

Town of Topsail Beach, NC:

# Topsail Beach Walks & Bikes



Adopted: 10-09-2019



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## ACKNOWLEDGEMENTS

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Topsail Beach, NC 28445

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## Chapter 1: Introduction

### Purpose

The “Topsail Beach Walks & Bikes” non-motorized transportation plan addresses the needs of those individuals looking to travel by foot or wheel. The Town of Topsail Beach is located in southeastern North Carolina and bordered by the Atlantic Ocean to the east and the Intracoastal Waterway (ICWW) to the west (See Map 1). Tourism is vital to the Town’s economy and safety and availability of bicycle and pedestrian facilities serve to complement this industry. This plan aims to enhance bicycle and pedestrian safety, provide new facilities, and encourage use. Focused geographic areas of concern include the Town’s Central Business District and portions of NC 50/Anderson Boulevard. For the Town of Topsail Beach, providing safer facilities for pedestrians and cyclists will support the tourism industry and family-friendly atmosphere the Town desires. Please note: NC 50 and Anderson Boulevard may be used interchangeably throughout the plan.

### Process

The planning process was initiated in August 2018, with support from the Cape Fear Rural Transportation Planning Organization (RPO). The Town has sought to improve safety for pedestrians and cyclists in recent years. In fact, the Town has submitted a number of grant applications to NCDOT to complete a Comprehensive Bicycle and Pedestrian Transportation Plan. To date, the grant application efforts have not been successful. As a result, the Town has embarked on this planning process to address bicycle and pedestrian facilities.

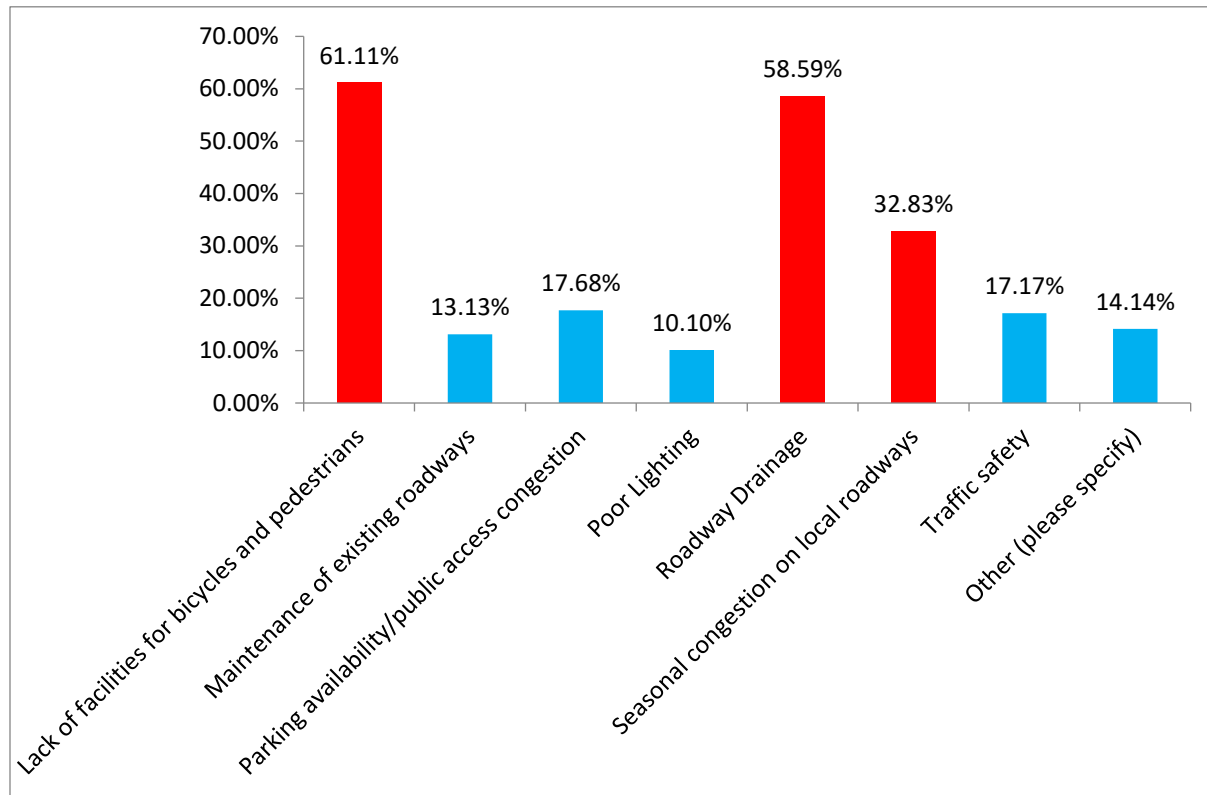
As part of the planning process, traffic counts and field surveys were done to analyze existing conditions for bicycle and pedestrian facilities. To supplement field work, the Town worked closely with NCDOT and the Cape Fear RPO to understand the barriers and constraints to the installation of new or modified bicycle and pedestrian facilities.

### Public Involvement

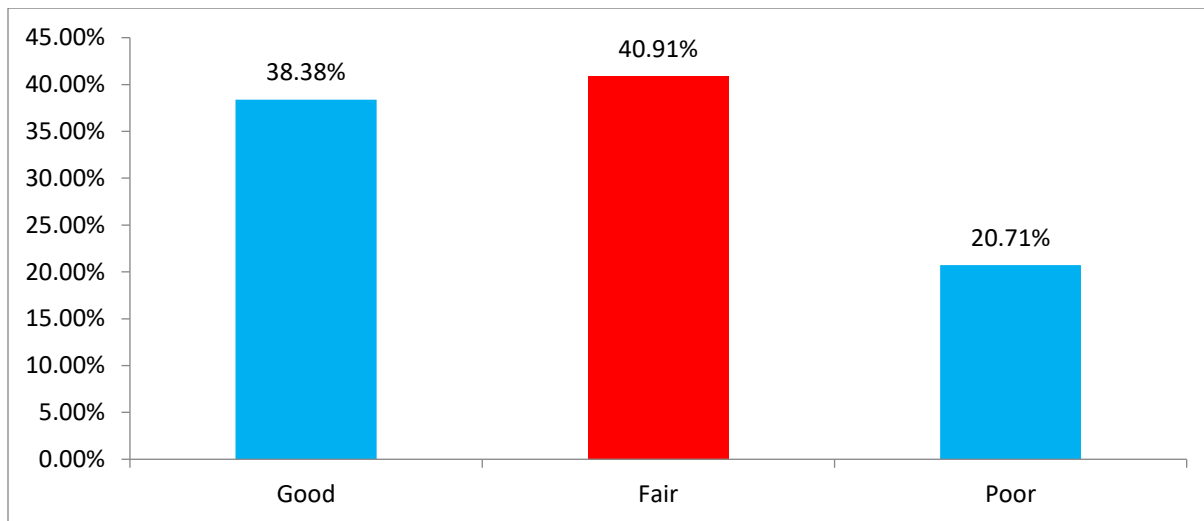
A community wide survey focused on bicycle and pedestrian transportation was established at the project’s onset. The survey was designed to solicit feedback from residents, visitors, and business owners of the Town. Many concerns were identified, all of which have been summarized as a part of this process.

## Community Survey Results

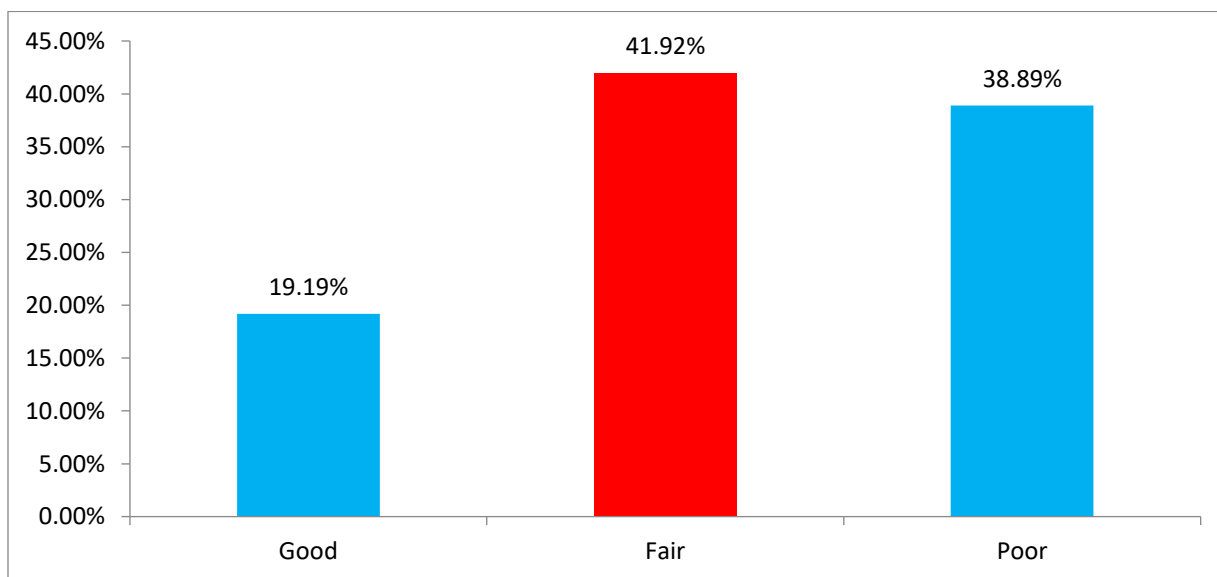
**Question 1: What do you consider to be the most important transportation issues for the Town? [Select up to THREE]**



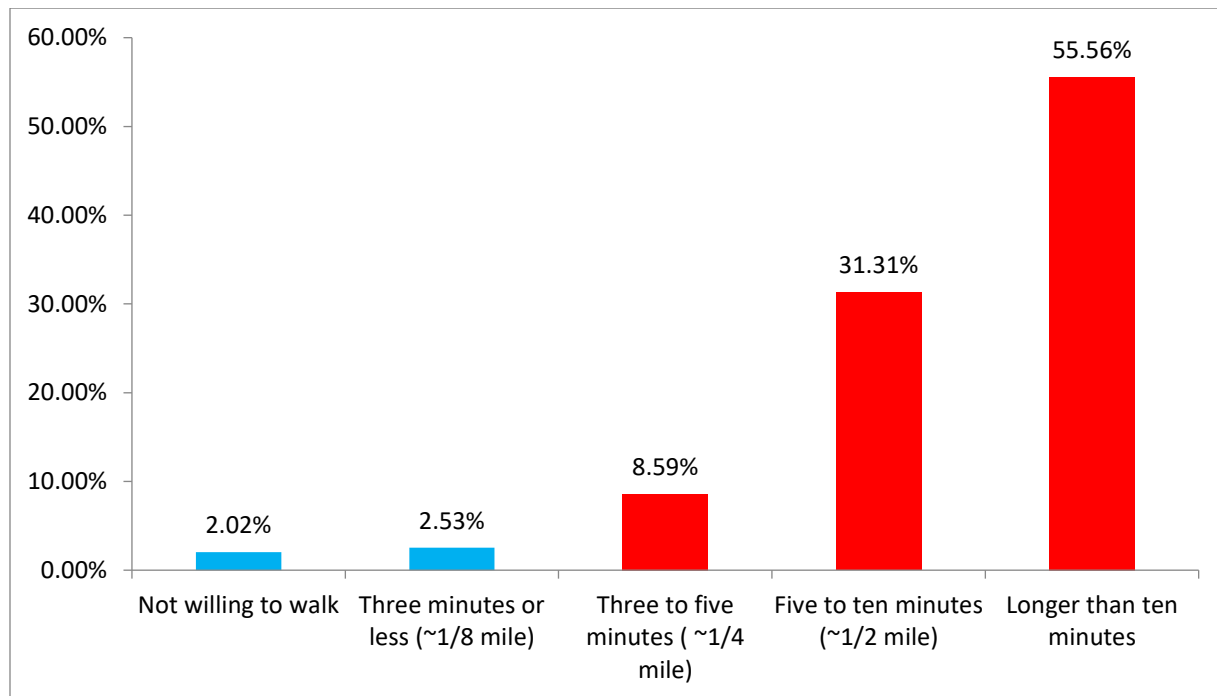
When asked what you consider to be the most important transportation issues for Topsail Beach, the majority of respondents indicated the lack of facilities for bicycles and pedestrians, roadway drainage, and seasonal congestion on local roadways as the top three. It is important to note that roadway drainage and the lack of facilities received a similarly overwhelming number of responses. Other issues identified include maintenance of existing roadways, parking availability/public access congestion, poor lighting, as well as traffic safety.

**Question 2: How do you rate walking conditions in Topsail Beach?**

The majority of respondents rated walking conditions in Topsail Beach as fair at nearly 41%. The next highest response was good at 38% of respondents. Additionally, 41 out of 198 respondents identified walking conditions as poor in the Town of Topsail Beach.

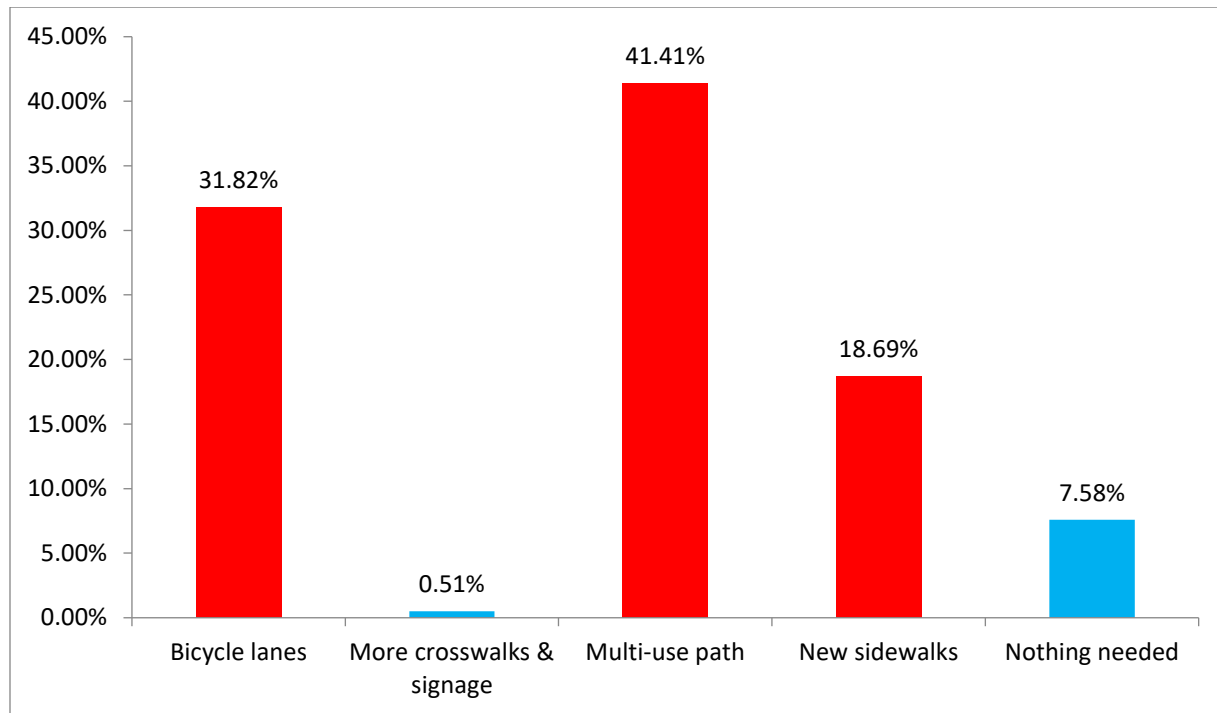
**Question 3: How do you rate biking conditions in Topsail Beach?**

Out of 198 responses, nearly 42 percent of respondents rated biking conditions in Topsail Beach as fair. The next highest response identified biking conditions as poor at 39%. The least selected response was good by 38 out of 198 respondents, or 19%. This indicates that respondents believe cycling conditions are worse overall than those for pedestrians.

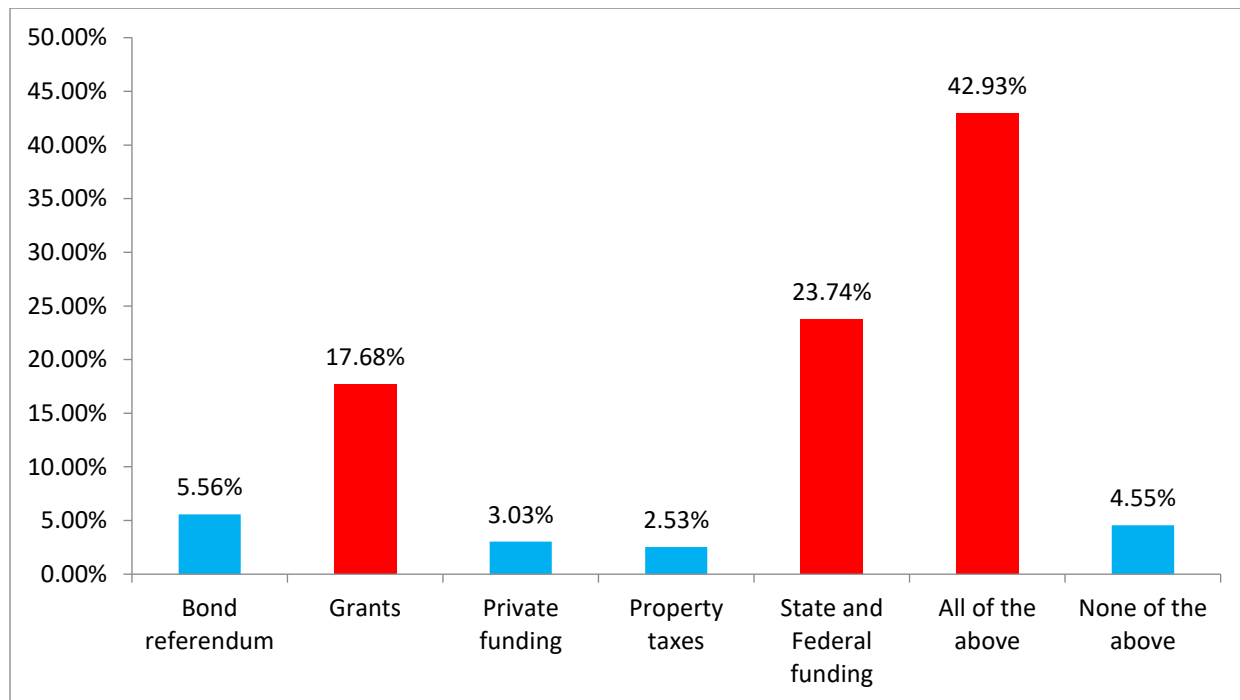
**Question 4: How far would you be willing to walk to a destination?**

When asked how far people would be willing to walk to a destination, 110 out of 198 respondents replied that they would be willing to walk longer than ten minutes. The next highest response indicated five to ten minutes, or half a mile, as a willing distance to walk. Additionally, 17 respondents said they would only be willing to walk three to five minutes, or a quarter mile. Less than five percent of residents indicated that they would only be willing to walk three minutes or less or not willing to walk at all. Overall, the majority of respondents are willing to walk a half a mile or more to reach their destination. This is a positive response for the Town as it shows a general willingness to walk to destinations within the Town.

**Question 5: In regards to transforming Topsail Beach into a more bicycle and pedestrian friendly Town, what do you think would be the most important accomplishment?**



The survey asked what bicycle and pedestrian improvements would be the greatest accomplishment for making Topsail Beach more of a bicycle and pedestrian friendly Town. The majority of respondents selected a multi-use path with the next highest option being bicycle lanes. Additionally, 37 out of 198 respondents said that new sidewalks would be the greatest accomplishment. Overall, according to respondents, a multi-use path, bicycle lanes, and new sidewalks would be great accomplishments for the Town. The responses to this question indicate a need for a facility that is separated from vehicular traffic, such as a multi-use path.

**Question 6: How should the Town fund any bicycle and pedestrian improvements?**

The majority of respondents indicated that the Town should pursue a variety of funding opportunities for any bicycle and pedestrian improvements. These methods include bond referendum, grants, private funding, property taxes, as well as state and federal funding. Additionally, 9 out of 198 respondents indicated that none of these options should be pursued.

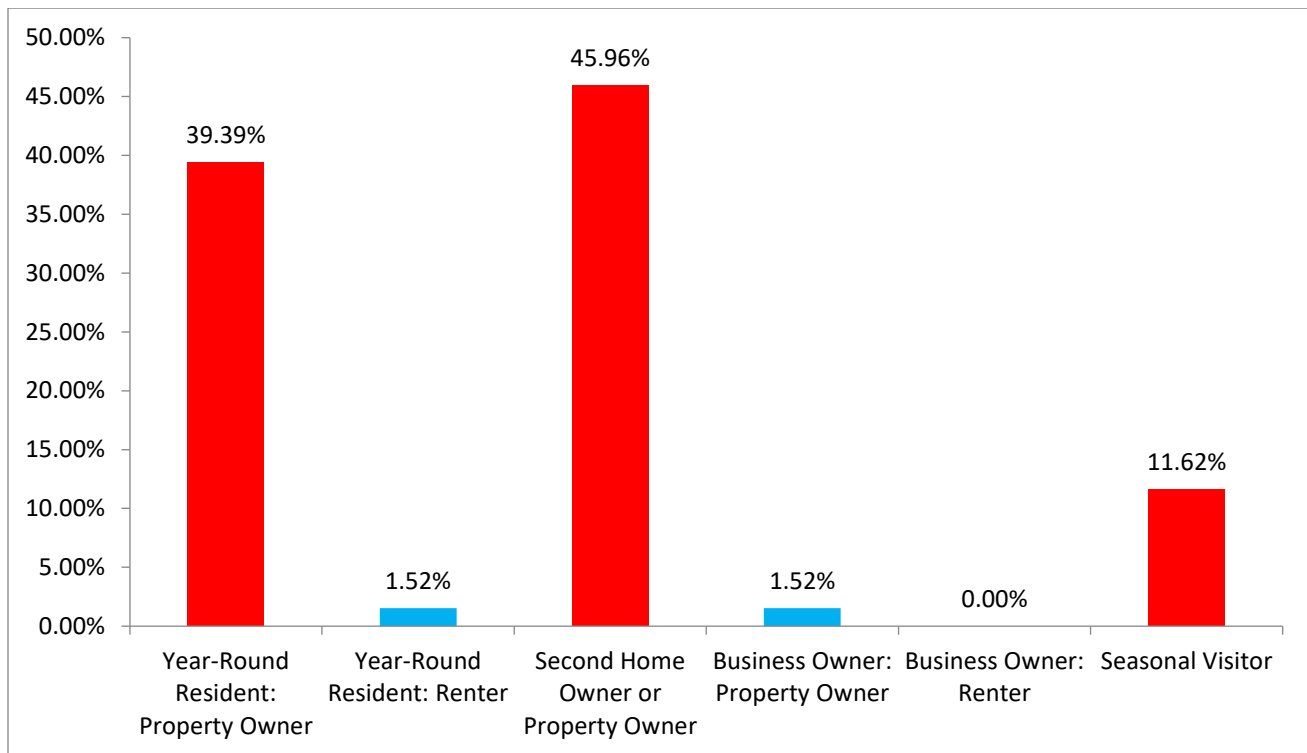


**Question 7: In what areas would you most like to see bicycle and pedestrian improvements?**

The survey asked what areas people would like to most see bicycle and pedestrian improvements in Topsail Beach. The majority of respondents indicated North and South Anderson Boulevard. Respondents also indicated a need for improvements in the Town Center/downtown area. Ocean Boulevard was also indicated as an area where bicycle and pedestrian improvements are desired, particularly speed enforcement.

**Question 8: Have you experienced a recurring issue regarding bicycle and pedestrian safety that you feel should be addressed? If so, please briefly explain:**

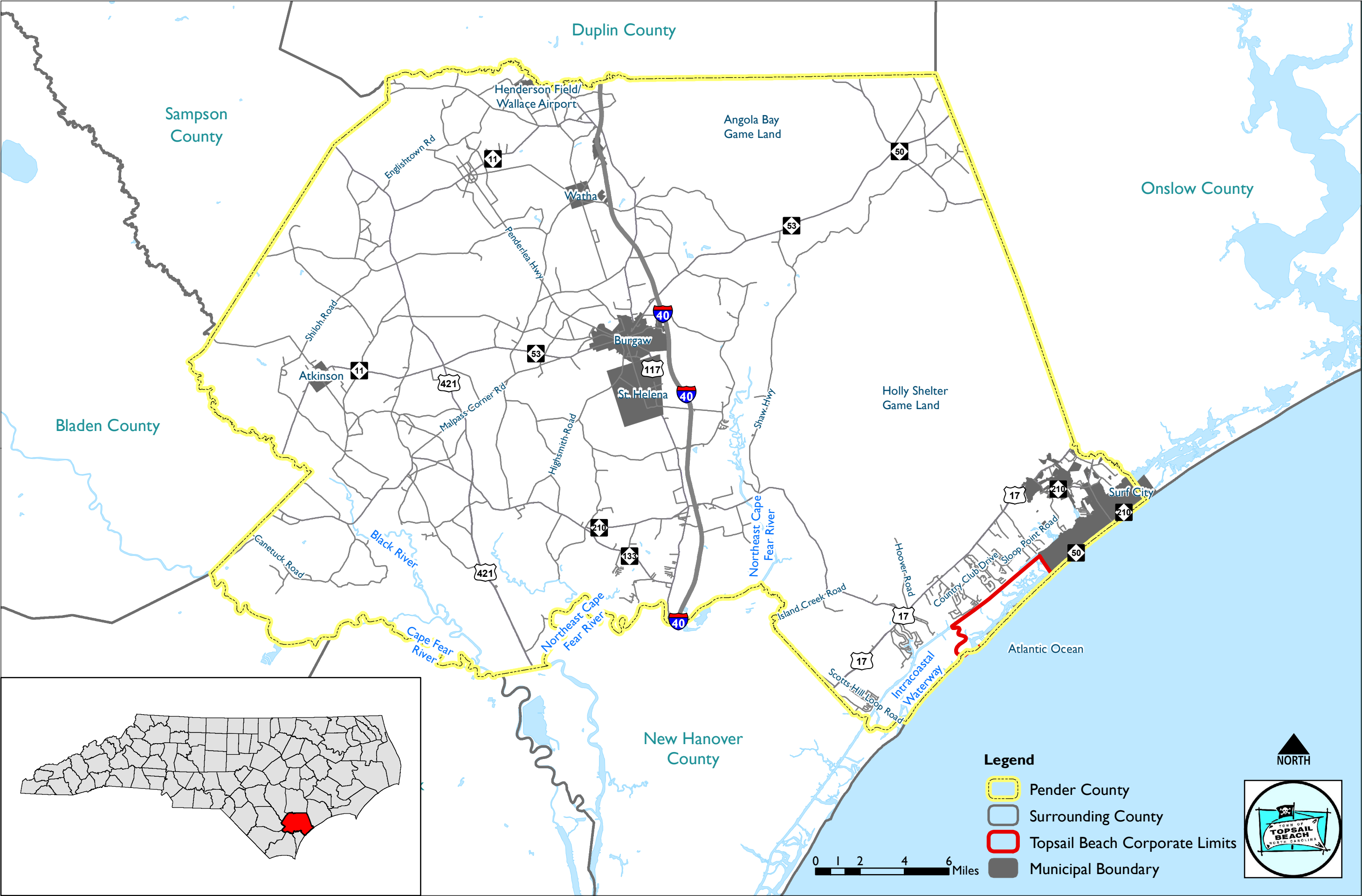
The survey asked respondents to report recurring issues related to bicycle and pedestrian safety that need to be addressed. Respondents identified a variety of issues, including that the lack of sidewalks and pedestrian/bicycle lanes makes it difficult to walk/bike the area. Respondents also indicated that driving at night is dangerous due to people walking along the side of the road. Others indicated that bicyclists need lights or bells to better alert motorists and pedestrians at night. Respondents believe the lack of signage for bicyclists and pedestrians is a concern. Respondents also noted seasonal traffic backing up behind bicycles was a recurring issue. Several respondents feel speed limits are not properly enforced on Ocean Boulevard.

**Question 9: Which statements describes your relationship to the Town of Topsail Beach? (Select all that apply)**

The majority of respondents are property owners with second home property owners as the group providing the highest number of responses at 91 out of 198. The second highest group of respondents was year-round residents that own property at 78 out of 198 respondents. Additionally, 3 year-round renters, 3 business owners, and 23 seasonal visitors responded to the survey. Overall, the majority of input for the survey was provided by property owners.

**Question 10: Please provide any other comments you may have regarding cyclist and pedestrian options.**

Finally, respondents were given the opportunity to provide additional comments regarding cyclist and pedestrian options. Nearly half of the survey respondents answered this question. Many respondents indicated Ocean Boulevard and Anderson Boulevard as primary areas of concern for both pedestrians and bicyclists. Others indicated a general need for maintenance and repairs to current sidewalks. Additionally, respondents indicated a need for more sidewalks and multi-use paths.



Map I: Location

## Chapter 2: Community Profile

### Population

Of the eight comparable municipal beach communities below, located in North Carolina, Topsail Beach has the smallest permanent population at 354. The total number of people in North Carolina living in the eight beach municipalities year-round, in 2016 was 20,385. This total represents 0.2% of the North Carolina total population of 9,940,828. However, the population increases exponentially in summer months during the tourist season. Accordingly, the permanent population is not representative of the demand for services, businesses, or infrastructure such as bicycle and pedestrian facilities.

**Table 2.1: North Carolina Selected Barrier Island Municipal Beaches Population Growth, 2001-2016**

Municipality	2001 Population	2010 Population	2016 Population	Percentage Growth, 2001- 2016	Percentage Growth (Average Yearly), 2001-2016
<b>Topsail Beach</b>	<b>481</b>	<b>368</b>	<b>354</b>	<b>(-26%)</b>	<b>(-2.0%)</b>
Surf City	1,423	1,853	2,618	84%	4.2%
North Topsail Beach	833	743	1,104	33%	1.9%
Emerald Isle	3,538	3,655	3,709	5%	.03%
Atlantic Beach	1,777	1,495	1,671	(-7%)	(-0.4%)
Wrightsville Beach	2,604	2,477	2,546	(-2%)	(-0.2%)
Carolina Beach	5,225	5,706	6,048	16%	1%
Kure Beach	1,573	2,012	2,335	48%	2.7%
Pender County	42,051	52,217	56,358	34%	2%
North Carolina	8,188,008	9,535,483	9,940,828	18%	1.3%

Source: U.S. Department of Commerce, Bureau of the Census, 2016

### Current Permanent Population Estimates

In 1990, the population of Topsail Beach was 346 persons with the 11 year growth rate from 1990 to 2001 showing an increase in population by 39%. Comparatively, between 2001 and 2016 the town experienced a decrease in population from 481 to 354 persons, a 26% loss. Several other neighboring beach towns, namely North Topsail Beach, Atlantic Beach and Wrightsville Beach also experienced a loss in population. These drops are at least in part attributable to the general economic downturn and fluctuations in the housing market. At the same time Surf City has grown by 84%, largely due to annexation, and Kure Beach increased by 48%. Pender County as a whole with a 34% growth rate surpassed North Carolina overall with 18%. Compared to its neighboring counties, Pender County is classified as a rural county, with the vast majority of the population living outside of municipal boundaries. As a beach municipality, Topsail Beach cannot be classified as rural, however, it is notable that the area has a low population density.

**Table 2.2: Pender and Neighboring Counties Population Growth, 1990-2016**

County Government	2010 Population	2016 Population	Number of Persons	% Growth
Bladen County	35,190	34,454	(-736)	(-2.1%)
Brunswick County	107,431	119,167	11,736	11%
Carteret County	66,469	68,537	2,068	3.1%
Columbus County	58,098	57,015	(-1,083)	(-1.9%)
Duplin County	58,505	59,121	616	1.1%
New Hanover County	202,667	216,430	13,763	6.8%
Onslow County	177,772	185,755	7,983	4.5%
<b>Pender County</b>	<b>52,217</b>	<b>56,358</b>	<b>4,141</b>	<b>8.0%</b>
Sampson County	63,431	63,713	282	0.4%

Source: U.S. Department of Commerce, Bureau of the Census, 2016

### Current Seasonal Population Estimates

When planning for infrastructure, housing, commerce and recreation, it is important to consider the impact of vacationers, visitors, and temporary residents visiting the community on a seasonal basis. Typically, the seasonal population has the greatest impact on services and resources from Memorial Day to Labor Day.

Persons who reside in the town limits for the majority of the year, or refer to it as their primary residence, make up the permanent population. Whereas, persons who temporarily vacation or visit for at least one night in the planning area during the peak season comprise the seasonal population. The permanent population plus the seasonal population (including day-trippers) make up the peak population. The seasonal overnight population accounts for only the permanent and seasonal population and not day-trip visitors. While there is no standard method for tabulating seasonal population for a given jurisdiction, there are few methods that can be used to estimate the population. Seasonal population estimates are difficult to calculate with any precision and require making assumptions based upon experience and an understanding of the underlying population demographics, seasonal tourism industry, and the habits of beach goers.

It has been determined by the North Carolina State Data Center, based on the 2016 Census that there were 354 permanent residents of Topsail Beach in 2016. According to the 2016 U.S. Census there were 1,299 housing units in Topsail Beach in 2016. Since there are 184 housing units occupied by the 354 permanent residents, this equates 1,115 housing units that are occupied seasonally.

The 2016 Census reported 354 permanent residents and 1,299 housing units with 184 occupied and 1,115 units vacant, equating to a 14.3% occupancy rate.

The number of persons per housing unit in Topsail Beach, in 2016, based on permanent population (354 divided by 184), is 1.92. For purposes of figuring seasonal peak population, and to account for summer visitors, we will add one additional person per residence, for visitation purposes, to equate to 2.92 persons per housing unit. According to a study completed by the UNC Carolina Population Center, a standard number frequently used for the number of occupants in a vacation cottage is 8.2 persons per unit. The seasonal overnight population based solely on housing units would be equal to the permanent population (354) plus the additional 1 person per unit

(184 multiplied by 2.92 = 537.3), plus vacation cottage rental (8.2 multiplied by 1,115 = 9,143) gives a total of 10,034 persons.

\*permanent population divided by occupied housing units plus one = additional persons per residence  $(354/184) + 1 = 2.92$

\*seasonal population = permanent population **plus** additional persons per residence **plus** vacation cottage rental (which is found by multiplying the number of vacation occupants by the number of seasonal occupied housing units)

$354 + (184 * 2.92) + (8.2 * 1,115) = 10,034$

The table below lists the number of motels in Topsail Beach and the number of rooms at each motel.

**Table 2.3: Topsail Beach Motels and Number of Rooms, 2016**

Name of Motel	Number of Units
Breezeway Motel	47
Jolly Roger	65
Sea Vista Motel	34
Main Street Inn	4
<b>Total</b>	<b>146</b>

When accounting for transient room stays the seasonal overnight population increases. According to a study completed by the UNC Carolina Population Center, a standard number frequently used for beach visitors occupying a motel unit is 3 persons. When all units are occupied, the additional number of people visiting the Town is 450. When added to the 10,034 figure, this brings the total seasonal population number to 10,460. This figure, however, does not include day trippers. This is a particularly difficult population segment to establish a reliable population estimate without further research and field work.

### Permanent Population Growth Trends

**Table 2.4: Permanent Population Growth Trends, 1990-2016**

Name	1990 Population	2001 Population	2010 Population	2016 Population
Topsail Beach	346	481	368	354
Pender County	28,855	42,051	52,504	56,358
North Carolina	6,632,488	8,188,008	9,535,483	9,940,828

Source: U.S. Department of Commerce, Bureau of the Census, 2016

Topsail Beach had a (-26%) population decrease rate between 2001 and 2016 and the annualized growth rate for the municipality is 0.15%. From 2001 to 2016 Pender County had a 34% growth rate annualized at 2.3%. North Carolina had an 18% growth rate from 2001 to 2016 and an annualized rate of 1.4%.

### Age of Population

According to Census data, the median age of residents of the Town of Topsail Beach is 58.4 years. Among neighboring beach communities - including Surf City, North Topsail, Emerald Isle, Atlantic Beach, Wrightsville Beach, Carolina Beach and Kure Beach - Topsail Beach as the highest in median age. Kure Beach was next highest at 56.4 years, while the youngest median was found at Wrightsville Beach at 43.3. The median age for

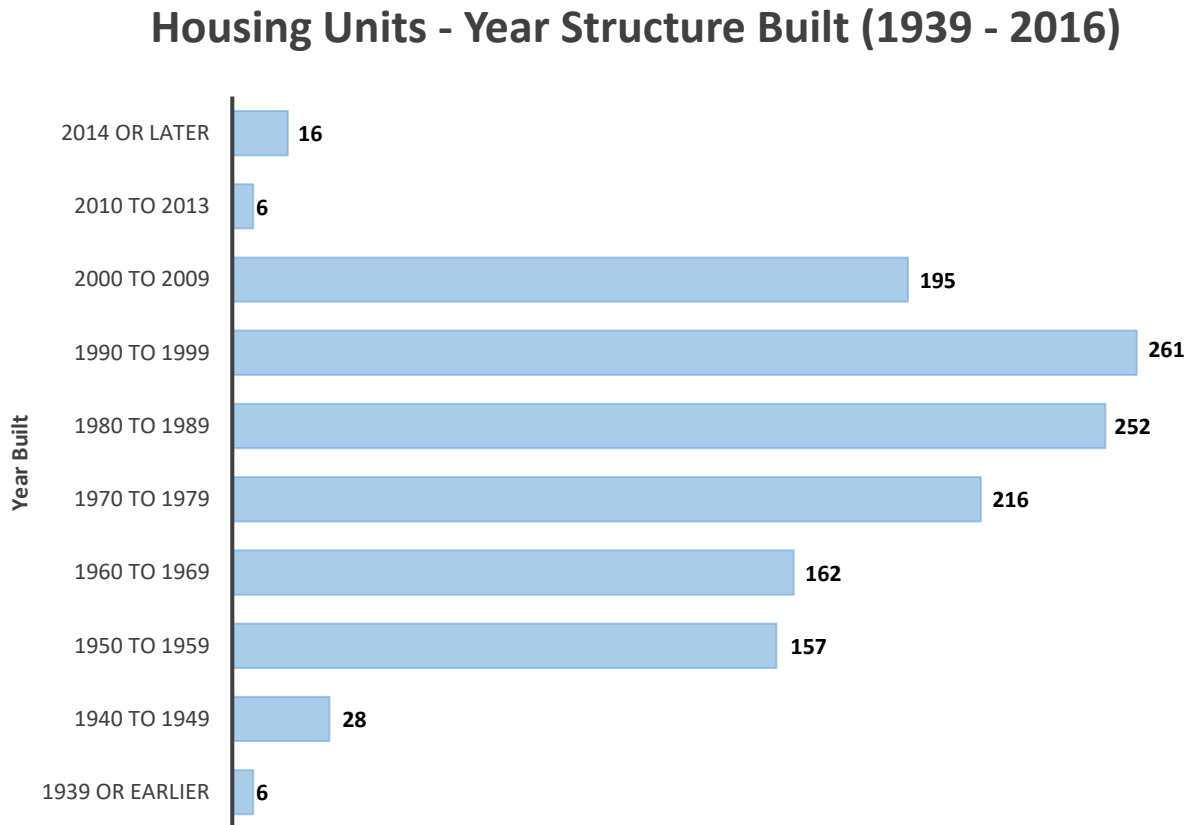
Pender County was 42.7. In North Carolina the median age reported is 38.3. This statistic characterizes the Town of Topsail Beach as an older, retirement oriented community.

An important general trend in planning documents nationwide is to integrate health issues into decision making guidance documents. The aging population is one of the fastest growing demographic and Town's need to plan to prepare to meet the needs of this rising population. Nearly a third, 26.3% of the total population within Topsail Beach is over the age of 65. The median age in the Town is 58.4 years. A multigenerational planning approach ensures that the needs of all residents are met and the older members of the community are not at risk of social isolation, declining health, and poor well-being. Aging with a high quality of life in your community can be challenging to deliver. Locating services and transportation options for older adults can enhance the safety and general welfare of those in need of special care. Because mobility limitations may increase with age, it is important to promote well-connected neighborhoods with access to critical facilities.

### Housing Stock

A review and analysis of a Town's housing stock gives us additional information on local land use patterns. According to the 2016 Census, more than 90% of the total housing in the Town of Topsail Beach is classified as single-family dwellings. Of the 1,299 homes in Topsail Beach, only 63 units, or 4.8% of the housing stock is composed of multiple-family dwelling units.

According to the 2016 Census, 72.8% of the housing in Topsail Beach was built since 1970. A total of 56.2% had been built since 1980, 36.8% since 1990, and 16.7% since 2000. The above figures do not include motels and their rooms. The age of the houses in Topsail Beach are shown in the figure below.

**Figure 2.1: Topsail Beach Housing – Year Structure Built (1939-2016)**

Source: U.S. Department of Commerce, Bureau of the Census, 2016

## Summary

While the permanent population has decreased since 2000, the number of housing units has increased by more than 200 – equating to a substantial increase in the seasonal population. With more housing units being built each year to support the growing tourist demand; a heavy demand has been placed on the need for new bicycle and pedestrian infrastructure and facilities.

- As of 2016, the permanent year-round population of Topsail Beach is 354.
- The estimated peak seasonal population for Topsail Beach is 10,460. This estimate is more representative of the demand for infrastructure such as bicycle and pedestrian facilities.
- The median age of residents of Topsail Beach is 58.4 years. Nearly a third of the population within Topsail Beach is over the age of 65. This illustrates a need for recreational opportunities for the retiree population and highlights the importance of establishing improved connectivity to increase access to beach accesses, Town facilities, and commercial/retail establishments.
- More than 90% of the housing stock in Topsail Beach is classified as single-family dwellings.



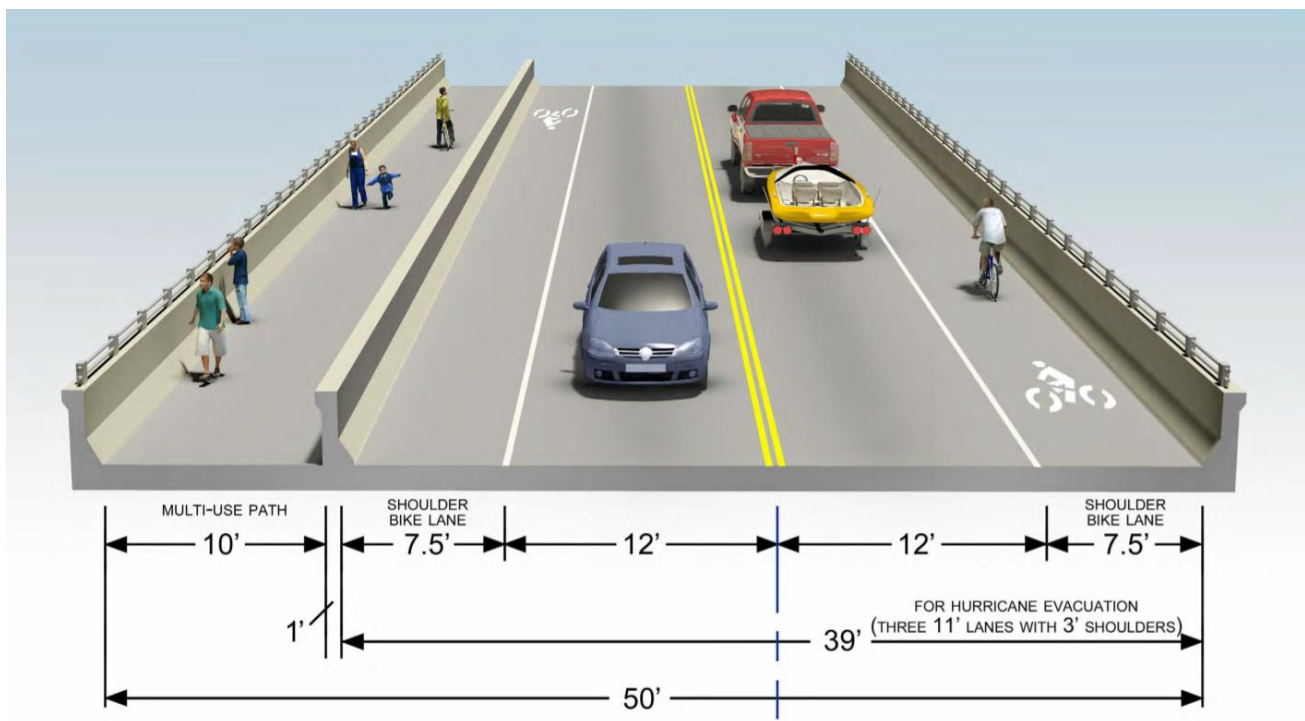
## Chapter 3: Existing Conditions

### Introduction

This section provides an inventory of existing conditions and availability of bicycle and pedestrian infrastructure in the Town. In addition, seasonal vehicular traffic counts were catalogued on the northern and southern end of the Town. To summarize the existing conditions section, a Strengths, Weaknesses, Opportunities, and Threats, (SWOT) Analysis was developed.

### Local and Regional Facilities

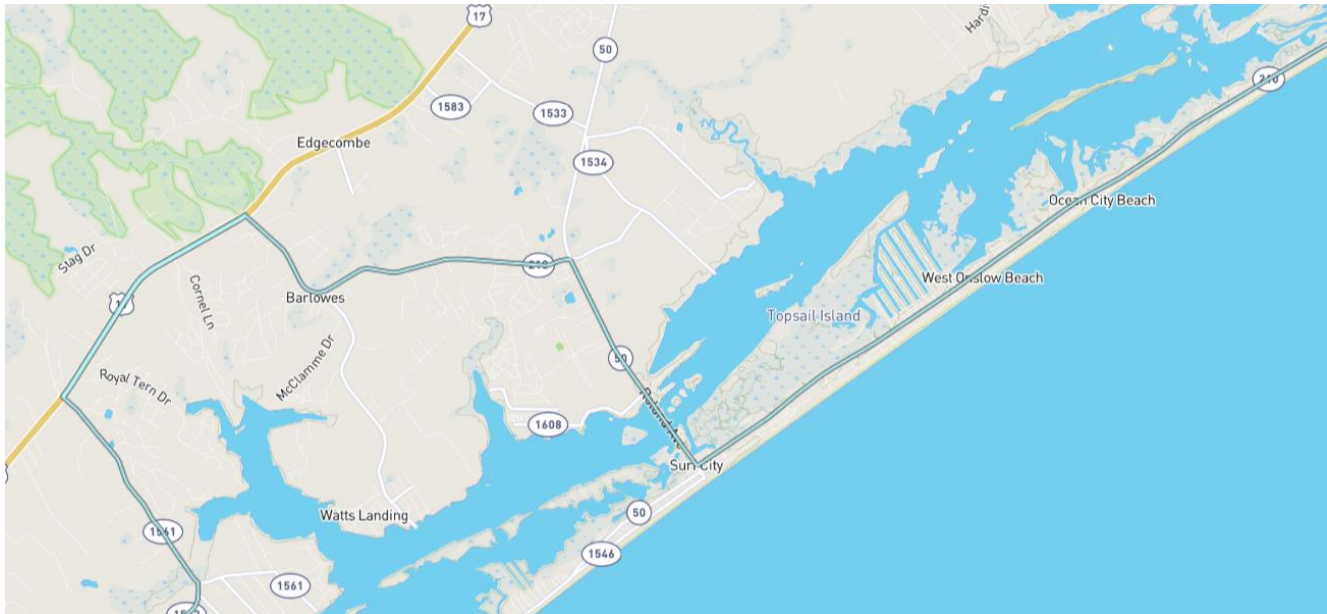
#### *Topsail Island Bridge (Surf City)*



**Figure 3.1: Surf City Flyover Bridge**

The newly constructed Surf City flyover bridge, opened in December of 2018, replaced the long-standing swing bridge that served the island for decades. The new bridge will ease congestion typically experienced during the summer months as its height allows for maritime traffic to pass below without it opening. The bridge is outfitted with a dedicated multi-use path, the first of its kind in North Carolina. It will be important to monitor traffic volumes in the following years to determine if the bridge has an impact on traffic volumes. Increased development activity in Pender County, coupled with a bridge that no longer opens on the hour, may increase the number of motorists, cyclists, and pedestrians visiting the island.

### East Coast Greenway



**Figure 3.2: East Coast Greenway Route**

The East Coast Greenway (ECG) is a developing trail system, linking many of the major cities of the Eastern Seaboard between Canada and Key West. Over 30 percent of the route is already on traffic-free greenways, creating safe, accessible routes for people of all ages and abilities. The route of the ECG crosses onto the island via the Surf City bridge and heads north on NC 210 to the of North Topsail Beach. This presents an opportunity to entice cyclists to travel south to the Town to enhance business and tourism activities.

### Surf City Bicycle Lanes



**Figure 3.3: On-street Bicycle Lanes terminate on South Shore Drive in Surf City.**

On NC 50 traveling southbound, there is a 1.25-mile section of roadway that is outfitted with on-street bicycle lanes that begins at the foot of the new bridge. The bicycle lanes terminate at the intersection of South Shore Drive and give way to the four-foot side path that traverses the roadway to the Town of Topsail Beach. Accordingly, cyclists are forced to merge with vehicular traffic or utilize the four-foot path for the remainder of NC 50 travelling south bound. The Town should monitor any further plans to extend the Surf City bicycle lanes. Ideally, any expansion of facilities in Surf City should be coordinated with the Town, with the goal of continuing the bicycle lanes to the southern terminus of NC 50.

## Vehicular Roadway Network

NC 50 (Anderson Boulevard) is the primary transportation arterial through the Town of Topsail Beach. This primary roadway, which also serves as the only entry and exit point for the Town, effectively bisects the island from east to west. Speed limits on NC 50 vary from 35 MPH to 25 MPH within the Town's Central Business District. No other roadways run parallel for the length of the Corporate Limits, with no other north to south routes available within the northern most two miles of Town. Cross streets run perpendicular to NC 50, while Bridgers Avenue, Ocean Boulevard, and Carolina Boulevard run parallel to NC 50.

Roadway right-of-way width varies throughout the Corporate Limits, with some segments of NC 50/Anderson Boulevard having a 75' right-of-way. However, throughout most of the Town, road rights-of-way are measured at 60 feet (See Map 2 for a delineation of the NC 50 Right-of-Way). NCDOT is responsible for maintenance and resurfacing of the Town's primary roadways, including NC 50 and much of Ocean Boulevard. Accordingly, any modifications or future changes to NC 50 or Ocean Boulevard must be in accordance with NCDOT guidelines. There are no signalized intersections within the Corporate Limits.

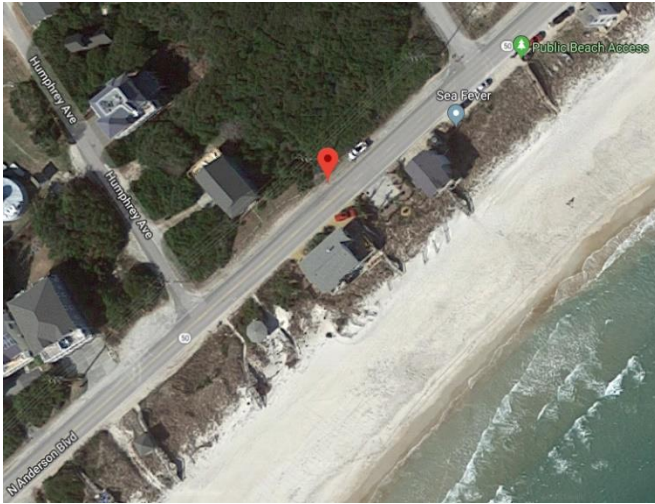
## Vehicular Traffic Counts



**Figure 3.4: CFCOG Staff  
Collecting Traffic Counts**

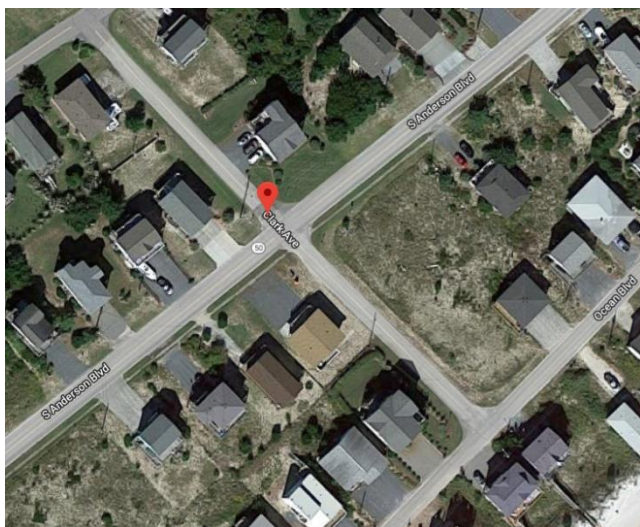
Seasonal vehicular traffic counts were captured at two different locations during the summer of 2018. A traffic counter was placed at the northern Corporate Limit line and another on the south end of the island. In 2008, the NCDOT relinquished its program to inventory seasonal traffic counts. As a result, seasonal enclaves such as Topsail Beach no longer have access to true vehicular traffic impacts. Moving forward, the Cape Fear Rural Planning Organization (RPO) hopes to work with beach communities in the region to analyze and inventory seasonal traffic counts.



*Traffic Count Station 1:**North Anderson Boulevard near Humphrey Ave/Town Limit***Figure 3.5: Traffic Count #1 Location**

The northern traffic count station was located at the Town boundary line. This count location yielded significantly higher volumes than is estimated by NCDOT's Annual Average Daily Traffic Counts (AADT). The counts were conducted from August 7<sup>th</sup> to the 13<sup>th</sup>, and despite an unusually rainy week, the volumes were approximately three times higher than the NCDOT AADT figures. Over the course of the weekend, nearly 7,000 vehicles entered or exited the Town each day. While there was a reduction in the weekday numbers, the total number was not substantial. Furthermore, vehicular speed limits inventoried were in line with the posted requirement of 35 MPH.

- Seasonal Weekday Average Daily Traffic Count: 5,657
- Seasonal Weekend Average Daily Traffic Count: 6,621
- Seasonal Weekday Average Speed: 33.3
- Seasonal Weekend Average Speed: 32.4
- NCDOT Annual Average Daily Traffic Count: 2,100

*Traffic Count Station 2: Clark Avenue and South Anderson Boulevard***Figure 3.6: Traffic Count #2 Location**

At the second traffic count location on the southern end of Town, volumes were nearly four times lower than the count station at the Town boundary. Traffic count data was collected from June 7<sup>th</sup> to July 6<sup>th</sup> and similar to the northern count location, speeds were in line with the posted requirement. However, the seasonal count was lower than the AADT estimated by the NCDOT.

- Seasonal Weekday Average Daily Traffic Count: 1,408
- Seasonal Weekend Average Daily Traffic Count: 1,828

- Seasonal Weekday Average Speed: 34.4
- Seasonal Weekend Average Speed: 34.7
- NCDOT Annual Average Daily Traffic Count: 2,200

Based on the traffic count data, the northern end of Town receives significantly more vehicular traffic than the southern end. Several factors lead to this; (1) the Town's Central Business District, including the park, attract a number of visitors that do not venture further south of the particular area, (2) additional north to south parallel routes are available south of Town that reduce vehicular traffic on NC 50; and (3) once residents and visitors reach their homes or beach destination on the north end of Town they have no need to travel further south on the island.

### Bicycle & Pedestrian Network



**Figure 3.7: Four-foot sidepath and cyclist attempting to cross NC 50.**

The primary facility available to bicyclists and pedestrians in Topsail Beach is a pervious asphalt side path that is approximately four feet wide. The side path originates in Surf City at the intersection of South Shore Drive and traverses NC 50 to its terminus on Trout Avenue on the south end of Town. However, in the Town's Central Business District the path is not available (See Map 3 for more information), forcing bicyclists and pedestrians to use the roadway shoulder or travel lanes. The side path is available on only one side of the road; thus, all users traverse the path whether traveling north or south. This inherently causes conflicts as the minimum width recommended by NCDOT guidelines for an off-street side path is eight feet.



**Figure 3.8: Crosswalk markings in Town Center area.**

NC 50/Anderson Boulevard serves as the primary barrier to bicycle and pedestrian travel, particularly in the northern portion of Town. In the summer months, crossing NC 50 to access the beach is commonly mentioned as the most important safety issue for pedestrians. There are no marked pedestrian crossing locations adjacent to any of the beach accesses along the northern segment of NC 50. It should be noted, NCDOT discourages crosswalk markings at any unsignalized intersection as drivers may not notice pedestrians or fail to yield without an official

traffic stop or signal. In the Central Business District, there are two intersections that are outfitted with high visibility crosswalks and signage. Due to the low posted speed limit, concerns with crossing at the unsignalized intersection are minimized. For cyclists, there are no dedicated on-street facilities available. Along NC 50, the shoulder is available for use, but due to its varying width, dedicated on-street bike lanes are not available. The roadway network offers greater connectivity in the southern portion of Town, with traditional block layouts that are more conducive to walking and cycling.

## NC 50/Anderson Boulevard

As stated previously, the primary and only route through Town is NC 50/Anderson Boulevard, which runs north to south through Town and is maintained by NCDOT. The speed limit on NC 50/Anderson Boulevard was recently reduced to 35 MPH. The right-of-way of NC 50 varies from 60 feet in the northern portion of Town to 75 feet on the south end. See figures below outlining the cross section width.

### NC 50/North Anderson Boulevard from Town Line to Davis Avenue

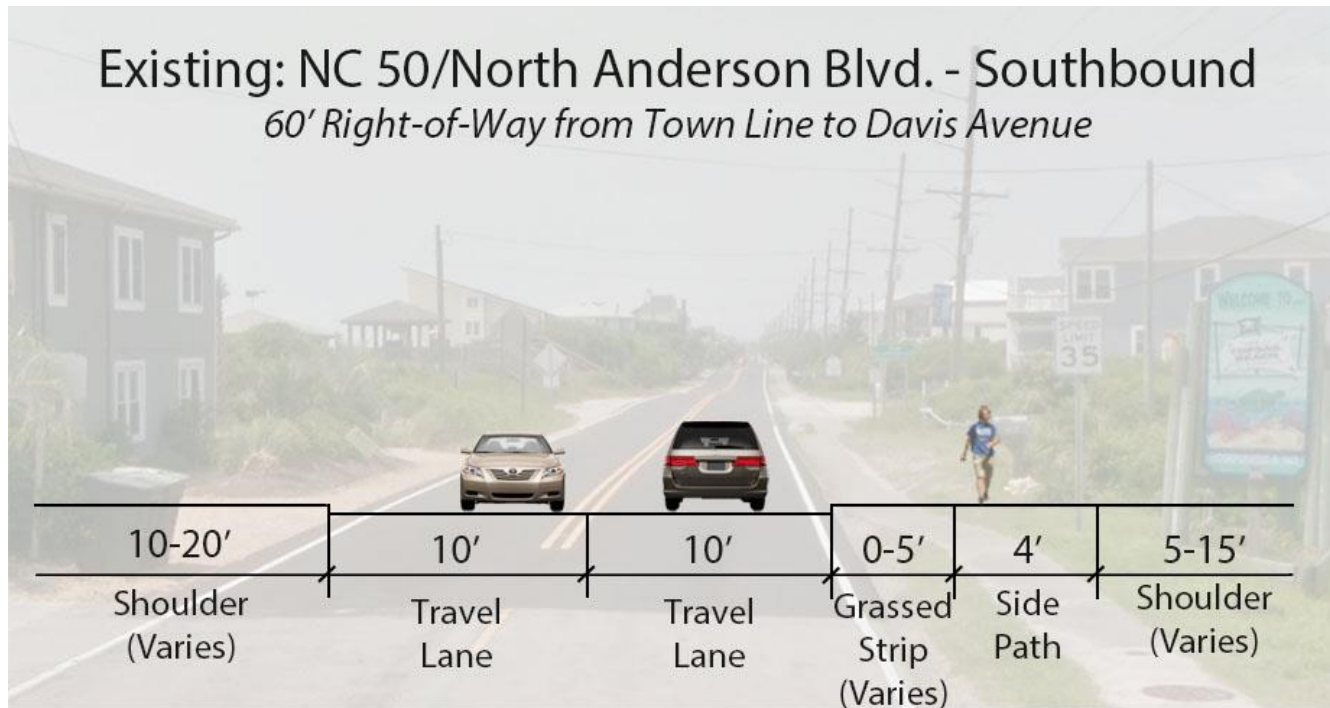
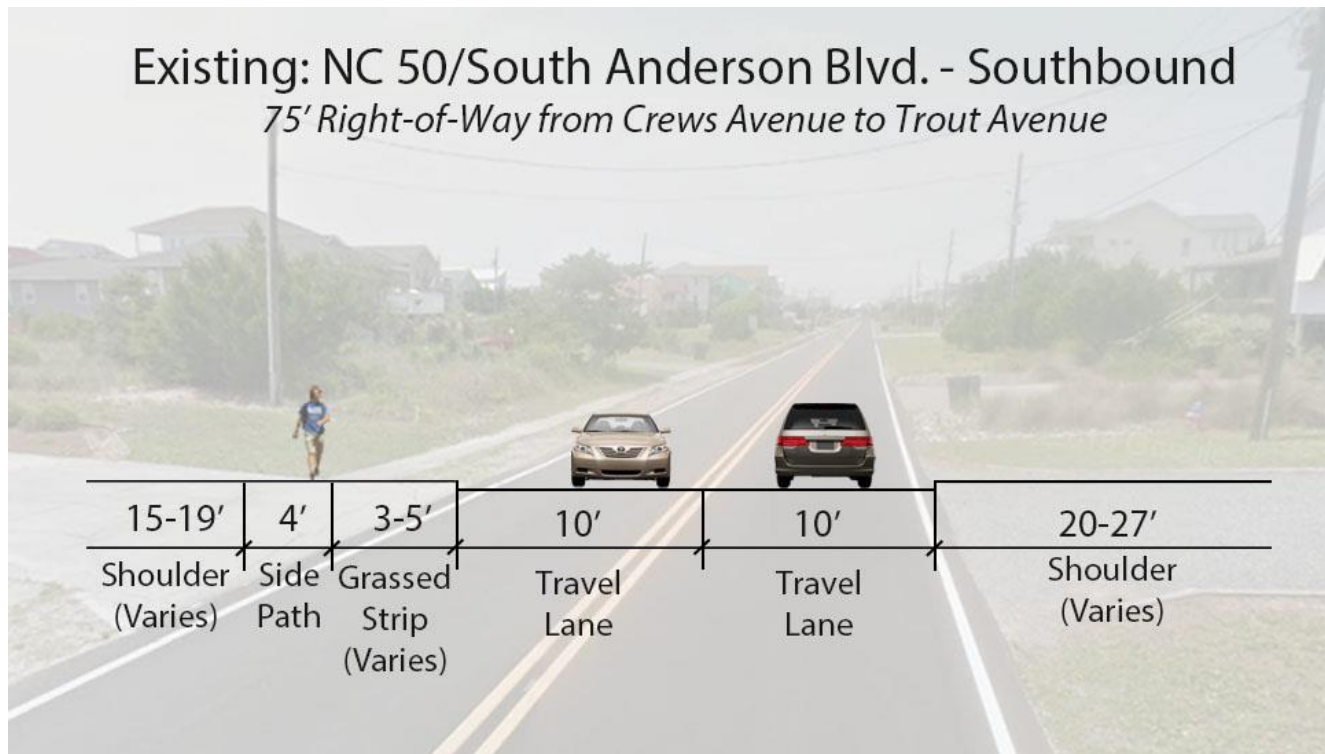


Figure 3.9: Cross Section of NC 50/North Anderson Boulevard.

- **Shoulder**
  - Ocean Side (east): Shoulder width varies from 10 to 20 feet throughout the segment. Grade changes, at times substantial, pose constraints to further encroachment of the roadway oceanward in certain locations. Mailboxes, landscaping, and other vertical barriers also constrain widening of pavement.
  - Sound Side (west): The shoulder on the sound side of North Anderson contains the four-foot side path and grassed separation from the roadway. Utilities are also present within the approximately 20-foot shoulder. The shoulder is relatively flat throughout allowing for potential expansion of pavement. The primary constraint to additional non-motorized facilities are utility poles, mail boxes, landscaping, and hydrants.
- **Pavement Width/Travel Lanes**
  - The pavement width varies throughout this segment of North Anderson; however, the average width is approximately 22 feet. Travel lanes throughout are 10 feet in width, which does not allow for motorists to pass on-road cyclists without crossing into the opposite travel lane.



*NC 50/South Anderson Boulevard from Crews Avenue to Trout Avenue***Figure 3.10: Cross Section of South Anderson Boulevard.**

- **Shoulder**
  - Ocean Side (east): On South Anderson Boulevard the ocean side shoulder contains the four-foot side path, grassed horizontal separation, and the remaining right-of-way. The total width of the shoulder varies from 22 to 28 feet. There are fewer constraints to roadway or facility expansion on this segment of Anderson Boulevard. The right-of-way is wider and elevation changes are minimal.
  - Sound Side (west): The shoulder on the sound side of South Anderson consists of utility poles, underground lines, and fire hydrants. Mail boxes, landscaping, and utilities serve as barriers to expansion of the roadway or addition of future facilities. However, similar to the ocean side right-of-way, the grade remains relatively flat and the overall right-of-way width would allow for pavement expansion to accommodate a wider travel lane.
- **Pavement Width/Travel Lanes**
  - Similar to North Anderson, the pavement width varies; with the average width being approximately 22 feet. Travel lanes throughout are 10 feet in width, which does not allow for motorists to pass on-road cyclists without crossing into the opposite travel lane.



## Central Business District

The Central Business District functions as the primary business area and commerce hub for tourism (See Map 3). Pedestrian and cyclist activity is generated in this area due to restaurants, retail, the post office, the pier, and the Town Center park. The posted speed limit within this area is 25 MPH. North and south bound vehicular traffic on NC 50/Anderson Boulevard is not required to stop as there are no signals or stop signs for motorists utilizing this roadway. Intersections with cross streets do have stop signs and two of the primary intersections include high-visibility markings and signage.

### NC 50/South Anderson Boulevard from Crews Avenue to Trout Avenue

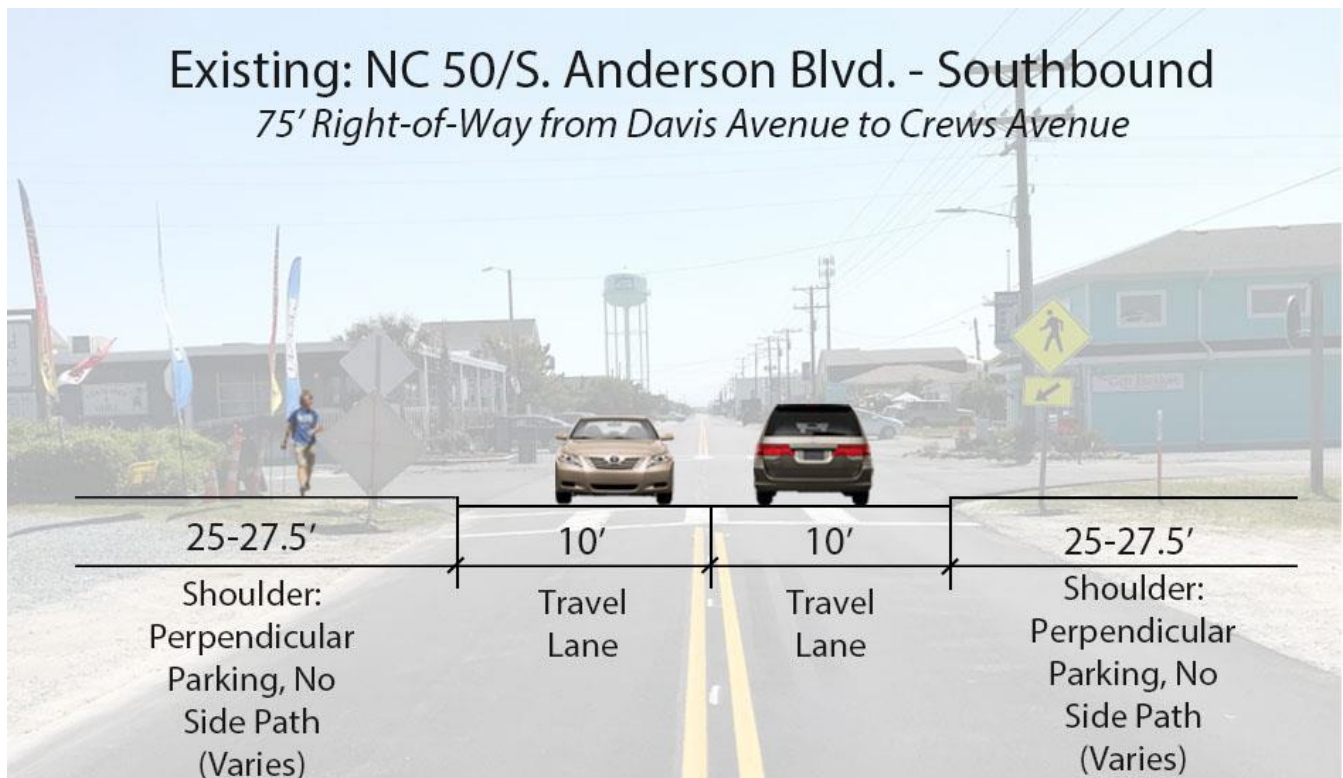


Figure 3.11: Cross Section of Anderson Boulevard from Davis Avenue to Crews Avenue.

- **Shoulders**
  - Within the Central Business District, the shoulders on either side of Anderson Boulevard have similar characteristics. The 75 foot right-of-way width extends to the edge of structures or within a few feet, leaving very little room for building setbacks. Perpendicular parking, where adjacent to non-residential uses, is located along these few blocks of Anderson Boulevard. No dedicated pedestrian or bicycle facilities are located on the shoulders. However, more substantial paved shoulders are present in certain areas allowing for use by cyclists or pedestrians. Utilities (located on the sound side of the shoulder), storm drains, mail boxes, the loss of parking, and a historic missile viewing tower serve as the primary constraints to pavement widening or the addition of bicycle and pedestrian facilities.

- **Pavement Width/Travel Lanes**
  - Travel lanes are approximately 10 feet wide throughout the Town Center area. However, the pavement width varies as some portions of the roadway include a three or four-foot-wide paved shoulder.



**Figure 3.12: NC 50/Anderson Boulevard within Central Business District is outfitted with a paved shoulder in certain locations.**

### S.W.O.T Analysis

An analysis of Strengths (S), Weaknesses (W), Opportunities (O), and Threats (T) was conducted to obtain a thorough understanding of the study area. A S.W.O.T. analysis is a tool most consistently used for corporate planning, but can be used across multiple disciplines. This SWOT analysis focuses on bicycle and pedestrian travel and facilities within the Town of Topsail Beach.

**Table 3.1: S.W.O.T Analysis**

Strengths
The four-foot wide side path offers off-street transportation for pedestrians and cyclists.
The southern portion of the Town (Barwick Avenue south) allows for additional east-west travel routes and greater connectivity via Bridgers Avenue, Carolina Boulevard, and Ocean Boulevard.
Low vehicular speeds (mostly) within the Town's Central Business District allow for safer pedestrian travel despite a lack of facilities.
The Central Business District consists of a network of blocks that allow for distribution of bicycle and pedestrian travel away from Anderson Boulevard.
Bicycle parking is available at sound and ocean access locations.
Pedestrians may the utilize beach as an alternative route to travel north or south to their destination.
Weaknesses
The width of the four-foot side path is insufficient to allow for two-way travel or two pedestrians side by side. An eight-foot minimum path is recommended for combined pedestrian and cyclist travel.
The existing roadway pavement width does not allow for a dedicated segment of roadway for bicyclists. In summer months, vehicle congestion can become exacerbated by inability to pass cyclists. This is also coupled with increased safety concerns for cyclist use of the roadway.
The Central Business District lacks dedicated facilities for bicyclists and pedestrians.
Perpendicular parking along Anderson Boulevard creates safety hazard for bicyclists and pedestrians. Vehicles backing in and out of parking spots may not see passing cyclists or pedestrians.
There is a lack of signage and awareness of pedestrians crossing Anderson Boulevard to beach access locations.
No stop signs or signage are present at beach access locations on Ocean Boulevard.

Right-of-way constraints and encroachment concerns exist along NC 50/Anderson Boulevard. Utility lines and telephone poles in addition to hydrants, mailboxes, fences, and landscaping constrain future use of right-of-way for bicycle and pedestrian facilities.

Seasonal vehicular travel volumes and speeds create a barrier to bicycle and pedestrian travel along Anderson Boulevard.

Lack of grade separation or curb between the four-foot side path and roadway creates real and perceived danger for path users. Design guidelines recommend the minimum separation distance to be five feet where no curb is present.

Location of storm drains adjacent to roadway creates a potential barrier to expansion. If pavement widths were extended some storm drains may require relocation.

### Opportunities

Increased signage and targeted installation of crosswalks at beach access locations may enhance motorist awareness. This may include signage for marked crosswalks or signs for Shared Roadways.

Shared-lane markings, indicating shared use of the roadway for vehicles and bicycles, may be appropriate for use in the Town's Central Business District.

Right-of-way widths may allow for widening of travel lanes. Lane widths 13 feet or less make it likely that most motor vehicles will encroach at least part way into the next lane to pass a bicyclist.

Partnership with the Town of Surf City to create a true multi-use path that would provide a non-motorized connection to the mainland via the newly constructed bridge.

Right-of-way widths in the Central Business District will accommodate pedestrian facilities or a multi-use path if parking arrangements are modified from perpendicular to parallel.

Replacement of applicable drainage grates with those that run perpendicular to the travel way to ensure bicycle wheels do not fall into gaps.

### Threats

Property owners along Anderson Boulevard may not support right-of-way encroachments to accommodate additional bicycle or pedestrian facilities

Reduced parking in the Central Business District to accommodate bicycle and pedestrian facilities may lack support from businesses, seasonal visitors, and/or property owners.

Vehicular drivers may discourage any changes to the roadway which may slow the travel pace.

Lack of state and Federal funding to support bicycle and pedestrian facilities.

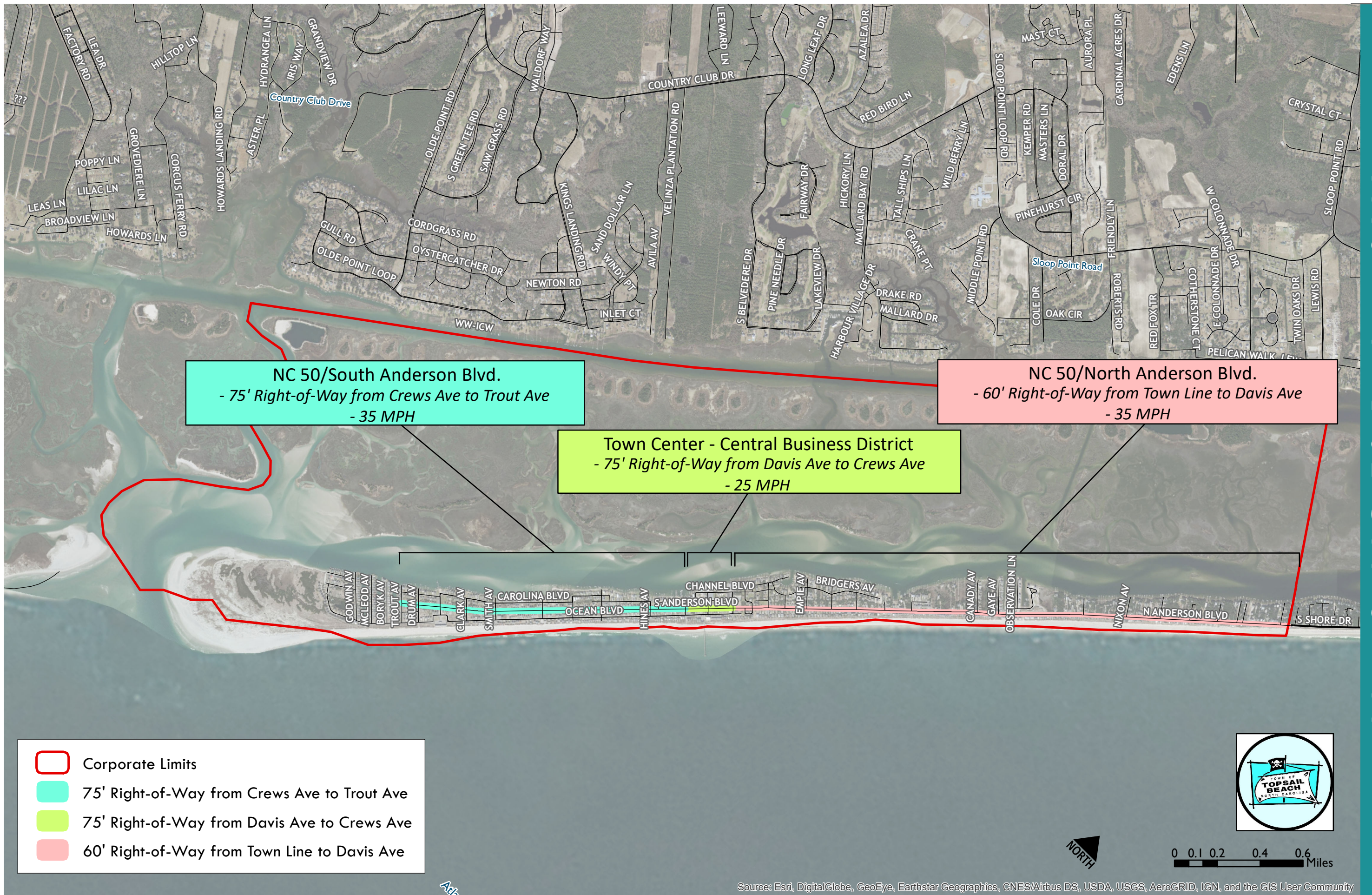
Multi-use path crossing of driveways/intersections may result in bicycle and vehicle collisions.

## Summary

See the list below for a brief overview of the relevant existing conditions related to bicycle and pedestrian travel in the Town of Topsail Beach.

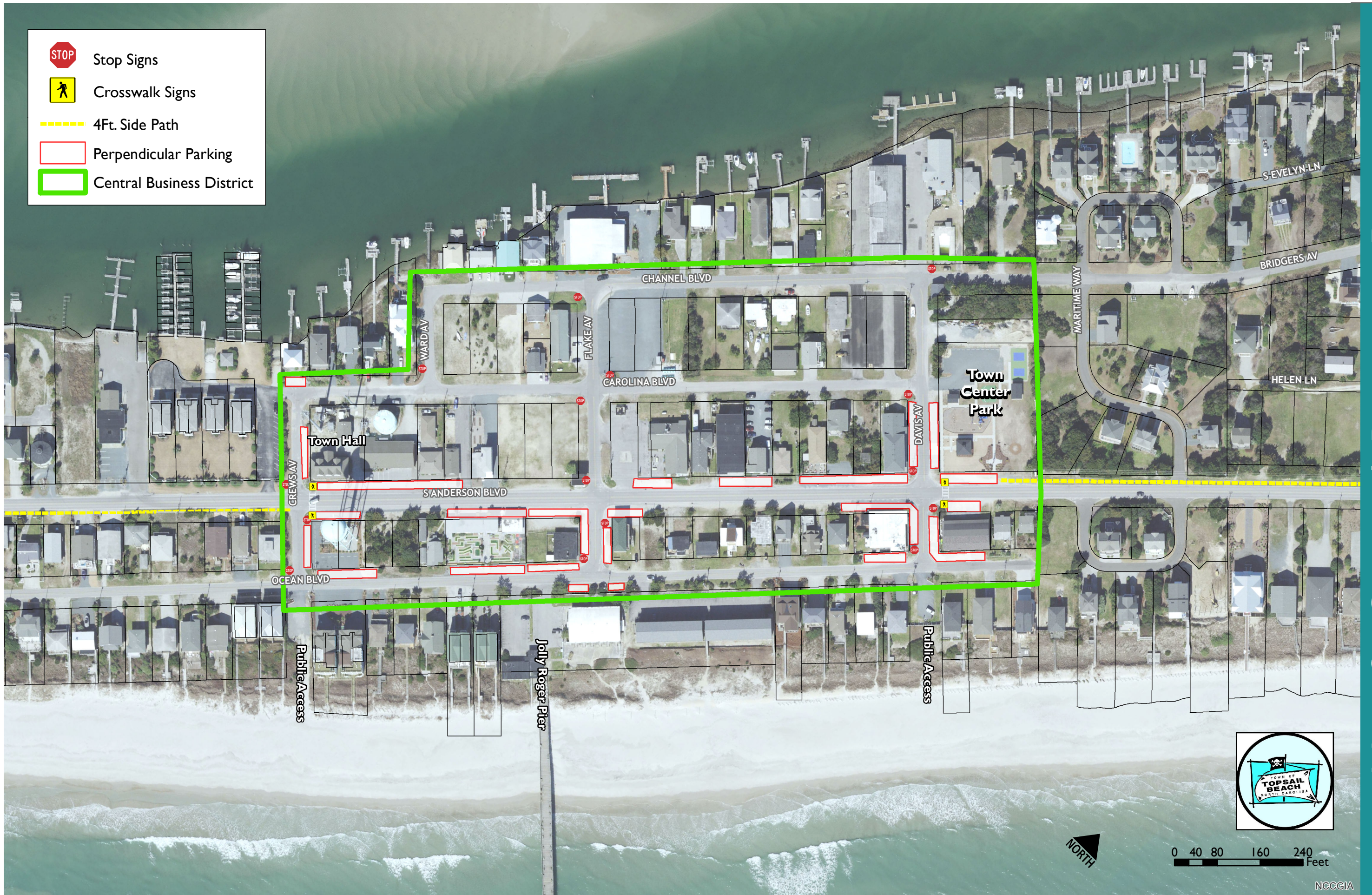
- The new Surf City flyover bridge is outfitted with a dedicated multi-use path, the first of its kind in North Carolina. Increased development activity in Pender County, coupled with a bridge that no longer opens on the hour, may increase the number of motorists, cyclists, and pedestrians visiting the island.
- NCDOT is responsible for maintenance and resurfacing of the Town's primary roadways, including NC 50 and much of Ocean Boulevard. Accordingly, any modifications or future changes to NC 50 must be in accordance with NCDOT guidelines.
- Seasonal traffic count volumes on the northern end of Town are approximately three times higher than Annual Average Daily Traffic (AADT) provided by NCDOT.
- The primary facility available to bicyclists and pedestrians in Topsail Beach is a pervious asphalt side path that is approximately four-feet wide.
- NC 50/Anderson Boulevard serves as the primary barrier to bicycle and pedestrian travel, particularly in the northern portion of Town.
- The width of the four-foot side path is insufficient to allow for two-way travel or two pedestrians. An eight-foot minimum path is recommended for combined pedestrian and cyclist travel.
- Right-of-way constraints and encroachment concerns exist along NC 50/Anderson Boulevard. Utility lines and telephone poles in addition to hydrants, mailboxes, fences, and landscaping constrain future use of right-of-way for bicycle and pedestrian facilities.
- Shared-lane markings, indicating shared use of the roadway for vehicles and bicycles, may be appropriate for use in the Town's Central Business District or along NC 50 coupled with widening of the travel lanes.





Map 2: NC 50 Right-of-Way





Map 3: Central Business District



## Chapter 4: Recommendations

### Introduction

A primary focus of this plan is the identification of practical recommendations for improving pedestrian and bicycle travel options in the Town of Topsail Beach. Infrastructure recommendations are included for bicycle and pedestrian facilities. Generalized cost estimates are provided for facility recommendations. Further engineering studies should take place prior to installation of any proposed facilities. Detailed cost figures should be established at that time.

Recommendations in this section include options for enhancing key intersections and modifying the configuration of NC 50 at three different segments throughout the Town. Three options are provided for North and South Anderson and two for the Town's Central Business District. Implementation of the recommendations will require support from the Town's citizenry, its appointed Boards, and its elected officials. The recommendations provided herein should serve as a starting point in establishing consensus regarding long-term capital improvements related to bicycle and pedestrian travel. The Town may also choose to proceed without implementation of any recommendation contained herein as this is a conceptual planning document and only offers generalized guidance. Further, adoption of this plan does not necessitate implementation of recommendations or the expense of Town funds.

### Intersection Enhancements

Intersection enhancements related to bicycle and pedestrian use are provided in this section. The primary facility recommendations relate to signage and crossing enhancements. Guidelines related to signage and crossing enhancements is provided.

#### Signage



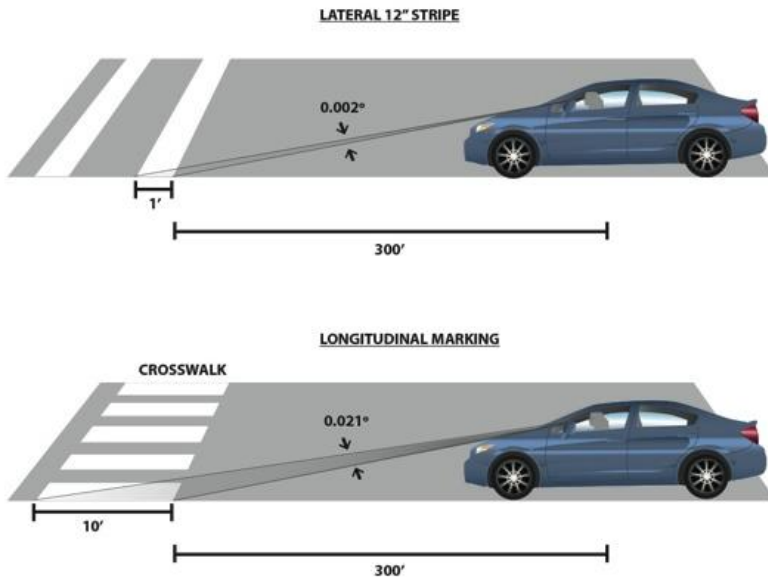
**Figure 4.1:**  
**Pedestrian**  
**Signage**

Signs provide important information to improve road safety by letting people know what to expect, so they react and behave appropriately. However, sign use and placement should be done judiciously, as overuse breeds noncompliance and disrespect. Too many signs create visual clutter.

Regulatory signs, such as STOP, YIELD, or turn restrictions, require driver actions and can be enforced. Warning signs provide information, especially to motorists and pedestrians unfamiliar with an area. Advance pedestrian warning signs should be used where motorists may not expect pedestrian crossings, especially if there are many motorists who are unfamiliar with the area. The fluorescent yellow/green color is designated specifically for pedestrian, bicycle, and school warning signs (Section 2A.10 of the 2009 MUTCD) and should be used for all new and replacement installations. This bright color attracts the attention of drivers because it is unique.



### High-Visibility Crosswalks



**Figure 4.2: High Visibility Crosswalks**

behavior. Staggered longitudinal markings reduce maintenance since they avoid vehicle wheel paths.

### NCDOT Coordination & Facility Cost

Stop sign installation – if pursued on any NCDOT roads – must be done in accordance with NCDOT guidelines, which require a study to determine if such is warranted at a particular intersection (NOTE: No stop signs are recommended as part of this plan). This process requires a formal request from Town officials to NCDOT Division 3. Costs for stop signs are the responsibility of NCDOT while pedestrian signage and crosswalk striping are the responsibility of the Town. Estimated costs for two pedestrian signs and two crosswalk markings per intersection is approximately \$700.

### Ocean Boulevard

Many survey respondents identified Ocean Boulevard as a safety concern for pedestrians crossing to visit the beach. Speeding vehicular traffic was also noted as a concern. As a result, the Town should increase speed limit enforcement on Ocean Boulevard from Clark Avenue to Hines Avenue. There are multiple beach access locations along Ocean Boulevard, but no available signage to increase motorist awareness of pedestrians. The following is recommended at the at the locations provided below (See Map 4 for more information).

- Hines Avenue & Ocean Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Scott Avenue & Ocean Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage

Because of the low approach angle at which pavement markings are viewed by drivers, the use of longitudinal stripes in addition to or in place of transverse markings can significantly increase the visibility of a crosswalk to oncoming traffic. While research has not shown a direct link between increased crosswalk visibility and increased pedestrian safety, high-visibility crosswalks have been shown to increase motorist yielding and channelization of pedestrians, leading the Federal Highway Administration to conclude that high-visibility pedestrian crosswalks have a positive effect on pedestrian and driver

- Crocker Avenue & Ocean Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Darden Avenue & Ocean Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Smith Avenue & Ocean Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage

Estimated Total Cost for Ocean Boulevard Signage and Crosswalk Installation: \$3,500

### *NC 50 –Anderson Boulevard*

Similar to survey responses regarding Ocean Boulevard, respondents were concerned with traffic volumes and safety on Anderson Boulevard – particularly in the northern portion of Town. As stated previously, traffic volumes are much higher on the northern segment of NC 50. Accordingly, the primary concern is enhancing pedestrian and bicycle safety on the northern segment of NC 50. However, pedestrian signage and crosswalks should be considered on the South Anderson Boulevard intersections of Hines Avenue, Crocker Avenue, and Smith Avenue. The following is recommended at the at the locations provided below (See Map 4 for more information).

- Fields Avenue & North Anderson Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Sidbury Avenue & North Anderson Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Sunset Avenue & North Anderson Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Gaye Avenue & North Anderson Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage
- Flake Ave & North Anderson Boulevard
  - Marked pedestrian crosswalk
  - Pedestrian signage

Estimated Total Cost for North Anderson Boulevard Signage and Crosswalk Installation: \$3,500

### **Network Recommendations**

A combination of field work, staff input, community survey results, and practicality led to the creation of the network recommendations contained within this section. Understanding the existing pedestrian, bicycle, and

vehicular network framework and challenges is important to recommending feasible and effective improvements.

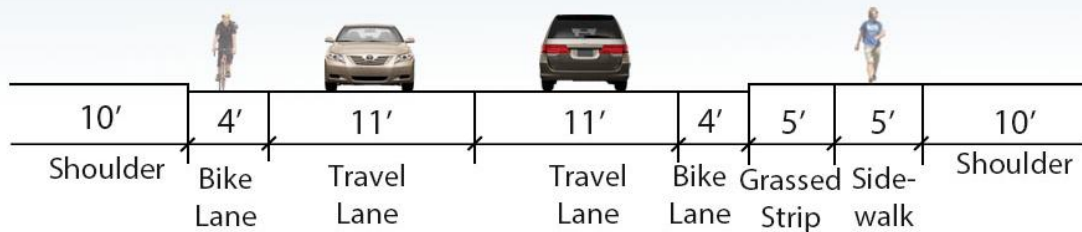
*Option 1: North and South Anderson Boulevard (excluding Central Business District) – Bicycle Lanes*

Option 1 includes the expansion of pavement to accommodate four-foot bicycle lanes and the expansion of the side path to a five-foot sidewalk. No curb and gutter or vertical separation is proposed as part of this recommended reconfiguration of NC 50.

### Option 1: NC 50/North Anderson Blvd. - Southbound

*60' Right-of-Way from Town Line to Davis Avenue*

*11' Travel Lanes with 4' Bike Lanes & 5' Sidewalk*

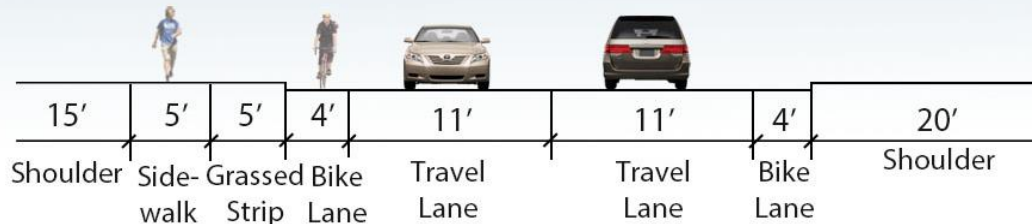


**Figure 4.3: Option 1: North Anderson Blvd.**

### Option 1: NC 50/South Anderson Blvd. - Southbound

*75' Right-of-Way from Crews Avenue to Trout Avenue*

*11' Travel Lanes with 4' Bike Lanes & 5' Sidewalk*



**Figure 4.4: Option 1: South Anderson Blvd.**

### Option 2: North and South Anderson Boulevard (excluding Central Business District) – Multi-use Path

Option 2 includes the addition of an eight-foot multi-use path in replacement of the existing four-foot side path. This option would allow for pedestrian and bicycle use separated from vehicular traffic. Based on survey input, this is the preferred recommendation. Right-of-way constraints are of concern on the northern segment of NC 50.

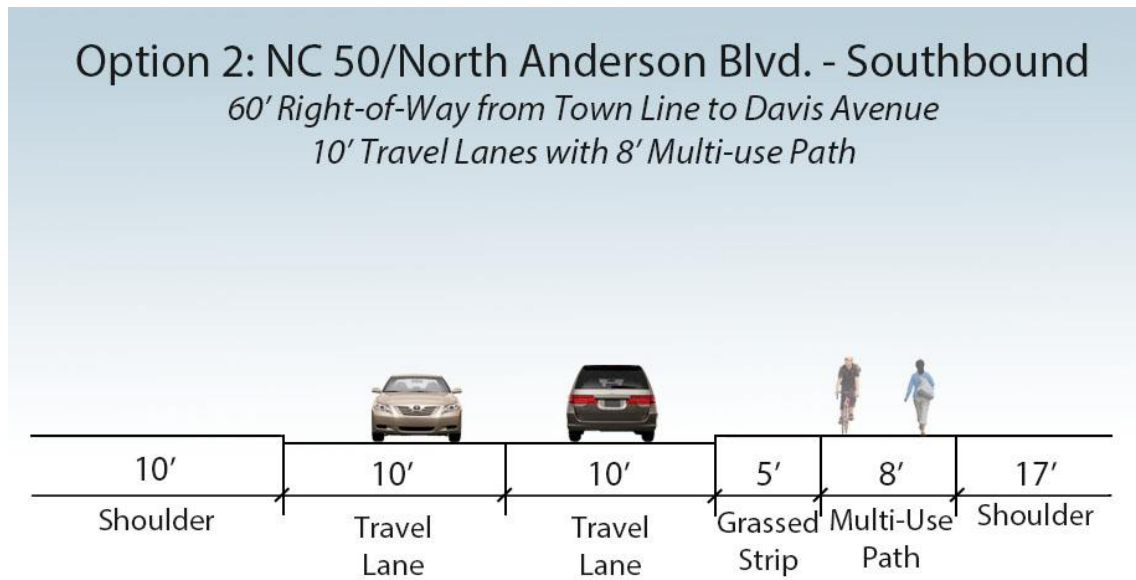


Figure 4.5: Option 2: North Anderson Blvd.

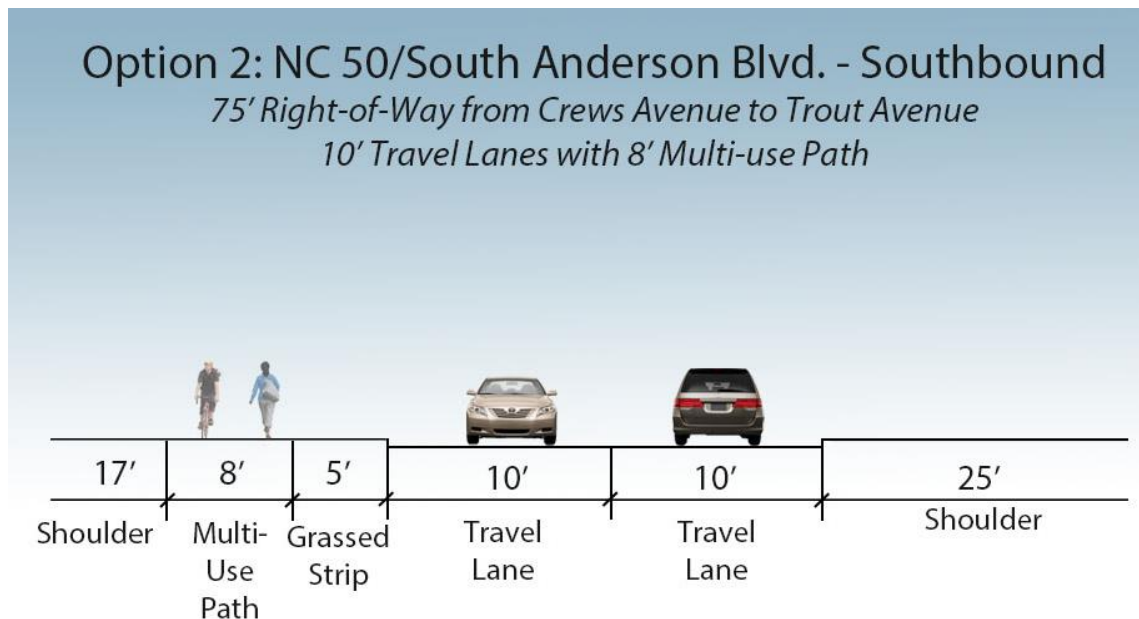


Figure 4.6: Option 2: South Anderson Blvd.

### Option 3: North and South Anderson Boulevard (excluding Central Business District) – Bike Lanes Only

Option 3 is similar to Option 1 with the exception of a five foot rather than four foot bike lane. This options proposes no change to the existing four foot side path. Similar to Option 1, no curb and gutter or vertical separation is proposed.

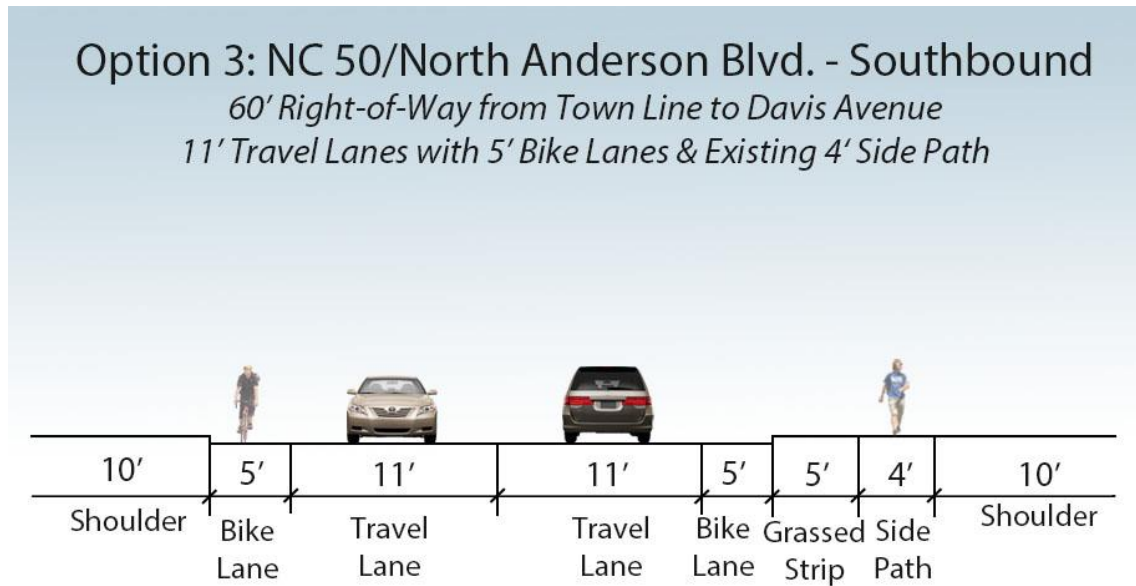


Figure 4.7: Option 3: North Anderson Blvd.

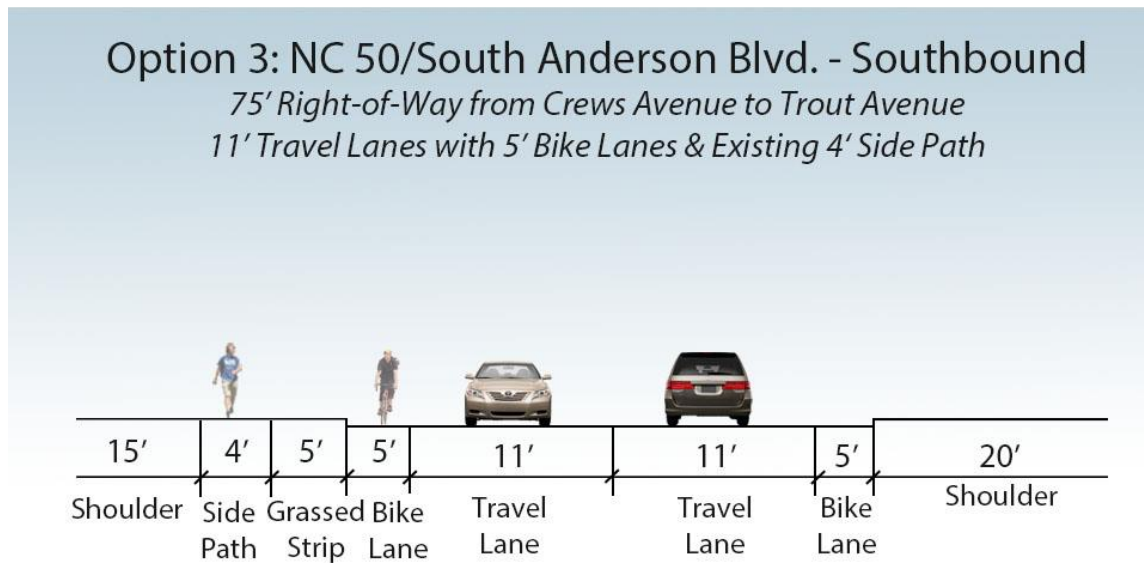
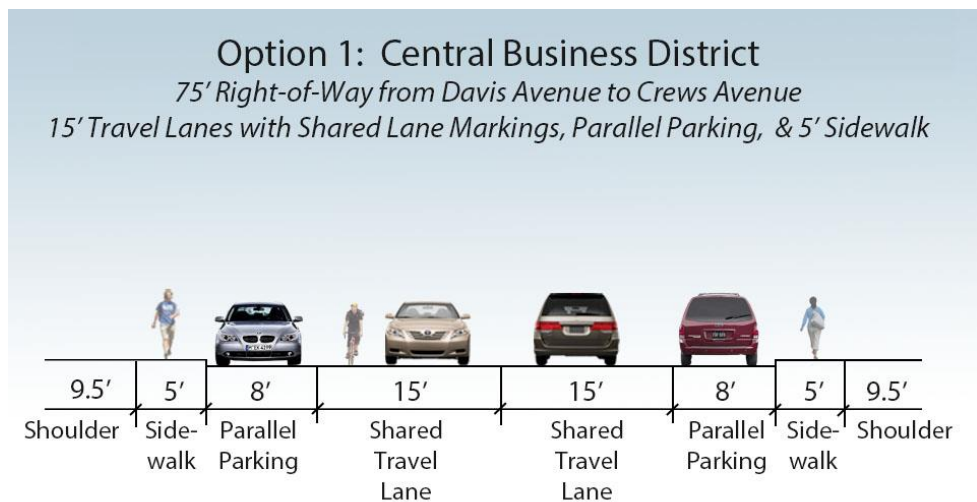


Figure 4.8: Option 3: South Anderson Blvd.

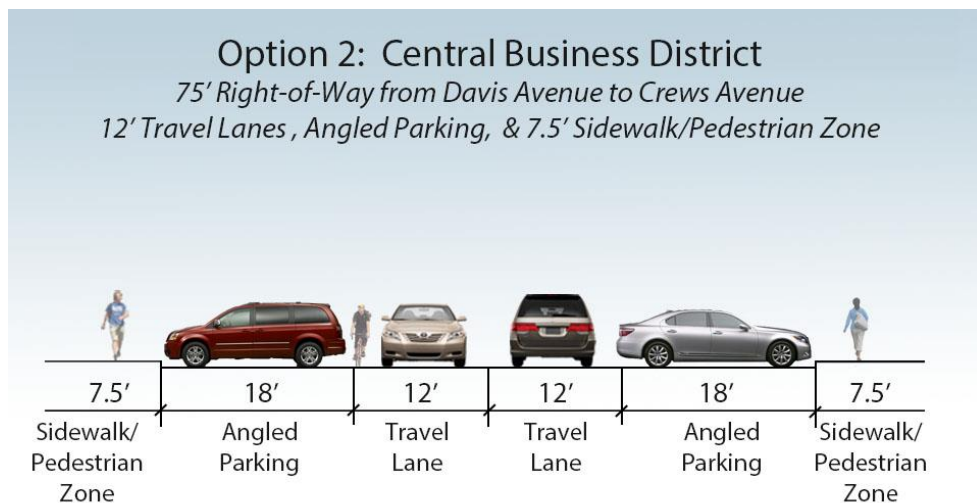
### Central Business District – Parking Reconfiguration & Sidewalks

Two options are provided for modification of the Town's Central Business District. Both options include a modification of the existing parking arrangement. Option one proposes to create additional space for sidewalks and wider travel lanes to accommodate cyclists through the installation of parallel parking. Modifying perpendicular parking to parallel would result in a reduction in overall parking spots; however, bicycle and pedestrian safety would be enhanced by reducing conflicts between rear backing vehicles. The second option for the Central Business District would modify the parking design to allow for angled rather than perpendicular parking. This option would reduce the travel lane width and buffer area for cyclists, but still allow for pedestrian space. With both options, the construction of sidewalks within the Central Business District would encourage greater pedestrian use of the space with the goal of enhanced commerce.

Funding for both options may be pursued as a NCDOT Access Management Project that would include provisions for curb and gutter, stormwater drainage, and sidewalks (See Appendix A and B for a project worksheet).



**Figure 4.9: Option 1: Central Business District**

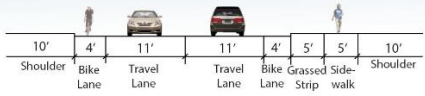
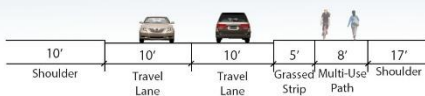
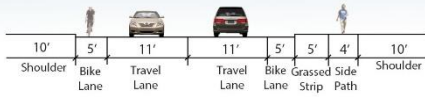


**Figure 4.10: Option 2: Central Business District**



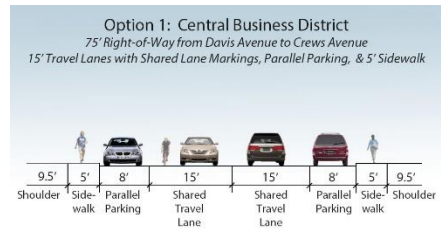
## Network Recommendation Cost Estimates

Table 4.1: Network Recommendation Cost Estimates

Recommendation	Planning Level Cost Estimate
North and South Anderson Boulevard (excluding Central Business District)	
<p><b>Option 1: Bike Lanes and Sidewalk</b></p> <p>Option 1: NC 50/North Anderson Blvd. - Southbound 60' Right-of-Way from Town Line to Davis Avenue 11' Travel Lanes with 4' Bike Lanes &amp; 5' Sidewalk</p> 	<p>North Anderson Segment – 13,200 linear feet: Bicycle Lanes: \$1,500,000* Sidewalk: \$1,800,000** Subtotal: \$3,300,000</p> <p>South Anderson Segment - 6,864 linear feet: Bicycle Lanes: \$790,000* Sidewalk: \$990,000** Subtotal: \$1,780,000</p> <p>Total: \$5,080,000</p> <p><i>*This cost estimate may be potentially reduced if included as part of a resurfacing project or official NCDOT project.</i> <i>**Costs may be further reduced if the Town forgoes conversion of the four-foot side path to a five-foot sidewalk.</i></p>
<p><b>Option 2: Multi-use Path</b></p> <p>Option 2: NC 50/North Anderson Blvd. - Southbound 60' Right-of-Way from Town Line to Davis Avenue 10' Travel Lanes with 8' Multi-use Path</p> 	<p>North Anderson Segment – 13,200 linear feet: Multi-use Path: \$1,300,000</p> <p>South Anderson Segment – 6,864 linear feet: Multi-use Path: \$700,000</p> <p>Total: \$2,000,000</p>
<p><b>Option 3: Bike Lanes Only</b></p> <p>Option 3: NC 50/North Anderson Blvd. - Southbound 60' Right-of-Way from Town Line to Davis Avenue 11' Travel Lanes with 5' Bike Lanes &amp; Existing 4' Side Path</p> 	<p>North Anderson Segment – 13,200 linear feet: Bicycle Lanes: \$1,600,000*</p> <p>South Anderson Segment - 6,864 linear feet: Bicycle Lanes: \$860,000*</p> <p>Total: \$2,460,00</p> <p><i>*This cost estimate may be potentially reduced if included as part of a resurfacing project or official NCDOT project.</i></p>

### Central Business District: Davis Avenue to Crews Avenue

#### Option 1: Parallel Parking & Sidewalks



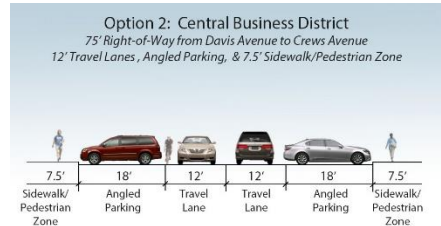
Central Business District – 1,380 feet:

Sidewalk with Curb & Gutter: \$500,000  
Pavement Widening for Shared Lanes: \$200,000

Total: \$700,000\*

*\*Please see the Access Management Project worksheet provided in Appendix A. The worksheet is developed as a more comprehensive project to include drainage, driveway consolidation, and access management. This project would be a candidate for the receipt of NCDOT funds.*

#### Option 2: Angled Parking & Sidewalks



Central Business District – 1,380 feet:

Sidewalk with Curb & Gutter: \$500,000  
Pavement Widening for Angled Parkin: \$260,000

Total: \$760,000\*

*\*Please see the Access Management Project worksheet provided in Appendix B. The worksheet is developed as a more comprehensive project to include drainage, driveway consolidation, and access management. This project would be a candidate for the receipt of NCDOT funds.*

Source: NCDOT Cost Estimator Tool



## Implementation Strategy

To fully implement the recommendations contained in this plan will take time, care, and effort on the part of the Town's elected officials, staff, and citizenry. Many communities chose to appoint a specific board or commission that is charged with implementing the recommendations contained in this plan. If Topsail Beach were to do so, the Parks and Recreation Advisory Committee (PRAC) should serve in this role. The PRAC would be responsible for implementing the recommendations found within this plan. Action steps for implementation are provided below.

**Table 4.2: Implementation Action Steps**

Implementation Strategy	Responsible Party
Adopt this plan. Adoption shows that the Town has undergone a successful, citizen-supported planning process.	Parks and Recreation Advisory Committee (PRAC); Board of Commissioners (BOC)
Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. It is recommended that a combination of existing Planning & Zoning and Public Works staff oversee the day-to-day implementation of this plan.	Town Manager; Planning & Zoning; Public Works
Designate the PRAC as the board responsible for implementation of this plan. The first goal of the committee should be the prioritization of projects contained within this plan.	PRAC
Create a five to six-year Pedestrian and Bicycle Capital Improvement Program (CIP). The CIP should be based upon the prioritization of projects outlined by the Parks and Recreation Advisory Committee. A one-year capital improvement budget should complement this effort.	PRAC; Town Manager; Planning & Zoning
Identify and establish a dedicated fund for pedestrian capital improvement projects.	PRAC; Board of Commissioners (BOC)
Pursue funding opportunities to construct projects identified in the CIP. Coordination with the Cape Fear Rural Transportation Planning Organization and the NCDOT Division 3. Work with NCDOT Design/Construction Unit to finalize project cost estimates.	Town Manager; Planning & Zoning
Pursue NCDOT funding and implementation for the desired Access Management Project option for the Central Business District. This would include drainage, curb and gutter, and sidewalks.	Town Manager; Planning & Zoning
Create a Wayfinding & Signage Program that identifies several pedestrian destinations, particularly within the Central Business District.	Planning & Zoning; PRAC
Submit an application to participate in the "Watch For Me NC" program. The application form asks questions about how the Town will use the resources provided by NCDOT to address bicycle and pedestrian safety in the community. A letter of support is required by the Topsail Beach Board of Commissioners.	Town Manager; Planning & Zoning ; BOC; PRAC
Establish performance measures. The performance measures should be based upon the use of existing and constructed bicycle and pedestrian facilities. Work with the Cape Fear RPO to establish bicycle and pedestrian counts on an annual basis at specific locations throughout the Town.	PRAC; Town Manager; Planning & Zoning

## Funding Sources

Multiple approaches should be taken to support bicycle and pedestrian facility development and programming. It is important to secure the funding necessary to undertake projects but also to develop a long-term funding strategy to allow continued development of the overall system. Dedicated local funding sources will be important for the implementation of this plan.

### *State Transportation Improvement Program*

The Transportation Improvement Program (TIP) is an ongoing program at NCDOT which includes a process asking localities to present their transportation needs to state government. Pedestrian facility and safety needs are an important part of this process. Every other year, a series of TIP meetings are scheduled around the state. Following the conclusion of these meetings, all requests are evaluated. Pedestrian improvement requests, which meet project selection criteria, are then scheduled into a four-year program as part of the state's long-term transportation program. There are two types of projects in the TIP: incidental and independent. Incidental projects are those that can be incorporated into a scheduled roadway improvement project. Independent are those that can stand alone such as a trail project, not related to a particular roadway.

The Town of Topsail Beach, guided by the projects within this plan, should present projects along state roads to the Cape Fear RPO and NCDOT. Local requests for small projects, such as crosswalks and smaller segments of sidewalk, can be directed to the Cape Fear RPO or the local NCDOT Division 3 office.

### *SPOT Safety Program*

The Spot Safety Program is a state-funded public safety investment and improvement program that provides highly effective low-cost safety improvements for intersections and sections of North Carolina's 79,000 miles of state-maintained roads in all 100 counties of North Carolina. The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year.

### *Land and Water Conservation Fund*

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the Department of Environmental Quality as a grant program for states and local governments. Maximum annual grant awards for county governments, incorporated municipalities, public authorities, and federally recognized Indian tribes are \$250,000. The local match may be provided with in-kind services or cash.

### *NC Parks and Recreation Trust Fund (PARTF)*

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities, and public authorities, as defined by G.S. 159-7, are eligible applicants. A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost

of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. Property acquired with PARTF funds must be dedicated for public recreational use.

### *The NC Division of Parks and Recreation – Recreational Trails and Adopt-A-Trail Grants*

The Adopt-a-Trail Grant Program (AAT) awards \$108,000 annually to government agencies, nonprofit organizations and private trail groups for trail projects. Funding from the federal Recreational Trails Program (RTP), which is used for renovating or constructing trails and greenways, is allocated to states. The North Carolina Division of Parks and Recreation and the State Trails Program manages these funds with a goal of helping citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking, and horseback riding to river trails and off-highway vehicle trails. Grants are available to governmental agencies and nonprofit organizations. The maximum grant amount is \$100,000 and requires a 25% match of RTP funds received. Permissible uses include:

- New trail or greenway construction
- Trail or greenway renovation
- Approved trail or greenway facilities
- Trail head/ trail markers
- Purchase of tools to construct and/or renovate trails/greenways
- Land acquisition for trail purposes
- Planning, legal, environmental, and permitting costs - up to 10% of grant amount
- Combination of the above

### *Powell Bill Funds*

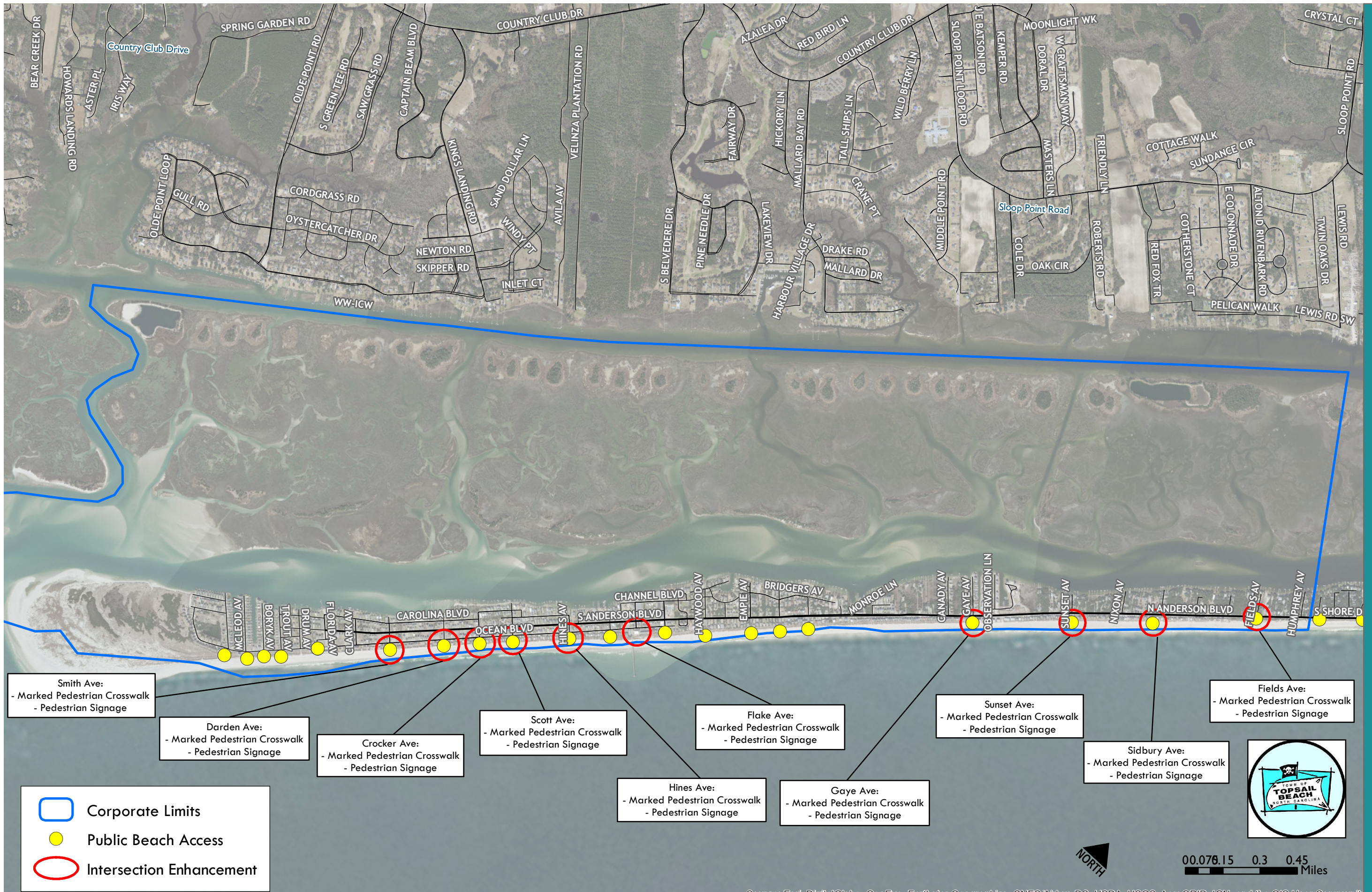
Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.4. Powell Bill funds shall be expended only for the purposes of maintaining, repairing, constructing, reconstructing or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

### *Innovative Funding Options*

Crowdsourcing “is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.” For some success stories and ideas for innovative fundraising techniques:

<https://www.americantrails.org/resources/trail-planning>





Map 4: Intersection Enhancements





## Appendix A: Central Business District - Access Management Project

### NCDOT Prioritization 5.0 Project Summary

**SPOT ID:** H184409

**Mode:** Highway

**Status:** Draft

#### NC-50 (S Anderson Blvd)

**From/Cross Street:** Maritime Way (south)

**Specific Improvement Type:** 11 - Access Management

**To:** Crews Ave

**Project Category:** Regional Impact

**Length:** 0.3

**TIP#:**

**Fully Funded in Draft STIP?** No

**Cost to NCDOT:** \$3,658,000

#### Description:

NC 50 - Upgrade NC 50 (S Anderson Blvd) to a 2-lane curb and gutter facility with wide outside lanes, sidewalks and parallel on-street parking from Topsail Beach Town Center near Maritime Way to Crews Ave, including closing or narrowing many driveways

**Primary Purpose:** Improve traffic flow, access management, vehicular safety, and pedestrian and bicycle safety

**Division(s):** Division 3

**County(s):** PENDER

**MPOS(s)/RPO(s):** Cape Fear RPO

#### Project Location



**Statewide Mobility Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Totals: Weight: 0% Weighted Score: 0	N/A	N/A

**Regional Impact Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Safety (10%) 0.00 Congestion REG (20%) 0.00 Benefit-Cost SW & REG (20%) In Progress Accessibility-Connectivity (10%) In Progress Freight (10%) 0.00	Percent: 15% Points:	Percent: 15% Points:
Totals: Weight: 70% Weighted Score: 0		

**Division Needs Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Safety (10%) 0.00 Congestion DIV (15%) 0.00 Benefit-Cost DIV (15%) In Progress Accessibility-Connectivity (5%) In Progress Freight (5%) 0.00	Percent: 25% Points:	Percent: 25% Points:
Totals: Weight: 50% Weighted Score: 0		

**Criteria Measures**

Criteria	Measure	Raw Value	Scaled value	Criteria	Measure	Raw Value	Scaled value
Congestion	Volume/Capacity (SW 60%, REG 80%, DIV 100%)			Economic Competitiveness	% Change in Economy (50%)		
	Volume (SW 40%, REG 20%, DIV 0%)				% Change in Long-term jobs (50%)		
Benefit-Cost (SW)	Benefit/Cost SW (100%)			Accessibility / Connectivity	County Economic Indicator (50%)		
Benefit-Cost (REG/DIV)	Benefit/Cost REG/DIV (100%)				Upgrade Roadway Travel Time Savings (50%)		
Safety (Segments)	Crash Density (20%)			Freight	Truck Volume (50%)		
	Crash Severity (20%)				Truck Percentage (50%)		
	Critical Crash Rate (20%)			Multimodal	Multimodal Benefits		
	Safety Benefit (40%)				Lane Width Difference (100%)		
Safety (Intersections)	Crash Frequency (30%)			Shoulder Width	Paved Shoulder Width Difference (100%)		
	Severity Index (30%)			Pavement Condition	Pavement Condition Rating (100%)		
	Safety Benefit (40%)						

**Project Data\*****Existing Conditions**

Existing Cross-Section:	2 Lane Undivided
Speed Limit (mph):	35
Length (miles):	0.3
Facility Type:	Arterial
Access Control:	None
Functional Classification:	Major Collector
Terrain Type:	Level
Lane Width (ft):	12
Paved Shoulder Width (ft):	0
Roadway has Curb & Gutter?	No
Volume (AADT):	2200
Volume (PADT):	2400
Peak ADT (PADT) Factor:	1.09
Capacity (vpd):	15800
Volume (PADT)/Capacity Ratio:	0.15
% Autos:	97%
% Trucks:	3%
Truck Volume (AADTT):	71.94
Total Crashes:	20
Crash Density (seg):	66.7
Crash Severity (seg):	66.7
Critical Crash Rate (seg):	33.3
Crash Frequency (int):	
Severity Index (int):	
Adjusted Property Tax Base Per Capita Rank:	
Population Growth Rank:	
Median Household Income Rank:	
12 Month Average Unemployment Rate Rank:	
Sum County Rank:	283
Non-Interstate STRAHNET Route?	No
Future Interstate Route?	No
Pavement Condition Rating:	64

**Project Benefits**

Project Cross-Section:	2G - 2 Lane Undivided with Curb & Gutter, Parking Both Sides, Bike Lanes, and Sidewalks
Speed Limit (mph):	25
Length (miles):	0.3
Facility Type:	Arterial
Access Control:	None
Functional Classification:	Major Collector
Terrain Type:	Level
DOT Design Lane Width (ft):	12
DOT Design Paved Shoulder Width (ft):	0
Travel Time Savings for 10 Years (NCSTM) - SW/REG:	
Travel Time Savings in \$ (NCSTM) - SW/REG:	
Travel Time Savings for 10 Years (CALC) - DIV:	
Travel Time Savings in \$ (CALC) - DIV:	
Safety Benefits in \$:	
% Change in Long-term Employment:	
% Change in Economy:	
Future Interstate Completion Factor:	
Does project upgrade how the roadway functions?	No
Travel Time Savings/User:	
In CTP or LRTP?	No
CTP/LRTP Name:	
CTP/LRTP Completion Year:	
Submitted by:	Cape Fear RPO

\* Data reflects calculations which include weighted averages (where applicable) and represent raw output from the Department's SPOT Online tool and associated databases.

**Project Ownership****Division**

Division	Percent	Regional Impact Points	Division Needs Points
Division 3	100%	0	0
	0%	0	0
	0%	0	0
<b>TOTAL Division Points</b>		<b>0</b>	<b>0</b>

**MPO/RPO**

MPO/RPO	Percent	Regional Impact Points	Division Needs Points
Cape Fear RPO	100%	0	0
	0%	0	0
	0%	0	0
<b>TOTAL MPO/RPO Points</b>		<b>0</b>	<b>0</b>

**Project Cost and Source**

Construction Cost:	\$1,726,000	Cost Estimation Tool
Right-of-Way Cost:	\$1,725,000	Cost Estimation Tool
Utilities Cost:	\$207,000	Cost Estimation Tool
Total Project Cost:	\$3,658,000	
Other Funding:	\$0	None
<b>Cost to NCDOT :</b>	<b>\$3,658,000</b>	





## Appendix B: Central Business District - Access Management Project

### NCDOT Prioritization 5.0 Project Summary

**SPOT ID:** H184409 - Angled Parking

**Mode:** Highway

**Status:** Draft

#### NC-50 (S Anderson Blvd)

**From/Cross Street:** Maritime Way (south)

**Specific Improvement Type:** 11 - Access Management

**To:** Crews Ave

**Project Category:** Regional Impact

**Length:** 0.3

**TIP#:**

**Fully Funded in Draft STIP?** No

**Cost to NCDOT:** \$3,718,000

#### Description:

NC 50 - Upgrade NC 50 (S Anderson Blvd) to a 2-lane curb and gutter facility with travel lanes, sidewalks and angled on-street parking from Topsail Beach Town Center near Maritime Way to Crews Ave, including closing or narrowing many driveways

**Primary Purpose:** Improve traffic flow, access management, vehicular safety, and pedestrian and bicycle safety

**Division(s):** Division 3

**County(s):** PENDER

**MPOS(s)/RPO(s):** Cape Fear RPO

#### Project Location



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

**Statewide Mobility Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Totals: Weight: 0% Weighted Score: 0	N/A	N/A

**Regional Impact Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Safety (10%) 0.00 Congestion REG (20%) 0.00 Benefit-Cost SW & REG (20%) In Progress Accessibility-Connectivity (10%) In Progress Freight (10%) 0.00	Percent: 15% Points:	Percent: 15% Points:
Totals: Weight: 70% Weighted Score: 0		

**Division Needs Total Score: 0**

Quantitative Score	Division Engineer Points	MPO/RPO Points
Safety (10%) 0.00 Congestion DIV (15%) 0.00 Benefit-Cost DIV (15%) In Progress Accessibility-Connectivity (5%) In Progress Freight (5%) 0.00	Percent: 25% Points:	Percent: 25% Points:
Totals: Weight: 50% Weighted Score: 0		

**Criteria Measures**

Criteria	Measure	Raw Value	Scaled value	Criteria	Measure	Raw Value	Scaled value
Congestion	Volume/Capacity (SW 60%, REG 80%, DIV 100%)			Economic Competitiveness	% Change in Economy (50%)		
	Volume (SW 40%, REG 20%, DIV 0%)				% Change in Long-term jobs (50%)		
Benefit-Cost (SW)	Benefit/Cost SW (100%)			Accessibility / Connectivity	County Economic Indicator (50%)		
Benefit-Cost (REG/DIV)	Benefit/Cost REG/DIV (100%)				Upgrade Roadway Travel Time Savings (50%)		
Safety (Segments)	Crash Density (20%)			Freight	Truck Volume (50%)		
	Crash Severity (20%)				Truck Percentage (50%)		
	Critical Crash Rate (20%)			Multimodal	Multimodal Benefits		
	Safety Benefit (40%)				Lane Width Difference (100%)		
Safety (Intersections)	Crash Frequency (30%)			Shoulder Width	Paved Shoulder Width Difference (100%)		
	Severity Index (30%)			Pavement Condition	Pavement Condition Rating (100%)		
	Safety Benefit (40%)						

**Project Data\*****Existing Conditions**

Existing Cross-Section:	2 Lane Undivided
Speed Limit (mph):	35
Length (miles):	0.3
Facility Type:	Arterial
Access Control:	None
Functional Classification:	Major Collector
Terrain Type:	Level
Lane Width (ft):	12
Paved Shoulder Width (ft):	0
Roadway has Curb & Gutter?	No
Volume (AADT):	2200
Volume (PADT):	2400
Peak ADT (PADT) Factor:	1.09
Capacity (vpd):	15800
Volume (PADT)/Capacity Ratio:	0.15
% Autos:	97%
% Trucks:	3%
Truck Volume (AADTT):	71.94
Total Crashes:	20
Crash Density (seg):	66.7
Crash Severity (seg):	66.7
Critical Crash Rate (seg):	33.3
Crash Frequency (int):	
Severity Index (int):	
Adjusted Property Tax Base Per Capita Rank:	
Population Growth Rank:	
Median Household Income Rank:	
12 Month Average Unemployment Rate Rank:	
Sum County Rank:	283
Non-Interstate STRAHNET Route?	No
Future Interstate Route?	No
Pavement Condition Rating:	64

**Project Benefits**

Project Cross-Section:	2G - 2 Lane Undivided with Curb & Gutter, Parking Both Sides, Bike Lanes, and Sidewalks
Speed Limit (mph):	25
Length (miles):	0.3
Facility Type:	Arterial
Access Control:	None
Functional Classification:	Major Collector
Terrain Type:	Level
DOT Design Lane Width (ft):	12
DOT Design Paved Shoulder Width (ft):	0
Travel Time Savings for 10 Years (NCSTM) - SW/REG:	
Travel Time Savings in \$ (NCSTM) - SW/REG:	
Travel Time Savings for 10 Years (CALC) - DIV:	
Travel Time Savings in \$ (CALC) - DIV:	
Safety Benefits in \$:	
% Change in Long-term Employment:	
% Change in Economy:	
Future Interstate Completion Factor:	
Does project upgrade how the roadway functions?	No
Travel Time Savings/User:	
In CTP or LRTP?	No
CTP/LRTP Name:	
CTP/LRTP Completion Year:	
Submitted by:	Cape Fear RPO

\* Data reflects calculations which include weighted averages (where applicable) and represent raw output from the Department's SPOT Online tool and associated databases.

## **Project Ownership**

### **Division**

<b>Division</b>	<b>Percent</b>	<b>Regional Impact Points</b>	<b>Division Needs Points</b>
Division 3	100%	0	0
	0%	0	0
	0%	0	0
<b>TOTAL Division Points</b>		<b>0</b>	<b>0</b>

### **MPO/RPO**

<b>MPO/RPO</b>	<b>Percent</b>	<b>Regional Impact Points</b>	<b>Division Needs Points</b>
Cape Fear RPO	100%	0	0
	0%	0	0
	0%	0	0
<b>TOTAL MPO/RPO Points</b>		<b>0</b>	<b>0</b>

## **Project Cost and Source**

Construction Cost:	\$1,786,000	Cost Estimation Tool
Right-of-Way Cost:	\$1,725,000	Cost Estimation Tool
Utilities Cost:	\$207,000	Cost Estimation Tool
Total Project Cost:	\$4,175,000	
Other Funding:	\$0	None
<b>Cost to NCDOT :</b>	<b>\$3,718,000</b>	