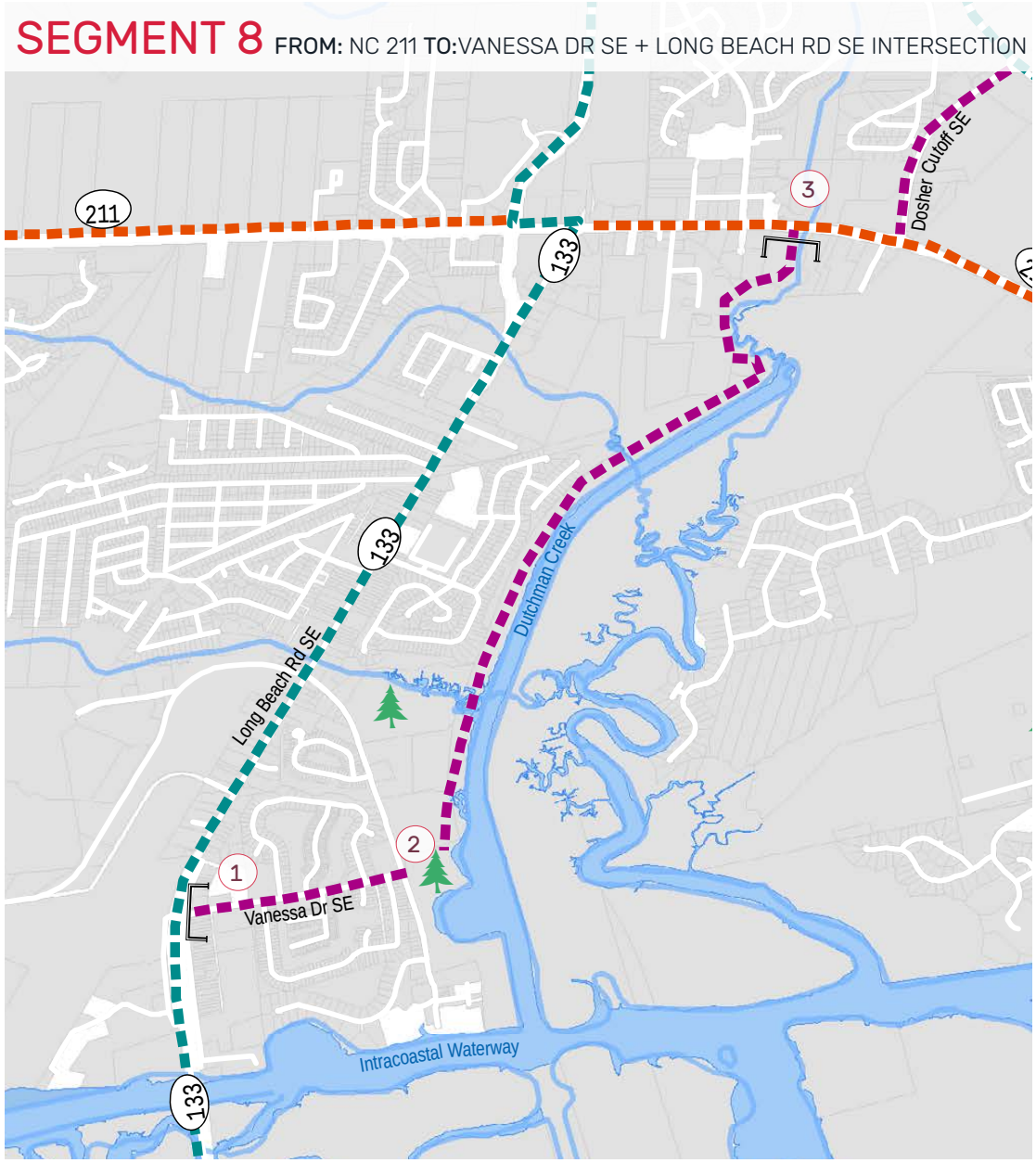
OBSERVATIONS

1. Live Oak Dr has lower traffic volumes and wider right-of-way. Existing sidewalk on south side of E Oak Island Dr ends at 79th St.
2. South side of Caswell Beach Rd best suited for trail.

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Water Bodies
- Tax Parcels
- Streams
- Historic Southport
- Alternative Routes
  - purple_route
  - red_route
  - blue_route
  - brown_route
  - cyan_route

SEGMENT 8 FROM: NC 211 TO:VANESSA DR SE + LONG BEACH RD SE INTERSECTION



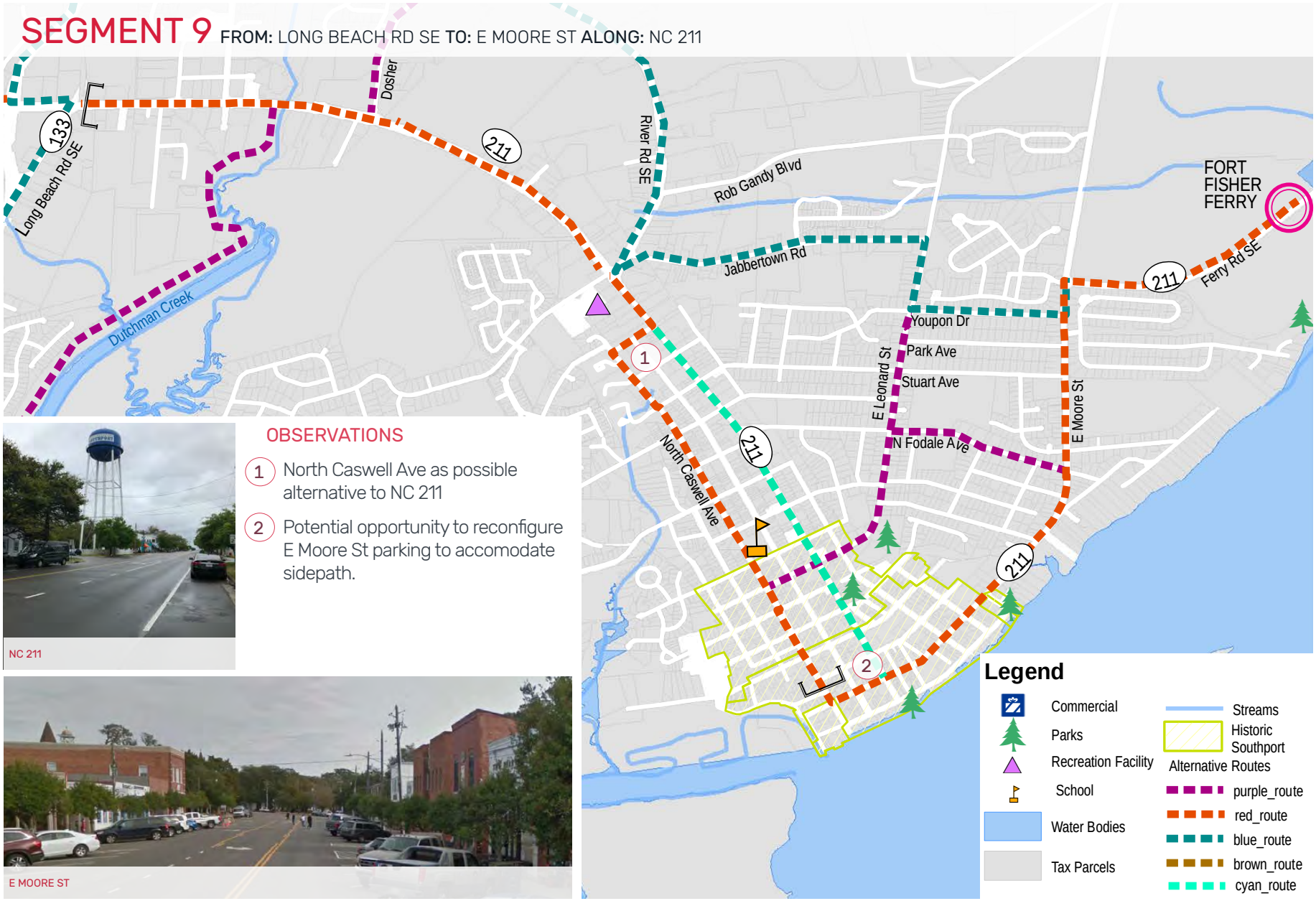
VANESSA DRIVE

NC 211 AT DUTCHMAN CREEK CROSSING

OBSERVATIONS

1. Low traffic volumes on Vanessa Dr.
2. Connection to existing parks.
3. Challenging location at NC 211 intersection bridge. Option to accommodate sharrow

SEGMENT 9 FROM: LONG BEACH RD SE TO: E MOORE ST ALONG: NC 211



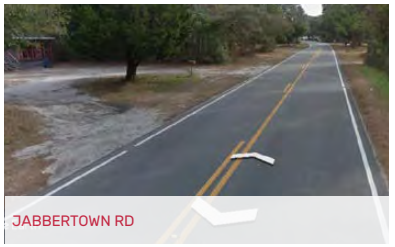
NC 211

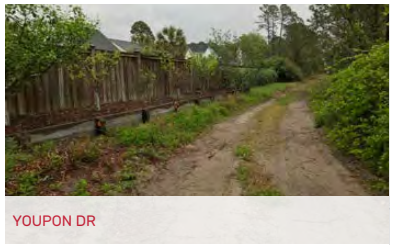
OBSERVATIONS

1. North Caswell Ave as possible alternative to NC 211
2. Potential opportunity to reconfigure E Moore St parking to accomodate sidepath.

E MOORE ST

SEGMENT 10 **FROM:** NC 211 **TO:** FORT FISHER FERRY


JABBERTOWN RD


YOUPON DR

DOSHER CUTOFF SE

LONG BEACH ROAD (133)

OBSERVATIONS

1. Wide easement on east side of River Rd SE.
2. Connection to Brunswick Little Theater; Driveway conflicts on either side of street
3. Dosher Cutoff may have signalized intersection at River Rd SE intersection to connect park.
4. Jabbertown Rd may be less traffic than Rob Gandy Blvd.
5. Wide bridge over canal, banks of of which are steep. Large swales on east side of street.
6. Youpon Dr connects Leonard and E Moore (211). Park and Stuart are optional.
7. Fodale Ave is a viable alternative - connects to cemetery and Parks and Recreation Department.

COMMUNITY ENGAGEMENT

INTRODUCTION

Community input is an essential part of any planning process and the most effective plans are firmly rooted in the realities and visions of the community that created them. This plan uses a combination of input from community, the steering committee, and CFCOG staff to inform the community engagement portion of the information-gathering process.

METHODOLOGY

The staff and project team designed the public engagement process to maximize the amount of input and feedback from community members and steering committee. Due to the public gathering restrictions in effect during the COVID-19 pandemic, the public engagement process was conducted on virtual platforms.

Both public meetings included a recorded presentation for the public to view and a follow-up online public opinion survey. Local jurisdictional staff helped advertise the public engagement and encouraged people to particpate in the survey. The summary of the meetings, input strategy, and the outcomes are described below.

PUBLIC ENGAGEMENT # 1

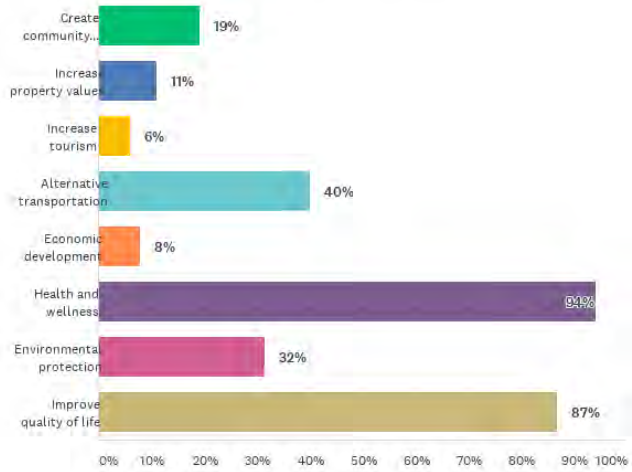
Timeframe
August 2020

Purpose
To solicit feedback on the needs and wants of the community regarding a dedicated bike-ped facility along the NC 211 corridor. The questions were targeted to find out the frequency of use for biking, key destinations, and any challenges the users are aware of along the corridor that may prevent development of the facility.

Number of responses
462 responses

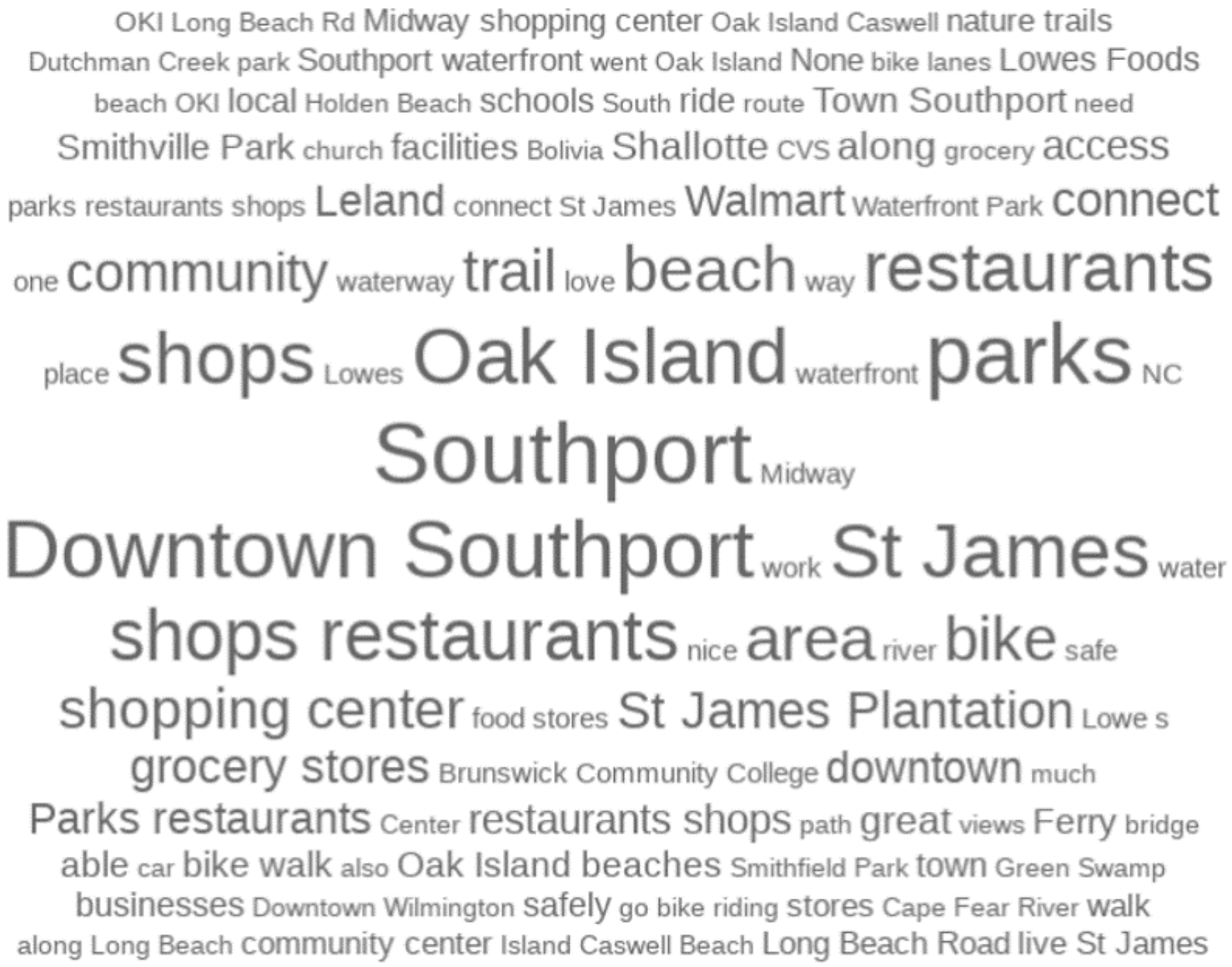
Key Findings
- Participants supported building a bike-ped facility for the benefit it would provide to the community.
- The top three benefits identified were health and wellness (94%), improved quality of life (87%), and alternative transportation (41%).
- Respondents identified a desire to use the facility to engage in physical activity (94%), recreational activity (86%), and to access parks and open spaces (68%).
- The largest number of respondents (41%) mentioned that they are within quarter to half mile from closest sidewalk, bike facility or a greenway trail.
- Participants identified Southport, Oak Island, St. James as some of the top destinations they would like to visit using the bike-ped facility. Other destinations included shops, restaurants, and beaches.
- Challenges along the corridor identified by participants included wetlands, easements, bridges, and heavy traffic.

Q1 Which benefits of a biking and walking facility are most important to you? your TOP 3 choices.

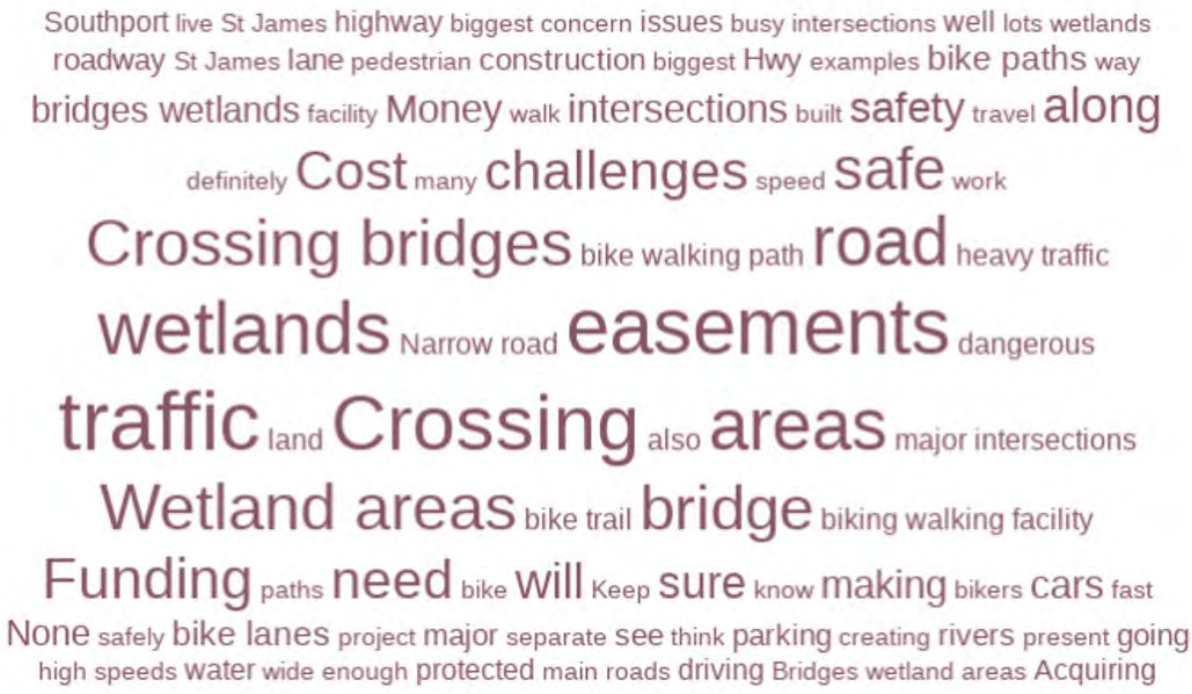


Q2 I would like to use the future 211 biking and walking facility:(Select all that apply.)

Q3 How often would you use the NC 211 walking and biking facility?



Desired destinations to be connected by bike-ped facility



Anticipated challenges

PUBLIC ENGAGEMENT # 2

Timeframe

November 2020

Purpose

To solicit feedback on the preliminary proposed routes for a dedicated bike-ped facility from Stone Chimney Road to Fort Fisher Ferry in Southport. An online questionnaire was set up where cut sheet images of proposed routes and site conditions observations were shared with the public, who were then asked to provide comments on the routes, identify desired destinations, and anticipated challenges they may have observed.

Number of responses

162 responses

Key Findings

Comments from the online survey are summarized below.

- Segment 1: Overall support for a separated bike-ped facility, concern with heavy traffic on NC 211; and Winding River Plantation entrance monument conflict.
- Segment 2: Narrow road; Zion Hill is scenic but sees heavy traffic and curves. Close coordination with Winding River Plantation HOA will be necessary to avoid conflict with private amenities.
- Segment 3: Concern with traffic speed; narrow bridge; support for optional connection to Oak Island.
- Segment 4: Support for this route; destinations along the way; Live Oak Road as an alternative; already a popular route.
- Segment 5: Concern with heavy traffic and support for a separated bike-ped facility; recognized as fastest route from Rock Chimney Road to Southport.
- Segment 6: Need protective barrier on the bridge; purple route is scenic; traffic concern on Long Beach Road.
- Segment 7: Preference for Live Oak Dr; overall support for this route with some traffic concern.
- Segment 8: Purple route desirable - more scenic; narrow bridge concern; evaluate possibility of separate multiuse path on separate bridge; support for park connection.
- Segment 9: Support for all destination connections; Downtown Southport connection; 8th street-12th St is historically African American Neighborhood. Additional feedback was to consider revised connection from Downtown Southport to NC 211 and Jabbertown Road intersection with traffic signal instead of connection to NC 211 from 12th Street.
- Segment 10: Support for park connection and downtown connections.
- Other feedback: Overall support for the project and excitement; expressed need for physically separated bike-ped facility because of traffic concerns. Need to work with local HOAs and residents for project implementation.

"Love the idea. Please continue. You have my vote. We desperately need this available in our community."

"Would be a great opportunity for loop ride from Wilmington back up Brunswick Co side of Cape Fear River"

"This is a great idea and something missing from our general area. It could be an attraction for tourists and keep in mind the safety factor, especially with families and small children on bikes."

- Quotes from public engagement # 2

WINDING RIVER PLANTATION HOA MEETING

Timeframe

January 27, 2021

Purpose

At the request of the Homeowners Association for Winding River Plantation community, the project team presented the project at the regular HOA meeting. Project process, East Coast Greenway connectivity, previous community engagement findings, opportunities and constraints along the corridor were discussed along with the specific design options for Zion Hill Road that runs through the community.

Number of responses

93 attendees

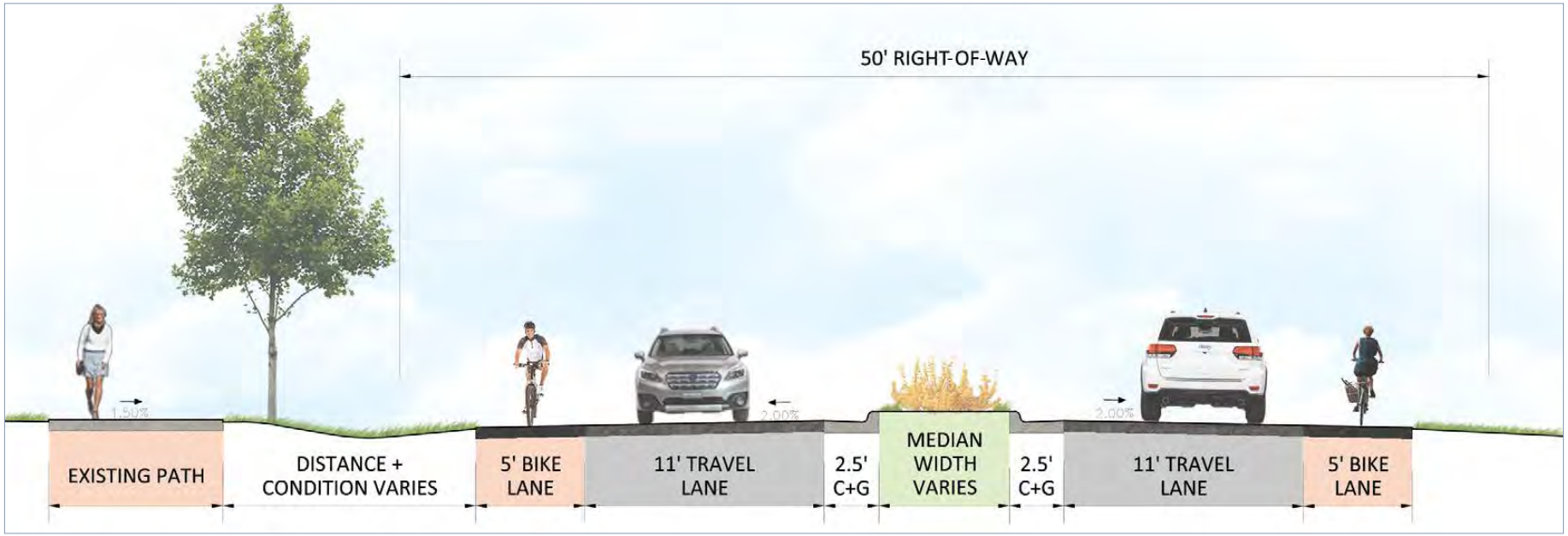
Key Findings

Winding River community showed interest in the East Greenway plans and is receptive of the ECG bike-ped path running through their community along Zion Hill Road.

Existing Zion Hill Road and Winding River Plantation Trail

"Our Winding River community has much interest in the East Greenway plans and is thinking through the various aspects of having the path run through our community. We would like to keep the lines of communication open in the future."

Feedback from HOA meeting shared by Teresa Casey, WR ABCPOA Chair



Proposed Street Cross Section Shared with HOA for Zion HIll Road

RECOMMENDATIONS


SPEED
LIMIT
25

EAST COST GREENWAY – NC 211 CORRIDOR - RECOMMENDATIONS

CORRIDOR SEGMENTS

The most detailed evaluation is presented in the detailed corridor segments where cut sheets are provided to set up preferred corridor segments for future implementation. The segments were selected based on public input priority corridors and Staff recommendations. Information contained in each cut sheet includes:

- Detailed segment map which identifies streams and wetlands, roads, neighborhoods, schools, parks, and existing pedestrian / bicycle facilities as well as adjacent greenway projects (some of which are detailed in subsequent cut sheets)
- Recommendations
  - Proposed alignment (note: where streams, creeks, or wetlands were inaccessible, assumptions were made to reach an alignment solution)
  - Pedestrian bridges and boardwalks
  - Pedestrian crosswalk locations
- Project Snapshot including:
  - Project Location
  - Project Type
  - Length of Project
  - Estimated Construction Year
- Previous Planning Efforts
- Potential Right-of-Way Needs
  - Total estimated area needed
  - Number of impacted parcels that are privately owned (not State, County, or municipal)
  - Number of impacted property owners
- Potential Permitting Needs
- Estimated Project Cost (description on how to use the estimated costs is provided below)
  - 2020 Estimated Construction Costs
  - Escalated Construction Costs (adjusted to reflect the project's estimated construction year)
  - 35% Contingency
  - Estimated Right-of-Way Costs
  - Estimated Design Services
  - Estimated Construction Engineering and Inspection (CEI) services
- Potential Funding Sources

INTERSECTION IMPROVEMENTS

The following is a description of features and the design approach for greenway or trail crossings for the NC 211 feasibility study.

Major Intersection Crossings

Where trails intersect roadways along the project corridors, the crossing design should minimize trail users' exposure to traffic and minimize the speed differential at the points where travel movements intersect. Another goal is to provide clear messages regarding right-of-way to all users moving through intersections in conjunction with design features that result in higher compliance where users are expected to yield or stop. Special attention should be given to ensuring that people with limited or no vision are given sufficient cues at intersections to prevent them from unintentionally moving into the street or the trail facility.

Key design considerations or features at major intersections include:

- Providing adequate sight lines at trail intersections so users on both shared use paths can identify a potential conflict and take appropriate measures to avoid a crash
- Using high-visibility crosswalk markings
- Wideneing curb ramps at all corners for locations with trails intersecting or crossing multiple legs of an intersection
  - this provides benefit at signalized intersections in allowing more trail user flexibility depending on signal phase upon arriving at the intersection
- Utilizing trail wayfinding with advance intersection warning signs for trail users
- Clearly delineating the trail centerline at approaches for trail user separation
- Installing pedestrian signals with detection or push buttons placed in accordance with accessibility guidelines
- Providing "bend-out" (offset) trail crossings of side streets (6 ft to 13.5 ft offset recommended)
  - Creates at space for yielding zone for motorists turning right.
  - Creates larger queuing areas for bicyclists and pedestrians within the street buffer.
- Using traffic signal phasing to reducing conflicts
  - leading pedestrian intervals and phase separation should be considered

A critical component is the analysis turning movements at major intersections including left and right-turns across trail crossings. Specific thresholds should be included in the design criteria and where vehicle movements cannot be restricted and separate phases aren't provided, geometric treatments should be considered to reduce vehicle speeds and increase sight distance. At locations where conflicts are relatively high and the provision of a separate phase is not feasible or desirable, the following should be considered:

- Install regulatory signs, such as the TURNING VEHICLES YIELD TO (or STOP FOR) BICYLISTS (or PEDESTRIANS) (R10-15 series) and NO TURN ON RED
- Install medians (including refuge medians) or hardened center lines to slow vehicle left-turn speeds
- Offset the trail crossing to create space for yielding
- Provide a flashing yellow signal indication

Disclaimer

This is a preliminary document. All results, recommendations, cost opinions, and commentary contained herein are based on limited available data at the time of preparation. Further engineering analysis and design are necessary prior to implementing any of the recommendations contained herein. This document is an instrument of professional service. Reuse or alteration is at the user's sole risk.

How to use Estimated Costs

When reviewing the estimated project costs contained in the subsequent cut sheets, please consider the following:

- The estimated costs are indicative of a planning-level of analysis. No survey, subsurface investigation, or precise measurements were taken to produce base maps.
- Elements of the project are priced by using a linear foot (LF) or mile (MI) unit cost from the US dollar value in 2020. Each item is inclusive of all costs associated with their construction. However, these costs should not be taken as a final estimate and should only be used for planning purposes.
- Detailed construction cost estimates should be completed during the design phase of each project.
- The estimated subtotal of construction costs is escalated out to the fiscal year that each segment is expected to be constructed (see below for how this was calculated by the design team).

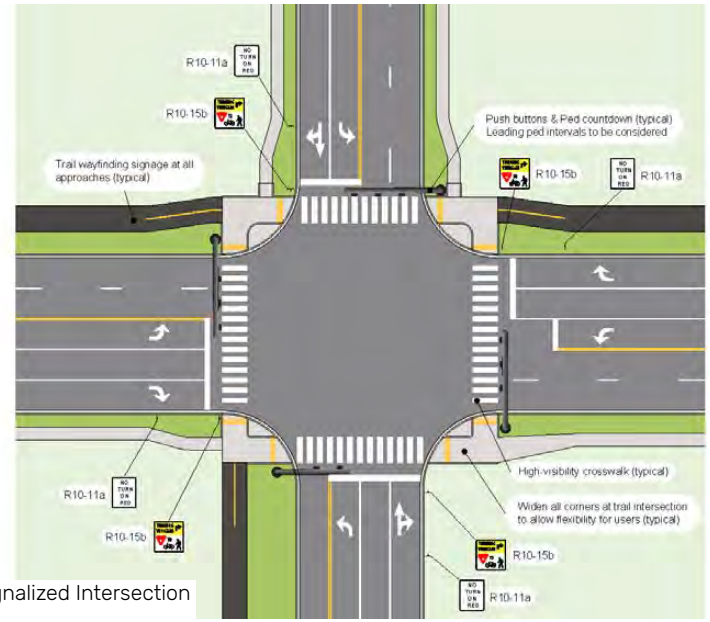
Typical elements for each estimate include but are not limited to:

- Cost per linear foot (LF) of 10-foot wide asphalt trail - $178.87/LF. This price includes grading, base materials, basic drainage, and asphalt.
- Cost per linear foot (LF) of boardwalk - $1,136.29/LF. This price includes piles for foundation, boardwalk substructure, decking, and handrails.
- Cost per linear foot (LF) of bridge - $3,341.36/LF. This price includes bridge foundations, end bents/caps, prefabricated bridge and bridge erection.
- Cost per linear foot (LF) of erosion control: $21.78/LF. This price includes silt fence and outlets, temporary crossings, construction entrances, etc.
- Cost per mile (MI) of temporary traffic control for construction: $9,894.35/MI. This price includes signs, traffic cones/barrels, temporary concrete barriers, flagmen, etc.

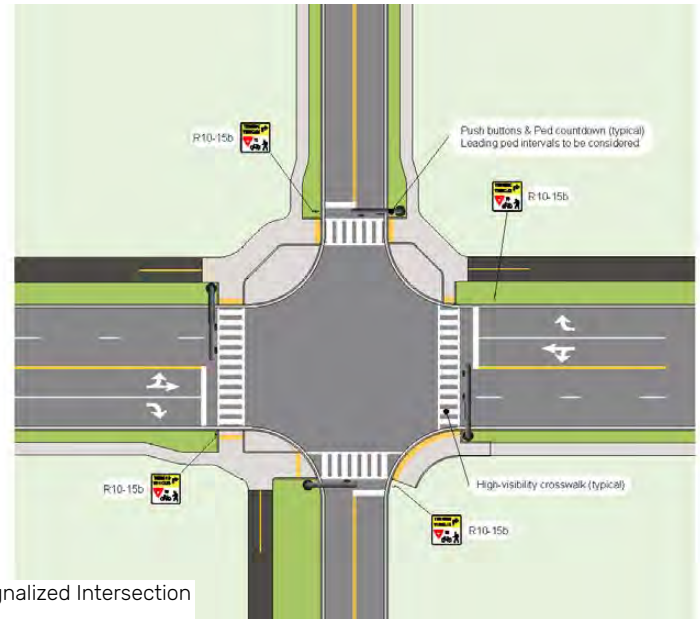
Each estimate was projected to a fiscal year (FY) of probable construction. For example, the fiscal year 2025 is identified as "FY2025". As more detailed information becomes available during the design process, costs will evolve. Costs are listed in the base year of 2020 and should be escalated at a rate of 3.5% (current industry standard) each year thereafter. The formula used is a linear compound interest formula, $A = P(1 + r)^t$

- where P is the original cost in 2020 dollars;
- r is the rate of 3.5% escalation; and
- t is difference in years from 2020 to construction year (i.e. the t value for a project constructed in 2025 would be: ***t = (2025-2020) = 5.***

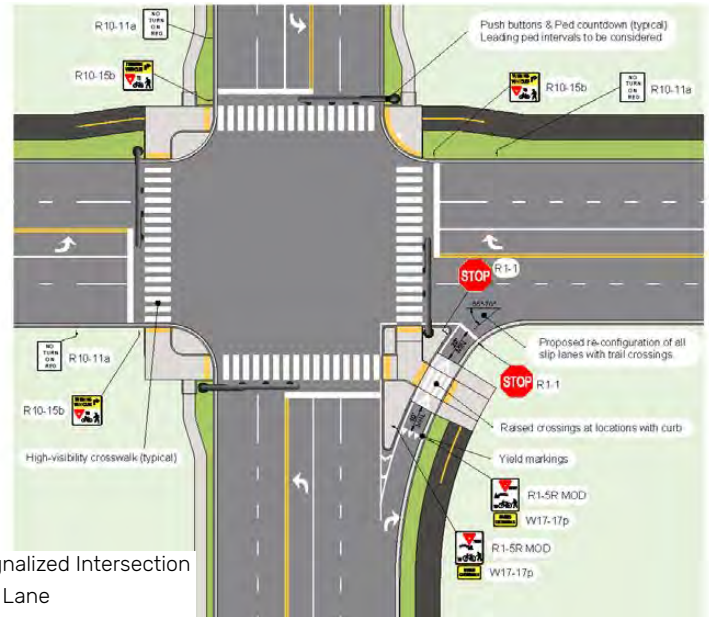
Each estimate includes a 35% contingency line for unforeseen or unknown costs that may arise during design and construction of projects. Unforeseen or unknown costs may include any flood study permit fees, such as CLOMR/LOMR, any additional construction material costs that may vary over time.



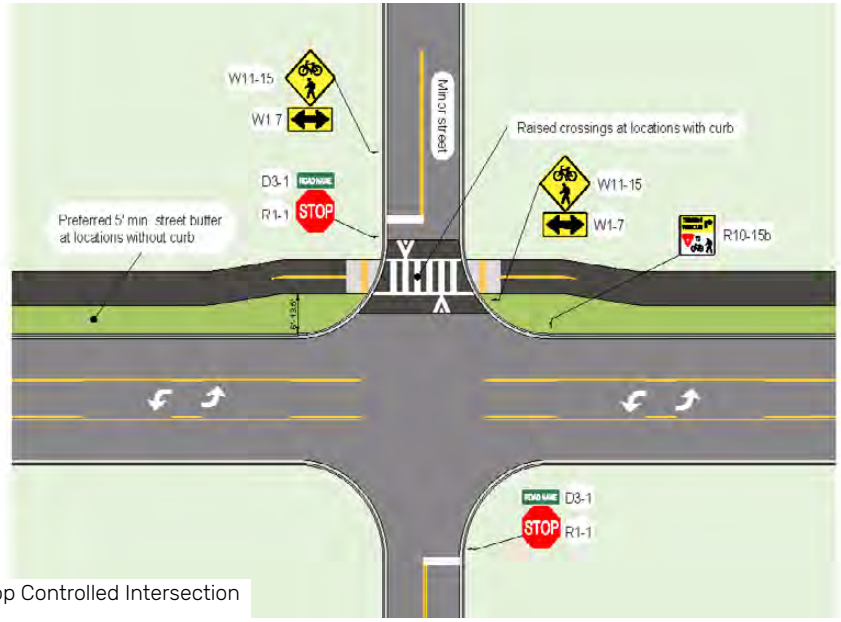
Major Signalized Intersection



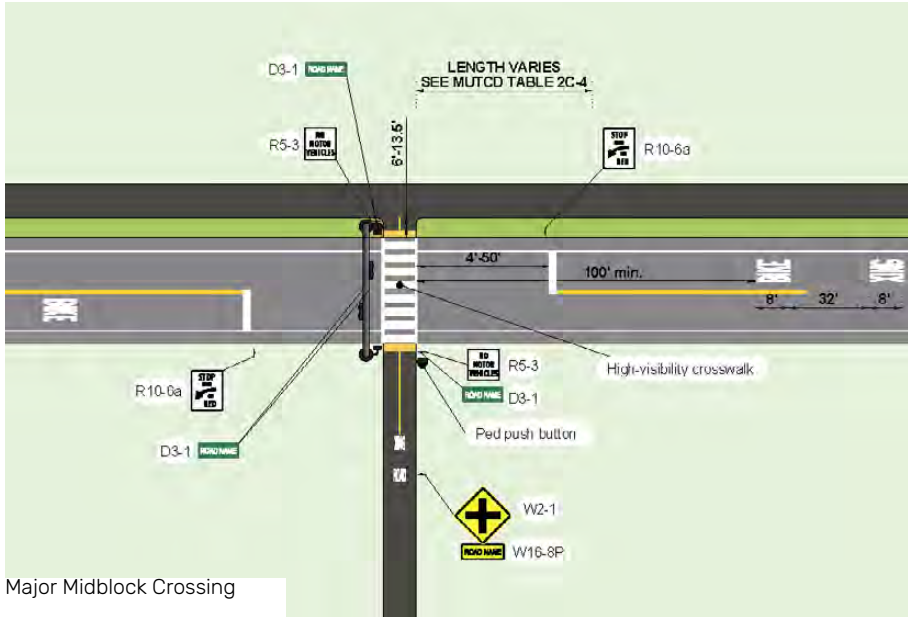
Minor Signalized Intersection



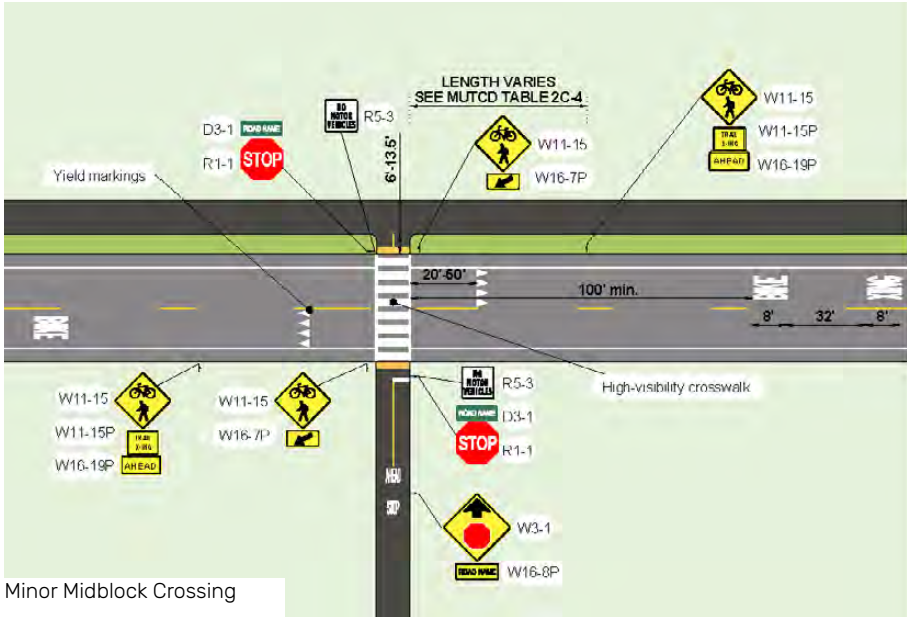
Major Signalized Intersection with Slip Lane



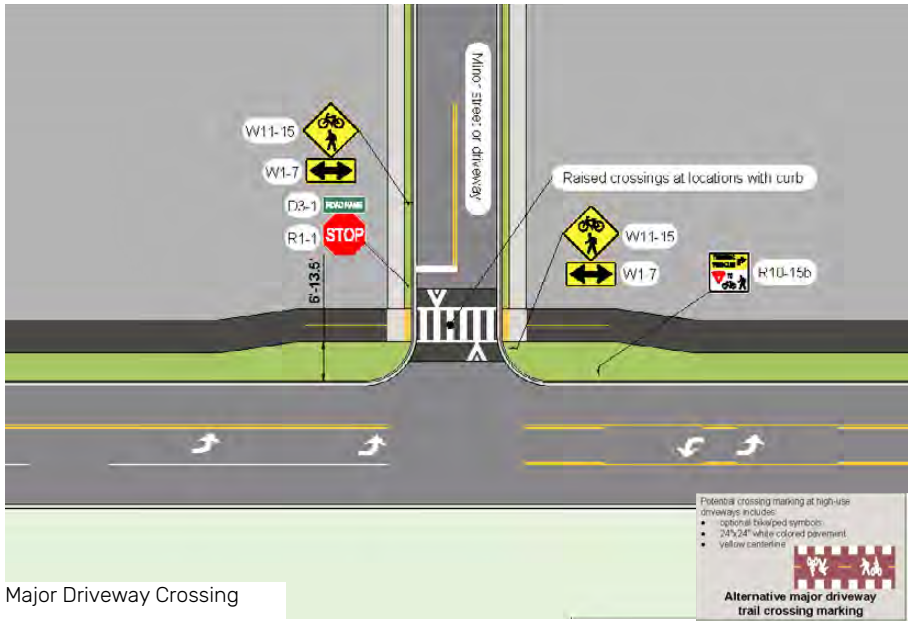
Stop Controlled Intersection



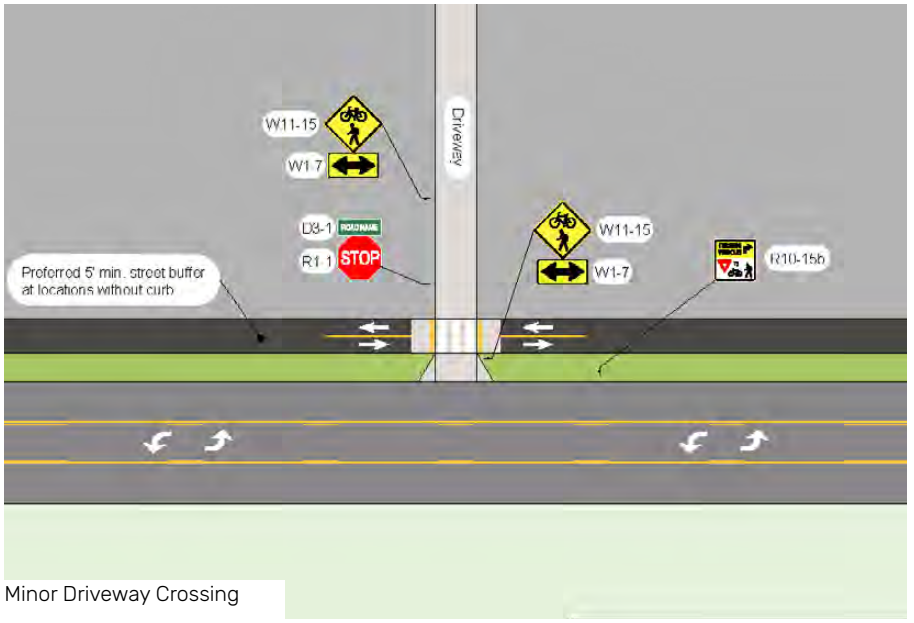
Major Midblock Crossing



Minor Midblock Crossing



Major Driveway Crossing



Minor Driveway Crossing

TYPE	CATEGORY	SUBTYPE	DESCRIPTION	COMMENTS	EXAMPLE LOCATION	TREATMENTS
A	Signalized Intersection	A.1	Major	Multi-lane approaches typical, graphic will show trail on north side with a trail intersection or spur to the south	NC211 & E F Middleton Blvd	Ped signal leading interval Raise Crossing 6-16.5' Offset Trail-user warning signs 25' Solid yellow pavement markings at trail approaches (Possible median refuge)
		A.2	Minor		NC211 & Dosher Cutoff SE	Ped/Bike signal leading interval SUP Crossing pavement marking 6-16.5' Offset Trail-user warning signs 25'Solid yellow pavement markings at trail approaches (Possible median refuge)
		A.3	Major/ with slip lane	Similar to A.1	NC211 & Zion Hill Rd SE	(A1/A2 Outside of slip lane) Raised crossing with SUP crossing pavement markings Motorist stop/yield signs Trail-user warning signs Yield pavement markings (Potential truck apron/shoulder) -Smart Channel Design
B	Unsignalized Intersection	B.1	Stop-controlled	Trail with a raised crossing, typical of neighborhood routing and locations.	NC211 & W 14th ST	Motorist stop/yield signs Raised crossing Trail-user warning signs 6-16.5' Trail offset distance 25' Solid yellow pavement markings at trail approaches
		B.2	Yield-controlled			Motorist stop/yield signs Raised crossing Trail-user warning signs 6-16.5' Trail offset distance 5' Solid yellow pavement markings at trail approaches
		B.3	Uncontrolled	This will highlight yield markings at crossing, with a raised trail.	N Caswell Ave & W 14th ST	Motorist stop/yield signs Raised crossing Trail-user warning signs 6-16.5' Trail offset distance 25' Solid yellow pavement markings at trail approaches Yield pavement markings

TYPE	CATEGORY	SUBTYPE	DESCRIPTION	COMMENTS	EXAMPLE LOCATION	TREATMENTS
C	Midblock	C.1	Major	Typical of an enhanced mid-block crossing with (assume >9,000 AADT, 35mph or higher)	NC211 - Between Woodside Trail & Mosquito Branch Rd SW	Pedestrian hybrid beacon/RRFB with warning signs Motorist stop/yield signs 6-16.5' Trail offset distance 25' Solid yellow pavement markings at trail approaches Yield pavement markings
		C.2	Minor	Typical minor street crossing (assume <9,000 AADT, <30 mph)	NC211 - Between J Swain Blvd & Dutch St SE	Motorist stop/yield signs SUP crossing pavement markings Trail-user warning signs 6'-16.5' Trail offset 25' Solid yellow pavement markings at trail approaches Yield pavement markings
D	Driveway	D.1	Major	Minor streets, Commercial, >10vph		Motorist stop/yield signs Raised crossing Trail-user warning signs 6-16.5' Trail offset distance 25' Solid yellow pavement markings at trail approaches
		D.2	Minor	Residential driveways, <10vph		Motorist stop/yield signs Typical driveway crossing pavement markings (green/red hatch with elephant feet) Trail-user warning sign 6-16.5' Trail offset distance 25' solid yellow pavement markings at trail approaches
E	Bridge		Major	The bridge traffic lanes will be shifted or reallocated to allow for a protected trail	N Middleton Ave (906)	Travel lanes to be shifted or reallocated to gain width for trail. Trail to be vertically separated behind curb or other barriers if possible. Vertical delineators to provide additional visuals to motorists.

Cost estimates for land acquisition/right-of-way needs are based on the Brunswick County's assessed property values and are an approximation. The method for attaining costs are based on the current tax value of each property (broken down per square foot) and multiplied by the easement area needed for the trail and associated construction based on the alignments shown.

Engineering and Planning Services (design costs) can range between 8-14% of construction costs. The cost of design has not been escalated in the estimates with the assumption that design may occur several years before construction and that design fees are somewhat more stable than construction costs. Survey and wetland delineation are included in the design costs as well as FEMA studies as applicable. Please note that the estimated design cost percentage may be higher on projects that encounter:

- The inclusion of structures such as bridges and boardwalks
- Impacts to FEMA regulated floodways; will require detailed flood modeling and permitting
- Where federal funding is utilized – this requires a high level of regulatory compliance
- If the project is smaller in size/scope

Construction Engineering and Inspection (CEI) services account for a third party CEI firm providing to the municipality documentation of the construction, reviews submittals, approval of pay applications, and coordination with NCDOT on federally and state funded projects. Fees for CEI services range between 8% and 12% of the construction costs. Since the CEI occurs at the same time as the construction, the estimate is based on the escalated construction costs. The municipality may also provide CEI services in-house for non-state or non-federal funded projects as a cost savings option.

Estimated Budget Recommendation Quick Key

2020 Construction Estimate (Basis for Calculations):	(Basic elements of the project) x (linear feet x unit cost)
Escalated Construction Cost Estimate (Construction Year):	Basis compounded at 3.5% annually to the Construction Year
35% Contingency:	35% of escalated construction estimate
Estimated Right of Way Costs:	(Estimated easement area) x (current tax value)
Estimated Design Services	11% of 2020 Basis cost +/-3% adjusted per project
Estimated CEI Services	10% of escalated cost +/-2% adjusted per project
Total Estimated Budget Recommendation:	**TOTAL**

SEGMENT 1

Segment 1 begins at the Brunswick Senior Center just off of Stone Chimney Road and then follows NC-211 (Southport-Supply Road) on the north side all the way to Zion Hill Road. A separated pedestrian bridge and boardwalks will be needed to cross Lockwood Folly River and there will need to be coordination with the transmission lines around the area of the river. This segment will be an ideal candidate to leverage NCDOT's complete streets policy when the widening of Southport-Supply Road happens.

Project Snapshot

- Project Location: Southport-Supply Road
- Project Type: Sidepath/MUP
- Length of Project: 2.60 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

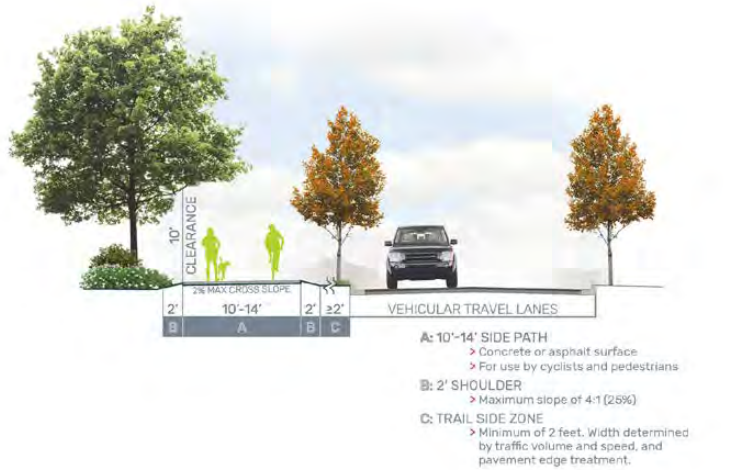
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

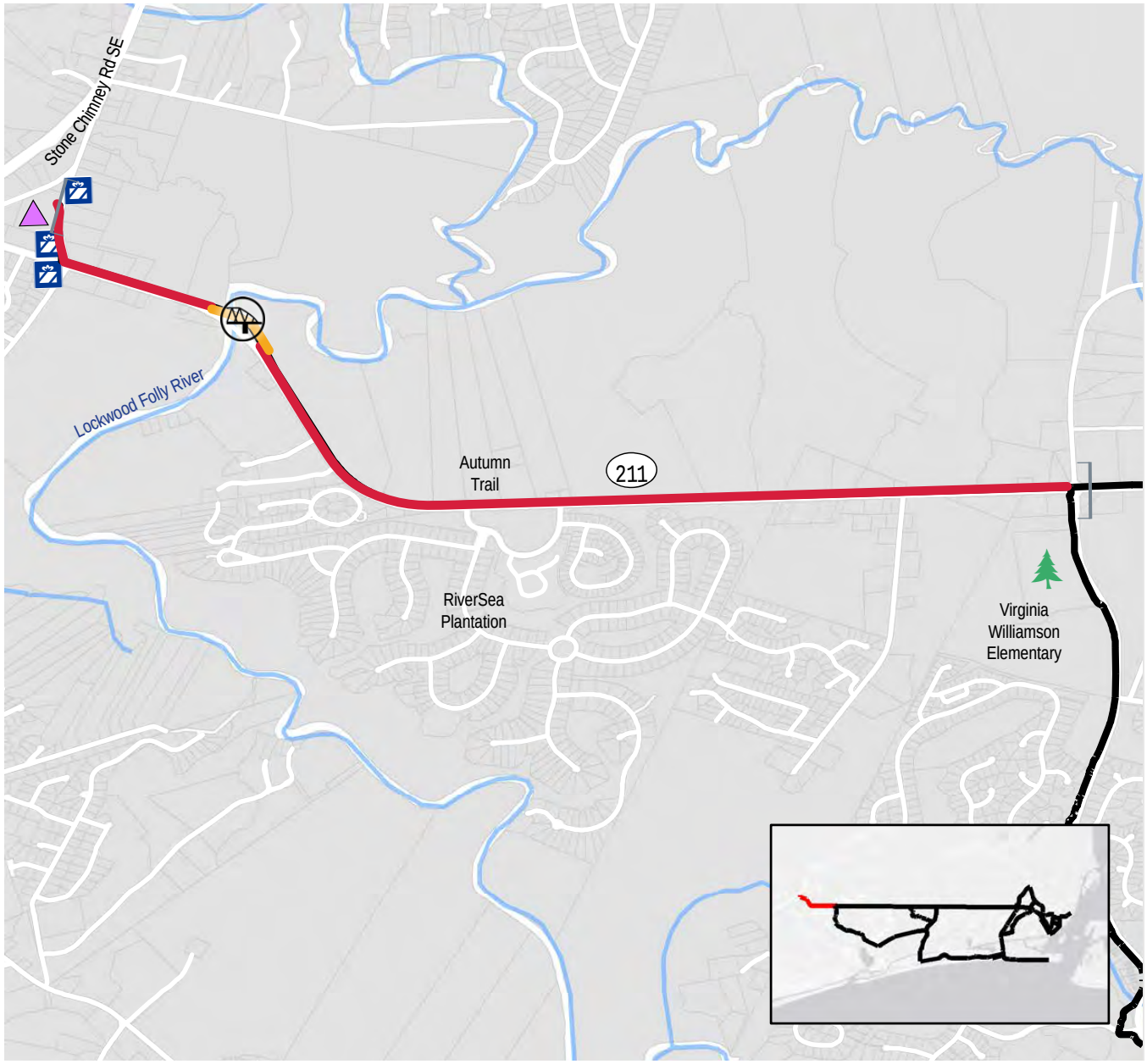
- Total estimated area needed: 0.94 AC
- Number of impacted parcels (not City or County owned): 7
- Number of impacted property owners: 7

Estimated Project Cost

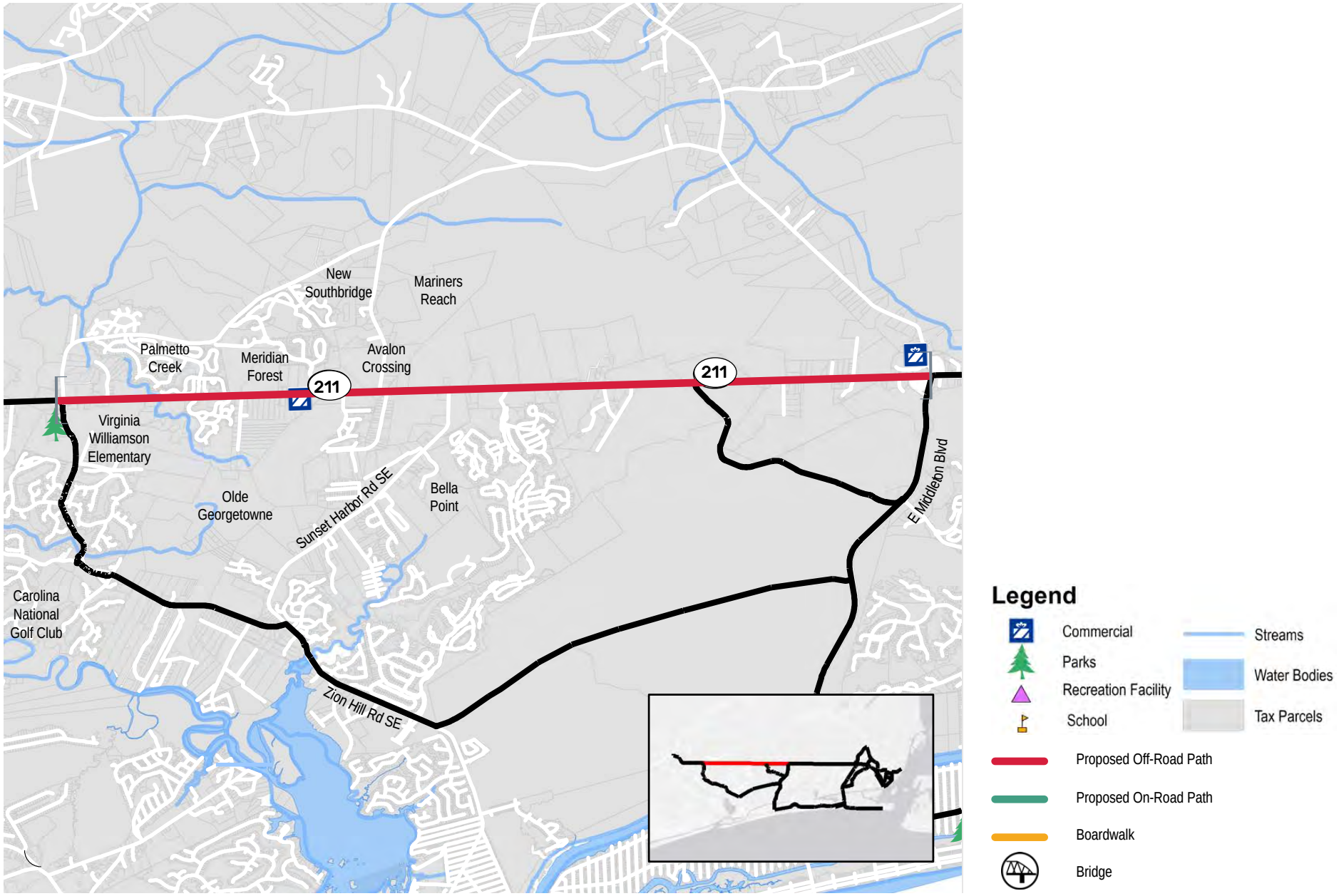
2020 Construction Cost Estimate (Basis for Calculations):	$ 4,528,000
Escalated Construction Cost Estimate (FY2025):	$ 5,780,000
35% Contingency:	$ 2,023,000
Estimated Right-of-Way Costs:	$ 16,000
Estimated Design Services 3% *adjust per project	$ 906,000
Estimated CEI Services 2% *adjust per project	$ 694,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 9,419,000**



SEGMENT 1


Stone Chimney Rd SE
Lockwood Folly River
Autumn Trail
211
RiverSea Plantation
Virginia Williamson Elementary
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 2A


New Southbridge
Mariners Reach
Palmetto Creek
Meridian Forest
Avalon Crossing
211
211
Virginia Williamson Elementary
Olde Georgetowne
Sunset Harbor Rd SE
Bella Point
E Middleton Blvd
Carolina National Golf Club
Zion Hill Rd SE
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 2A

Picking up from Segment 1 at Zion Hill road intersection with Southport-Supply Road, Segment 2A continues along NC-211 on the north side of the road all the way to the East Middleton Boulevard intersection. This segment will also be a good candidate for the Complete Street Policy and for NCDOT to build as part of a roadway improvement project for Southport-Supply Road.

Project Snapshot

- Project Location: Southport-Supply Road
- Project Type: Sidepath/MUP
- Length of Project: 6.14 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

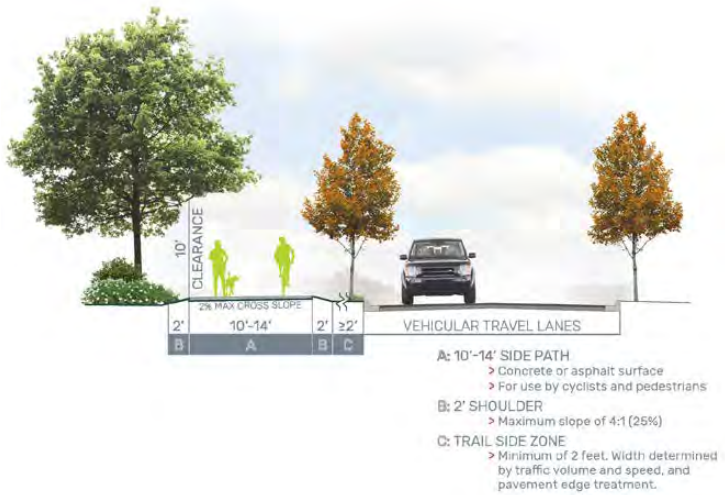
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

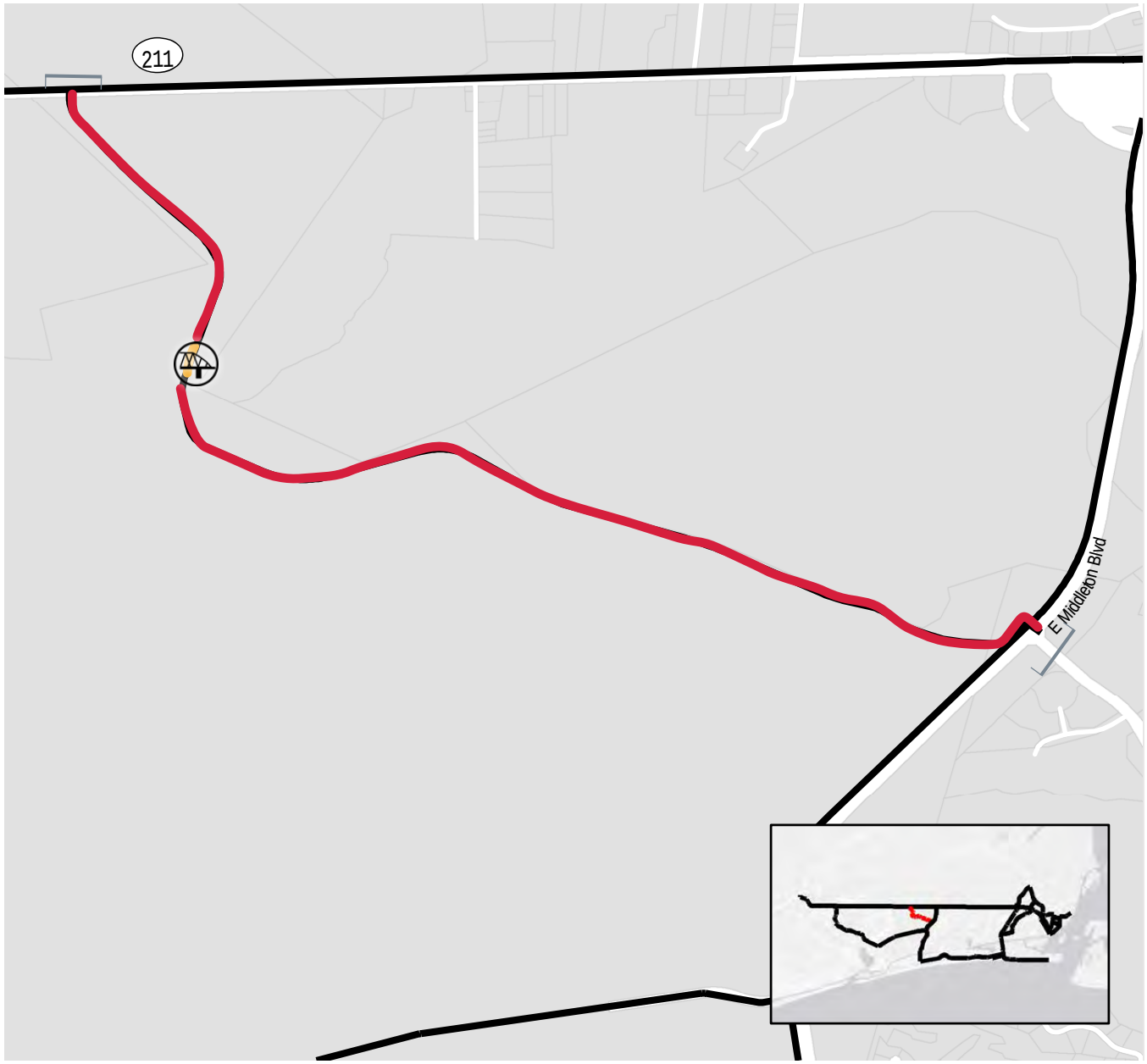
- Total estimated area needed: 0.09 AC
- Number of impacted parcels (not City or County owned): 8
- Number of impacted property owners: 6

Estimated Project Cost

2020 Construction Cost Estimate (Basis for Calculations):	$ 7,463,000
Escalated Construction Cost Estimate (FY2025):	$ 9,525,000
35% Contingency:	$ 3,333,750
Estimated Right-of-Way Costs:	$ 60,000
Estimated Design Services 20% *adjust per project	$1,493,000
Estimated CEI Services 15% *adjust per project	$1,143,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 15,554,750**



SEGMENT 2B


211
E Middleton Blvd
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 2B

Segment 2B would cross Southport-Supply Road (NC-211) with a mid-block crossing and utilize a single parcel to navigate down and intersect with East Middleton Boulevard at the intersection with Seafield Drive and the St. James community.

Project Snapshot

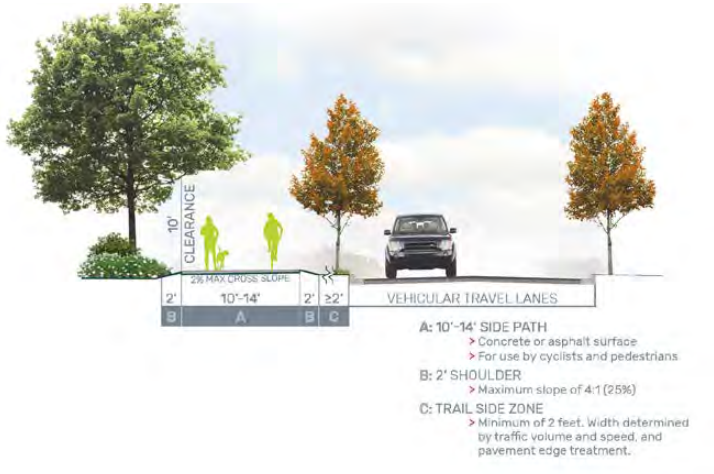
- Project Location: Easement
- Project Type: Sidepath/MUP
- Length of Project: 3.49 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

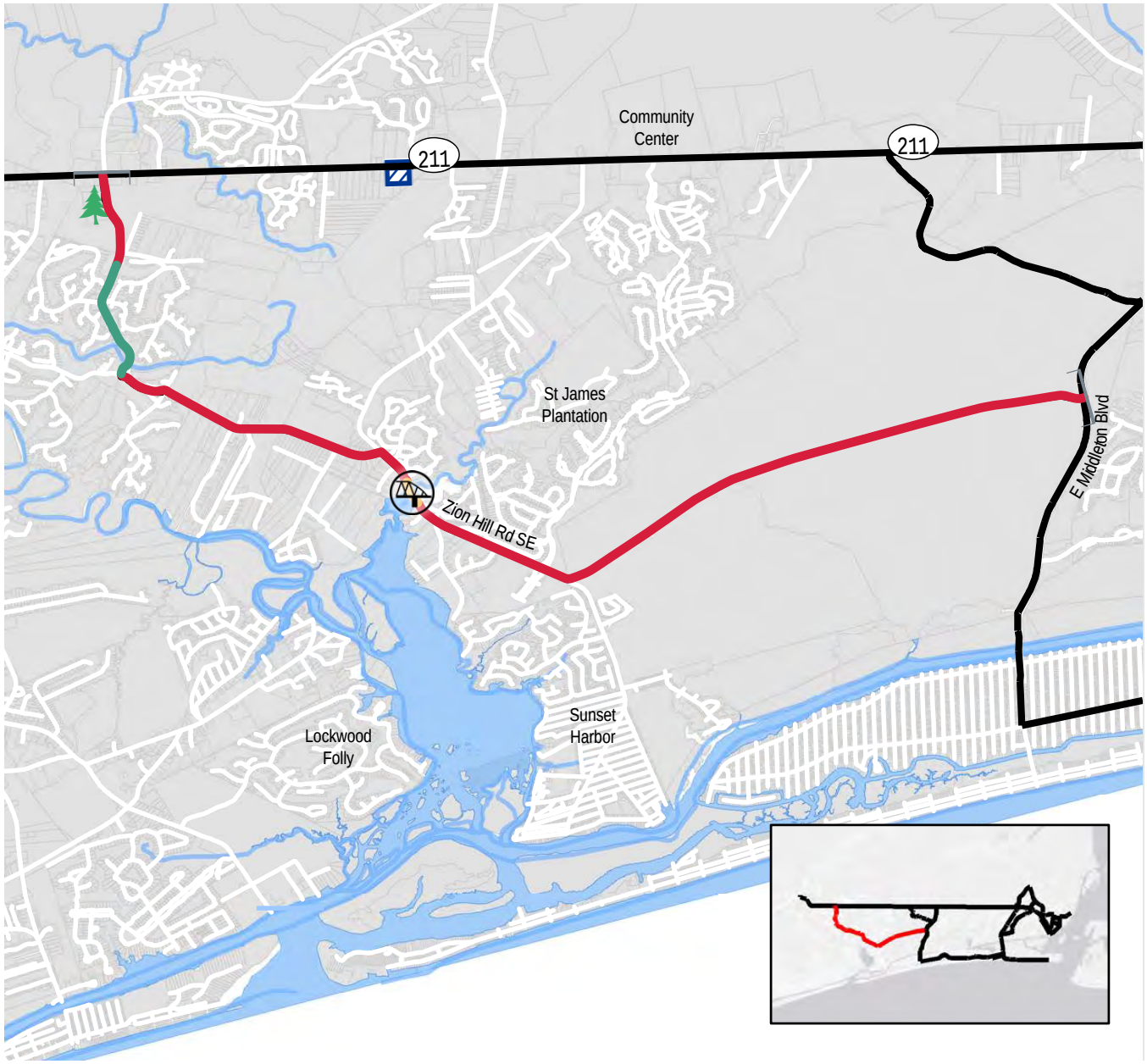
- Total estimated area needed: 7.93 AC
- Number of impacted parcels (not City or County owned): 1
- Number of impacted property owners: 1



Estimated Project Cost

2020 Construction Cost Estimate (Basis for Calculations):	$ 4,753,000
Escalated Construction Cost Estimate (FY2025):	$ 6,066,000
35% Contingency:	$ 2,123,100
Estimated Right-of-Way Costs:	$ 20,000
Estimated Design Services 20% *adjust per project	$ 951,000
Estimated CEI Services 15% *adjust per project	$ 728,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 9,888,100**

SEGMENT 2C



This segment starts to pull the project down and away from Southport-Supply Road (NC-211) starting with a crossing at the intersection of Zion Hill Road. The trail will then follow the west side of the road past Virginia Williamson Elementary and through the Winding River community. There is an opportunity to use existing sidewalk and sidepaths but additional coordination with Winding River will be required. Bike lanes may be the result through Winding River because of the limited Right-of-Way along the road. Past Winding River, the trail crosses to the east side of the road at Weatherly Lane/Riverhouse Road

› Continued on next page

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Streams
- Water Bodies
- Tax Parcels
- Proposed Off-Road Path
- Proposed On-Road Path
- Boardwalk
- Bridge

SEGMENT 2C

› Continued from previous page

and continues in the Right of Way until Sunset Harbor Road. The segment follows Sunset Harbor in the Right-of-Way on the west side of the road about a quarter of a mile then crosses with a mid-block crossing and begins a boardwalk and bridge over Mill Creek. The trail cuts away from Sunset Harbor after passing St. James Plantation and connects to East Middleton Boulevard over several large tracks of undeveloped land.

Project Snapshot

- Project Location: Zion Hill Road
- Project Type: Sidepath/MUP
- Length of Project: 6.99 miles
- Estimated Construction Year: 2031

Potential Permitting Needs

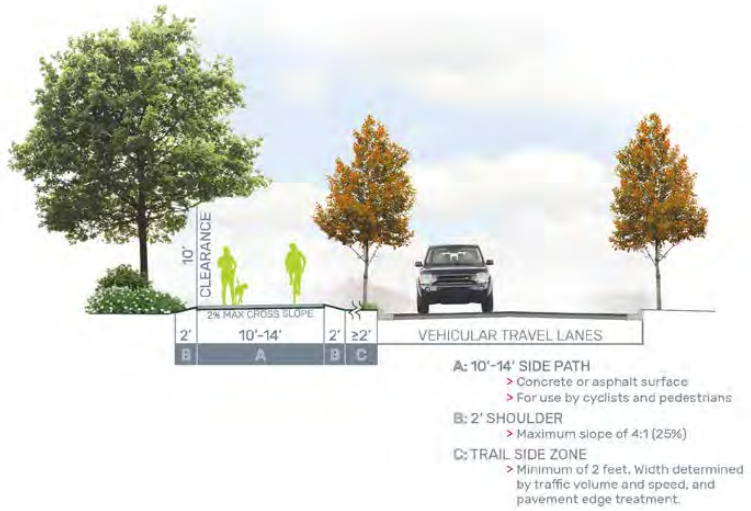
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

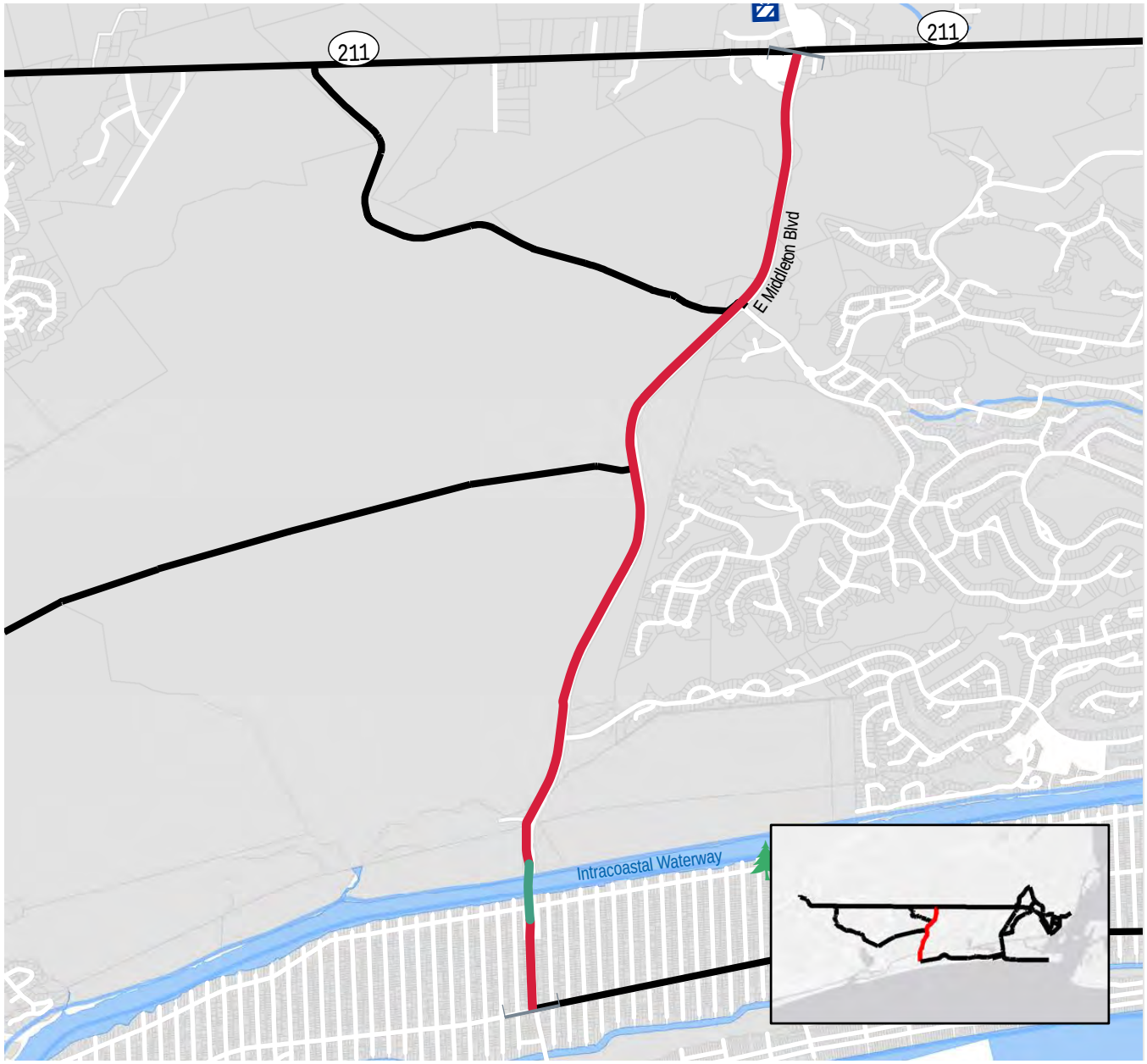
- Total estimated area needed: 21.19 AC
- Number of impacted parcels (not City or County owned): 77
- Number of impacted property owners: 45

Estimated Project Cost

2020 Construction Cost Estimate (Basis for Calculations):	$ 9,806,000
Escalated Construction Cost Estimate (FY2031):	$ 16,773,000
35% Contingency:	$ 5,870,550
Estimated Right-of-Way Costs:	$ 87,000
Estimated Design Services 20% *adjust per project	$ 1,962,000
Estimated CEI Services 15% *adjust per project	$ 2,013,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 26,705,550**



SEGMENT 3


211
211
E Middleton Blvd
Intracoastal Waterway
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 3

Segment 3 Begins at Southport-Supply Road (NC-211) with a crossing at the intersection and then continues down the west side of East Middleton Boulevard. Segments 2A, 2B, and 2C intersect this alignment. The roadway would be modified just before, on the bridge over and just after the Intracoastal Waterway to eliminate a southbound vehicular lane and replace it with the trail and a barrier to protect users. Both north bound lanes will be preserved for emergency evacuation. Segment 3 stays within the Right of way for the most part and minimal easements are required.

Project Snapshot

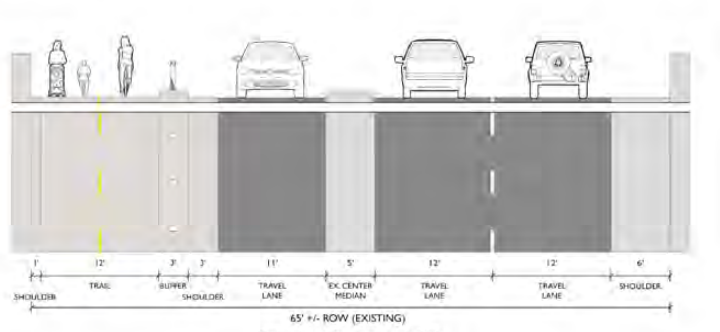
- Project Location: E Middleton Blvd
- Project Type: Sidepath/MUP
- Length of Project: 4.11 miles
- Estimated Construction Year: 2031

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 0.11 AC
- Number of impacted parcels (not City or County owned): 24
- Number of impacted property owners: 18

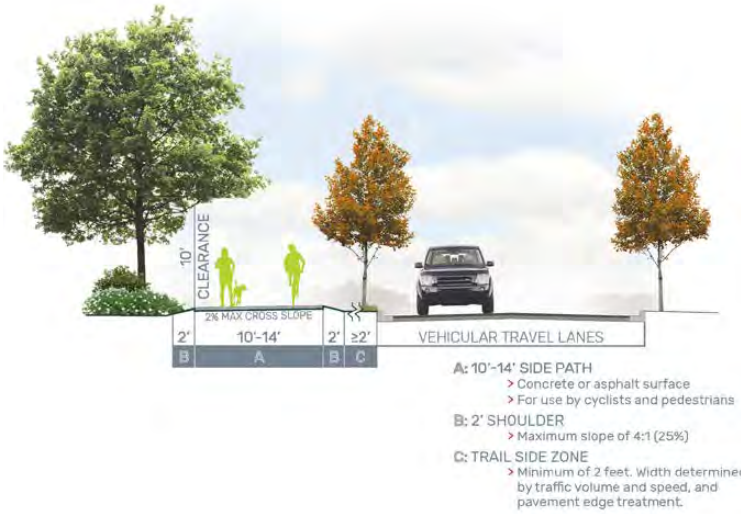


Oak Island Bridge - NC 906
PROPOSED CROSS SECTION TYIC

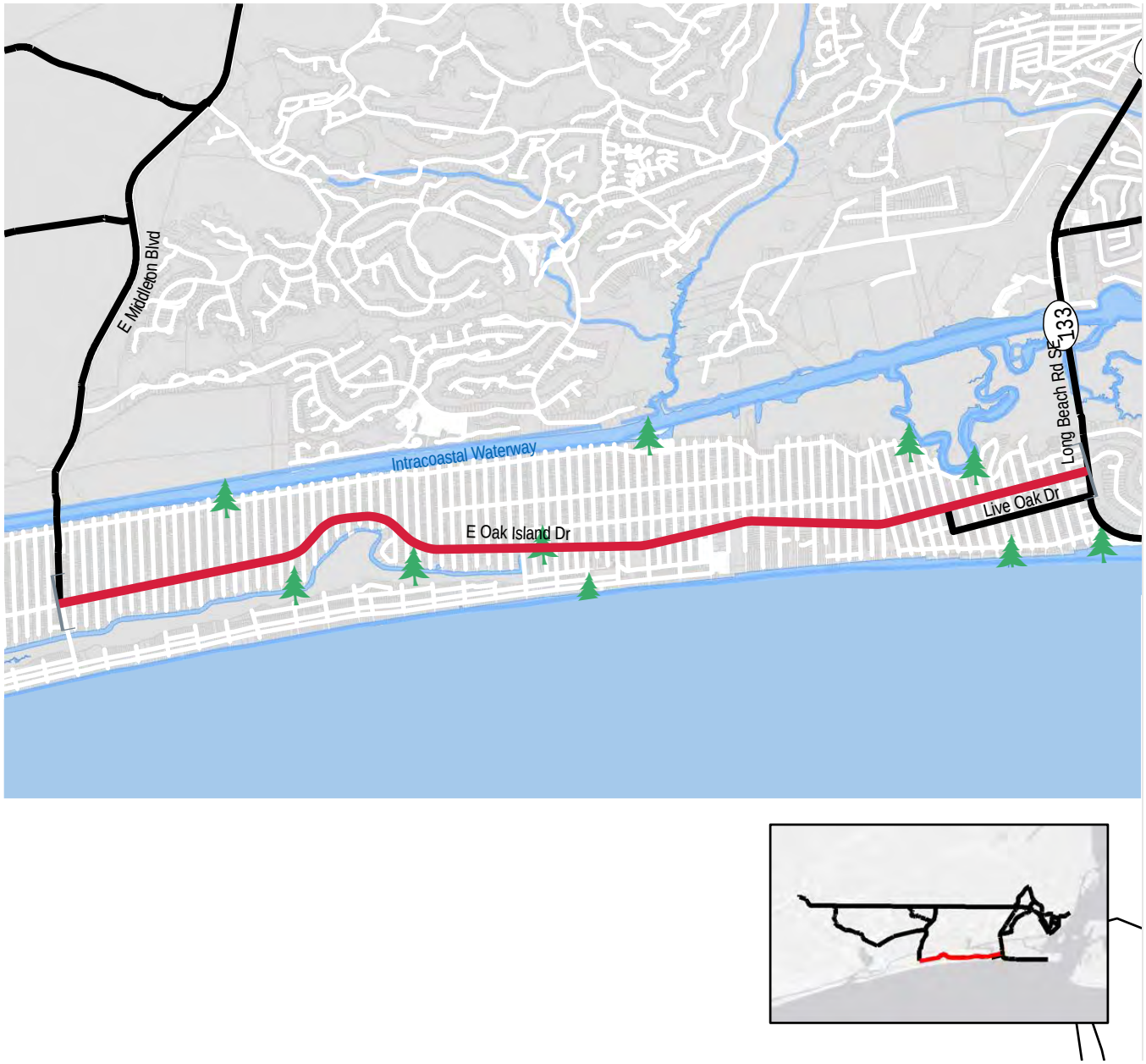
Note: Dimensions shown indicate the prefered cross section; based on constraints and design requirements, these dimensions may vary.

Estimated Project Cost

2020 Construction Cost Estimate (Basis for Calculations):	$ 5,083,000
Escalated Construction Cost Estimate (FY2031):	$ 8,694,000
35% Contingency:	$ 3,042,900
Estimated Right-of-Way Costs:	$ 2,000
Estimated Design Services 20% *adjust per project	$ 1,017,000
Estimated CEI Services 15% *adjust per project	$ 1,044,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 13,799,900**



SEGMENT 4


E Middleton Blvd
Intracoastal Waterway
E Oak Island Dr
Live Oak Dr
Long Beach Rd SE
133
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 4

This segment follows Oak Island Drive on the north side of the road between East Middleton Boulevard and County Club Drive. There is an existing sidewalk on the south side of the road and this segment would serve the north side. The Right-of-Way becomes narrow towards the eastern end where there is more commercial activity and coordination will need to take place with all the property owners to navigate the parking lots and driveways of business. Segment 7A is an alternative that may be considered once the trail reaches 79th Street to avoid many of the conflicts approaching County Club Drive.

Project Snapshot

- Project Location: E Oak Island Dr
- Project Type: Sidepath/MUP
- Length of Project: 5.28 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

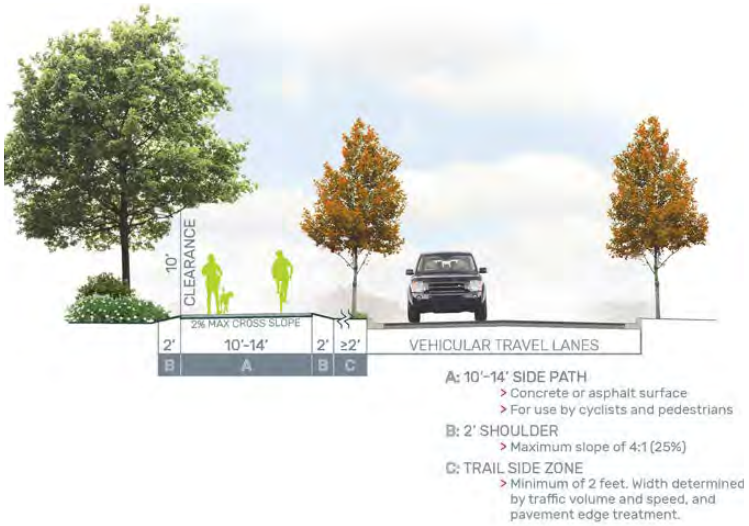
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

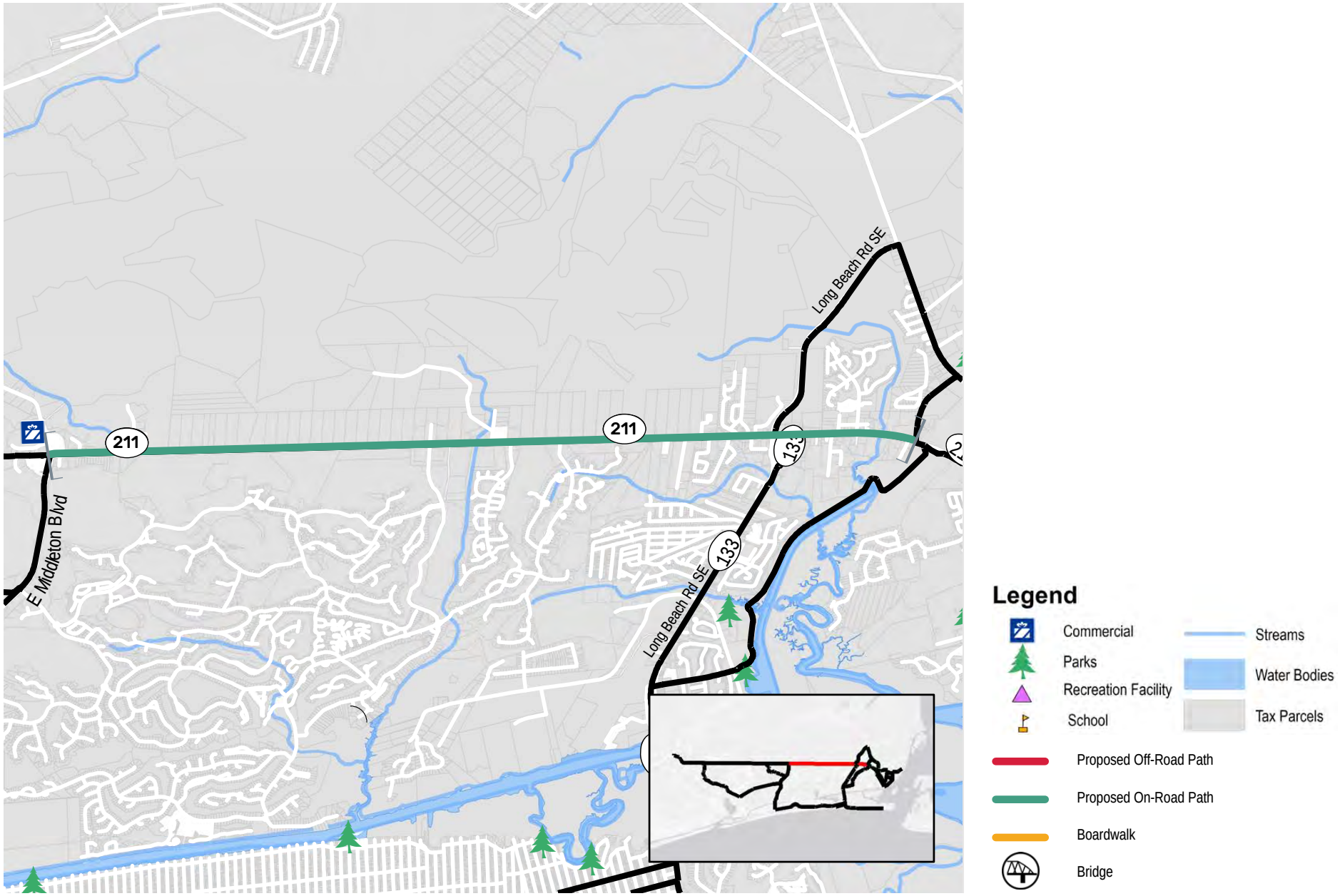
- Total estimated area needed: 1.20 AC
- Number of impacted parcels (not City or County owned): 113
- Number of impacted property owners: 103

Estimated Project Cost

2020 Construction Cost Estimate (Basis for Calculations):	$ 11,690,000
Escalated Construction Cost Estimate (FY2025):	$ 14,920,000
35% Contingency:	$ 5,222,000
Estimated Right-of-Way Costs:	$ 172,000
Estimated Design Services 20% *adjust per project	$ 2,339,000
Estimated CEI Services 15% *adjust per project	$ 1,791,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 24,444,000**



SEGMENT 5


211
211
E Middleton Blvd
Long Beach Rd SE
133
Long Beach Rd SE
133
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 5

Segment 5 continues the Multi-Use Path along Southport-Supply Road (NC-211) from East Middleton Boulevard to Dosher Cutoff, running on the north side of the road. Unfortunately, the NCDOT R-5021 project is already underway and was grandfathered in without any complete street accommodations. R-5021 is a widening project on NC-211 from Midway Road to River Road (NC-87). The recommendation is to pursue this segment after segments 3, 4, and 6 as one of the last pieces of this project to complete the network. Portions of this segment may need to be built to connect Long Beach Road and Dosher Cutoff as part of other segments.

Project Snapshot

- Project Location: Southport-Supply Road
- Project Type: Sidepath/MUP
- Length of Project: 6.15 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

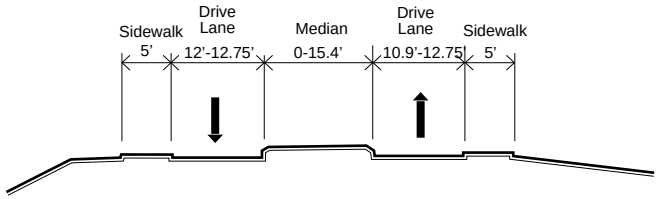
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 0.22 AC
- Number of impacted parcels (not City or County owned): 11
- Number of impacted property owners: 9

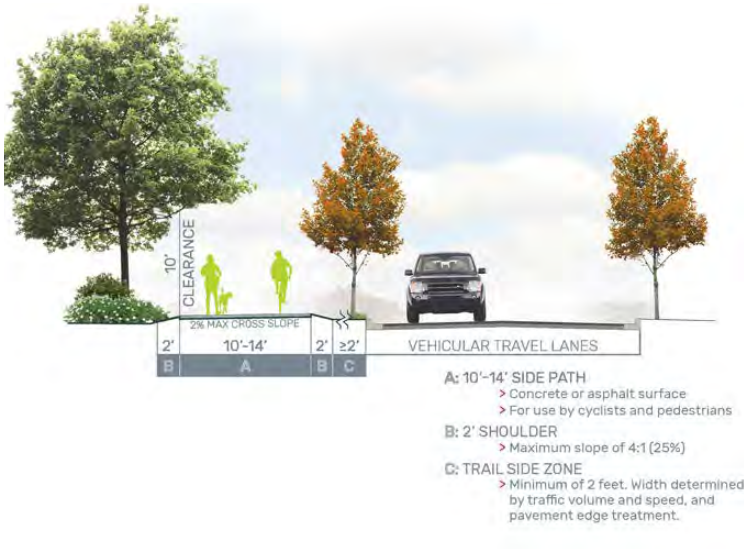
Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 8,507,000
Escalated Construction Cost Estimate (FY2025):	$ 10,858,000
35% Contingency:	$ 3,800,300
Estimated Right-of-Way Costs:	$ 23,000
Estimated Design Services 20% *adjust per project	$ 1,702,000
Estimated CEI Services 15% *adjust per project	$ 1,303,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 17,686,300**

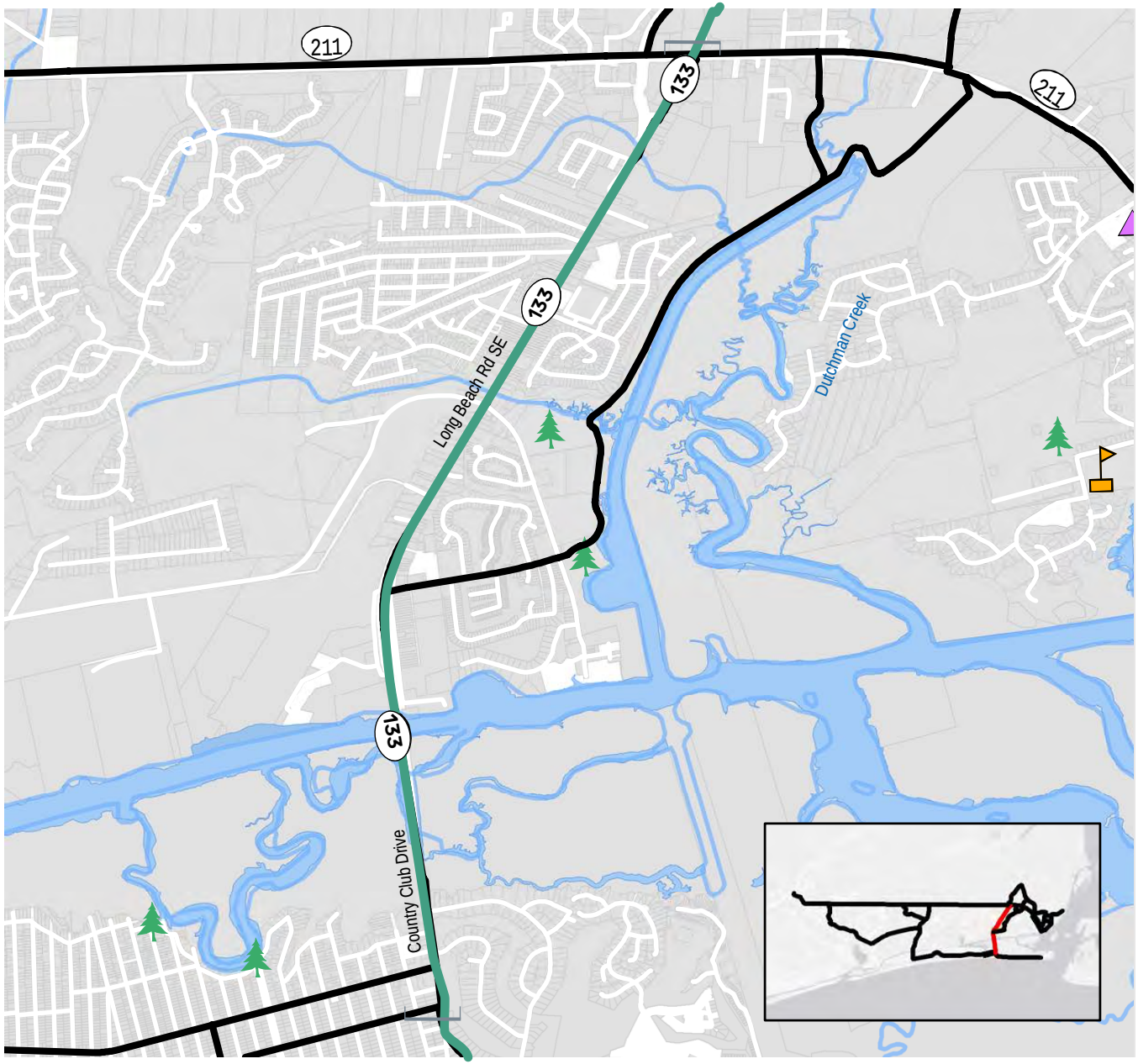


NC 211 PROPOSED NCDOT PLANS (SOURCE: NCDOT TIP PROJECT R-5021)

NOTE: The above illustration shows one type of cross section proposed for this segment of NC 211 corridor by NCDOT which is also funded by NCDOT from E Middleton Blvd to Long Beach Rd SE.
The proposed trail design will be based on property acquisitions and the cross section proposed below shows the basis of design.



SEGMENT 6


211
133
211
133
Long Beach Rd SE
Dutchman Creek
133
Country Club Drive
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 6

Segment 6 connects back up to Southport-Supply Road (NC-211) from Oak Island along NC-133. It begins on the east side of Country Club, within the Right-of-Way, and follows the road to the bridge. Part of this segment will be shifting lanes on the bridge and eliminating the center painted median lane. This would allow for the trail to hug the east side of the bridge. Additional evaluation will need to take place to determine the structural capacity for a raised trail surface and permanent barrier to protect trail users from vehicular traffic. Once on the north side of the Intracoastal Waterway, the trail would follow Long Beach Road within the Right-of-Way all the way to NC-211. There are a lot of challenges along Long Beach and this is another good project to tackle with a future road widening/improvement project and leveraging the complete streets policy. There is limited Right-of-Way and a lot of driveways to cross. Portions of this segment may be needed as part of Segment 8A.

Project Snapshot

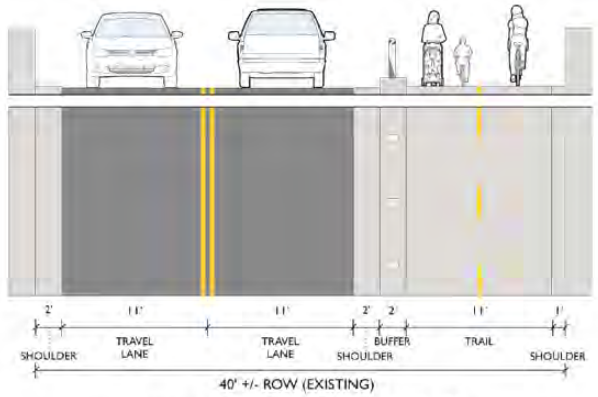
- Project Location: Long Beach Road SE
- Project Type: Sidepath/MUP
- Length of Project: 4.03 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

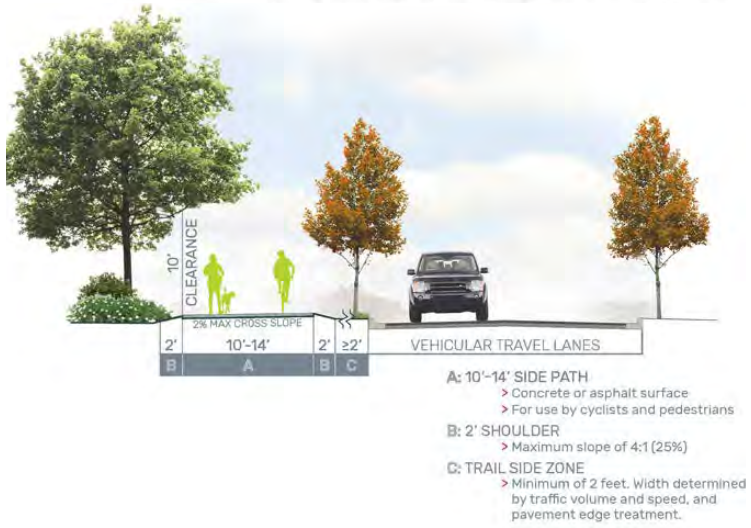
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 2.04 AC
- Number of impacted parcels (not City or County owned): 82
- Number of impacted property owners: 56



Country Club Drive Bridge - NC 133
PROPOSED CROSS SECTION TY5



Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 7,432,000
Escalated Construction Cost Estimate (FY2025):	$ 9,486,000
35% Contingency:	$ 3,320,100
Estimated Right-of-Way Costs:	$ 343,000
Estimated Design Services 20% *adjust per project	$ 1,487,000
Estimated CEI Services 15% *adjust per project	$ 1,139,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 15,775,100**

SEGMENT 7A


Long Beach Rd SE
E Oak Island Dr
Live Oak Dr
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 7A

This segment was designed as an alternative to Segment 4 and help to avoid the congestion along the east end of Oak Island Drive. Live Oak Drive is a low volume, low speed road through a residential neighborhood and would provide an easier through trail that would connect to Country Club and the trail heading north.

Project Snapshot

- Project Location: Live Oak Drive
- Project Type: Sidepath/MUP
- Length of Project: 1.15 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

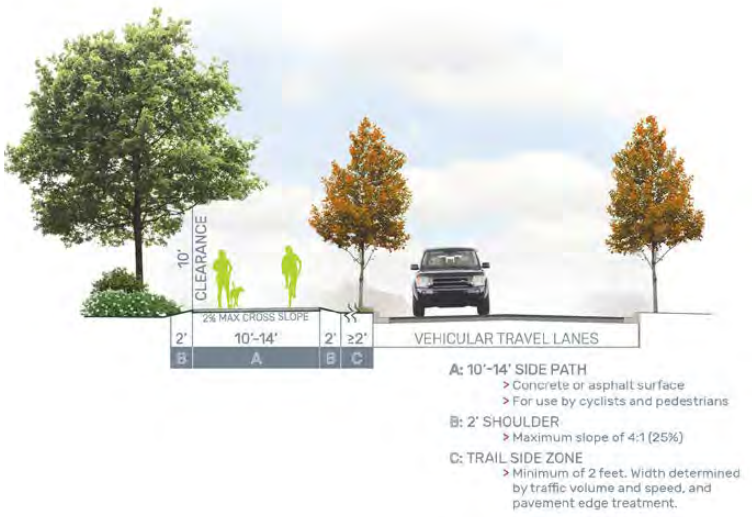
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 0.04 AC
- Number of impacted parcels (not City or County owned): 8
- Number of impacted property owners: 8

Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 2,038,000
Escalated Construction Cost Estimate (FY2025):	$ 2,601,000
35% Contingency:	$ 910,350
Estimated Right-of-Way Costs:	$ 5,000
Estimated Design Services 20% *adjust per project	$ 408,000
Estimated CEI Services 15% *adjust per project	$ 313,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 4,237,350**



SEGMENT 7B

Legend

- Commercial
- Parks
- Recreation Facility
- School
- Streams
- Water Bodies
- Tax Parcels
- Proposed Off-Road Path
- Proposed On-Road Path
- Boardwalk
- Bridge

SEGMENT 7B

This segment serves the residents of Caswell Beach and provide an opportunity to have a Multi-Use Path along Caswell Beach Road where there currently are no sidewalks. The segment starts at Live Oak Drive and follows the east and south side of the road all the way to the end of the State maintained portion at the gate to Fort Caswell.

Project Snapshot

- Project Location: Caswell Beach Rd
- Project Type: Sidepath/MUP
- Length of Project: 3.32 miles
- Estimated Construction Year: 2036

Potential Permitting Needs

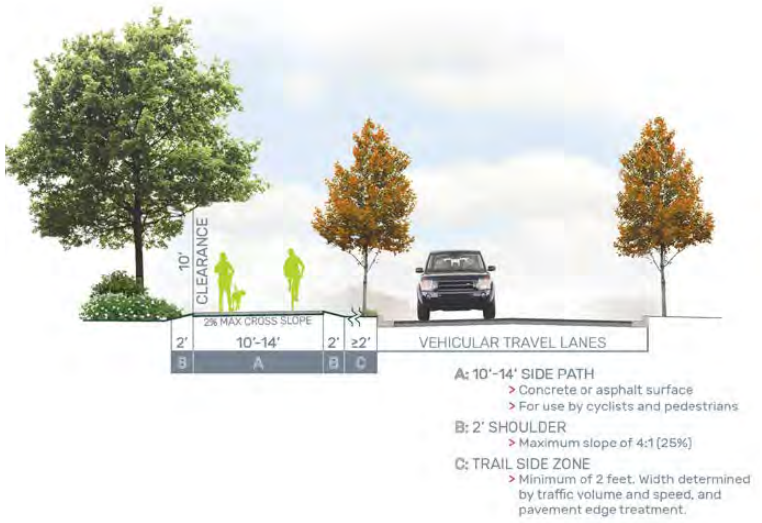
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

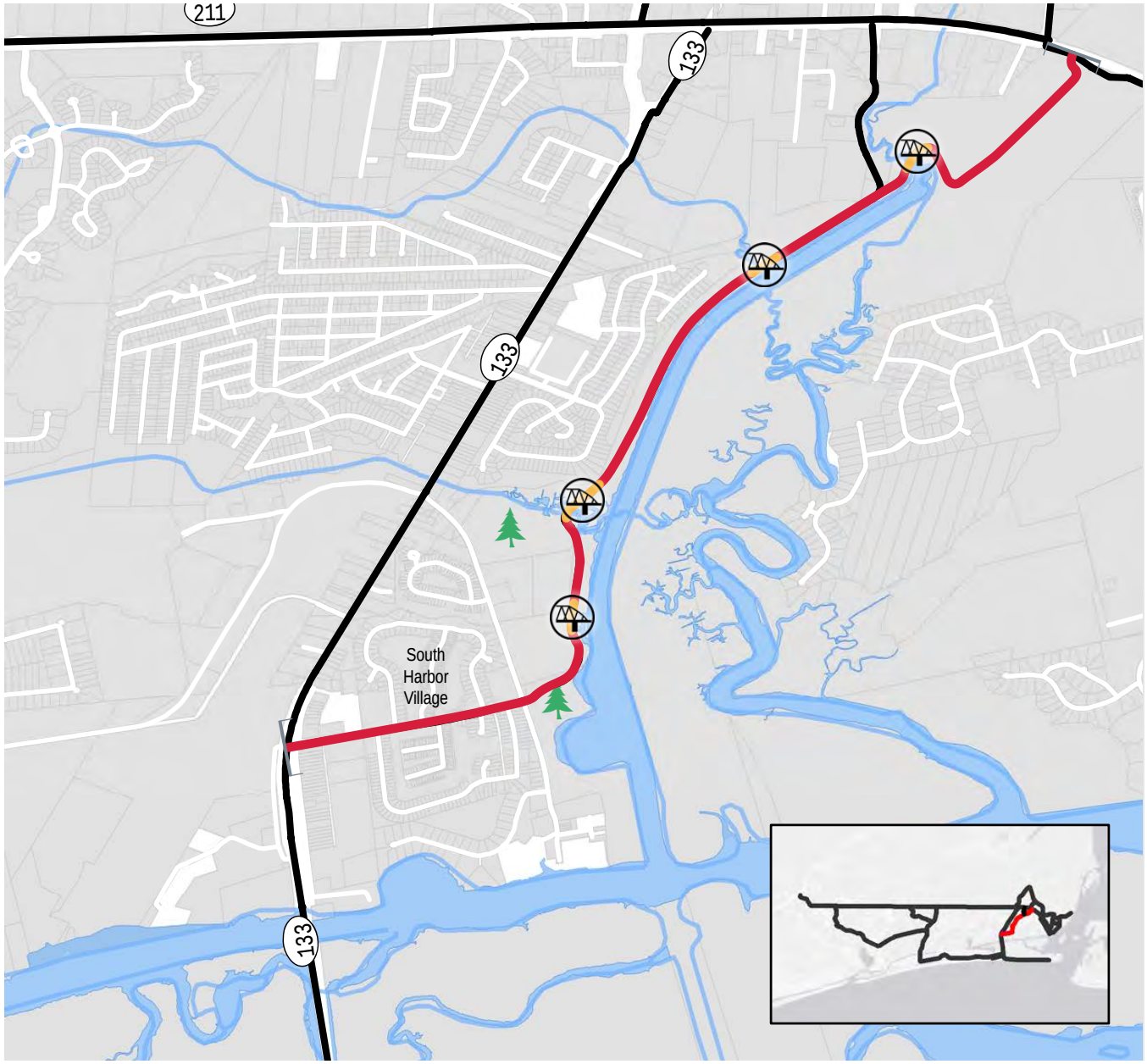
- Total estimated area needed: 2.29 AC
- Number of impacted parcels (not City or County owned): 119
- Number of impacted property owners: 113

Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 3,806,000
Escalated Construction Cost Estimate (FY2036):	$ 8,308,000
35% Contingency:	$ 2,907,800
Estimated Right-of-Way Costs:	$ 700,000
Estimated Design Services 20% *adjust per project	$ 762,000
Estimated CEI Services 15% *adjust per project	$ 997,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 13,674,800**



SEGMENT 8A



Segment 8A connects into Segment 6 on the north side of the Intracoastal Waterway bridge at the intersection of Venessa Drive. This segment was developed as an alternative to the north of Segment 6 along Long Beach Road and avoid many of the conflicts and provide a more scenic route. A Multi-Use Path follows the Right of Way on the south side of Vanessa Drive through the Oak Island Golf Course and then crosses Fish Factory Road to connect with Dutchmans Creek boat ramp and park. The trail then follows the waterway north and connects to William S.

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Legend

- Commercial
- Parks
- Recreation Facility
- School
- Streams
- Water Bodies
- Tax Parcels
- Proposed Off-Road Path
- Proposed On-Road Path
- Boardwalk
- Bridge

SEGMENT 8A

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Smith County park. A boardwalk then crosses the marsh and Calf Gully Creek and follows along the waterway on Duke Energy property and eventually connecting to Southport-Supply Road (NC-211) just west of the road bridge over the waterway. The waterway is maintained for the Brunswick County Nuclear Plant and there are existing maintenance roads that may lend themselves to reducing the project footprint. Coordination with Duke Energy and the Power Plant will need to continue to determine the extents of what will be allowable. Segment 8A is the preferred first segment for implementation in making this project a reality and should be made the priority in funding, designing, and construction.

Project Snapshot

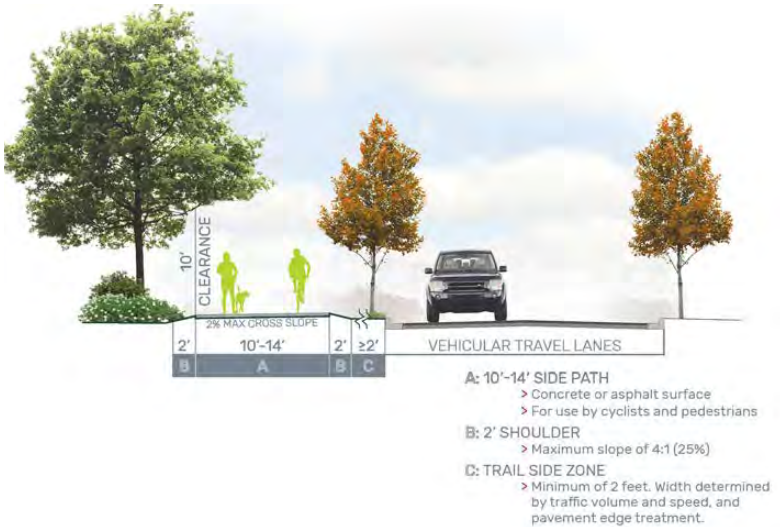
- Project Location: Easement
- Project Type: Sidepath/MUP
- Length of Project: 3.32 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

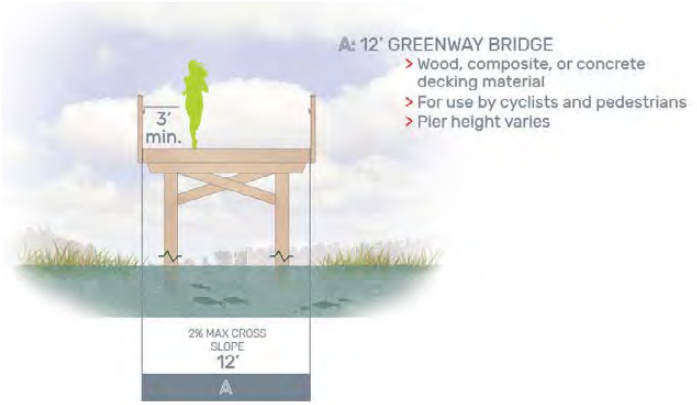
Potential Right-of-Way Needs

- Total estimated area needed: 9.07 AC
- Number of impacted parcels (not City or County owned): 19
- Number of impacted property owners: 13

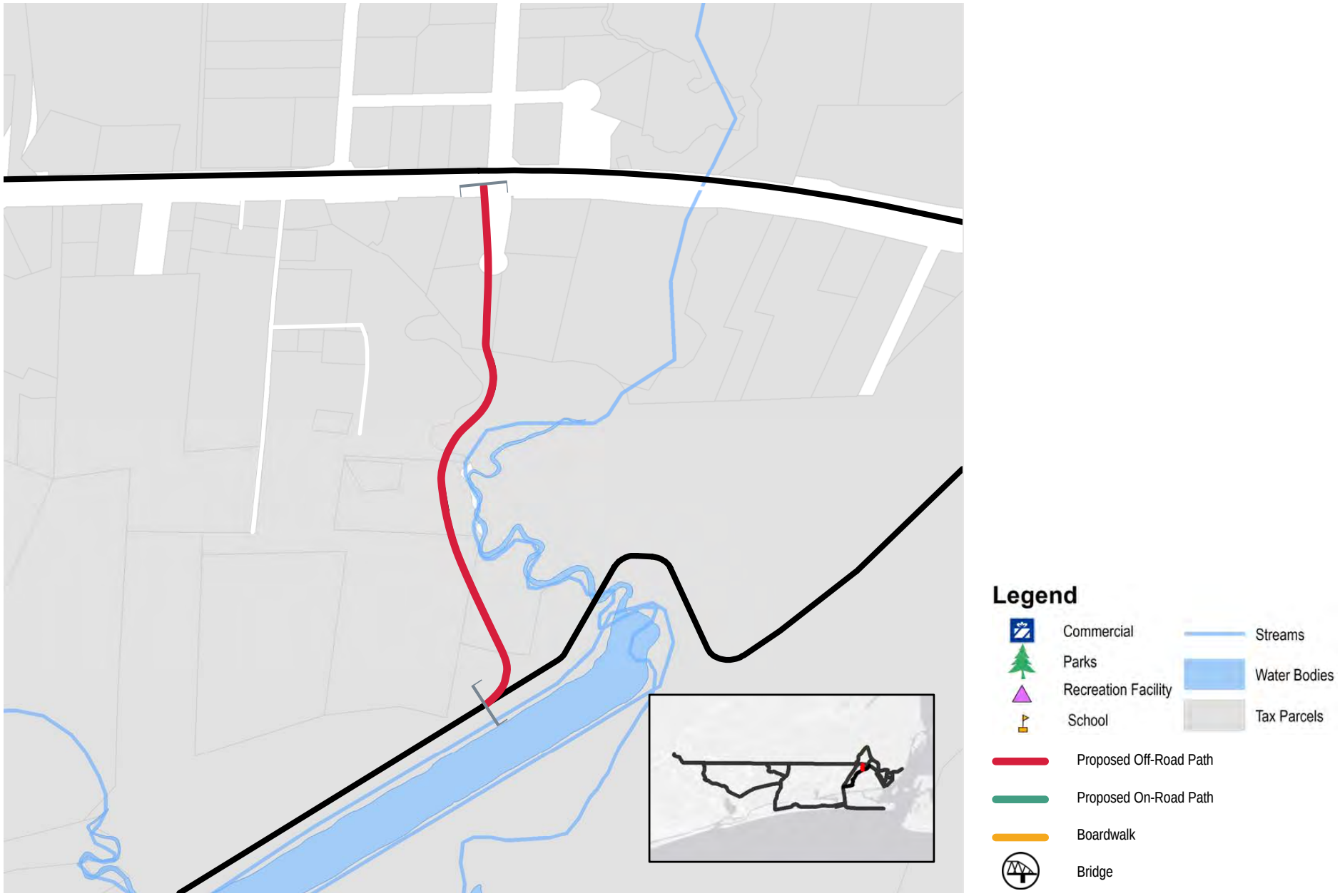


Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 6,758,000
Escalated Construction Cost Estimate (FY2025):	$ 8,625,000
35% Contingency:	$ 3,018,750
Estimated Right-of-Way Costs:	$ 168,000
Estimated Design Services 20% *adjust per project	$ 1,352,000
Estimated CEI Services 15% *adjust per project	$ 1,035,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 14,198,750**



SEGMENT 8B


Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 8B

Segment 8B provides an alternative to connect to Southport-Supply Road (NC-211) at the intersection with Swain Boulevard. This would eliminate some costly structures to cross Dutchman Creek also reduce some clearing and environmental impacts.

Project Snapshot

- Project Location: Easement
- Project Type: Sidepath/MUP
- Length of Project: 0.86 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

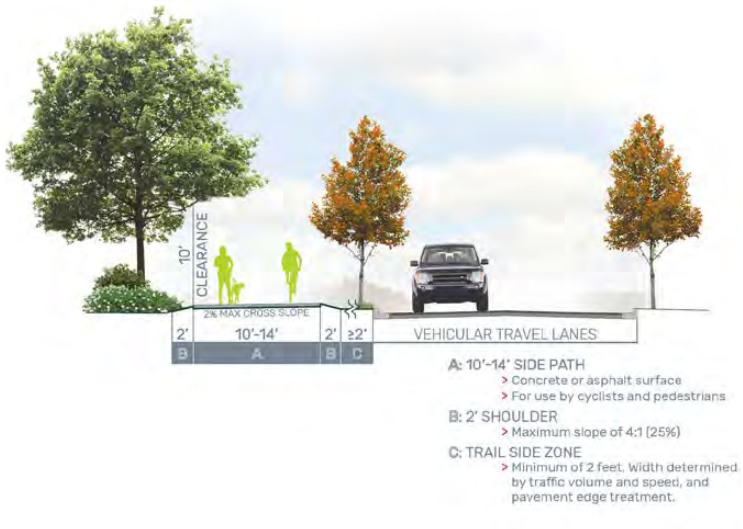
- Erosion Control
- 401/404 permitting
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

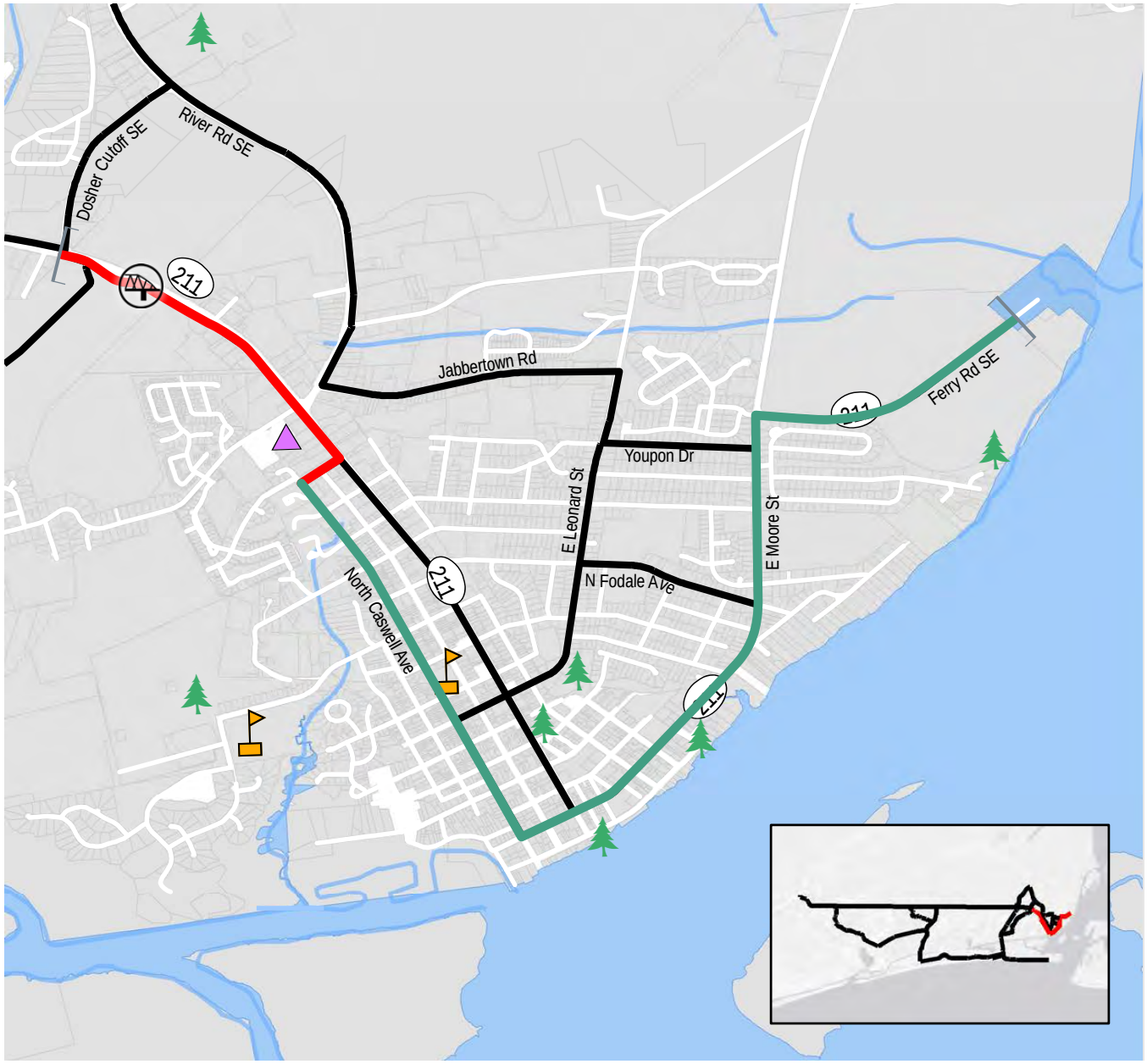
- Total estimated area needed: 1.63 AC
- Number of impacted parcels (not City or County owned): 6
- Number of impacted property owners: 5

Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 891,000
Escalated Construction Cost Estimate (FY2025):	$ 1,137,000
35% Contingency:	$ 397,950
Estimated Right-of-Way Costs:	$ 70,000
Estimated Design Services 20% *adjust per project	$ 179,000
Estimated CEI Services 15% *adjust per project	$ 137,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 1,920,950**



SEGMENT 9A



Segment 9A picks up the connection from Segments 5,8, and 8A and brings them into Southport and existing sidewalk and bike lanes with a Multi-Use Path along the south side of the road. A separated pedestrian bridge would need to span the waterway from the Brunswick Nuclear Plant because there is currently not enough width on the road bridge to accommodate additional bike/ped facilities. The trail would turn down 14th Street and then connect into on-street bike network of Southport. There are several commercial centers that need consideration in how to cross driveway and navigate easements.

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SEGMENT 9A

› Continued from previous page

Once on the trail transitions to bike lanes, it follows Caswell Avenue to Moore street. The bike lanes then head north up Moore street (NC-211) to the roundabout at Ferry Road (NC-211) and then the project terminates at the pier for the Fort Fisher ferry.

Project Snapshot

- Project Location: Dosher Cutoff to Ferry Rd SE
- Project Type: Sidepath/MUP
- Length of Project: 1.41 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

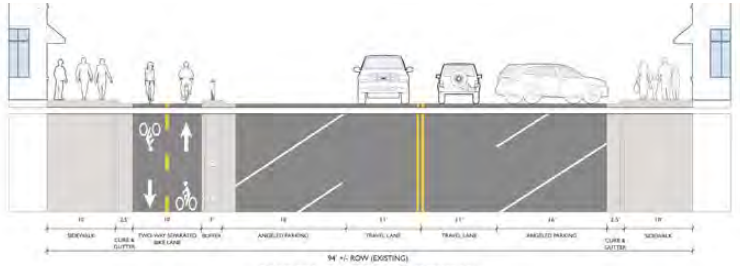
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 1.06 AC
- Number of impacted parcels (not City or County owned): 15
- Number of impacted property owners: 13

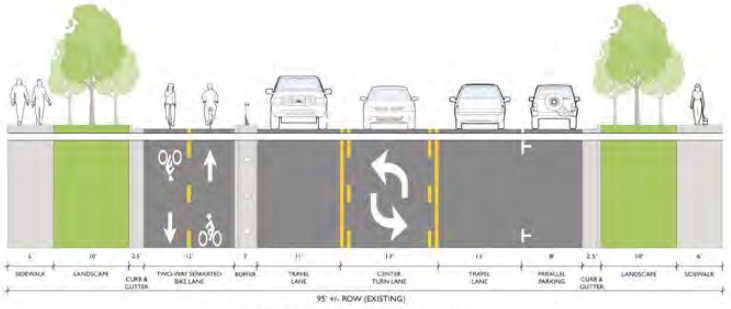
Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 4,076,000
Escalated Construction Cost Estimate (FY2025):	$ 5,202,000
35% Contingency:	$ 1,820,700
Estimated Right-of-Way Costs:	$ 102,000
Estimated Design Services 20% *adjust per project	$ 816,000
Estimated CEI Services 15% *adjust per project	$ 625,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 8,565,700**



E MOORE ST (N HOWE ST TO N DAVIE ST)
PROPOSED CROSS SECTION TY3

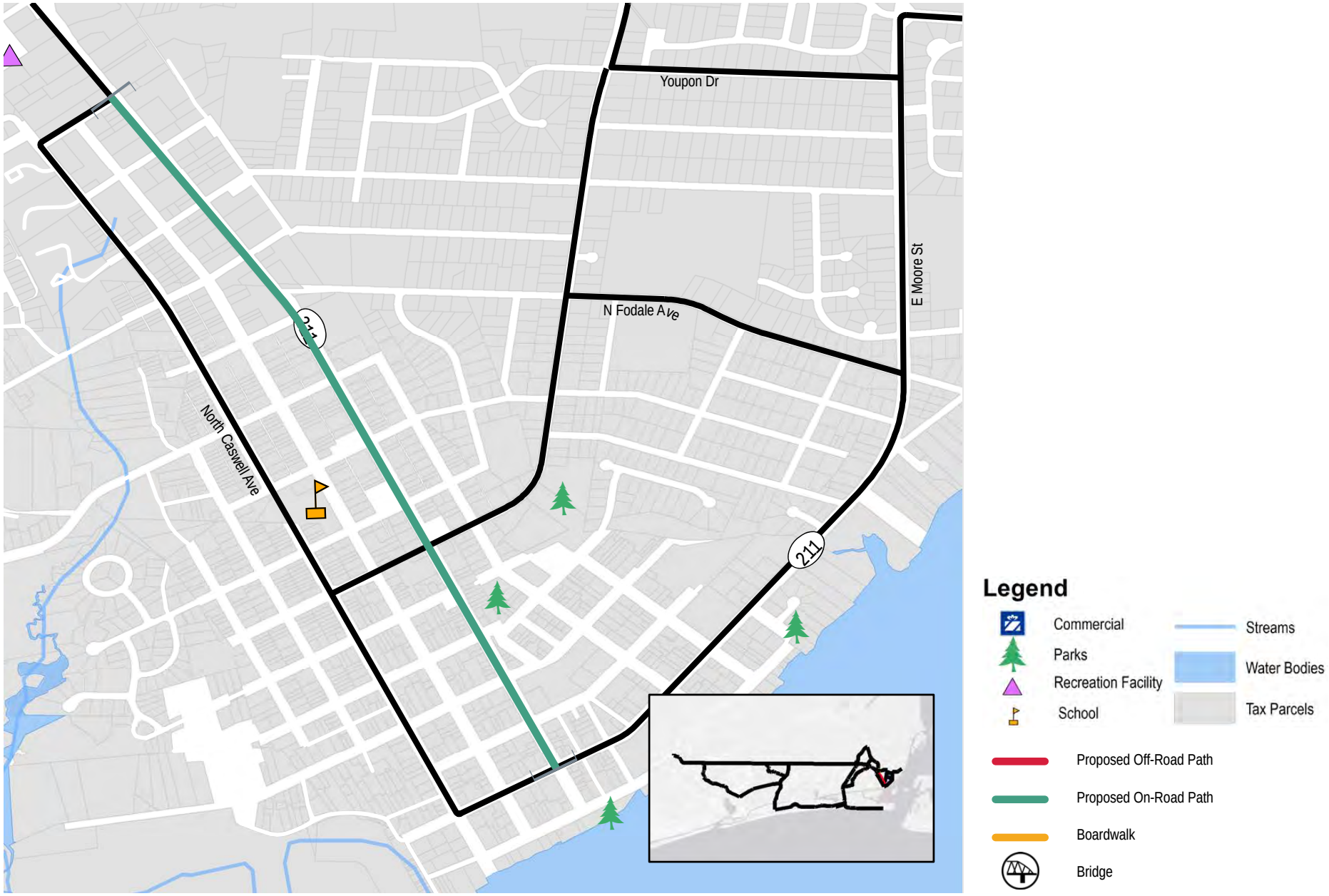
Note: Dimensions shown indicate the prefered cross section; based on constraints and design requirements, these dimensions may vary.



E MOORE ST (N DAVIE ST TO N RHETT ST)
PROPOSED CROSS SECTION TY4

Note: Dimensions shown indicate the prefered cross section; based on constraints and design requirements, these dimensions may vary.

SEGMENT 9B


Youpon Dr
E Moore St
N Fodale Ave
North Caswell Ave
211
211
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 9B

Segment 9B is an on-road bike facility along Howe Street (NC-211). We are proposing dedicated bike lanes and would recommend looking at shifting parking and creating back-in parking protected bike lanes through the downtown district. This is a short segment from 14th Street to West Moore Street.

Project Snapshot

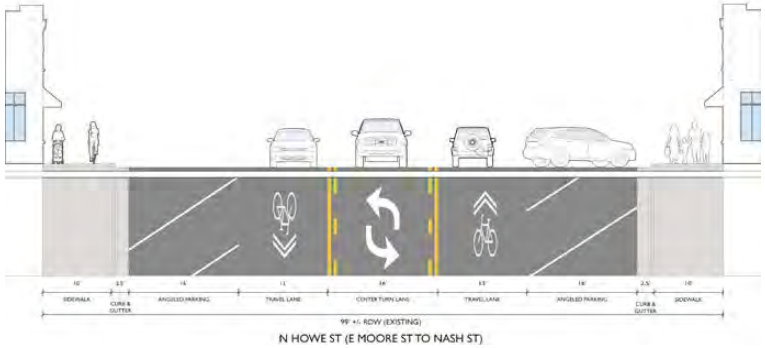
- Project Location:
- Project Type: Bike lanes
- Length of Project: 1.29 miles
- Estimated Construction Year: 2025

Potential Permitting Needs

- NCDOT Encroachments

Potential Right-of-Way Needs

- No Right-of-way needs



Estimated Project Cost

2019 Construction Cost Estimate (Basis for Calculations):	$ 381,000
Escalated Construction Cost Estimate (FY2021):	$ 487,000
10% Contingency:	$ 170,450
Estimated Right-of-Way Costs:	$ 0
Estimated Design Services 3% *adjust per project	$ 77,000
Estimated CEI Services 2% *adjust per project	$ 59,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 793,450**

Note: No cost estimates were done for the on-road sections 9B, 9C, or 9D.

SEGMENT 9C


E Leonard St
N Fodale Ave
211
North Caswell Ave
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 9C

Segment 9C is another on-street segment that would include bike lanes along Leonard Street south of Fodale and Multi-Use Path north to Yupon Drive Extension.

Project Snapshot

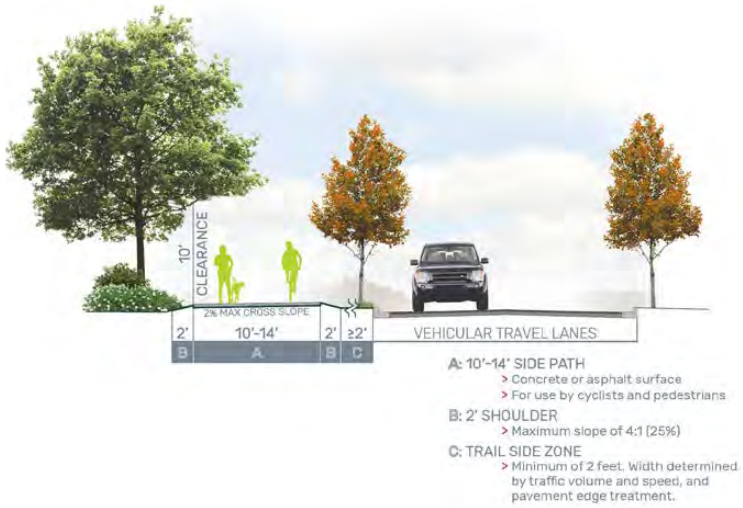
- Project Location: E Leonard St
- Project Type: Bike Lanes
- Length of Project: 0.98 Miles long
- Estimated Construction Year:2025

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits

Potential Right-of-Way Needs

- No Right-of-way needs



Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 220,000
Escalated Construction Cost Estimate (FY2025):	$ 282,000
35% Contingency:	$ 98,700
Estimated Right of Way Costs:	$ 0
Estimated Design Services ±20% *adjust per project	$ 45,000
Estimated CEI Services ±15% *adjust per project	$ 34,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 459,700**

Note: No cost estimates were done for the on-road sections 9B, 9C, or 9D.

SEGMENT 9D


E Leonard St
N Fodale Ave
E Moore St
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 9D

Segment 9D is a low volume, low speed road that we are recommending bike lanes or sharrows on to add to Southports' bike network.

Project Snapshot

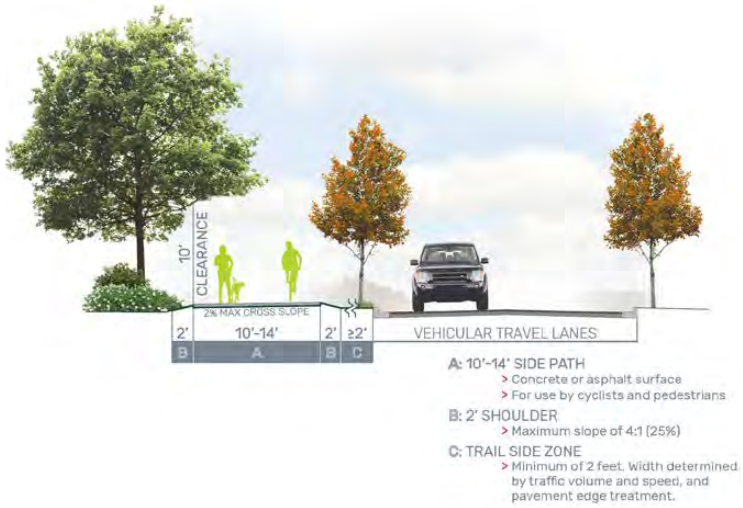
- Project Location: Fodale Ave
- Project Type: Bike Lanes
- Length of Project: 0.49 Miles long
- Estimated Construction Year: 2025

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits

Potential Right-of-Way Needs

- No Right-of-way needs

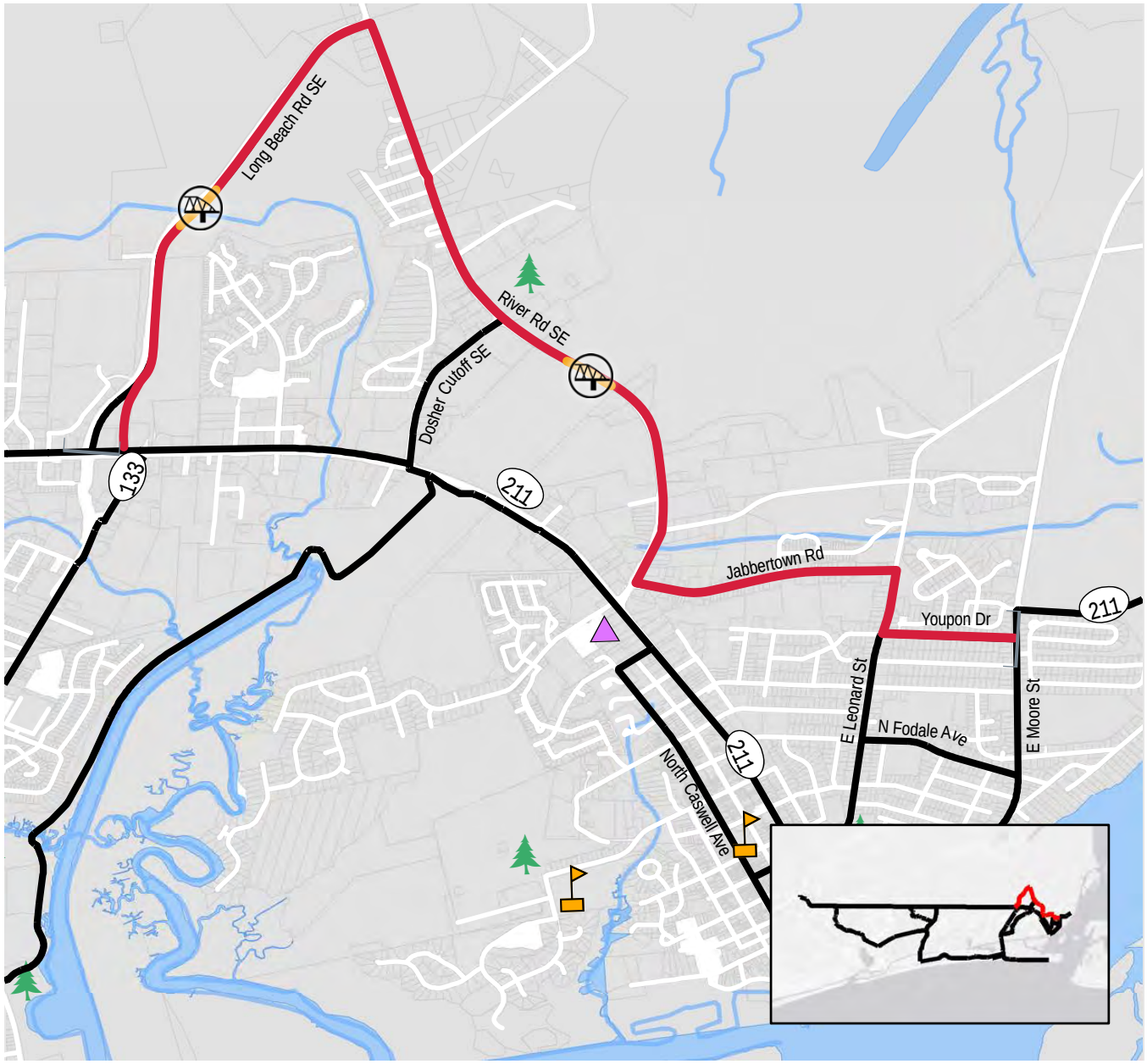


Estimated Project Cost

2019 Construction Cost Estimate (Basis for Calculations):	$ 110,000
Escalated Construction Cost Estimate (FY2025):	$ 141,000
10% Contingency:	$ 49,350
Estimated Right-of-Way Costs:	$ 0
Estimated Design Services 3% *adjust per project	$ 23,000
Estimated CEI Services 2% *adjust per project	$ 17,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 230,350**

Note: No cost estimates were done for the on-road sections 9B, 9C, or 9D.

SEGMENT 10A



This segment ties into segment 5 and 6 and continues on the east side of Long Beach Road (NC-133) at the base of the slope all the way up to River Road (NC-87). There will be a crossing at the traffic light then the trail will continue south on the east side of NC-87 To Jabbertown Road. There will be a separate pedestrian bridge crossing of the Brunswick County Nuclear plant waterway because of the limited width of the roadway bridge and the volume of heavy truck traffic. The Trail will continue on the north side of Jabbertown road and then down the west side of Leonard street to Youpon

› Continued on next page

SEGMENT 10A

› Continued from previous page

Drive. Youpon Drive is a dead end unpaved road but the Right-of-Way extends all the way through to East Moore Street. This segment would pave Youpon Drive and punch through to East Moore street with just the Multi-Use Path, maintaining the low volume street but providing a through connection for trail users.

Project Snapshot

- Project Location:
- Project Type: Sidepath/MUP
- Length of Project: 5.73 miles
- Estimated Construction Year: 2031

Potential Permitting Needs

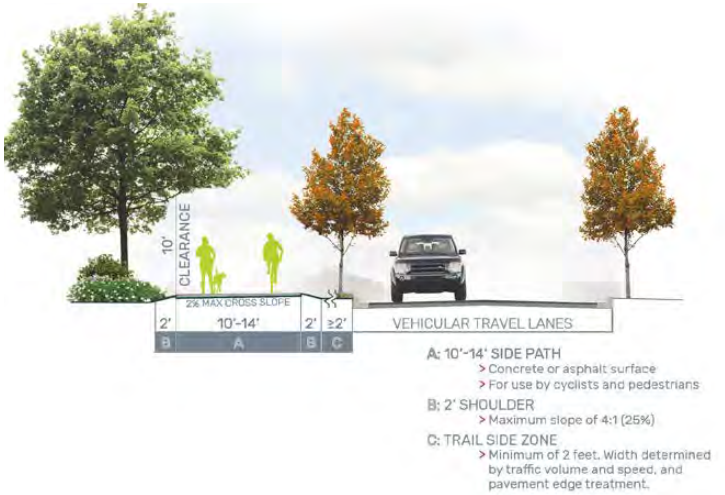
- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- CLOMR/LOMR flood modeling permits
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

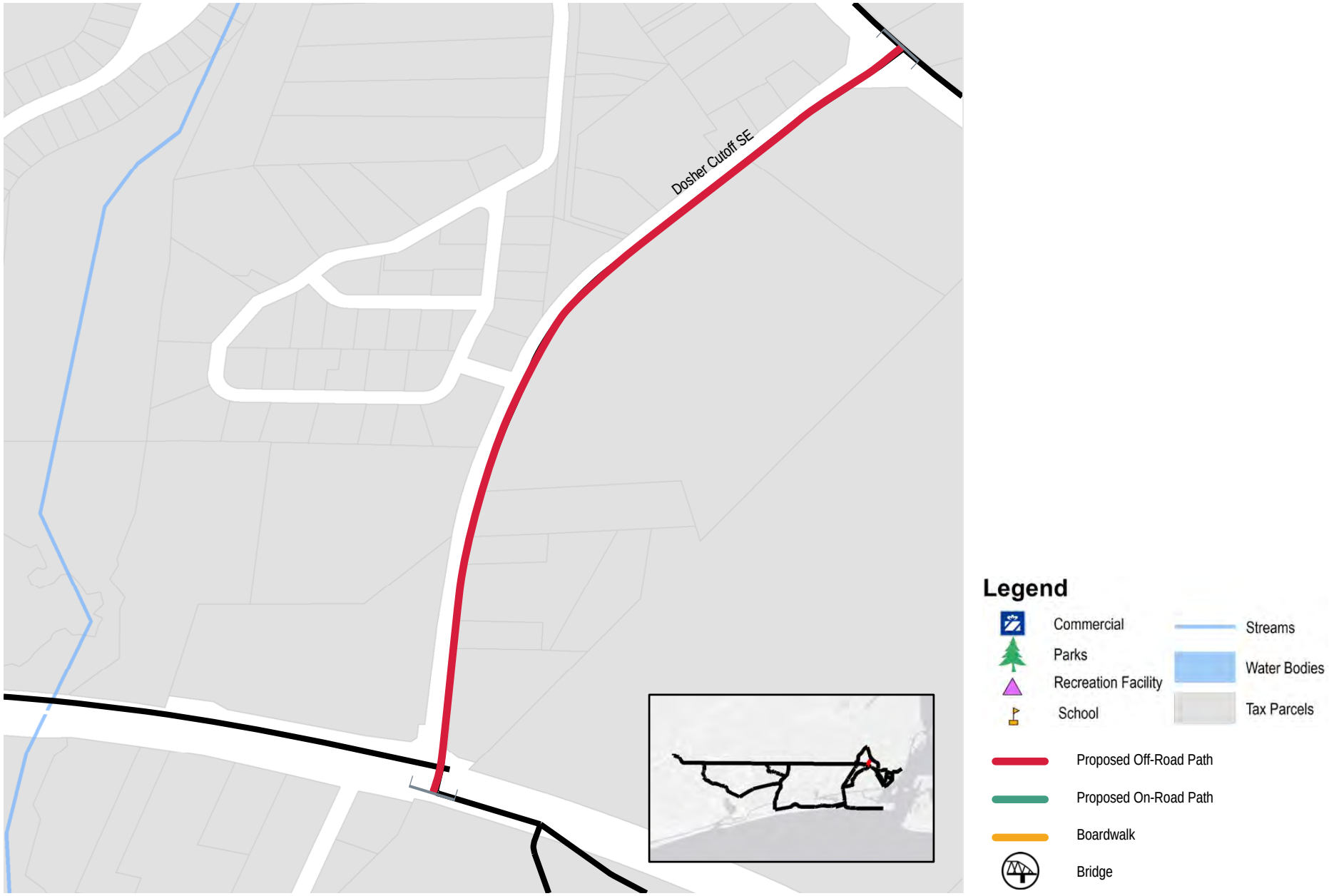
- Total estimated area needed: 2.83 AC
- Number of impacted parcels (not City or County owned): 67
- Number of impacted property owners: 51

Estimated Project Cost

Construction Cost Estimate (Basis for Calculations):	$ 9,509,500
Escalated Construction Cost Estimate (FY2031):	$ 16,265,000
35% Contingency:	$ 5,692,750
Estimated Right-of-Way Costs:	$ 79,000
Estimated Design Services 20% *adjust per project	$ 1,902,000
Estimated CEI Services 15% *adjust per project	$ 1,952,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 25,890,750**



SEGMENT 10B


Dosher Cutoff SE
Legend
Commercial
Parks
Recreation Facility
School
Streams
Water Bodies
Tax Parcels
Proposed Off-Road Path
Proposed On-Road Path
Boardwalk
Bridge

SEGMENT 10B

Segment 10B may be an attractive alternate to 9A and the first half of 10A if being on Southport-Supply Road (NC-211) becomes unfeasible. It connects the trails on both ends along Dosher Cutoff on the east side and also ties into Smithville District Park on the north end.

Project Snapshot

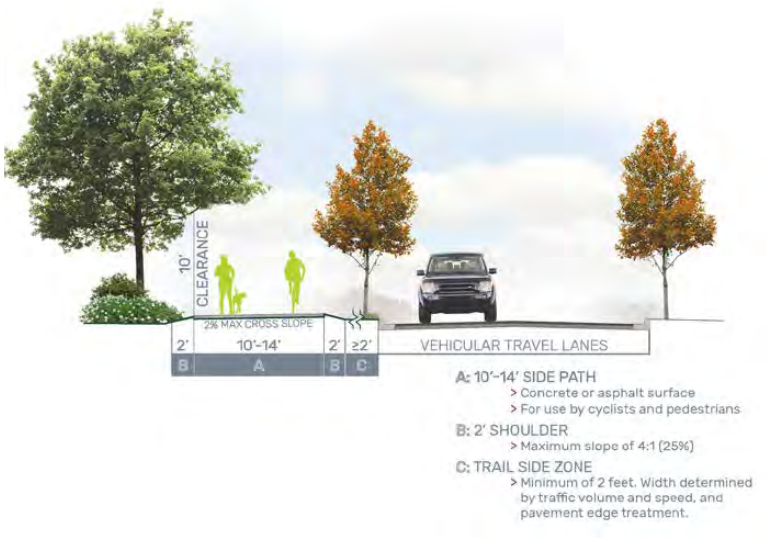
- Project Location: Dosher Cutoff SE
- Project Type: Sidepath/MUP
- Length of Project: 1.03 miles
- Estimated Construction Year: 2031

Potential Permitting Needs

- Erosion Control
- 401/404 permitting
- NCDOT Encroachments
- Coastal Area Management Act (CAMA)

Potential Right-of-Way Needs

- Total estimated area needed: 0.81 AC
- Number of impacted parcels (not City or County owned): 7
- Number of impacted property owners: 6



Estimated Project Cost

2019 Construction Cost Estimate (Basis for Calculations):	$ 1,203,100
Escalated Construction Cost Estimate (FY2031):	$ 2,058,000
35% Contingency:	$ 720,300
Estimated Right of Way Costs:	$ 37,000
Estimated Design Services 3% *adjust per project	$ 241,000
Estimated CEI Services 2% *adjust per project	$ 247,000
TOTAL ESTIMATED BUDGET RECOMMENDATION:	**$ 3,303,300**

IMPLEMENTATION

IMPLEMENTATION

This chapter lays the groundwork for implementation efforts, with a recommended framework for establishing funding and carrying out implementation.

The proposed trail segments traverse through differing development densities and connect various destinations along the NC-211 corridor and surrounding communities through a series of linked greenway trails, multi-use paths, and expanded bike and sidewalk facilities strategically located to connect residential neighborhoods, commercial centers, schools, and existing parks. Several key considerations went into developing the recommended timing of the projects. These include:

- The desire among project stakeholders and the general public to complete these segments in a reasonable amount of time;
- The constraints involved with funding such a large infrastructure investment (though small relative to highway projects); and the time needed to coordinate the leveraging of funds;
- The ability of local and regional agencies and staff to manage and administer the amount of trail construction;
- Minimal land / easement acquisition;
- Strong support from the community;
- The ability to improve access to priority destinations, especially public parks;
- Proximity to population growth centers; and
- Facilitation of regional connections

The design team's methodology to arrive at the recommendations contained herein included data collection through desktop map analysis, on-site field visits, and public input. Existing bicycling and pedestrian facilities (e.g. sidewalks, bike lanes, multi-use paths, and greenways) and proposed facilities from previous planning efforts were mapped to determine where gaps currently exist. This exercise also helped inform the design team about which segments have been the subject of previous focus and planning efforts and are therefore significant to advancement of the network. From these key steps, recommendations were developed in concert with Cape Fear COG Staff and Brunswick County Staff, across municipalities in Brunswick County, and with the needs and desires of local residents at the forefront.

PROJECT FUNDING CONSIDERATIONS

These timeline targets are aspirational, reflecting what is needed to meet the vision and goals of this study, ideally sooner rather than later for the residents and visitors that stand to benefit from this project. The strategies below are provided as an illustration, for consideration only. During actual implementation, projects will likely be built from any of the four categories below, depending on changing local needs, priorities, and opportunities.

1-5 years:

- Design and build short "Low hanging Fruit" segments
- Leverage NCDOT "complete streets" policy on road improvement projects
- Start design and Right of Way acquisition on longer segments
- Program funding for longer segments
- Enact policy for Developer built sections and dedication of Right of Way

5-9 years:

- Build longer segments
- Continue Right of Way acquisition

10 years +:

- Make final, key connections to finish network
- Expand network north and west

FUNDING STRATEGIES

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.

FEDERAL FUNDING

TRANSPORTATION ALTERNATIVES (TA)[1]

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

1 https://www.fhwa.dot.gov/environment/transportation_alternatives/

- Streetscape improvements
- Refurbishment of historic transportation facilities
- Other investments that enhance communities

RECREATIONAL TRAILS PROGRAM (RTP)23

The intent of the RTP is to help fund trails and trail-related recreational needs at the State level. Funding for the RTP comes from federal gas taxes paid on non-highway fuel used in off-highway vehicles. The program is administered at the Federal level by the Federal Highway Administration. Grants range from $10,000 - $100,000 and require a 25% match by the locality. Approved Uses - New Trail/Greenway Construction Trail/Greenway Renovation Approved Trail/Greenway Facilities & Trail Head/Trail Markers Purchase of Tools to Construct &/or Renovate Trail/ Greenway Land Acquisition for Trail Purposes Planning, Legal, Environmental, and Permitting Costs - up to 10% of grant amount combination of the above.

REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE)[4]

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.

2 https://www.fhwa.dot.gov/environment/recreational_trails/
3 https://trails.nc.gov/trail-grants
4 https://www.transportation.gov/RAISEgrants

STATE FUNDING

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 right-of-way 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.

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%

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.

Project Bundling[5]
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 various geographies and project types. Projects do not have to be contiguous or related, and projects can be within a single municipality or across multiple jurisdictions. Bundled projects must be under one project manager, which must be a TAP eligible entity.

Incidental Bicycle & Pedestrian Facilities with Roadway Projects[6]

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, 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.

NORTH CAROLINA DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

Parks and Recreation Trust Fund (PARTF)[7]

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.

PRIVATE FUNDING

NORTH CAROLINA LAND TRUSTS & CONSERVANCIES

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

NORTH CAROLINA COMMUNITY FOUNDATION

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

5 https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx
6 https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx
7 https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund

GOLDEN LEAF FOUNDATION
https://www.goldenleaf.org/

THE CONSERVATION FUND
https://www.conservationfund.org/our-work/conservation-finance/conservation-grants

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION
https://www.bcbsncfoundation.org/grants-programs/grantmaking-overview/

TRAIL POLICY GUIDANCE

The establishment of policy ordinances is essential for the successful development and expansion of the region-wide greenway system, especially considering the continued overall growth and development in Brunswick County. The following are general considerations for Brunswick County and its municipalities regarding essential policies related to greenway planning and development. These represent best practices, and may vary upon implementation locally, depending on political will and public interest in each of Brunswick County's municipalities and surrounding communities. Brunswick County and the municipalities should work with developers when possible to provide incentives and strong partnership. When updating requirements, it will also be important to communicate to developers the many benefits to them to provide greenways for their prospective buyers.

Developer Dedication of ROW and Construction for Trails

Brunswick County and its municipalities should strive for consistency in their respective land use, subdivision, zoning, and/or UDO ordinances related to the requirement to set aside and construct greenway trails, in addition to sidewalks. Below is a summary of recommended guidance for consideration.

Brunswick County

Brunswick County should:

- Update the requirement to include commercial development as well as residential.
- Update the language to include greenway requirements when improvements are shown on this Brunswick County Comprehensive Transportation Plan (CTP)
- Consider a mandatory requirement for development, especially in the circumstance of a recommended greenway corridor through a site.

Municipalities

- Municipalities should require greenway dedication and construction as part of standard development practice, regardless of whether a greenway is proposed through the area. In addition, municipalities should require construction of any proposed greenway corridor segments that are part of a local plan along with providing high-quality pedestrian/bicyclist connections from the development to the main greenway corridor.
- Municipalities should require greenway dedication and construction for all types of development, not just residential. The same requirements as the

above bullet would apply.

- Utility and Sewer Easements and Provision of Public Access within the Right-of-Way
- With new development often comes expansion of services such as water, sewer, electrical, and gas. Brunswick County and its municipalities should make it standard practice to allow public access (trails) within those right-of-way corridors. It is much easier to build this into future expansion of systems as opposed to retroactively allowing public access to easements.

Additional Greenway-Related Policy Considerations for Brunswick County and Municipalities:

- Use of native plants in greenway landscaping;
- Wildlife-friendly landscaping and maintenance
- Complete Street policies that would address on-street connections, trail crossings, and sidepaths
- Requirement of additional bicycle/pedestrian friendly features in development to encourage more walking and bicycling such as street connectivity, strong bike/ped connectivity from the subdivision/development to surrounding destinations and greenways, minimization of cul-de-sac streets, pedestrian/bicyclist cut-through path connections, and greenway connections to adjacent existing and proposed greenways.

TRAIL DESIGN REFERENCES AND RESOURCES

The following standards and guidelines may be referred to for details on greenway design:

AASHTO Guide for the Development of Bicycle Facilities, 4th Edition

Published by the American Association of State Highway and Transportation Officials, this guide provides information on how to accommodate bicycle travel and operations in most riding environments. The guide is intended to present sound planning and design guidelines by referencing a recommended range of design values and describing alternative design approaches. Some flexibility is permitted to encourage designs that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists. The guide contains sections specific to shared-use paths.

The North Carolina Department of Transportation Complete Streets Planning and Design Guidelines

Released in 2012, these guidelines provide NCDOT and municipality staff with a guide to planning and designing streets that meet the needs of all users, including pedestrians, bicyclists, and motor vehicles. The guidelines include detailed information on the processes, street types, and recommendations for creating complete streets in North Carolina, and also includes sections on shared-use paths.

NACTO Urban Bikeway Design Guide

Most relevant to on-road bicycle facility connectors for Wake County's regional greenway system, the NACTO Urban Bikeway Design Guide is based on the experience of the best cycling cities in the world. The designs in the guide were developed specifically for urban settings, since unique urban streets require innovative solutions. Most of these treatments are not directly referenced in the current version of the AASHTO Guide, although they are

virtually all permitted under the Manual on Uniform Traffic Control Devices (MUTCD). All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Manual on Uniform Traffic Control Devices (MUTCD)

Most relevant to greenway trail and roadway crossings, the Federal Highway Administration's MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.

Public Rights-of-Way Accessibility Guidelines (PROWAG)

Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle facility project. The United States Access Board's proposed PROWAG and the 2010 ADA Standards for Accessible Design (2010 Standards) contain standards and guidance for the construction of accessible facilities.

East Coast Greenway Design Guide

The Greenway Design Guide provides information and resources for the planning, design, construction, promotion, and maintenance of local East Coast Greenway (ECG) segments. This Guide defines our vision of a protected, connected series of safe facilities for a continuous route from Maine to Florida.

APPENDICES

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 1

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 215,620.23	$ 215,620.23	$ 275,192.12	$ 275,192.12	
0000000450-N	Cost per LF of Trail Asphalt	12751	LF	$ 178.87	$ 2,280,831.30	$ 228.29	$ 2,910,982.93	
0000000200-N	Cost per LF of Boardwalk	792	LF	$ 1,117.21	$ 884,827.32	$ 1,425.87	$ 1,129,288.80	
0000000300-N	Cost per LF of Bridge	203	LF	$ 3,200.34	$ 649,669.50	$ 4,084.54	$ 829,161.20	
0000000500-N	Traffic Control Cost per mile	2.603409	MI	$ 9,887.66	$ 25,741.62	$ 12,619.44	$ 32,853.56	
0000000610-N	Erosion Control Cost per LF	13746	LF	$ 21.87	$ 300,574.83	$ 27.91	$ 383,618.12	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)	1	EA	$ 170,760.00	$ 170,760.00	$ 217,937.84	$ 217,937.84	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 4,528,024.81		Subtotal:	$ 5,779,034.57

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 5,780,000.00
35% CONTINGENCY:	$ 2,023,000.00
RIGHT OF WAY COSTS:	$ 16,000.00
ENGINEERING AND PLANNING SERVICES	$ 906,000.00
CEI SERVICES	$ 694,000.00
TOTAL BUDGET RECOMMENDATION:	$ 9,419,000.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 2a

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 355,366.00	$ 355,366.00	$ 453,547.08	$ 453,547.08	
0000000450-N	Cost per LF of Trail Asphalt	32429	LF	$ 178.87	$ 5,800,727.64	$ 228.29	$ 7,403,361.73	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	6.141856	MI	$ 9,887.66	$ 60,728.58	$ 12,619.44	$ 77,506.77	
0000000610-N	Erosion Control Cost per LF	32429	LF	$ 21.87	$ 709,103.84	$ 27.91	$ 905,016.15	
	Entrance driveway crossings	3	EA	$ 61,000.00	$ 183,000.00	$ 77,853.18	$ 233,559.53	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	3	EA	$ 61,000.00	$ 183,000.00	$ 77,853.18	$ 233,559.53	
	Minor road crossings (signalized)	1	EA	$ 170,760.00	$ 170,760.00	$ 217,937.84	$ 217,937.84	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 7,462,686.05		Subtotal:	$ 9,524,488.62

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 9,525,000.00
35% CONTINGENCY:	$ 3,333,750.00
RIGHT OF WAY COSTS:	$ 60,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,493,000.00
CEI SERVICES	$ 1,143,000.00
TOTAL BUDGET RECOMMENDATION:	$ 15,554,750.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 2b

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 226,325.49	$ 226,325.49	$ 288,855.04	$ 288,855.04	
0000000450-N	Cost per LF of Trail Asphalt	18101	LF	$ 178.87	$ 3,237,810.94	$ 228.29	$ 4,132,358.41	
0000000200-N	Cost per LF of Boardwalk	185	LF	$ 1,117.21	$ 206,683.15	$ 1,425.87	$ 263,785.89	
0000000300-N	Cost per LF of Bridge	148	LF	$ 3,200.34	$ 473,650.67	$ 4,084.54	$ 604,511.62	
0000000500-N	Traffic Control Cost per mile	3.491288	MI	$ 9,887.66	$ 34,520.66	$ 12,619.44	$ 44,058.09	
0000000610-N	Erosion Control Cost per LF	18434	LF	$ 21.87	$ 403,084.28	$ 27.91	$ 514,449.03	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)	1	EA	$ 170,760.00	$ 170,760.00	$ 217,937.84	$ 217,937.84	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 4,752,835.19		Subtotal:	$ 6,065,955.92

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 6,066,000.00
35% CONTINGENCY:	$ 2,123,100.00
RIGHT OF WAY COSTS:	$ 20,000.00
ENGINEERING AND PLANNING SERVICES	$ 951,000.00
CEI SERVICES	$ 728,000.00
TOTAL BUDGET RECOMMENDATION:	$ 9,888,100.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2031 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 2c

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2031)	Item Amount (FY2031)	
0000100000-N	MOBILIZATION	1	LS	$ 466,968.00	$ 466,968.00	$ 798,673.74	$ 798,673.74	
0000000450-N	Cost per LF of Trail Asphalt	36005	LF	$ 178.87	$ 6,440,383.56	$ 305.94	$ 11,015,241.49	
0000000200-N	Cost per LF of Boardwalk	763	LF	$ 1,117.21	$ 852,428.34	$ 1,910.80	$ 1,457,941.75	
0000000300-N	Cost per LF of Bridge	123	LF	$ 3,200.34	$ 393,642.11	$ 5,473.67	$ 673,261.59	
0000000500-N	Traffic Control Cost per mile	6.986932	MI	$ 9,887.66	$ 69,084.40	$ 16,911.25	$ 118,157.77	
0000000610-N	Erosion Control Cost per LF	36891	LF	$ 21.87	$ 806,671.49	$ 37.40	$ 1,379,681.99	
	Entrance driveway crossings	5	EA	$ 61,000.00	$ 305,000.00	$ 104,330.70	$ 521,653.50	
	Mid-block crossings (non-signalized)	1	EA	$ 30,000.00	$ 30,000.00	$ 51,310.18	$ 51,310.18	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Minor road crossings (non-signalized)	4	EA	$ 61,000.00	$ 244,000.00	$ 104,330.70	$ 417,322.80	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Major road crossings (signalized)	1	EA	$ 198,150.00	$ 198,150.00	$ 338,903.74	$ 338,903.74	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 9,806,327.90		Subtotal:	$ 16,772,148.56

SUB TOTAL CONSTRUCTION COSTS (FY2031):	$ 16,773,000.00
35% CONTINGENCY:	$ 5,870,550.00
RIGHT OF WAY COSTS:	$ 87,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,962,000.00
CEI SERVICES	$ 2,013,000.00
TOTAL BUDGET RECOMMENDATION:	$ 26,705,550.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2031 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 3

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2031)	Item Amount (FY2031)	
0000100000-N	MOBILIZATION	1	LS	$ 242,040.76	$ 242,040.76	$ 413,971.84	$ 413,971.84	
0000000450-N	Cost per LF of Trail Asphalt	21680	LF	$ 178.87	$ 3,878,003.49	$ 305.94	$ 6,632,702.00	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,910.80	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 5,473.67	$ -	
0000000500-N	Traffic Control Cost per mile	4.106060606	MI	$ 9,887.66	$ 40,599.33	$ 16,911.25	$ 69,438.63	
0000000610-N	Erosion Control Cost per LF	21680	LF	$ 21.87	$ 474,062.45	$ 37.40	$ 810,807.66	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 104,330.70	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 51,310.18	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 104,330.70	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Major road crossings (signalized)	1	EA	$ 198,150.00	$ 198,150.00	$ 338,903.74	$ 338,903.74	
	Road Bridge Work	1	LS	$ 250,000.00	$ 250,000.00	$ 427,584.84	$ 427,584.84	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 5,082,856.03		Subtotal:	$ 8,693,408.72

SUB TOTAL CONSTRUCTION COSTS (FY2031):	$ 8,694,000.00
35% CONTINGENCY:	$ 3,042,900.00
RIGHT OF WAY COSTS:	$ 2,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,017,000.00
CEI SERVICES	$ 1,044,000.00
TOTAL BUDGET RECOMMENDATION:	$ 13,799,900.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 4

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 556,667.86	$ 556,667.86	$ 710,464.92	$ 710,464.92	
0000000450-N	Cost per LF of Trail Asphalt	25858	LF	$ 178.87	$ 4,625,341.99	$ 228.29	$ 5,903,238.70	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	5.276325758	MI	$ 9,887.66	$ 52,170.51	$ 12,619.44	$ 66,584.26	
0000000610-N	Erosion Control Cost per LF	27859	LF	$ 21.87	$ 609,174.62	$ 27.91	$ 777,478.34	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	87	EA	$ 61,000.00	$ 5,307,000.00	$ 77,853.18	$ 6,773,226.25	
	Minor road crossings (signalized)	2	EA	$ 170,760.00	$ 341,520.00	$ 217,937.84	$ 435,875.68	
	Major road crossings (signalized)	1	EA	$ 198,150.00	$ 198,150.00	$ 252,895.19	$ 252,895.19	
	Road Bridge Work		LS	$ 250,000.00	$ -	$ 319,070.39	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 11,690,024.97		Subtotal:	$ 14,919,763.34

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 14,920,000.00
35% CONTINGENCY:	$ 5,222,000.00
RIGHT OF WAY COSTS:	$ 172,000.00
ENGINEERING AND PLANNING SERVICES	$ 2,339,000.00
CEI SERVICES	$ 1,791,000.00
TOTAL BUDGET RECOMMENDATION:	$ 24,444,000.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 5

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 405,093.59	$ 405,093.59	$ 517,013.49	$ 517,013.49	
0000000450-N	Cost per LF of Trail Asphalt	30451	LF	$ 178.87	$ 5,446,913.48	$ 228.29	$ 6,951,795.25	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	6.146212121	MI	$ 9,887.66	$ 60,771.65	$ 12,619.44	$ 77,561.74	
0000000610-N	Erosion Control Cost per LF	32452	LF	$ 21.87	$ 709,606.76	$ 27.91	$ 905,658.03	
	Entrance driveway crossings	14	EA	$ 61,000.00	$ 854,000.00	$ 77,853.18	$ 1,089,944.45	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	2	EA	$ 61,000.00	$ 122,000.00	$ 77,853.18	$ 155,706.35	
	Minor road crossings (signalized)	3	EA	$ 170,760.00	$ 512,280.00	$ 217,937.84	$ 653,813.52	
	Major road crossings (signalized)	2	EA	$ 198,150.00	$ 396,300.00	$ 252,895.19	$ 505,790.38	
	Road Bridge Work		LS	$ 250,000.00	$ -	$ 319,070.39	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 8,506,965.49		Subtotal:	$ 10,857,283.20

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 10,858,000.00
35% CONTINGENCY:	$ 3,800,300.00
RIGHT OF WAY COSTS:	$ 23,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,702,000.00
CEI SERVICES	$ 1,303,000.00
TOTAL BUDGET RECOMMENDATION:	$ 17,686,300.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 6

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 353,896.83	$ 353,896.83	$ 451,672.00	$ 451,672.00	
0000000450-N	Cost per LF of Trail Asphalt	19058	LF	$ 178.87	$ 3,408,994.03	$ 228.29	$ 4,350,836.22	
0000000200-N	Cost per LF of Boardwalk	100	LF	$ 1,117.21	$ 111,720.62	$ 1,425.87	$ 142,586.97	
0000000300-N	Cost per LF of Bridge	100	LF	$ 3,200.34	$ 320,034.24	$ 4,084.54	$ 408,453.80	
0000000500-N	Traffic Control Cost per mile	4.026325758	MI	$ 9,887.66	$ 39,810.94	$ 12,619.44	$ 50,809.96	
0000000610-N	Erosion Control Cost per LF	21259	LF	$ 21.87	$ 464,856.72	$ 27.91	$ 593,288.06	
	Entrance driveway crossings	25	EA	$ 61,000.00	$ 1,525,000.00	$ 77,853.18	$ 1,946,329.38	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	6	EA	$ 61,000.00	$ 366,000.00	$ 77,853.18	$ 467,119.05	
	Minor road crossings (signalized)	2	EA	$ 170,760.00	$ 341,520.00	$ 217,937.84	$ 435,875.68	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road Bridge Work	1	LS	$ 500,000.00	$ 500,000.00	$ 638,140.78	$ 638,140.78	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 7,431,833.36		Subtotal:	$ 9,485,111.90

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 9,486,000.00
35% CONTINGENCY:	$ 3,320,100.00
RIGHT OF WAY COSTS:	$ 343,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,487,000.00
CEI SERVICES	$ 1,139,000.00
TOTAL BUDGET RECOMMENDATION:	$ 15,775,100.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 7a

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 97,029.71	$ 97,029.71	$ 123,837.23	$ 123,837.23	
0000000450-N	Cost per LF of Trail Asphalt	4045	LF	$ 178.87	$ 723,548.16	$ 228.29	$ 923,451.18	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	1.145075758	MI	$ 9,887.66	$ 11,322.12	$ 12,619.44	$ 14,450.21	
0000000610-N	Erosion Control Cost per LF	6046	LF	$ 21.87	$ 132,203.95	$ 27.91	$ 168,729.46	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	12	EA	$ 61,000.00	$ 732,000.00	$ 77,853.18	$ 934,238.10	
	Minor road crossings (signalized)	2	EA	$ 170,760.00	$ 341,520.00	$ 217,937.84	$ 435,875.68	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road Bridge Work		LS	$ 500,000.00	$ -	$ 638,140.78	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 2,037,623.94		Subtotal:	$ 2,600,581.86

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 2,601,000.00
35% CONTINGENCY:	$ 910,350.00
RIGHT OF WAY COSTS:	$ 5,000.00
ENGINEERING AND PLANNING SERVICES	$ 408,000.00
CEI SERVICES	$ 313,000.00
TOTAL BUDGET RECOMMENDATION:	$ 4,237,350.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2036 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 7b

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2036)	Item Amount (FY2036)	
0000100000-N	MOBILIZATION	1	LS	$ 181,236.99	$ 181,236.99	$ 395,617.61	$ 395,617.61	
0000000450-N	Cost per LF of Trail Asphalt	15548	LF	$ 178.87	$ 2,781,143.83	$ 390.46	$ 6,070,888.20	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 2,438.72	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 6,985.95	$ -	
0000000500-N	Traffic Control Cost per mile	3.323674242	MI	$ 9,887.66	$ 32,863.36	$ 21,583.52	$ 71,736.59	
0000000610-N	Erosion Control Cost per LF	17549	LF	$ 21.87	$ 383,732.56	$ 47.73	$ 837,640.06	
	Entrance driveway crossings	4	EA	$ 61,000.00	$ 244,000.00	$ 133,155.35	$ 532,621.40	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 65,486.24	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 372,747.66	$ -	
	Minor road crossings (non-signalized)	3	EA	$ 61,000.00	$ 183,000.00	$ 133,155.35	$ 399,466.05	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 372,747.66	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 432,536.60	$ -	
	Road Bridge Work		LS	$ 500,000.00	$ -	$ 1,091,437.29	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 3,805,976.74		Subtotal:	$ 8,307,969.90

SUB TOTAL CONSTRUCTION COSTS (FY2036):	$ 8,308,000.00
35% CONTINGENCY:	$ 2,907,800.00
RIGHT OF WAY COSTS:	$ 700,000.00
ENGINEERING AND PLANNING SERVICES	$ 762,000.00
CEI SERVICES	$ 997,000.00
TOTAL BUDGET RECOMMENDATION:	$ 13,674,800.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 8a

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 321,794.78	$ 321,794.78	$ 410,700.74	$ 410,700.74	
0000000450-N	Cost per LF of Trail Asphalt	13368	LF	$ 178.87	$ 2,391,196.99	$ 228.29	$ 3,051,840.63	
0000000200-N	Cost per LF of Boardwalk	1817	LF	$ 1,117.21	$ 2,029,963.70	$ 1,425.87	$ 2,590,805.24	
0000000300-N	Cost per LF of Bridge	347	LF	$ 3,200.34	$ 1,110,518.80	$ 4,084.54	$ 1,417,334.67	
0000000500-N	Traffic Control Cost per mile	3.320643939	MI	$ 9,887.66	$ 32,833.40	$ 12,619.44	$ 41,904.66	
0000000610-N	Erosion Control Cost per LF	17533	LF	$ 21.87	$ 383,382.70	$ 27.91	$ 489,304.27	
	Entrance driveway crossings	1	EA	$ 61,000.00	$ 61,000.00	$ 77,853.18	$ 77,853.18	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)	7	EA	$ 61,000.00	$ 427,000.00	$ 77,853.18	$ 544,972.23	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road Bridge Work		LS	$ 500,000.00	$ -	$ 638,140.78	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 6,757,690.36		Subtotal:	$ 8,624,715.61

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 8,625,000.00
35% CONTINGENCY:	$ 3,018,750.00
RIGHT OF WAY COSTS:	$ 168,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,352,000.00
CEI SERVICES	$ 1,035,000.00
TOTAL BUDGET RECOMMENDATION:	$ 14,198,750.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 8b

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 42,415.01	$ 42,415.01	$ 54,133.49	$ 54,133.49	
0000000450-N	Cost per LF of Trail Asphalt	2263	LF	$ 178.87	$ 404,793.45	$ 228.29	$ 516,630.41	
0000000200-N	Cost per LF of Boardwalk	300	LF	$ 1,117.21	$ 335,161.87	$ 1,425.87	$ 427,760.91	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	0.864393939	MI	$ 9,887.66	$ 8,546.83	$ 12,619.44	$ 10,908.16	
0000000610-N	Erosion Control Cost per LF	4564	LF	$ 21.87	$ 99,798.02	$ 27.91	$ 127,370.37	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road Bridge Work		LS	$ 500,000.00	$ -	$ 638,140.78	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 890,715.17		Subtotal:	$ 1,136,803.35

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 1,137,000.00
35% CONTINGENCY:	$ 397,950.00
RIGHT OF WAY COSTS:	$ 70,000.00
ENGINEERING AND PLANNING SERVICES	$ 179,000.00
CEI SERVICES	$ 137,000.00
TOTAL BUDGET RECOMMENDATION:	$ 1,920,950.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 9a

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 194,058.25	$ 194,058.25	$ 247,672.96	$ 247,672.96	
0000000450-N	Cost per LF of Trail Asphalt	4865	LF	$ 178.87	$ 870,225.41	$ 228.29	$ 1,110,652.65	
0000000200-N	Cost per LF of Boardwalk	340	LF	$ 1,117.21	$ 379,850.11	$ 1,425.87	$ 484,795.70	
0000000300-N	Cost per LF of Bridge	222	LF	$ 3,200.34	$ 710,476.00	$ 4,084.54	$ 906,767.43	
0000000500-N	Traffic Control Cost per mile	1.406818182	MI	$ 9,887.66	$ 13,910.14	$ 12,619.44	$ 17,753.25	
0000000610-N	Erosion Control Cost per LF	7428	LF	$ 21.87	$ 162,423.24	$ 27.91	$ 207,297.79	
	Entrance driveway crossings	12	EA	$ 61,000.00	$ 732,000.00	$ 77,853.18	$ 934,238.10	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)	3	EA	$ 170,760.00	$ 512,280.00	$ 217,937.84	$ 653,813.52	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road markings	1	LS	$ 500,000.00	$ 500,000.00	$ 638,140.78	$ 638,140.78	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 4,075,223.16		Subtotal:	$ 5,201,132.18

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 5,202,000.00
35% CONTINGENCY:	$ 1,820,700.00
RIGHT OF WAY COSTS:	$ 102,000.00
ENGINEERING AND PLANNING SERVICES	$ 816,000.00
CEI SERVICES	$ 625,000.00
TOTAL BUDGET RECOMMENDATION:	$ 8,565,700.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 9b

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 18,136.05	$ 18,136.05	$ 23,146.71	$ 23,146.71	
0000000450-N	Cost per LF of Trail Asphalt		LF	$ 178.87	$ -	$ 228.29	$ -	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	1.28655303	MI	$ 9,887.66	$ 12,721.00	$ 12,619.44	$ 16,235.57	
0000000610-N	Erosion Control Cost per LF		LF	$ 21.87	$ -	$ 27.91	$ -	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road markings	1	LS	$ 350,000.00	$ 350,000.00	$ 446,698.55	$ 446,698.55	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 380,857.05		Subtotal:	$ 486,080.83

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 487,000.00
35% CONTINGENCY:	$ 170,450.00
RIGHT OF WAY COSTS:	$ -
ENGINEERING AND PLANNING SERVICES	$ 77,000.00
CEI SERVICES	$ 59,000.00
TOTAL BUDGET RECOMMENDATION:	$ 793,450.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 9c

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 10,484.55	$ 10,484.55	$ 13,381.24	$ 13,381.24	
0000000450-N	Cost per LF of Trail Asphalt		LF	$ 178.87	$ -	$ 228.29	$ -	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	0.980113636	MI	$ 9,887.66	$ 9,691.03	$ 12,619.44	$ 12,368.48	
0000000610-N	Erosion Control Cost per LF		LF	$ 21.87	$ -	$ 27.91	$ -	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road markings	1	LS	$ 200,000.00	$ 200,000.00	$ 255,256.31	$ 255,256.31	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 220,175.58		Subtotal:	$ 281,006.03

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 282,000.00
35% CONTINGENCY:	$ 98,700.00
RIGHT OF WAY COSTS:	$ -
ENGINEERING AND PLANNING SERVICES	$ 45,000.00
CEI SERVICES	$ 34,000.00
TOTAL BUDGET RECOMMENDATION:	$ 459,700.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2025 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 9d

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2025)	Item Amount (FY2025)	
0000100000-N	MOBILIZATION	1	LS	$ 5,244.57	$ 5,244.57	$ 6,693.55	$ 6,693.55	
0000000450-N	Cost per LF of Trail Asphalt		LF	$ 178.87	$ -	$ 228.29	$ -	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,425.87	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 4,084.54	$ -	
0000000500-N	Traffic Control Cost per mile	0.49469697	MI	$ 9,887.66	$ 4,891.39	$ 12,619.44	$ 6,242.80	
0000000610-N	Erosion Control Cost per LF		LF	$ 21.87	$ -	$ 27.91	$ -	
	Entrance driveway crossings		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 38,288.45	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 77,853.18	$ -	
	Minor road crossings (signalized)		EA	$ 170,760.00	$ -	$ 217,937.84	$ -	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 252,895.19	$ -	
	Road markings	1	LS	$ 100,000.00	$ 100,000.00	$ 127,628.16	$ 127,628.16	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 110,135.96		Subtotal:	$ 140,564.50

SUB TOTAL CONSTRUCTION COSTS (FY2025):	$ 141,000.00
35% CONTINGENCY:	$ 49,350.00
RIGHT OF WAY COSTS:	$ -
ENGINEERING AND PLANNING SERVICES	$ 23,000.00
CEI SERVICES	$ 17,000.00
TOTAL BUDGET RECOMMENDATION:	$ 230,350.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2031 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 10a

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2031)	Item Amount (FY2031)	
0000100000-N	MOBILIZATION	1	LS	$ 452,830.62	$ 452,830.62	$ 774,494.03	$ 774,494.03	
0000000450-N	Cost per LF of Trail Asphalt	27501	LF	$ 178.87	$ 4,919,233.12	$ 305.94	$ 8,413,558.01	
0000000200-N	Cost per LF of Boardwalk	609	LF	$ 1,117.21	$ 680,378.59	$ 1,910.80	$ 1,163,678.28	
0000000300-N	Cost per LF of Bridge	163	LF	$ 3,200.34	$ 521,655.81	$ 5,473.67	$ 892,208.46	
0000000500-N	Traffic Control Cost per mile	5.733712121	MI	$ 9,887.66	$ 56,692.99	$ 16,911.25	$ 96,964.25	
0000000610-N	Erosion Control Cost per LF	30274	LF	$ 21.87	$ 661,981.85	$ 37.40	$ 1,132,213.62	
	Entrance driveway crossings	21	EA	$ 61,000.00	$ 1,281,000.00	$ 104,330.70	$ 2,190,944.72	
	Mid-block crossings (non-signalized)	1	EA	$ 30,000.00	$ 30,000.00	$ 51,310.18	$ 51,310.18	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Minor road crossings (non-signalized)	6	EA	$ 61,000.00	$ 366,000.00	$ 104,330.70	$ 625,984.21	
	Minor road crossings (signalized)	2	EA	$ 170,760.00	$ 341,520.00	$ 292,057.55	$ 584,115.10	
	Major road crossings (signalized)	1	EA	$ 198,150.00	$ 198,150.00	$ 338,903.74	$ 338,903.74	
	Road markings		LS	$ 500,000.00	$ -	$ 855,169.68	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 9,509,442.97		Subtotal:	$ 16,264,374.59

SUB TOTAL CONSTRUCTION COSTS (FY2031):	$ 16,265,000.00
35% CONTINGENCY:	$ 5,692,750.00
RIGHT OF WAY COSTS:	$ 79,000.00
ENGINEERING AND PLANNING SERVICES	$ 1,902,000.00
CEI SERVICES	$ 1,952,000.00
TOTAL BUDGET RECOMMENDATION:	$ 25,890,750.00

PRELIMINARY COST ESTIMATE **Date** **6/4/2021**

For construction year: 2031 Inflation Rate: 5.0%

ECG-NC-211 Feasbility Study

Segment 10b

Item #	Description	Quantity	Units	Current Unit Cost	Item Amount Current	Escalated Unit Cost (FY2031)	Item Amount (FY2031)	
0000100000-N	MOBILIZATION	1	LS	$ 57,289.86	$ 57,289.86	$ 97,985.11	$ 97,985.11	
0000000450-N	Cost per LF of Trail Asphalt	3434	LF	$ 178.87	$ 614,255.72	$ 305.94	$ 1,050,585.73	
0000000200-N	Cost per LF of Boardwalk		LF	$ 1,117.21	$ -	$ 1,910.80	$ -	
0000000300-N	Cost per LF of Bridge		LF	$ 3,200.34	$ -	$ 5,473.67	$ -	
0000000500-N	Traffic Control Cost per mile	1.029356061	MI	$ 9,887.66	$ 10,177.92	$ 16,911.25	$ 17,407.70	
0000000610-N	Erosion Control Cost per LF	5435	LF	$ 21.87	$ 118,843.61	$ 37.40	$ 203,262.90	
	Entrance driveway crossings	1	EA	$ 61,000.00	$ 61,000.00	$ 104,330.70	$ 104,330.70	
	Mid-block crossings (non-signalized)		EA	$ 30,000.00	$ -	$ 51,310.18	$ -	
	Mid-block crossings (signalized)		EA	$ 170,760.00	$ -	$ 292,057.55	$ -	
	Minor road crossings (non-signalized)		EA	$ 61,000.00	$ -	$ 104,330.70	$ -	
	Minor road crossings (signalized)	2	EA	$ 170,760.00	$ 341,520.00	$ 292,057.55	$ 584,115.10	
	Major road crossings (signalized)		EA	$ 198,150.00	$ -	$ 338,903.74	$ -	
	Road markings		LS	$ 500,000.00	$ -	$ 855,169.68	$ -	
	--		--	-	$ -	$ -	$ -	
	--		--	-	$ -	$ -	$ -	
				Subtotal:	$ 1,203,087.11		Subtotal:	$ 2,057,687.24

SUB TOTAL CONSTRUCTION COSTS (FY2031):	$ 2,058,000.00
35% CONTINGENCY:	$ 720,300.00
RIGHT OF WAY COSTS:	$ 37,000.00
ENGINEERING AND PLANNING SERVICES	$ 241,000.00
CEI SERVICES	$ 247,000.00
TOTAL BUDGET RECOMMENDATION:	$ 3,303,300.00