

TOWN *of* SWANSBORO BICYCLE PLAN



*Adopted by the Town of Swansboro
Board of Commissioners in September 2011*



ACKNOWLEDGEMENTS

CITIZEN INVOLVEMENT

A special thanks to the 100+ people who participated in this planning process through comment forms, public workshops, and meetings.

PROJECT STEERING COMMITTEE AND TOWN REPRESENTATIVES

Sarah Bouknight, Chair of Parks and Recreation Board & State Park Ranger

April Clark, Local Business Owner

Mary Donnelly, Vice Chair of Parks and Recreation Board

Steve Edwards, Public Works Director, Town of Swansboro

Donna Hammonds, Executive Director, Swansboro Chamber of Commerce

Jennifer Holland, Town Planner, Town of Swansboro

John Freshwater, Local Engineer/Developer

Lee Anne McCullough, Local Resident

Wayne Mixon, Local Bicyclist

Joe Mobley, Local Bicyclist

Edward Parrish, Police Chief, Town of Swansboro

Larry Philpott, Commissioner, Town of Swansboro

Patrick Thomas, Town Manager, Town of Swansboro

Rob Will, Down East Rural Planning Organization Liaison

Sarah Wiltgen, Local Bicyclist

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Chad Kimes, NCDOT Division 3 Liaison

Patrick Riddle, NCDOT Division 3 Liaison

Robert F. Mosher, Planning Program Manager, Bicycle and Pedestrian Division

PROJECT CONSULTANTS

Alta/Greenways



Division of
Bicycle &
Pedestrian
Transportation

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VISION STATEMENT

“This plan will guide the Town of Swansboro, NCDOT, and other key stakeholders in creating a community network of bicycle trails, connecting the historic district with parks, schools, and residents. This contiguous network of bicycle trails will not only help promote Swansboro as a destination for bicycling and recreation, but will also serve local residents. Kids will have safe routes to school, and bicycling will be a viable alternative to driving for everyday trips around town.”



1. PROJECT OVERVIEW & PURPOSE

Overview

In 2010, the Town of Swansboro was awarded a matching grant from the North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative. The purpose of the grant is to encourage municipalities to develop comprehensive bicycle plans and pedestrian plans. This program has assisted more than 100 North Carolina communities and is administered through NCDOT's Division of Bicycle and Pedestrian Transportation (DBPT).

BACKGROUND

The Town of Swansboro is a beautiful and historic waterfront community located at the mouth of the White Oak River, where the river joins the Atlantic Ocean and flows past the pristine beaches of Bear Island. Founded in 1783, the "Friendly City by the Sea" offers a historic downtown district overlooking the water, numerous opportunities for coastal recreation, and a progressive town government that works to balance high quality community growth with conservation of the community's natural and historic resources. See Chapter 2 of this plan for more information about the Town of Swansboro, including the principal opportunities and constraints for bicycling throughout the community.

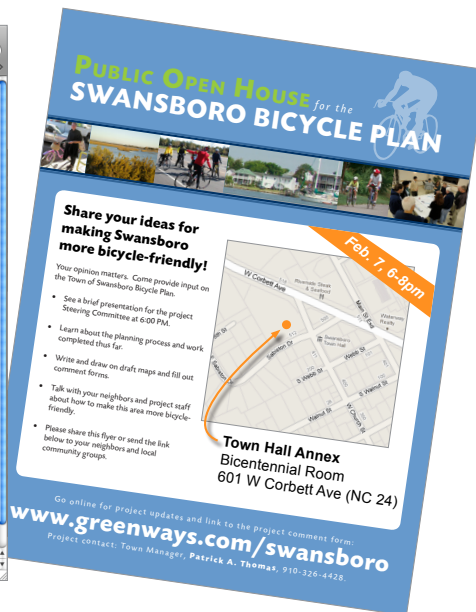
VISION & GOALS

In December 2010, Swansboro's Bicycle Plan Steering Committee met for the first of four meetings to confirm project visions and goals, identify desired outcomes of the plan, and to begin identifying opportunities for improving conditions for bicyclists. Individual statements from the committee were combined into the following overall vision statement for this plan:

"This plan will guide the Town of Swansboro, NCDOT, and other key stakeholders in creating a community network of bicycle trails, connecting the historic district with parks, schools, and residents. This contiguous network of bicycle trails will not only help promote Swansboro as a destination for bicycling and recreation, but will also serve local residents. Kids will have safe routes to school, and bicycling will be a viable alternative to driving for everyday trips around town."

Specific goals for the outcome of this plan include:

1. Create a community network of bicycle trails in order to improve the quality of life for residents and the attractiveness of the community as a location for growth.
2. Create a safe way for people to bicycle from the Historic District to Hammocks Beach State Park.
3. Create safe locations for people to cross NC 24.
4. Promote mutual respect among bicyclists and motorists; educate both on the rules of the road and etiquette related to bicycling.

Left: Online public comment form & public workshop flyer.

Planning Process

PROJECT CONSULTANTS AND STEERING COMMITTEE

The planning and design consultants, Alta/Greenways, led the process with direction from Town staff and the Bicycle Plan Steering Committee. This plan's Steering Committee is made up of citizen advocates and representatives from multiple stakeholder organizations, such as the Swansboro Chamber of Commerce, the NCDOT, and the Eastern Carolina Council (listed in the Acknowledgements section of this plan). The Steering Committee met several times throughout the process and provided guidance on the overall vision, facility recommendations, programs, policies, and draft plan development.

DATA COLLECTION AND ANALYSIS

After collecting baseline information about the study area from the Steering Committee, the consultants began analyzing existing conditions. Consultants used aerial photography and geographic information systems (GIS) data, to identify opportunities and constraints for bicycle facility development. These preliminary findings were then tested for applicability and appropriateness through on-the-ground field research. Field research also included examining portions of proposed trails, verifying certain road widths, studying lane configurations, and preparing a photographic inventory.

PUBLIC INVOLVEMENT

In January 2011, the Town of Swansboro began collecting public input and involvement through both an online campaign and public comment forms. Links to the project web site, open house flyer, and the online comment form were mass e-mailed by Steering Committee members and project consultants. Twenty-one people (including committee members) attended the first public workshop at the Town Hall Annex on February 7, 2011. The next public input opportunity was at the Swansboro Area Chamber of Commerce Business Expo on March 26, 2011, where 83 people stopped at the Bicycle Plan's table to provide input and/or learn more about the plan.

PLAN DEVELOPMENT

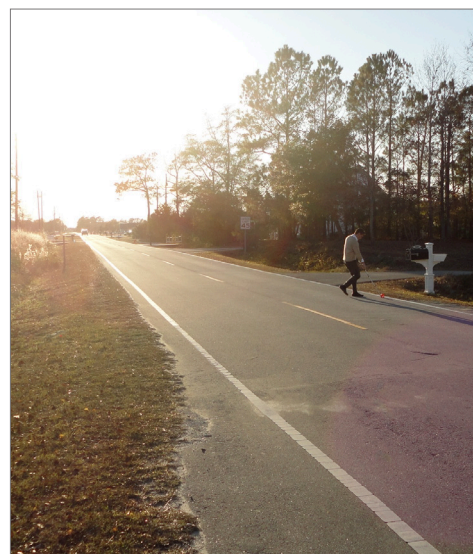
Project consultants developed a draft plan to reflect input from the public, the Steering Committee, Town staff, NCDOT staff, and the existing conditions analysis. Town staff then provided comments on the initial draft, which was revised and presented to the Steering Committee in July 2011. The Steering Committee unanimously recommended that the draft plan be presented to Town Council.



Right and Below: The first committee meeting for the bicycle plan (at the Town Hall Annex in December 2010).



Right: A project consultant taking preliminary roadway measurements (at Old Hammock Rd).



Above: The first public workshop on February 7, 2011.

Right: The second public input opportunity at the Swansboro Business Expo on March 28, 2011.





Benefits of a Bicycle-Friendly Community

A bicycle-friendly Swansboro will help to improve tourism, intrinsic real estate values, the health and fitness of residents, transportation options, and environmental conditions while contributing to a greater sense of community. Scores of studies from the fields of public health, urban planning, urban ecology, real estate, transportation, and economics consistently affirm the value of supporting bicycling as it relates to these issues. Small towns, big cities, and entire regions across the United States and throughout the world are implementing strategies for creating bicycle-friendly communities, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits of bicycling.

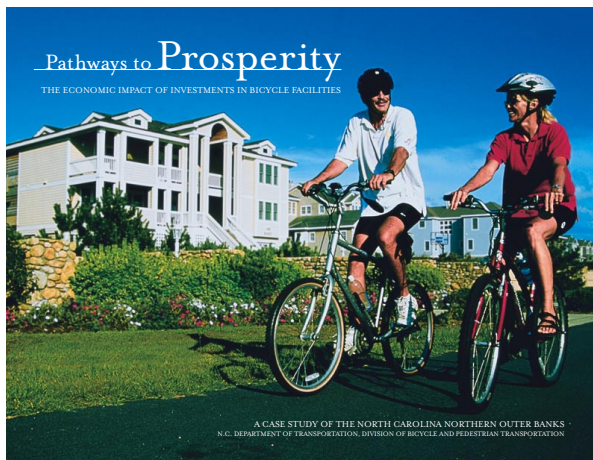
BICYCLE-RELATED TOURISM IN COASTAL NORTH CAROLINA

From a tourism perspective, cyclists can add real value to the Town of Swansboro's local economy. Consider the following quote from nearby Emerald Isle:

"Bike paths have been extremely well received by our community. There are people using the bike paths for all kinds of things - to go to the ice cream shop, ride to the grocery store, go out to dinner, etc. A lot of people make a conscious decision to ride a bike instead of driving, which helps in many ways - reduces traffic congestion, provides a healthy activity, and generates more traffic at our local businesses. Of course, we also have a lot of people who simply use the paths for walking, running, bicycling, rollerblading, and skateboarding, and that's great also!"

- Frank Rush, Emerald Isle Town Manager

Another example is the Outer Banks, NC, where bicycling is estimated to have a positive annual economic impact of \$60 million; 1,407 jobs are supported by the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.¹



Left: Apex, NC: A residential development added \$5,000 to the price of 40 homes adjacent to the greenway – and those homes were still the first to sell. (Rails to Trails Conservancy, 2005)

Far left: Download "Pathways to Prosperity" www.ncdot.gov/bikeped/download/bikeped_research_EIAbrochure.pdf

Even though there are substantial differences between the Town of Swansboro and the Outer Banks (such as beach access and available lodging) the Town could still achieve positive economic gains proportional to its own attractions and its own future investments in communitywide bicycle facilities. The quality of bicycling in the Outer Banks region positively impacts vacationers' planning—it is not all about the beaches:

- 12% of vacationers report staying three to four days longer to bicycle ¹
- 43% of vacationers report that bicycling is an important factor in their decision to come to the area ¹
- 53% of vacationers report that bicycling will strongly influence their decision to return to the area in the future ¹



If Swansboro and the surrounding region are successful in creating an attractive network of trails and bicycle routes, they could win over some bicycle-related tourism from other regions, and attract new tourists as the state grows, and as new visitors get to know the town.

ECONOMIC BENEFITS FOR THE INDIVIDUAL BICYCLIST

Bicycling is an affordable form of transportation. According to the Pedestrian and Bicycle Information Center (PBIC), of Chapel Hill, NC, the cost of operating a bicycle for a year is approximately \$120, compared to \$7,800 for operating a car over the same time period.² Bicycling becomes even more attractive from an individual's standpoint when the unstable price of gas is factored into the equation (e.g., in May 2011, gasoline prices were \$4 a gallon).³ Finally, bicyclists who are physically active on a regular basis can avoid costly medical expenses in the long run, and can avoid the cost of gym memberships in the short run (see more about the health and wellness benefits of bicycling later in this chapter).

THE POSITIVE IMPACT OF BIKING AND WALKING ON REAL ESTATE VALUES

From a real estate standpoint, consider the positive impact of trails and greenways, which are essential components of a complete bicycle network. According to a 2002 survey of homebuyers by the National Association of Home Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices.⁴ Additionally, the study found that 'trail availability' outranked 16 other options including security, ball fields, golf courses, parks, and access to shopping or business centers. Findings from the American Planning Association (How Cities Use Parks for Economic Development, 2002), the Rails-to-Trails Conservancy (Economic Benefits of Trails and Greenways, 2005), and CEO's for Cities (Walking the Walk: How Walkability Raises Home Values in U.S. Cities, 2009) further substantiate the positive connection between trails and property values across the country.

I RUN THE KIDS TO SCHOOL.
I RUN THE CLOTHES TO THE CLEANERS.
I RUN INTO THE OFFICE.

NOW I AM HOME, RUNNING AT MY OWN PACE.

I WANT
top schools nearby
my kids to get fresh air
my kids to have lots of friends
our TV to be ignored

Developers are taking advantage of the positive impact of trails on property values by marketing their greenways; above and right are examples of two magazine advertisements from developers that focus their marketing on greenways.

A place where video games get lonely from lack of use. A place where people are always going somewhere—families hiking on the miles of trails, or kids biking to our onsite top-rated schools. A place with best-in-class amenities, including a huge Aquatic Club. A place with a natural setting and tight-knit neighbors that always seem to be doing something together. All this and beautiful homes to match? That's FishHawk Ranch.

FishHawk RANCH
Newland COMMUNITIES



Events such as Kid's Bike Races can encourage physical activity among children.

"Individuals must choose to exercise, but communities can make that choice easier."

-Rails-to-Trails Conservancy

"The CDC determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week."

-U.S. Department of Health and Human Services,
Centers for Disease Control and Prevention

INCREASED HEALTH AND PHYSICAL ACTIVITY

A growing number of studies show that the design of our communities and the built environment—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people's ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth). According to the Centers for Disease Control and Prevention (CDC), "physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic."⁵ The increased rate of disease associated with inactivity reduces quality of life for individuals and increases medical costs for families, companies, and local governments.

Swansboro is part of Onslow County, in which child obesity is a documented concern. Prevalence of obesity in children is a key health indicator for a community. According to North Carolina statewide and county trends, 36% of children 5-11 years of age are obese in Onslow County (compared to 26% in NC).⁶

The CDC has determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week.⁷ This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits. **Establishing a safe and reliable bicycle network in Swansboro will positively impact the health of local residents.** The Rails-to-Trails Conservancy puts it simply: "Individuals must choose to exercise, but communities can make that choice easier."⁸

ENVIRONMENTAL IMPROVEMENTS

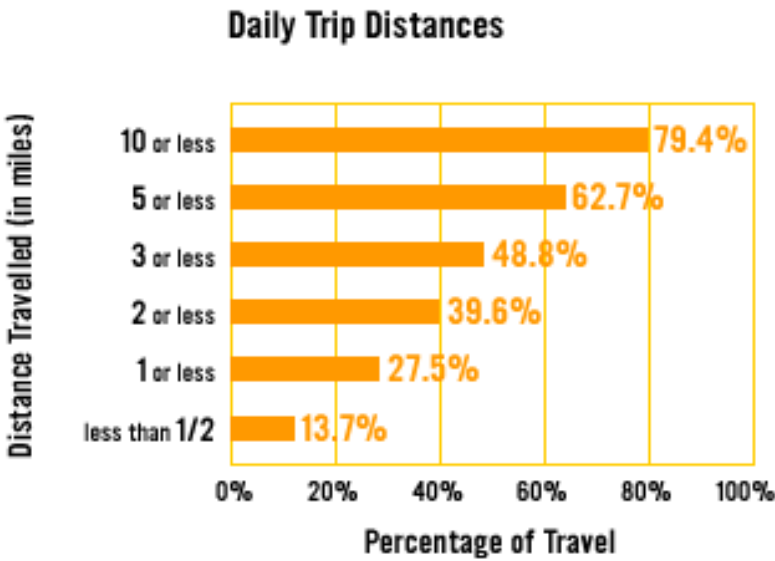
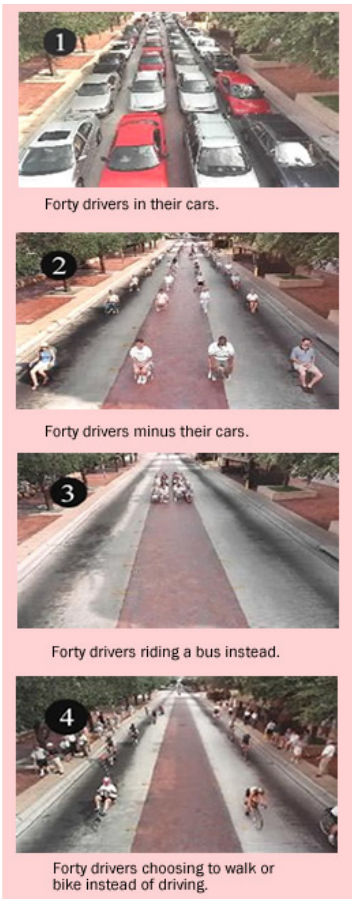
As demonstrated by the Southern Resource Center of the Federal Highway Administration, when people get out of their cars and onto their bicycles, they reduce measurable volumes of pollutants.⁹ Other environmental impacts include a reduction in overall neighborhood noise levels and improvements in local water quality as fewer automobile-related discharges wind up in the local rivers, streams, and lakes.



Trails and greenways are also part of an attractive bicycle network, conveying unique environmental benefits. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. Trails and greenways connect places without the use of emission-producing vehicles, while also reducing air pollution by protecting large areas of plants that create oxygen and filter pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal. Finally, greenway corridors can improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff.

TRANSPORTATION BENEFITS

A National Household Travel Survey found that roughly 40% of all trips taken by car are less than two miles (see chart at bottom right). **By replacing short car trips with bicycle trips, residents have a significant positive impact on local traffic and congestion** (see image below showing how cyclists take up significantly less space on the road). Traffic congestion reduces mobility, increases auto-operating costs, adds to air pollution, and causes stress in drivers. Substituting bicycling for some of these trips relieves the congestion, benefiting all road users. In addition, an improved bicycle network provides greater and safer mobility for residents who do not have access to a motor vehicle.



Above: 'Daily Trip Distances' chart from the Bicycle and Pedestrian Information Center website, www.pedbikeinfo.org

Source: *The Association for the Advancement of Sustainability in Higher Education*, 2007.



QUALITY OF LIFE

Many factors go into determining quality of life for the citizens of a community: the local education system, prevalence of quality employment opportunities, and affordability of housing are all items that are commonly cited. Increasingly though, citizens claim that access to alternative means of transportation and access to quality recreational opportunities such as parks, trails, greenways, and bicycle routes, are important factors for them in determining their overall pleasure within their community. Communities with such amenities can attract new businesses, industries, and in turn, new residents. Furthermore, quality of life is positively impacted by bicycling through the increased social connections that take place by residents being active, talking to one another and spending more time outdoors and in their communities.

According to the Brookings Institution, the number of older Americans is expected to double over the next 25 years.¹¹ All but the most fortunate seniors will confront an array of medical and other constraints on their mobility even as they continue to seek both an active community life, and the ability to age in place. Off-road trails built as part of the bicycle transportation network generally do not allow for motor vehicles; however, they do accommodate motorized wheelchairs, which is an important asset for the growing number of senior citizens who deserve access to independent mobility. For those seniors who remain very ambulatory, off-road trails provide an excellent and safe opportunity for exercise and fitness.

Children under 16 are another important subset of our society who deserve access to safe mobility and a higher quality of life. According to the U.S. Environmental Protection Agency, fewer children walk or bike to school than did so a generation ago. In 1969, 48 percent of students walked or biked to school, but by 2001, less than 16 percent of students between 5 and 15 walked or biked to or from school.¹²

According to the National Center for Safe Routes to School, “Walking or biking to school gives children time for physical activity and a sense of responsibility and independence; allows them to enjoy being outside; and provides them with time to socialize with their parents and friends and to get to know their neighborhoods.”¹³ In a 2004 CDC survey, 1,588 adults answered questions about barriers to walking to school for their youngest child aged 5 to 18 years.¹⁴ The main reasons cited by parents included distance to school, at 62%, and traffic-related danger, at 30%. A network of trails in Swansboro could reduce the travel distance from homes to schools, and overall bicycle improvements can improve the safety of our roadways. **The availability of a good bicycle network has become a hallmark of a community with a high quality of life – one of the reasons that they are almost always included in new planned communities.**



Utility bike for everyday trips, like grocery shopping (image from www.yubabike.com)



Footnotes from, “*Benefits of a Bicycle-Friendly Community*”:

1. NCDOT and ITRE. (2006). *Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities*.
2. Pedestrian and Bicycle Information Center. (2010). *Economic Benefits: Money Facts*. Retrieved 1/20/2010 from www.bicyclinginfo.org/why/benefits_economic.cfm
3. Kearney, Helen. (5/8/11). Reuters: U.S. gas prices hit \$4 a gallon, but may retreat.
4. National Association of Realtors and National Association of Home Builders. (2002). *Consumer’s Survey on Smart Choices for Home Buyers*.
5. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (1996). *Physical Activity and Health: A Report of the Surgeon General*.
6. North Carolina Department of Health and Human Services. (2008). *Division of Public Health, State Center for Health Statistics, North Carolina County Trends Reports*.
7. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). *Guide to Community Preventive Services*.
8. Rails-to-Trails Conservancy. (2006) *Health and Wellness Benefits*.
9. Federal Highway Administration, Southern Resource Center. (1999). *Off-Mode Air Quality Analysis: A Compendium of Practice*. To calculate air quality benefits of bicycling, first calculate the Daily VMT reduction. $VMT\ Reduction = PD * Area * L * BMS$, where PD = Population density, persons/mile; $Area$ = Project length * 1 mile radius, mile; L = Round trip length, one-half of the project length times 2 daily trips, miles; BMS = Bike mode share, %. Last, calculate the Daily Emission reductions for a pollutant. $Ed = EFx * VMT\ Reduction$, where Ed = Daily Emissions, grams/day; EFx = Emission factor for pollutant x, grams/mile; VMT = vehicle mile/day.
10. U.S. Department of Transportation (DOT), Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA). (2002). *National Household Travel Survey*.
11. Brookings Institution. 2003. *The Mobility Needs of Older Americans: Implications for Transportation Reauthorization*.
12. US EPA. (2003). *Travel and Environmental Implications of School Siting*.
13. National Center for Safe Routes to School. (2006). *National Center for Safe Routes to School Talking Points*.
14. Centers for Disease Control and Prevention. *The Importance of Regular Physical Activity for Children*. Accessed 9/16/05 at http://www.cdc.gov/nccdphp/dnpa/kidswalk/health_benefits.htm.



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2. CURRENT CONDITIONS

Overview

Swansboro is not generally bicycle-friendly as there are few dedicated bicycling facilities or trails which allow for safe and comfortable riding. However, in the Historic District and some residential neighborhood streets, where the speed and volume of traffic is generally lower, bicyclists can share the road relatively easily with automobiles. Swansboro also has several miles of signed bicycle routes, including the Jacksonville City-to-the-Sea Bicycle Route (developed by NCDOT) and the Swansboro Bicentennial Bicycle Route (developed by the Swansboro Bicentennial Committee and NCDOT), but they present challenges due to their narrow widths and lack of dedicated bicycle facilities or shoulders. These routes are mainly on Swansboro Loop Road, Main Street Extension, Norris Road, and Hammocks Beach Road (see Map 2.1: Current Bicycling Routes).

CURRENT STRENGTHS

Swansboro has numerous destinations of interest including waterfront areas, a historic district, seven municipal parks, one state park, and multiple shopping areas all within short bicycling distance of local residents. There is great potential for bicycling to these destinations as an attractive transportation option for residents and visitors alike. Recent community leadership has also demonstrated a willingness to use development review and voluntary annexation processes as tools to encourage dedication of bicycle paths.

CURRENT WEAKNESSES

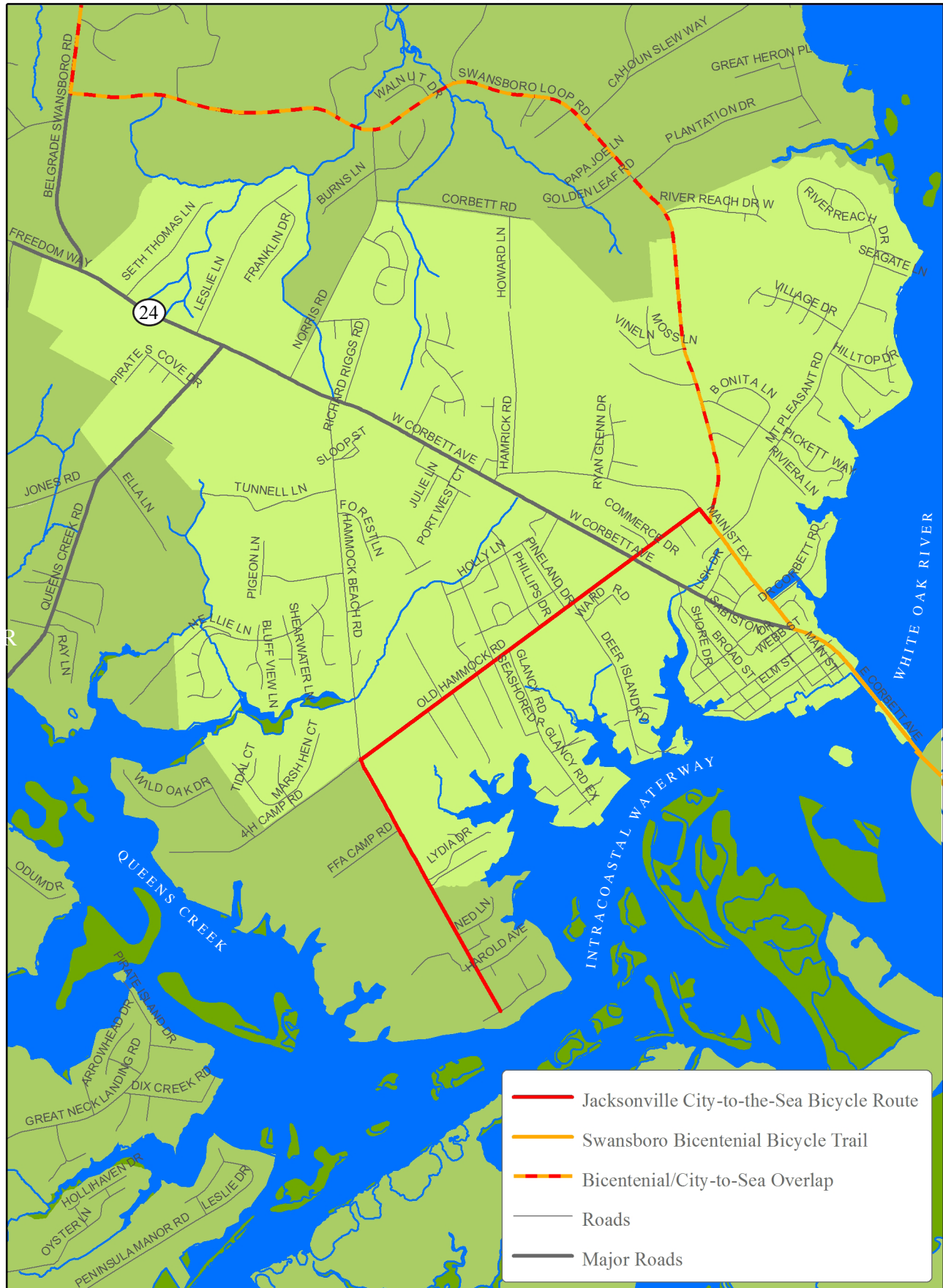
The current bicycling transportation system is relatively undeveloped aside from the few areas where sharing the road is already possible. There are no dedicated bicycling facilities such as bike lanes, shared-lane markings or multi-use paths in Swansboro. In addition, the major and minor thoroughfares through the town are state-maintained. Typically, these roads have open-ditches and narrow shoulders with limited space remaining within the existing right-of-way to add bicycling facilities. Swansboro's 2007 Comprehensive Transportation Plan points out that "current shoulder widths are not wide enough to provide adequate safety to bicyclists."

The design layout and operation of the main thoroughfare and commercial corridor, W. Corbett Ave (NC 24), creates issues for safe bicycling such as multiple through-lanes, high truck volume, high traffic speed, and frequent turning traffic. These conditions are difficult for non-motorized traffic to negotiate safely and even crossing NC 24 by foot or bike is difficult. Map 2.2 shows the state owned and maintained roadways in Swansboro, including vehicle counts.

The very irregular nature of Swansboro's town boundaries also presents challenges, due to the numerous non-municipal gaps on roadways and potential off-road trail routes. These gaps will adversely affect the ability of the Town to establish continuous bicycle routes in some locations. Map 2.2 also shows town limits, as opposed the extraterritorial planning jurisdiction (ETJ).

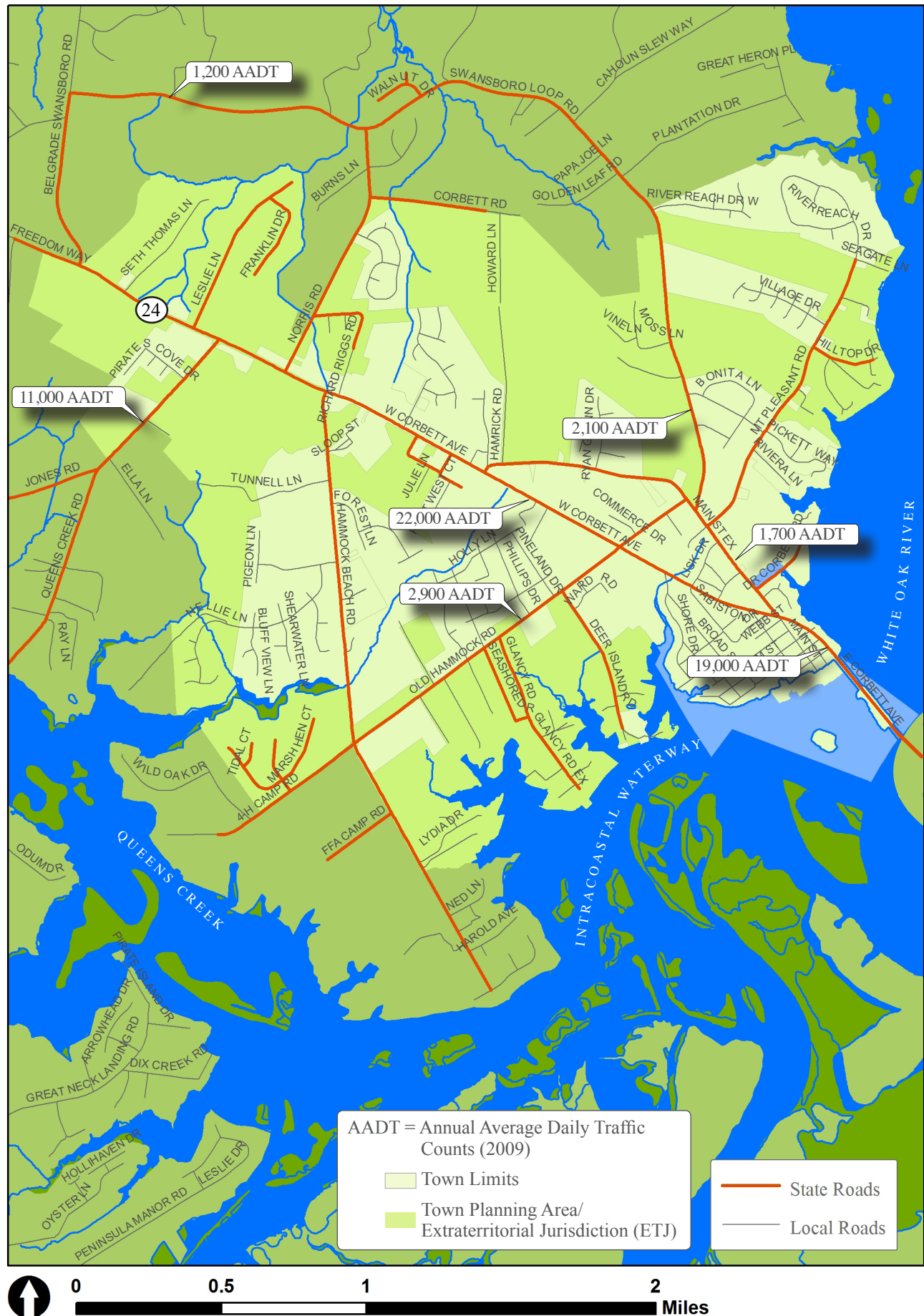


Map 2.1 State-Designated Bicycling Routes



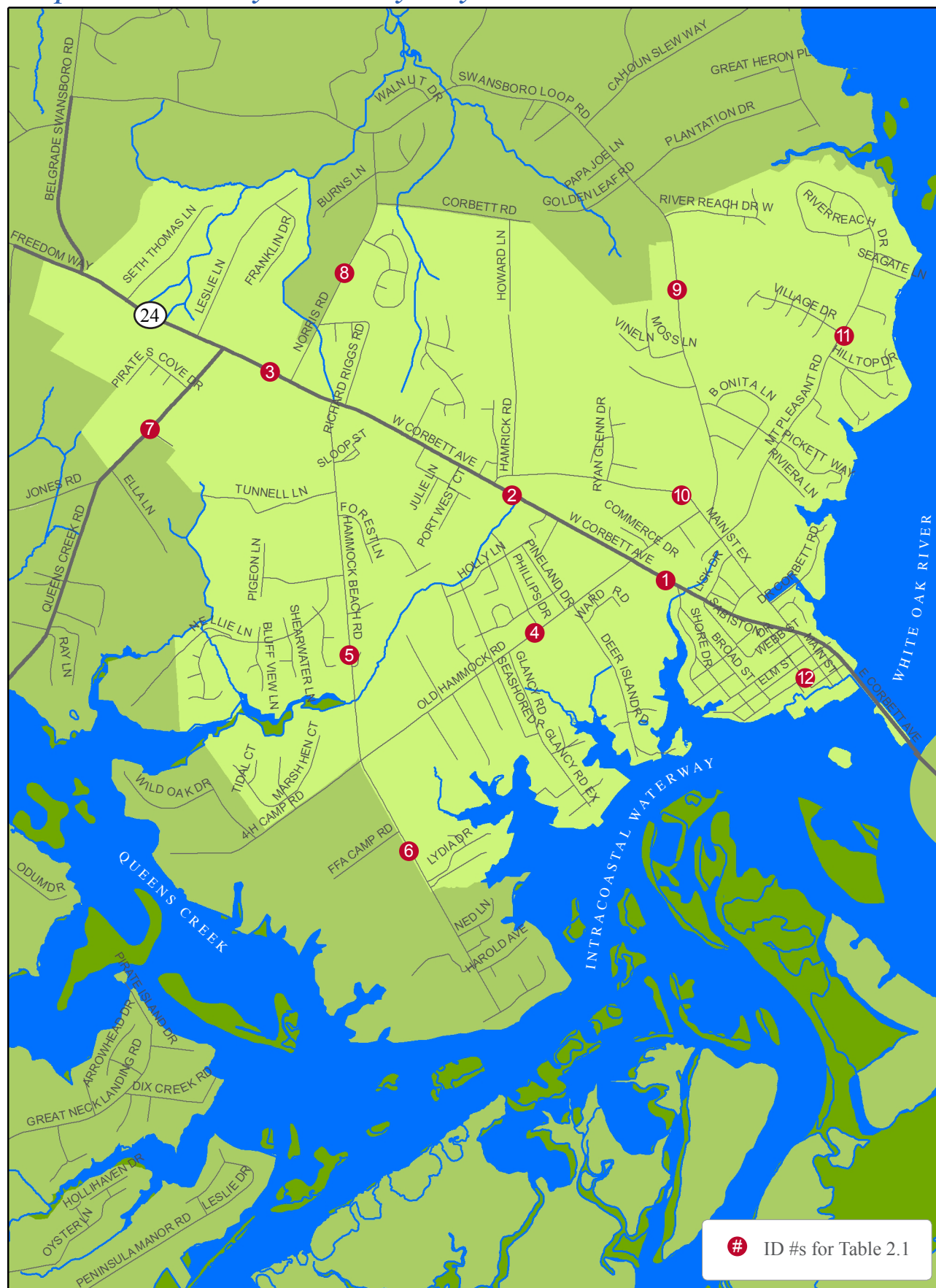


Map 2.2 Town Limits & NCDOT Roadways





Map 2.3 Roadway Inventory Key





Refer to Chapter 3, page 3-2 for more about recommended bicycle facilities.

CURRENT OPPORTUNITIES

There are several available opportunities to easily add bicycling facilities that will expand the bicycling infrastructure and routes in the community. There are significant undeveloped areas between residential development and between major destinations, offering the opportunity for identification, reservation, and acquisition of off-road bicycle paths to serve as dedicated routes for bicycle transportation. There is also potential for widening existing sidewalk in some locations, and extending them as 10 foot wide multi-use sidepaths, allowing enough space for bicyclists and pedestrians can use together safely. However, this option only has potential in areas where there are few driveways and intersecting streets.

Another major opportunity for improving bicycling conditions in Swansboro is the Croatan Regional Bicycle Plan and the Croatan Regional Trails Plan, both of which are under development as of mid-2011. Once implemented, bicycling routes throughout the region will be better signed, and in some cases re-routed with strategic infrastructure improvements for bicycling.

CURRENT THREATS

Threats to meeting the goals of this plan include anticipated cuts in state and federal transportation funding, including funding for bicycle facilities. Also, the anticipated curtailment of municipal annexation authority would make closing the many non-municipal gaps in Swansboro's roadway and bicycle network much more problematic.

Roadway Inventory

Most potential on-road improvements for bicycling in Swansboro are on or along NCDOT-owned and maintained roadways. A field inventory was conducted in January 2011 to assess existing roadway characteristics related to bicycle facility planning and design. These include factors such as lane configuration, right-of-way constraints, land uses, nearby destinations, traffic volume and speed. Field observations were supplemented with other sources of information, such as Geographic Informations Systems (GIS) data, North Carolina Department of Transportation (NCDOT) crash data, and NCDOT traffic counts.

Swansboro's main roadways were broken down into 12 individual segments for the inventory analysis (see Map 2.3: Roadway Inventory Key).

TABLE 2.1 ROADWAY INVENTORY BY SEGMENT

Map 2.3 I.D. #	Road Segment	Length (Ft)	Length (Mi)	Lane Configuration	Speed limit (MPH)	Width (Ft) ¹	Appx. Lane Widths (Ft)	Shoulder Type ²	Segment Observations	2009 AADT ³	Crash History	Ownership/ Maintenance	Destinations/ Notes
1	W. Corbett Ave/ NC 24 (from White Oak River Bridge to Old Hammock)	4,516	0.86	4 lanes plus center turn lane	35	65	12 12 16.5 12 12	curb & gutter	Sidewalks on the south side. Intersection of Hammocks Beach & NC 24 lacking crossing facilities (needs high visibility marked crosswalk, ped countdown signal, and sidewalks should connect to curb ramps).	19,000	2 pedestrian crashes at Old Hammock Rd, 1 pedestrian crash near waterfront, and 1 bicycle crash on NC 24 bridge	NCDOT	Commercial areas and businesses bordering downtown Swansboro, church, Chamber of Commerce/ Community Center
2	W. Corbett Ave/ NC 24 (from Old Hammock to Hammock Beach)	6,180	1.17	4 lanes plus center turn lane	45 (w/ 35 mph school zone)	65	12 12 16.5 12 12	curb & gutter	Auto services, storage facilities, vacant lots, commercial areas, utility poles; intermittent sidewalks, with more towards Old Hammock.	22,000	Pedestrian crash near Julie Ln	NCDOT	Commercial areas w/ grocery (Piggly Wiggly), schools, apartments. Potential for sidepath on south side, but driveways may be too frequent.
3	W. Corbett Ave/ NC 24 (from Hammock Beach to Belgrade-Swansboro)	5,000	0.95	4 lanes plus center turn lane	45	65	12 12 16.5 12 12	curb & gutter	Auto services, utility poles no sidewalks.	2,900	Pedestrian crash near Leslie Ln	NCDOT	Food lion, Swansboro Middle School

1) Appx. Width (Ft)* from edge of pavement, not including gutterpan.

2) Shoulder Type* 1) Relatively clear and level; 2) drainage ditches; 3) vegetation; 4) man-made obstacles, such as fences, retaining walls, utility boxes, etc.

3) 2009 AADT* (Annual Average Daily Traffic) from the Traffic Survey Group, Transportation Planning Branch, NCDOT



TABLE 2.1 ROADWAY INVENTORY BY SEGMENT (CONTINUED)

Map 2.3 I.D. #	Road Segment	Length (Ft)	Length (Mi)	Lane Configuration	Speed limit (MPH)	Width (Ft) ¹	Appx. Lane Widths (Ft)	Shoulder Type ²	Segment Observations	2009 AADT ³	Crash History	Ownership Maintenance	Destinations/ Notes
4	Old Hammock (from W. Corbett Ave/ NC 24 to Hammock Beach)	6,040	1.14	2 lanes, undivided	35 & 45	24	11 11	Type 2	Utility poles on SE side. Drainage ditches are close to the road.	2,900	None reported	NCDOT	Hotel, Ward Farm Town Center (coming); grocery (Piggly Wiggly); Key link between downtown and state park.
5	Hammock Beach (from W. Corbett Ave/ NC 24 to Old Hammock)	6,438	1.22	2 lanes, undivided	45	19	9 9	Type 1 & 2	Some sidewalk near the Soccer Complex. Drainage ditches in some areas are off-set from the road enough to allow for room for some paved shoulder.	n/a	Bicycle Crash near E Loop St	NCDOT	Residential Subdivisions and apartments, Swansboro Soccer Complex
6	Hammock Beach (from Old Hammock to H. B. State Park entrance)	4,475	0.85	2 lanes, undivided	45	19	9 9	Type 1 & 2	Some sidewalk near the Church. Drainage ditches are off-set from the road to allow for room for some paved shoulders or bike lanes. Area is mostly undeveloped w/ very few driveways.	n/a	None reported	NCDOT	Residential Subdivisions, Church, Hammocks Beach State Park
7	Queens Creek (from W. Corbett Ave/ NC 24 to Ella)	2,955	0.56	2 lanes, undivided / 2 lanes plus center turn lane	35 - 45	23 and 34.5	11.5 11.5 and 12 10.5 12	Type 2	Utility poles on west side; Room for sidepath on east side near schools.	11,000	None reported	NCDOT	Queens Creek Elementary and Swansboro High School
8	Norris Rd.	4,789	0.91	2 lanes, undivided	45 (35 during school hours)	18	9 9	Type 2 w/ some 1	Drainage Ditches towards NC 24 are off-set enough to add some paved shoulder.	n/a	None reported	NCDOT	Swansboro Middle School; Moose Lodge 1425 Family Center; some farmland with some residential frontage and some subdivisions
9	Swansboro Loop (from Norris to Main)	11,953	2.26	2 lanes, undivided	45	19	9 9	Type 2	Ditches are very close to the road.	2,100	None reported	NCDOT	Sander's Park; mostly farmland with some residential frontage and some subdivisions
10	Main St. Ext.	6,480	1.23	2 lanes, undivided	35	20	9.5 9.5	Type 1 & 2; some curb & gutter	Some new construction with curb and gutter; Frequent residential driveways.	1,700	None reported	NCDOT	Riverview Park, Church, residential corridor
11	Mt Pleasant	5,869	1.11	2 lanes, undivided	40	19	9 9	Type 2 w/ some 1	Utility poles on west side (some on east); Potential room for sidepath in areas with farmland, but residential driveways in other areas may be too frequent. Potential to extend shoulder in some areas.	n/a	None reported	NCDOT	Residential corridor & residential subdivisions
12	Sample of downtown roadways: Front, Church, Walnut, Broad, Shore, Spring, Water	7,886	1.49	2 lanes, undivided	20	Varies, 26 on Spring; 23 on 5th; 25 on Broad; 17 on Walnut & Water (not inc. gutter)	Unmarked lanes	Type 1; some curb & gutter	Many residential driveways.	n/a	None reported	Town	All Downtown Destinations

1) Appx. Width (Ft)* from edge of pavement, not including gutterpan.

2) Shoulder Type* 1) Relatively clear and level; 2) drainage ditches; 3) vegetation; 4) man-made obstacles, such as fences, retaining walls, utility boxes, etc.

3) 2009 AADT* (Annual Average Daily Traffic) from the Traffic Survey Group, Transportation Planning Branch, NCDOT



PHOTO INVENTORY OF ROADWAYS

The numbers for each image below correspond with the Roadway Inventory Table 2.1 and Inventory Key Map 2.3 (previous pages).

- ① W. CORBETT AVE/ NC 24 (FROM WHITE OAK RIVER BRIDGE TO OLD HAMMOCK)



- ② W. CORBETT AVE/ NC 24 (FROM OLD HAMMOCK TO HAMMOCK BEACH)



- ③ W. CORBETT AVE/ NC 24 (FROM HAMMOCK BEACH TO BELGRADE-SWANSBORO)



- ④ OLD HAMMOCK (FROM W. CORBETT AVE/ NC 24 TO HAMMOCK BEACH)





⑤ HAMMOCK BEACH (FROM W. CORBETT AVE/ NC 24 TO OLD HAMMOCK)



⑥ HAMMOCK BEACH (FROM OLD HAMMOCK TO H. B. STATE PARK ENTRANCE)



⑦ QUEENS CREEK (FROM W. CORBETT AVE/ NC 24 TO ELLA)



⑧ NORRIS RD.





9 SWANSBORO LOOP (FROM NORRIS TO MAIN)



10 MAIN ST. EXT.



11 MT PLEASANT



12 DOWNTOWN LOOP: FRONT, CHURCH, WALNUT, BROAD, SHORE, SPRING, WATER





BICYCLE AND PEDESTRIAN CRASHES (MAP 2.4)

Data for bicycle and pedestrian crashes involving a motor vehicle from 1994-2010 was provided by NCDOT and geocoded by Alta/Greenways. Eight crashes were mapped and can be seen in the following crash map. Almost every recorded bicycling or pedestrian crash in Swansboro took place along Corbett Ave (NC 24), with the exception of one bicycle-related crash on Hammock Beach Rd. It is important to note that not all crashes are reported.

TABLE 2.2 RECORDED CRASHES INVOLVING AUTOMOBILES WITH BICYCLISTS OR PEDESTRIANS IN SWANSBORO, NORTH CAROLINA

For the Reporting Period of January 1, 1994 to October 31, 2010

On Road	Direction	From Road	Toward Road	Crash Severity	Date Of Crash	Time Of Crash	Crash Type
Hammocks Beach Rd	S	Deer Island Rd	Corbett Ave	B-injury (Evident)	5/23/1994	03:43 pm	Bicyclist
Corbett Ave	E	Old Hammock Rd	Shore Dr	B-injury (Evident)	10/13/1995	9:37 am	Pedestrian
NC 24	E	Not Stated	Carteret	A-injury (Disabling)	11/29/2002	05:35 pm	Pedestrian
NC 24	W	Phillips Loop Rd	Queens Creek Rd	C-injury (Possible)	3/5/2004	06:40 pm	Pedestrian
NC 24	n/a	Old Hammocks	Taylor Terrece	Property Damage Only	5/24/2008	1:19 am	Pedestrian
NC 24	n/a	NC 24		C-injury (Possible)	n/a	11:43 am	Pedestrian
NC 24	n/a	Leslie Ln	Belgrade Swansboro	A-injury (Disabling)	n/a	010:22 pm	Pedestrian
NC 24	E	Front St	Carteret	B-injury (Evident)	n/a	12:30 pm	Bicyclist

Destinations, Development and Land Use

Geographic Information Systems (GIS) data was analyzed from the Town of Swansboro, Onslow County, and the State of North Carolina. The analysis included information about destinations (based on zoning areas), land use, and development patterns that may be useful in assessing need for future bicycle facilities.

TRIP ATTRACTORS

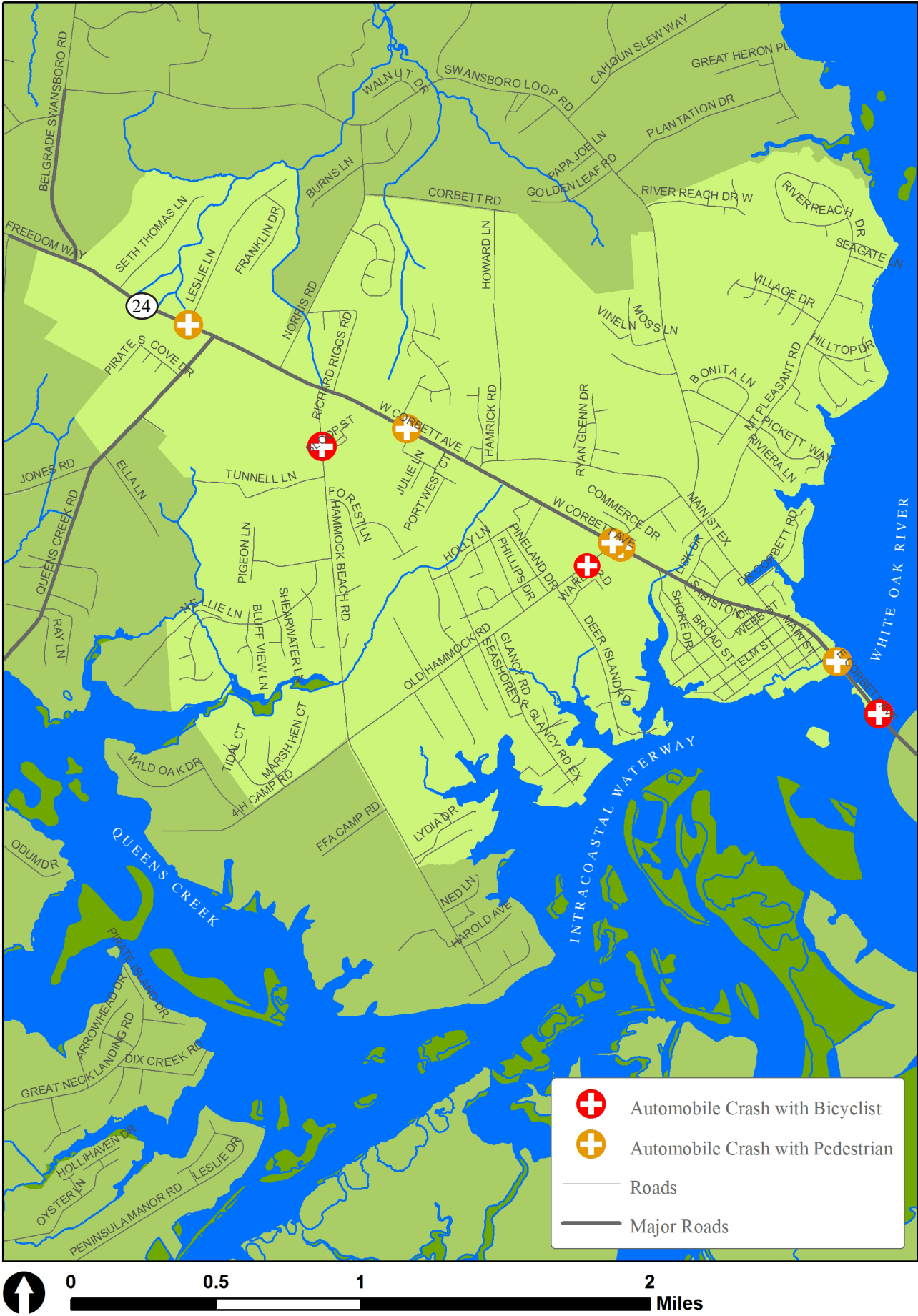
People currently drive, walk, or bike to a variety of destinations across Swansboro for various purposes. These potential destinations and points of origin for bicyclists are referred to in this document as ‘trip attractors’ (see Map 2.4). Examples include:

- The Historic Swansboro Waterfront
- Parks
- Schools
- Churches
- Civic destinations (post office, library, town hall, etc.)
- Tourist and visitor amenities (hotels, campgrounds, etc.)
- Shopping locations (grocery stores, shopping centers, restaurants, drug stores, banks, etc.)
- Town Hall Annex (for community uses)
- Places of employment (office centers, retail areas, downtown)

Connections in and out of town, to regional routes and/or destinations, may also be considered as trip attractors for bicyclists. These include, but are not limited to, the White Oak River bridge (NC 24), Belgrade-Swansboro Road, and Queens Creek Road.



Map 2.4 Crashes Involving Bicyclists or Pedestrians 1994-2010





Each of these categories of bicycle trip attractors will be considered when determining locations for recommended bicycle improvements. Certain zoning areas with Swansboro also tend to offer destinations, such as the business areas along NC 24 and the Historic Waterfront. These and other trip attractors represent important starting and ending points for bicycle travel. Most of these destinations currently lack safe and secure bicycle parking, with few existing bicycle racks (Municipal Park, Bicentennial Park, and Pirates Den Park have bike racks).

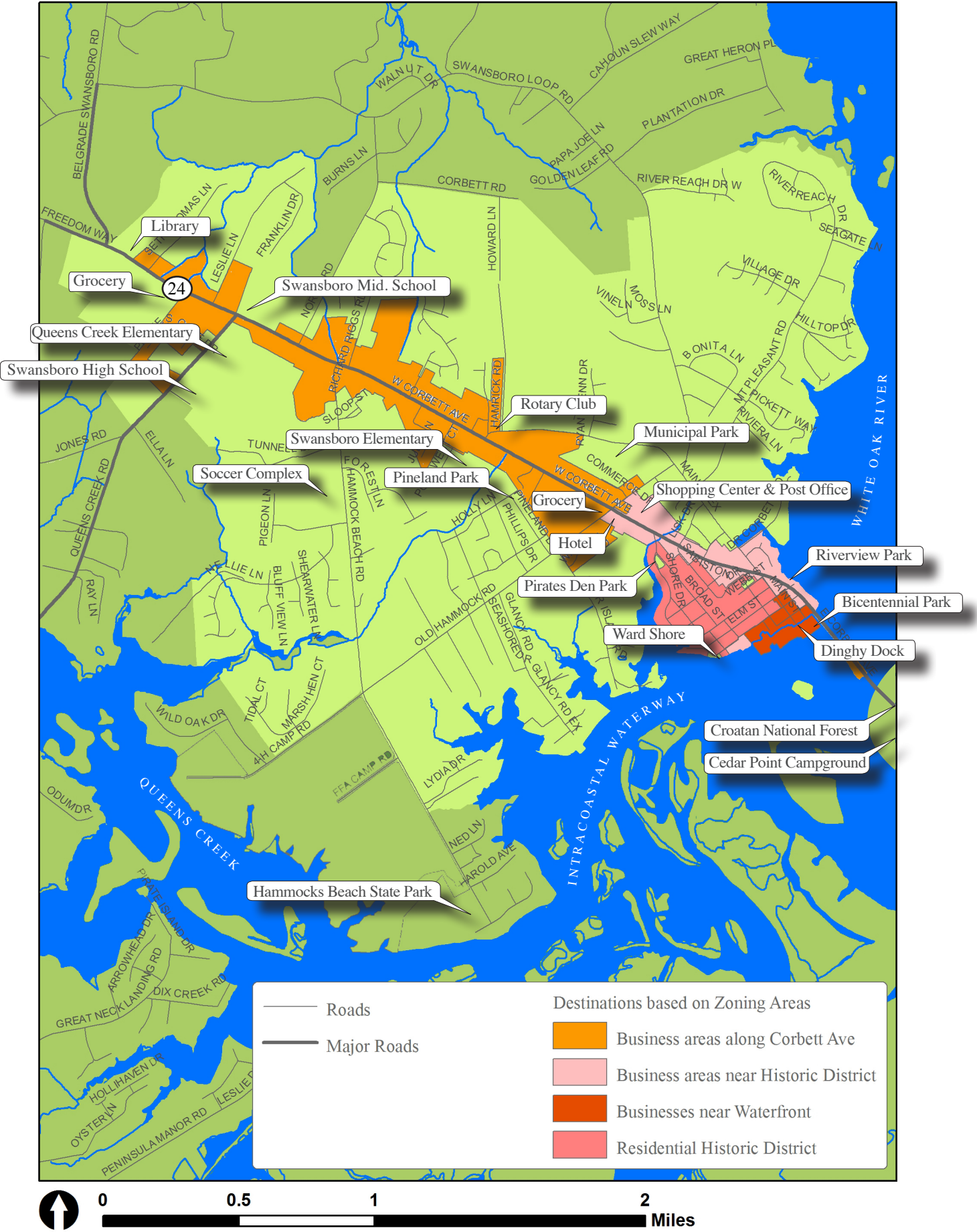


Examples of trip attractors in Swansboro, clockwise from top: Riverview Park, Historic Downtown Swansboro (Olde Brick Store shown), Bicentennial Park, and Municipal Park.





Map 2.5 Trip Attractors

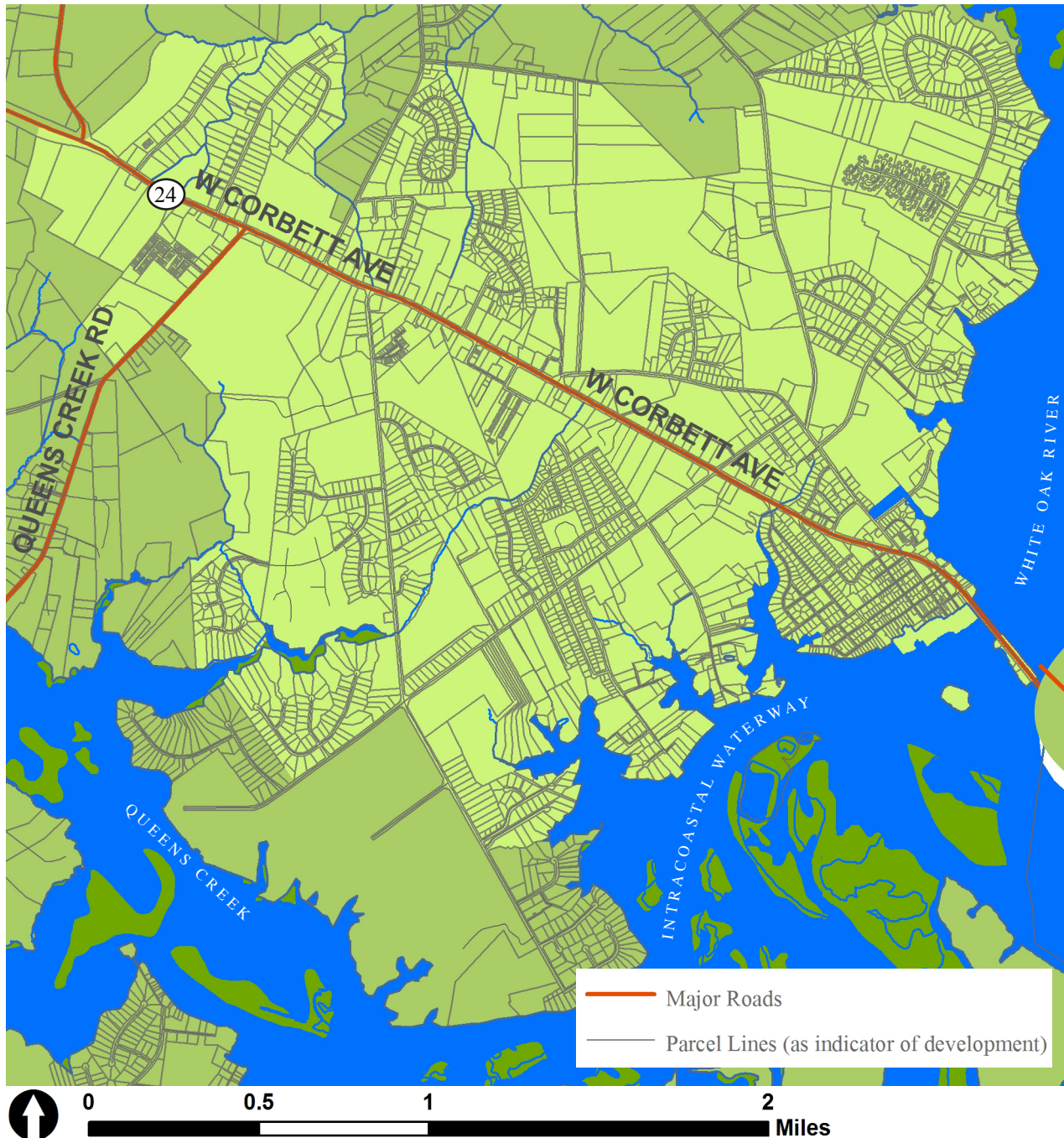




DEVELOPMENT & LAND USE

Map 2.6, below, shows parcel lines as an indicator of development patterns and development density. One major challenge in the overall layout of the Town is the way in which it is bisected by NC 24, leaving residential developments on each side of NC 24 separated from one another and separated from destinations on the opposite side. This leaves many residents with very few options for safe non-motorized access across NC 24, requiring people to drive automobiles for short trips that could otherwise be taken on foot or by bicycle.

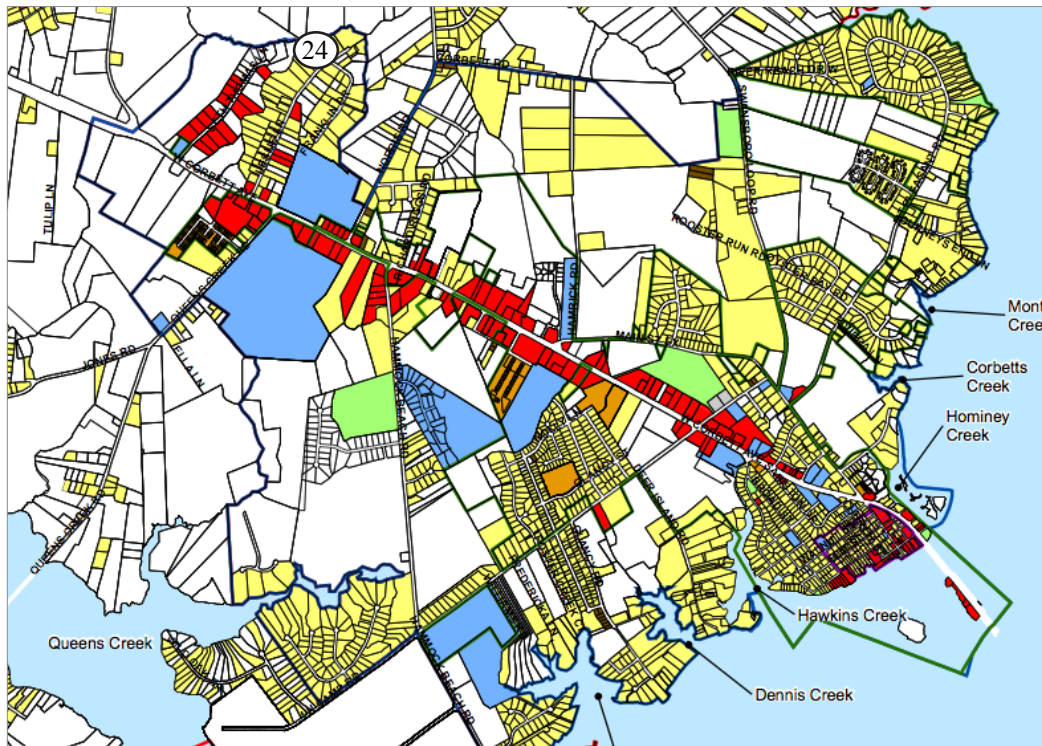
Map 2.6 Development Density





These land use maps display the existing and future land use patterns within the Town of Swansboro, from the Swansboro CAMA Core Land Use Plan. As shown, the core commercial corridor of NC 24 (in red) is surrounded by residential (yellow, orange, and brown), and office/institutional areas (blue). See page 2-16 for more on the current land use plan.

EXISTING LAND USE PLAN (from the Swansboro CAMA Core Land Use Plan)

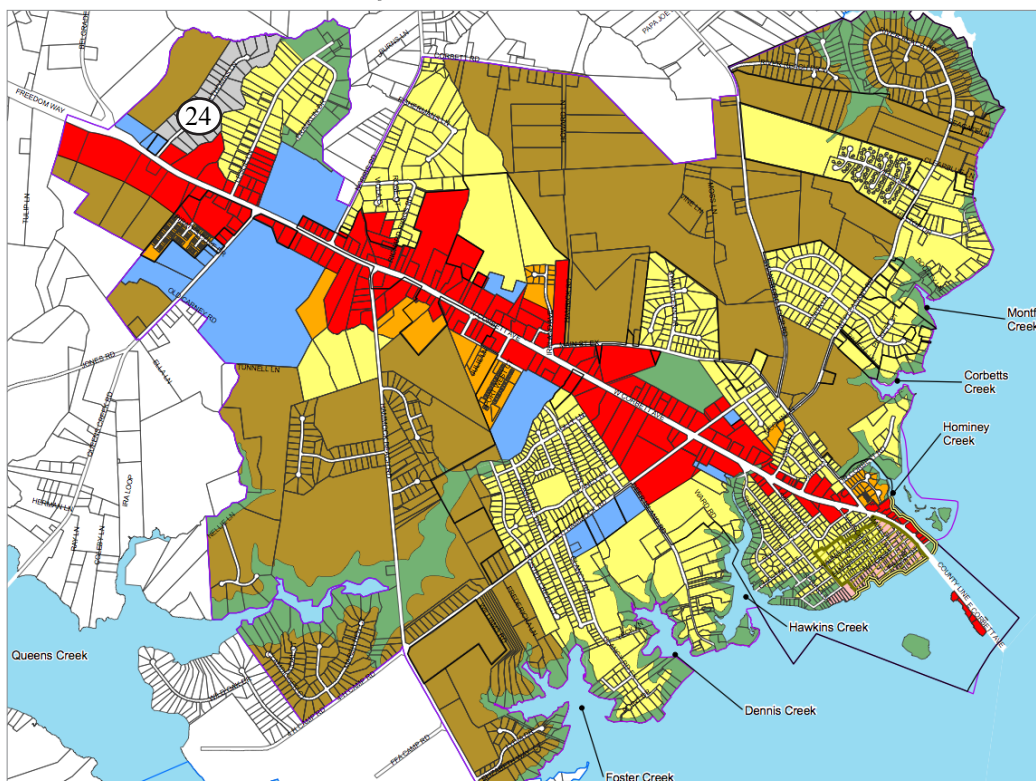


According to the 2009 Land Use Plan, 43.3% of land within the corporate limits is used for single-family residences and 31.4% is vacant. Single-family residences and vacant land are also the most significant land uses within the ETJ with 35.1% and 51.3%, respectively.

Existing Land Use

- Commercial
- Industrial
- Multi-Family Residential
- Mobile Home Park
- Office and Institutional
- Recreational
- Single-Family Residential
- Vacant

FUTURE LAND USE PLAN (from the Swansboro CAMA Core Land Use Plan)



Future Land Use

- Commercial
- Commercial Central Business
- Office & Institutional
- Light Industrial
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Conservation



Summary of Related Plans

SWANSBORO CAMA CORE LAND USE PLAN (2009)

This plan was prepared in accordance with the requirements of the North Carolina Coastal Area Management Act (CAMA). It covers existing and emerging conditions, outlines a plan for the future, and offers tools for managing development. Section six, 'Plan for the Future' includes policies related to bicycle planning:

- P.56 Swansboro supports vehicular, pedestrian, bicycle, and boating transportation improvements which will improve access to the Town's Central Business District and Historic District. (page 129)
- P.58 The development of bikeways, sidewalks, and trails will be encouraged as part of new roadways and roadway expansions. Particular attention should be given to bicycle and pedestrian needs for inclusion in the State Transportation Improvement Program, including development of a bikeway plan within the planning jurisdiction. (page 129)

These statements are important to the Bicycle Plan because they show existing policy that supports the development of bicycle infrastructure.

During the planning process, when local residents were asked which recreational facilities should be added, 'Walking paths/trails' ranked number six and 'Bike paths' were ranked number nine, out of 39 different types of amenities (Property Owner Survey Results).

COMPREHENSIVE TRANSPORTATION PLAN (2006)

The Swansboro Comprehensive Transportation Plan Study was a joint planning effort between the Town of Swansboro, the Down East Rural Planning Organization (RPO), and NCDOT. The Comprehensive Transportation Plan was initiated in January, 2005. The recommendations were approved by the Swansboro Board of Commissioners on August 15, 2006; and endorsed by the Down East RPO on September 26, 2006. The Plan was mutually adopted by the North Carolina Board of Transportation on November 2, 2006. The Plan classifies the existing road system and recommends the following improvements related to bicycling.

- NC 24 (Freedom Way / Corbett Avenue) The sections of roadway between Norris Road (SR 1445) and Hammock Beach Road (SR 1511); and between Front Street and the eastern planning area boundary are designated bicycle routes in accordance with the Jacksonville City to the Sea Bicycle Route and the Swansboro Bicentennial Trail Route Maps. Improvements should include AASHTO standard bicycle-safe bridge railing height of 54" at any new bridge locations and wide outside lanes (4-ft) in curb and gutter sections or wide paved shoulders (4-ft) in both directions depending on the preferred cross section.

These statements are relevant because they provide a framework from which to build this Bicycle Plan's recommendations.

Additionally, the following roadways and roadway segments are designated bicycle routes in accordance with the Jacksonville City to the Sea Bicycle Route and/or the Swansboro Bicentennial Trail Route Maps. For each of the listed roadways, the Comprehensive Transportation Plan recommends widening entire length of roadway to two 12-foot lanes. This will improve safety and increase the capacity of the roadway. Improvements should include AASHTO standard bicycle-safe bridge railing height of 54" at any new bridge locations and wide outside lanes (4-ft) in curb and gutter sections or wide paved shoulders (4-ft) in both directions depending on the preferred cross section:

- Belgrade-Swansboro Road (SR 1434); the section of roadway between Swansboro Loop (SR 1444) and the northern planning area boundary.
- Swansboro Loop (SR 1444)
- Main Street Extension (SR 1447); the section of roadway between Swansboro Loop (SR 1444) and NC 24 East.
- Norris Road (SR 1445)
- Hammock Beach Road (SR 1511)



Finally, upon the Town's request, the Comprehensive Transportation Plan recommended that Old Hammock Road be designated a bicycle route. This addition will provide a needed link to the transportation network. In accordance with State regulations, and as stated for the roadways listed above, improvements should include the AASHTO standard bicycle-safe bridge railing height of 54" at any new bridge locations and wide outside lanes (4-ft) in curb and gutter sections or wide paved shoulders (4-ft) in both directions depending on the preferred cross section. [Note: the Draft Revised AASHTO Guidelines for the Development of Bicycle Facilities - says "In locations where bicycles will operate in close proximity to bridge railings or barriers, the railings or barriers should be a minimum of 42 inches in height. On bridges where bicycle speeds are likely to be high and where a bicyclist could impact a barrier/rail at 25 degrees or greater a higher railing should be considered]

NCDOT TRANSPORTATION IMPROVEMENT PROGRAM (TIP) (2007-2013)

NCDOT's 2007-2013 Transportation Improvement Program (TIP) outlines all of the projects within Onslow County that are proposed for construction between the years of 2007 and 2013. The principal project proposed in the TIP with the potential to provide for bicycling is addition of paved shoulders to State Road 1509 (Queens Creek Road) over a four mile length. The project also proposes rumble strips which can be problematic for bicyclists as they are very difficult to ride a bicycle on or over. NCDOT staff indicated at the December 2010 Bicycle Plan Kick-Off Meeting that the rumble strips, while not ideal for bicycling, were an important aspect of the project for overall motorist safety. The League of American Bicyclists (LAB), has recommendations for bicycle tolerable rumble strips online: www.bikeleague.org/resources/reports/pdfs/rumble_strips.pdf

TOWN OF SWANSBORO PARKS AND RECREATION COMPREHENSIVE PLAN (2008)

In 2008, the Board of Commissioners adopted a Parks and Recreation Comprehensive Plan to address the recreation needs of the community. The plan includes several recommendations that are relevant to this bicycle plan, specifically in relation to potential greenway trails and bicycle-related programming:

- Make significant improvement to existing park facilities.
- Acquire additional park land.
- Begin providing recreational programming.
- Provide significant funding to meet parks and recreation needs.

Section four of the plan, 'Public Input Survey' discusses the most desirable recreation facilities. Of the 861 surveys responses, 'Nature Trails' and 'Bike Trails' are two of the four highest ranked. Only 'indoor swimming pool' and 'splash park' ranked higher (page 19).

In the section, 'Parks and Recreation Funding', the plan recommends seeking NCDOT funding for planning and construction of bike paths in Swansboro (page 87).

GATEWAY TO SWANSBORO (2009)

The Gateway to Swansboro Committee was appointed by the Swansboro Board of Commissioners in July of 2008 to address issues related to the NC 24 corridor. The committee was charged with developing a vision, specific concepts, and recommended strategies to guide the development of this central transportation gateway through Swansboro in a manner that enhances the appearance of the community and its attractiveness for other high-quality investments.

Through a process that included discussion and public input, the committee identified the following bicycle-related issues regarding the current development and conditions on the NC 24 gateway corridor:

Driveway cuts and the interconnections of commercial areas also affect the ability bicyclists and pedestrians to move around safely.

- *G. Traffic Safety and Circulation.* There has been little historical control of driveway cuts, increasing traffic hazards from turning traffic and random intervals. The "suicide lane" in the center of the highway creates the potential for head-on collisions from turning traffic conflicts and from misuse by motorists who sometimes use it as a passing lane. Except within a few shopping centers, there has been little effort to create interconnections or frontage drives



between business parking areas to allow off-highway circulation of vehicles. (Page 3) [Note: The Town Board recently adopted UDO requirements that mandate such interconnections where feasible.]

- **H. Pedestrian Safety and Circulation.** Most of the corridor is not pedestrian-friendly. Although the Town is preparing to install almost 3,900 linear feet of sidewalks with the assistance of a grant, there is a significant lack of continuous sidewalks to aid pedestrian movement among businesses along the corridor. There are hazardous conditions where some sidewalk segments end. There are no protected pedestrian crossings. Encroachments on the right-of-way by merchandise (primarily autos for sale) and other objects are inhibiting pedestrian use of rights-of-way and are detracting from the appearance of the roadway. (Page 3) [Note: The Town has now installed over 4,000 lf of sidewalks along Corbett Avenue, has obtained a Safe Routes to Schools grant to install more sidewalks, and is budgeting local funds for continuing improvements. The Town has also made requests to NCDOT for protected pedestrian crossings and has enacted an ordinance prohibiting placement of merchandise and other objects within 12 feet of the curb line of NC 24.]

Regarding the Gateway Vision:

- **H. Vehicle and Pedestrian Movement.** The gateway corridor should allow convenient and safe pedestrian and vehicle access from one business center to another, utilizing an uninterrupted system of contiguous sidewalks, interconnected parking areas, and safe locations for vehicle turns and pedestrian crossings. (Page 4)

Regarding Gateway Implementation and Recommendations:

- **H. Traffic Safety and Circulation.** The Town should pursue the following approaches to the improvement of traffic safety and circulation along the corridor:
 1. **Driveway Entrances.** The Town should develop a policy on the spacing and placement of driveway entrances to minimize the number of turning points along Corbett Avenue.
 2. **Off-Street Connections.** The Town should develop a policy that requires internal connections between parking lots along NC 24 to maximize the potential for off-street movement between businesses and to minimize the need for highway entries. Site review of building developments should also insure that parking lots are designed to allow such connections. [Note: The Town has now adopted an ordinance to encourage parking lot interconnections.]
 3. **Medians.** The Town should support the installation of medians along NC 24 to reduce the number of turning points along the highway and to increase highway safety.
- **I. Pedestrian Safety and Circulation**
 2. **Pedestrian Crossings.** The Town should work with NCDOT to encourage the establishment of pedestrian crossings along the corridor and across intersecting streets. [Note: The Town has requested NCDOT improvements for three pedestrian crossings.]

Although aimed at pedestrians, statements on this page are relevant to the Bicycle Plan because they show that safe movement within the corridor (with or without a vehicle) has been an identified issue for the Town, and one that the Town has begun taking steps towards addressing.

Implementation of improvements recommended in the Gateway report provide opportunities to address and improve facilities and safety issues for bicyclists. In many cases bicyclists use the same facilities as pedestrians for crossing the NC 24 corridor, and they are similarly impacted by the uncontrolled access issues and the left turning movements.



SWANSBORO DOWNTOWN RENAISSANCE (2010)

In December 2008, the Swansboro Board of Commissioners created a Downtown Renaissance Initiative which developed a vision and a plan for preservation and revitalization of Swansboro's historic downtown area that said, "Historic Downtown Swansboro, the location of very important natural and historic resources that need to be both carefully protected and artfully exploited, should become....a special and irreplaceable place of community heritage *and high quality public amenities....*". Note that bicycle trails have been identified as very important public amenities in many communities both locally and nationally (see Chapter 1 of this Bicycle Plan). The following are some of the recommendations from the Renaissance report:

These particular recommendations have implications for bicycling where they impact the street width, pedestrian facilities that may be shared or used by bicyclists, or street width which may impact on-street bicyclists.

- 15.3.1.3 *Waterfront Access.* There is broad consensus that, while the Swansboro waterfront is a beautiful asset, there is insufficient access – in the form of dock walks and piers – to the waterfront area for pedestrians. There is widespread agreement that enhancing this access would improve the attractiveness of the downtown area for both residents and visitors. Better pedestrian access to the waterfront was listed as a “top five” change that merchants believe would improve business success. Improvement of this access will require the acquisition of additional property and/or riparian rights along the waterfront, which has heretofore proved to be difficult. [Note: The Town has obtained a state Waterfront Access grant to help install a new dock and pier at the end of Moore Street. Other efforts to secure and improve waterfront access are ongoing.]
- 15.3.1.8 *Traffic.* Traffic congestion was determined by the committee to be a weakness of the downtown area. The streets are relatively narrow and usually allow only one-way traffic when vehicles are parked on both side of the street. Front Street is only 29 feet wide, Main Street is 26, Moore Street is 23, Church Street is 20, and Water Street is only 17 feet wide. An experienced downtown developer from another community did point out, however, that the narrow streets contribute to slower – and therefore safer – movement by traffic.
- 15.3.1.9 *Pedestrian-Friendliness.* The visiting downtown developers noted that the downtown area was very walkable, compact, and cohesive, and it felt friendly to pedestrians. The narrow streets and slow traffic speeds also support the pedestrian-friendliness of downtown. Some members of the committee indicated that they felt that there were issues with sidewalk safety. The Town has made some previous sidewalk repairs and is planning a detailed review of downtown sidewalks to determine whether there are any significant remaining issues that need to be resolved.
- 15.3.2.5 *Pedestrian Access.* The Town should pursue every opportunity – when waterfront access rights can be secured – to construct dock walk and pier facilities that provide greater public access to the Swansboro harbor waterfront. This effort should include the pursuit of grant funding from the Public Beach and Waterfront Access Program and any other appropriate grant sources to assist in financing the cost of these facilities. [See note above at Waterfront Access.]
- 15.3.2.20 *Transportation Access and Circulation.* The Town should remain vigilant regarding potential changes in access to the downtown area from NC 24. The Town should become more active in- and aware of highway planning and design discussions in the regional Rural Planning Organization, in order to help shape recommendations related to the future design of NC 24. The Town should explore means of improving traffic flow in the downtown area.



TOWN OF SWANSBORO UNIFIED DEVELOPMENT ORDINANCE (UDO)

The UDO has been developed to support the goals, objectives, and implementing actions which are stated in the town's CAMA Land Use Plan and Comprehensive Plan. The following table summarizes sections of the UDO with potential implications for bicycle policy. The comments in the right-hand column are for discussion purposes; actual incorporation of these comments into the UDO is dependent on further action by the Town, subsequent to the planning process for this Bicycle Plan.

Page	Policy/Regulation/Recommendations	Contents	Comments related to Bicycling
ARTICLE 10. ZONING DISTRICTS AND ZONING MAP			
131	<i>PART IV DISTRICT REGULATIONS</i> Section 10-10: Notes to the Table of Permitted/Special Uses/ Conditional Use Districts	<i>Note 5.</i> Any person, firm, or corporation hereafter engaging in any development of vacant commercial property shall construct or cause to be constructed upon said development sidewalks that comply with the specifications of the Town of Swansboro as maintained by the Administrator of the Town of Swansboro;	Consider similar construction requirements for bicycle lanes and multi-use trails.
142		<i>Note 26. Parks and Playgrounds, Semi-Public...</i> the following conditions shall apply (15) <i>Sidewalks.</i> All facilities shall have sidewalks along adjacent streets or rights-of way. Additional sidewalks may be required by the Administrator.	Consider similar requirements for bicycle lanes and multi-use trails.
ARTICLE 12 SPECIAL USES			
157 - 180	Section 12-2: Specific Criteria for Certain Special Uses	Uses: Assisted Living Residence, Motels, Nursing Home, Private Recreation Club, Theaters, Plans are required and must show: (B) Types of surfacing, slope, grade, and cross section of drives, sidewalks, malls, etc.	Consider adding bicycle lanes and multi-use trails to list of items that must be shown.
ARTICLE 13. RESIDENTIAL CLUSTER DEVELOPMENT REGULATIONS			
183	Section 13-2: Area, Permitted Districts, Exemptions; Street Access; Open Spaces(s); Density; Dimensional Standards	A residential cluster development shall provide open space(s) subject to all the following requirements: For purposes of this section...areas or shelters, ball fields, walking or jogging trails, ... or other similar recreational facilities may be allowed;	This implies bicycle trails are included, but saying "multi-use trails" may be better than "walking or jogging trails".
ARTICLE 14. PLANNED BUILDING GROUP REGULATIONS			
189	Section 14-1: Planned Building Group Regulations for Apartments and Condominiums	Details that shall be included in plan.. (5) Types of surfacing, slope, grade, and cross section of drives, sidewalks, and parking areas.	Consider adding bicycle lanes and multi-use trails to list of items that shall be included in the plan.
191	Section 14-2: Planned Building Group Regulations for Attached Unit for Individual Ownership	Details that shall be included in plan.. (5) Types of surfacing, slope, grade, and cross section of drives, sidewalks, and parking	See above.
191		(F) <i>Access.</i> Each lot shall front on a public street. A five-foot pedestrian, drainage, and utility easement shall be provided on each lot along the entire length of all rear lot lines and side lot lines which are situated between the end walls of buildings. No fences, trees, shrubbery, or other similar obstructions shall be permitted in that five-foot pedestrian, drainage, and utility easement.	Consider a wider 'multi-use' easement to accommodate movement of bicycles, rather than just pedestrians.
		(H) <i>Plans are required and must show.</i> (3) <i>Circulation:</i> Proposed points of ingress and egress and proposed pattern of internal automobile and pedestrian circulation.	Consider changing to: "...automobile, bicycle and pedestrian circulation."
ARTICLE 19. TRAFFIC IMPACT STUDY			
246	Section 19-4: General Requirements and Standards	(B) <i>Transportation Facilities Description.</i> The description shall contain a full documentation of the proposed internal and existing external transportation system. This description shall include proposed internal vehicular, bicycle, and pedestrian circulation;	This policy is listed in this table for reference purposes only (in relation to text in bold).



Page	Policy/Regulation/Recommendations	Contents	Comments related to Bicycling
247		(D) <i>Transportation Impact of the Development...</i> Pedestrian and bicycle volumes at school crossings and as otherwise applicable shall be reported.	This policy is listed in this table for reference purposes only (in relation to text in bold).
ARTICLE 20. SUBDIVISION REGULATIONS			
271	PART II STANDARDS OF DESIGN Section 20-18: Street	(G) <i>Private Street Design Criteria.</i> (6) The minimum width of all sidewalks constructed, shall be four (4) feet.	Consider updating the language of this section to say, "Sidewalks, bikeways, and multi-use trails will be designed in accordance with AASHTO Bicycle and Pedestrian Guidelines and NCDOT guidelines." For reference purposes, five (5) feet is the minimum width at which two people can comfortably pass and walk side-by-side. Also, ten (10) feet is the minimum width at which two bicyclists can pass comfortably and ride side-by-side on multi-use paths.
283	Section 20-21: Sidewalks	(E) Sidewalks shall be constructed to a minimum width of four (4) feet, and shall consist of a minimum thickness of four (4) inches of concrete. All sidewalks shall be placed in a right-of-way, unless the development is platted as a planned unit or group development...	See above.
295	PART III INFORMATION REQUIRED WITH SUBDIVISION APPLICATIONS Section 20-37: Warranties, Sureties, and Improvements Guarantees	(C) <i>Streets:</i> (1) Grading: All streets shall be cleared and graded to their full right-of-way width so as to provide adequate shoulders and pedestrian walkways.	Consider revising to say "adequate bikeways and pedestrian walkways". For the remainder of section 20-37, consider including bicycle facilities where pedestrian facilities (sidewalks) are mentioned.
ARTICLE 24. REGULATIONS FOR LANDSCAPING			
381	Section 24-7: Subdivisions & Commercial Development Tree Removal; Permit Required	(F) All new construction , as defined herein, shall , in addition to (E) above, submit a site plan containing the following information: (1) The shape and dimensions of the real property to be developed, together with the existing and/or proposed locations of structures and improvements, existing and/or proposed utility services, roadways, bikeways , walkways, and parking areas;	This policy is listed in this table for reference purposes only (in relation to text in bold).
386	Section 24-13: Trees/Shrubs Causing Problems with Safe Traffic Movement or Pedestrian Movement	... no foliage shall be allowed to extend from public or private property into any portion of a street right-of-way below a height of eight (8) feet above the grade of the sidewalk at the property line.	Consider revising to "eight (8) feet above the grade of the sidewalk or multi-use trail at the property line".
APPENDIX IV HISTORIC DISTRICT DESIGN GUIDELINES			
42	Section 14: Fences and Walks	9) Use a combination of fences and plantings to screen parking lots. To provide adequate visibility for drivers entering and leaving, the fence should not exceed a height of three (3) feet at the street/sidewalk edge.	Consider revising to "three (3) feet at the street, sidewalk, or multi-use trail edge".

BICYCLE-RELATED PROVISIONS OF THE SWANSBORO CODE OF ORDINANCES

Chapter 73 of the existing Swansboro Code of Ordinances specifies local bicycling-related provisions and requirements. The regulations apply to any public street or dedicated bike-path subject to stated exclusions. Rules and requirements that are contained in this chapter are summarized on the following page, including a table that summarizes the ordinances by actual section and title.



Chapter 73 includes several rules that address rights and responsibilities related to bicycling:

- Parents and guardians are responsible for children not violating terms of the ordinance
- Bicyclists are subject to all the same rights and legal responsibilities as motor vehicle operators, except where the rules have no application to cycling

In addition, this chapter includes rules about how bicycle operation is governed:

- Bicyclists must follow the direction of all signals, signs, and control devices as they apply to vehicles unless directed otherwise by a police officer
- Mounted bicyclists must obey no right-, left- or U-turn signs unless they dismount and become a pedestrian and wheel the bike through the turn, following pedestrian rules
- Bicyclists must ride as near to the right-hand side of the road as practicable, being careful when passing a parked vehicle or one proceeding in the same direction

The ordinance rules cover a number of issues specifically related to operating a bicycle:

- A bicyclist must use a regular and permanent seat when riding
- Bicycles can only carry the number of people that they are designed and equipped to carry
- Bicyclists cannot ride faster than is safe under the conditions
- Bicyclists cannot carry anything that would cause them not to have at least one hand on the handlebars

There are also several rules related to bike riding on sidewalks:

- Riding is not permitted on sidewalks in the business district
- Bike riders on sidewalks must yield to pedestrians and provide an audible warning before overtaking or passing them

SWANSBORO CODE OF ORDINANCES SUMMARY: CHAPTER 73 -- BICYCLES

Section	Title	Summary
73.01	Effect of regulations	Parents/guardians are responsible for children on bicycles not violating terms of the ordinance. Regulations apply to any public street or dedicated bike-path subject to stated exclusions
73.02	Traffic laws apply to persons riding bicycles	Bicyclists are subject to all the same rights and legal responsibilities as motor vehicle operators, except where the rules have no application to cycling
73.03	Obedience to traffic control devices	Bicyclist must follow the direction of all signals, signs, and control devices as they apply to vehicles unless directed otherwise by a police officer. Mounted bicyclists must obey no right-, left- or U-turn signs unless they dismount and become a pedestrian and wheel the bike through the turn, following pedestrian rules
73.04	Riding on bicycles	A bicyclist must use a regular and permanent seat when riding. Bikes can only carry the number of people that they are designed and equipped to carry.
73.05	Riding on roadways and bicycle paths	Bicyclists must ride as near to the right-hand side of the road as practicable, being careful when passing a parked vehicle or one proceeding in the same direction
73.06	Speed	Bicyclists cannot ride faster than is safe under the conditions
73.07	Carrying articles	Bicyclists cannot carry anything that would cause them not to have at least one hand on the handlebars
73.08	Riding on sidewalks	No bike riding is allowed on sidewalks in the business district. The Chief of Police can add signs to any road banning bike riding. Any bike riders on sidewalks must yield to pedestrians and provide an audible warning before overtaking or passing them.



Current Bicycle-Related Programs

LOCAL BICYCLE TOURS AND BICYCLE RENTALS

Local business, such as Second Wind in Swansboro, Bikes-R-In in Cedar Point, and Highway 58 Bicycles in Emerald Isle, offer bicycle rentals and provide bicycle tours, among other services. The bicycling tours based out of Swansboro typically involve transporting the riders to Croatan National Forest for bike riding tours.

BICYCLING AND WALKING BROCHURES

The Swansboro Chamber of Commerce visitor brochures feature several self-guided bicycling and walking tours, including the Jacksonville City to the Sea Bicycling Route, the Swansboro Bicentennial Bicycle Trail, and the Swansboro Historical Association Walking Tour. Each brochure contains a map with text describing the route and features along the route.





Bicycling and kayak tours are offered through local businesses. Left: An informational table for 'Second Wind' at Swansboro's 2011 Business Expo.

Public Comments Regarding Current Conditions



The following graphs and tables show public input related to current conditions for bicycling. These data were collected through paper comment forms during the public meetings and Steering Committee meetings described on pages 1-2 and 1-3. There was also an online version of the comment form that was publicized at those meetings, through project newsletters, and via e-mail by Steering Committee members. As of July 2011, there have been 43 responses to the comment form.






A. How important to you is improving bicycling conditions in Swansboro? (select one)

		Response Percent	Response Count
Very important		83.7%	36
Somewhat important		16.3%	7
Not important		0.0%	0















B. How do you rate present bicycling conditions in Swansboro? (select one)

		Response Percent	Response Count
Excellent		0.0%	0
Fair		45.2%	19
Poor		54.8%	23

C. Which statement best describes your comfort level on a bicycle.


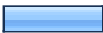
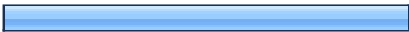




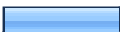









		Response Percent	Response Count
I am comfortable bicycling on the road with automobiles in all situations, including heavy traffic.		22.2%	8
I am most comfortable on off-road paths or in a clearly designated bicycle lane.		58.3%	21
I don't feel comfortable sharing any roadway with cars and prefer off-road paths or very low-traffic residential roads.		19.4%	7

**D. What bicycling destinations would you most like to get to? (choose all that apply)**












		Response Percent	Response Count
Downtown/Waterfront		88.1%	37
Schools		33.3%	14
Grocery stores		40.5%	17
Places of work		19.0%	8
Restaurants		35.7%	15
Public Transportation		2.4%	1
Other Shopping (retail stores)		31.0%	13
Parks		81.0%	34
Entertainment		28.6%	12
Trails and greenways		85.7%	36
Farmers markets/community gardens		38.1%	16
Surrounding towns/beaches		61.9%	26
I DON'T BICYCLE.		2.4%	1
Other specific location (please specify)		14.3%	6





**E. Which of the following factors prevent you from bicycling or from bicycling more often?
(choose all that apply)**

		Response Percent	Response Count
Lack of bicycle lanes, paved shoulders, or paths		94.7%	36
Gaps in bicycle facilities		15.8%	6
Narrow lanes		65.8%	25
Poor trail conditions		26.3%	10
Other travel modes are safer or more comfortable		10.5%	4
Crossing busy roads		65.8%	25
Hills		2.6%	1
Loose gravel or potholes		18.4%	7
Drainage grates		13.2%	5
Poor lighting (along routes/trails or at roadway crossings)		18.4%	7
Personal safety (from crime)		5.3%	2
Physical ability		5.3%	2
Travel time or distance		0.0%	0
Heavy traffic		52.6%	20
High-speed traffic		55.3%	21
Inconsiderate motorists		65.8%	25
Lack of bicycle parking		13.2%	5
Lack of showers and lockers at workplace		2.6%	1
NOTHING		0.0%	0

**F. Which of the following changes would encourage you to bike more often? (choose all that apply)**

		Response Percent	Response Count
Increased enforcement on speeding		13.2%	5
Commute-by-bike programs or incentives		13.2%	5
Bicycle racks at destination		36.8%	14
Improved off-road paths and greenways		94.7%	36
Showers or locker rooms at workplace		2.6%	1
Map of bicycle routes		28.9%	11
More bicycle lanes		68.4%	26
More off road bike paths or greenways		73.7%	28
More programs and events for new cyclists		18.4%	7
Safety education		15.8%	6
Lower speed limits		23.7%	9
NOTHING		0.0%	0

G. Should public funds be used to improve bicycle transportation options? (yes/no)

		Response Percent	Response Count
Yes		97.2%	35
No		2.8%	1



Current Conditions Conclusion

Below are the key findings related to the current conditions in the Town of Swansboro and how they impact bicycling routes, access and the ability to bicycle safely:

- Based on the public input, primary factors that are preventing residents from taking trips by bicycle are narrow roadways, crossing busy roads, and the lack of bicycle lanes, paved shoulders, or paths.
- More than four-fifths of the respondents to a comment form on bicycle conditions and needs say that bicycle conditions in Swansboro need to be improved, and 100% rate current bicycling conditions as only “fair” or “poor”.
- Although Swansboro currently has no off-road bicycling routes, public comments suggest that cyclists are strongly interested in off-road routes and would feel much safer on such routes.
- Based on the public input, the most important destinations for bicyclists in Swansboro include the Historic Downtown, parks, trails, and greenways. These destinations could be connected by creating a safe and accessible network of bicycle facilities, along with safe and secure bicycle parking.
- Major challenges facing the Town in the establishment of better bicycling routes include the lack of available right-of-way on state roads with swale drainage, declining state and federal funding for bicycle path construction, and the irregular configuration of the town’s municipal boundaries.
- Most potential improvements for bicycling in Swansboro are on or along roadways owned and maintained by NCDOT, and will therefore require close coordination with local division offices and the other regional transportation agencies.
- All recent studies and local plans that have been prepared for Swansboro indicate support for non-motorized transportation. In particular, the Swansboro Comprehensive Transportation Plan specifically calls for bicycling infrastructure improvements along designated bicycling routes.
- Most bicycle and pedestrian-related accidents in Swansboro occurred on NC 24, a corridor with the highest concentration of destinations and commercial land uses. The design and operation of NC 24 is recognized as a significant concern in several adopted plans. The ways in which those concerns are (or are not) addressed will affect the level of safety for non-motorized access across the corridor, including bicycling.
- Local resources for future bicycle education and encouragement programs include: local businesses serving bicyclists, tourism including the Chamber of Commerce, the Bicycle Plan Steering Committee members, the school system, physical education teachers and parents, local police, and regional organizations such as the East Carolina Council of Governments (ECCOG) that work on bicycling related issues.

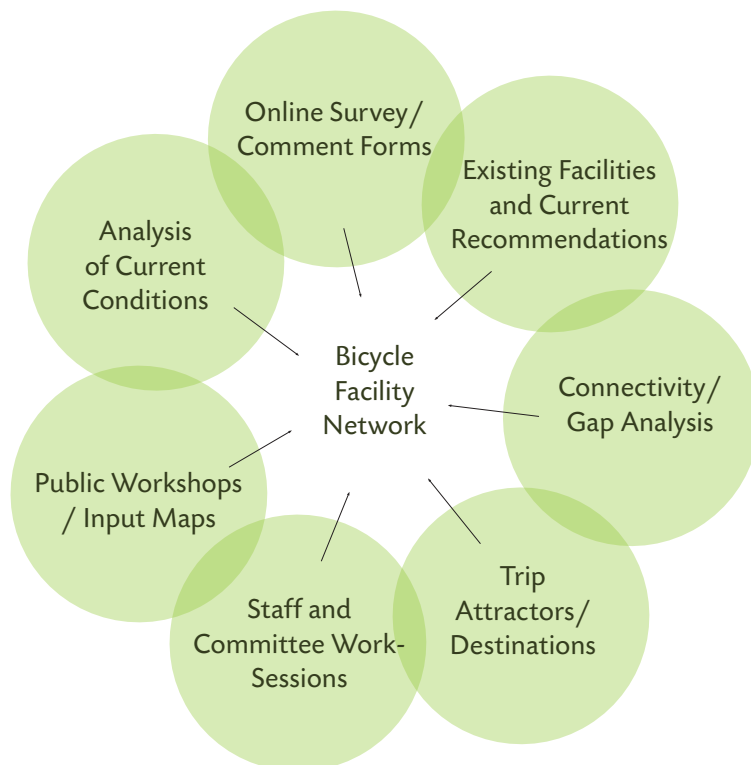


3. RECOMMENDED BICYCLE NETWORK

Overview

The recommended bicycle network (page 3-3) represents a connected system that will allow transportation and recreation-based bicycle travel throughout Swansboro. The recommended network is composed of numerous types of on-street and off-street bicycle facilities that serve to connect people and neighborhoods to local destinations. Individual segments of the overall network would be built in phases (along with related programs and policies), which is the subject of Chapter 4: Implementation. This chapter contains descriptions of the bicycle facility types, an overall map, and individual cutsheets that describe each segment of the overall network. The chapter concludes with planning-level construction budget estimates for each facility type and segment of the network.

This diagram illustrates the many inputs and levels of analysis used to design the Bicycle Facility Network.





Recommended Bicycle Facilities

Bicyclists are allowed to ride on all roads in Swansboro and have the same rights and responsibilities as motorists. Modifications to roadways and the addition of multi-use trails will make bicycling a safer and more viable form of transportation and recreation in Swansboro. Below are brief descriptions of different types of bicycle facilities recommended in Swansboro. **For a comprehensive guide to bicycle facility types and design standards, see this Plan's Implementation Toolbox (available from Town of Swansboro planning staff).**



Color corresponds to Map 3.1

MULTI-USE TRAILS/GREENWAY

Multi-use trails are physically separated from motor vehicle traffic, and can be either within the highway right-of-way or within an independent right-of-way. By definition, they accommodate multiple types of users, most notably, bicyclists and pedestrians and are typically bi-directional. The presence of multi-use paths should not necessarily preclude the provision of parallel on-road bicycle facilities (such as paved shoulders or bicycle lanes). Similarly, a cyclist is not required to use the trail instead of the roadway.



MULTI-USE TRAILS/BOARDWALK

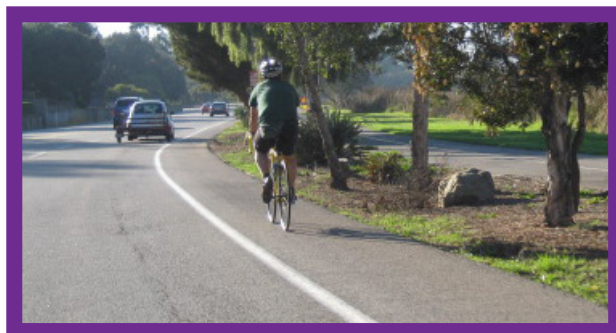
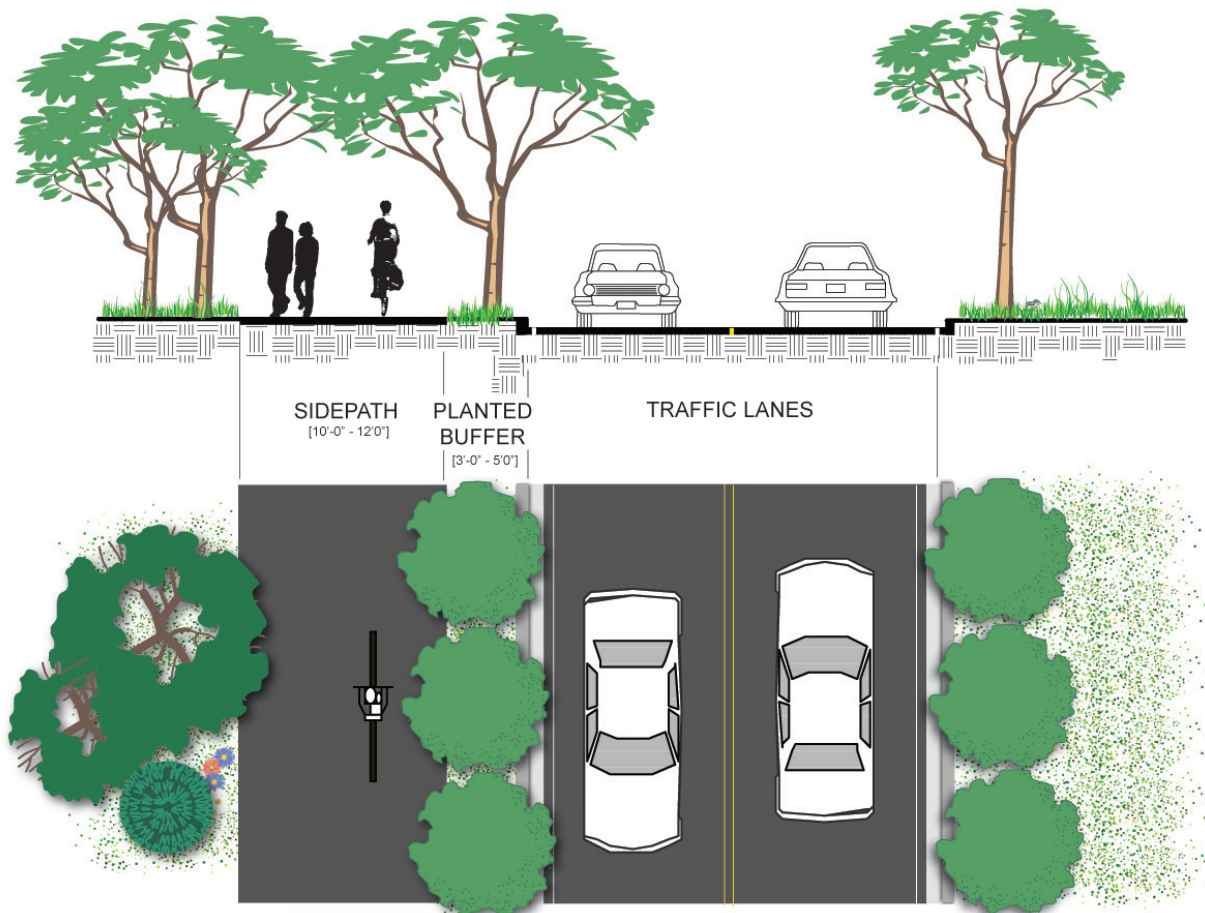
Typically, this plan recommends paved asphalt surface for proposed trails although an alternative type of boardwalk design is required in some areas. Boardwalk or wood surface trails are typically required when crossing wetlands or other poorly drained areas. They are constructed of wooden planks or recycled material planks that form the top layer of the boardwalk. The recycled material has gained popularity in recent years since it lasts much longer than wood, especially in wet conditions. A number of low-impact support systems are also available that reduce the disturbance within wetland areas to the greatest extent possible.



Color corresponds to Map 3.1

MULTI-USE TRAILS/SIDEPATHS

Multi-use paths located within the highway right-of-way are called 'Sidepaths'. Sidepaths provide a comfortable walking space for pedestrians and enables children and recreational bicyclists to ride without the discomfort of riding in a busy street. This configuration works best along roadways with limited driveway crossings and with services primarily located on one side of the roadway, or along a riverfront or other natural feature.



Color corresponds to Map 3.1

PAVED SHOULDERS

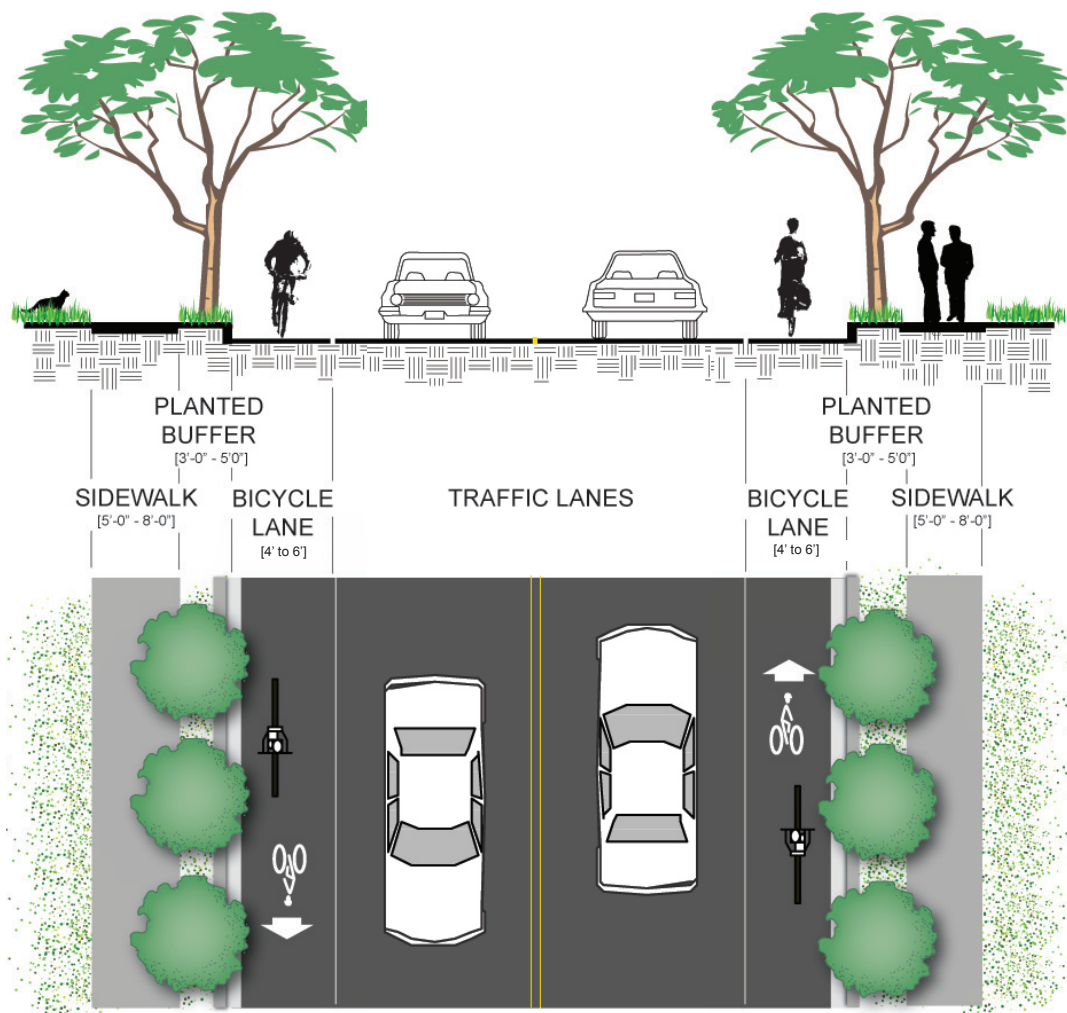
Paved shoulders are the part of a roadway which is contiguous and on the same level as the regularly traveled portion of the roadway. While there is no minimum width in paved shoulders, a minimum width of four feet is preferred for safe and comfortable bicycling. Ideally, paved shoulders should be included in the construction of new roadways and/or the upgrade of existing roadways, especially where there is a need to more safely accommodate bicycles.



Color corresponds to Map 3.1

BICYCLE LANES

A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. The minimum recommended width for a bicycle lane is four feet; five- and six-foot bike lanes are typical for roads with higher speeds or carrying higher levels of traffic. Bicycle lanes can be striped on existing roadways, sometimes with modifications to travel lane widths and configuration. There are few opportunities for bicycle lanes in Swansboro in the short term.



Color corresponds to Map 3.1

EDGE LINE STRIPES

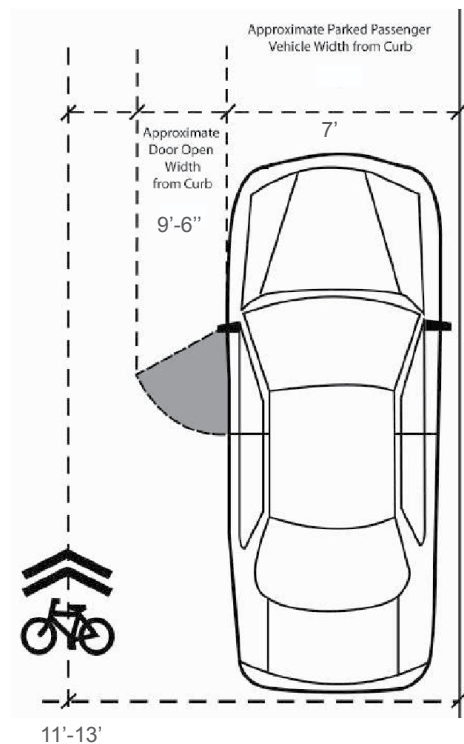
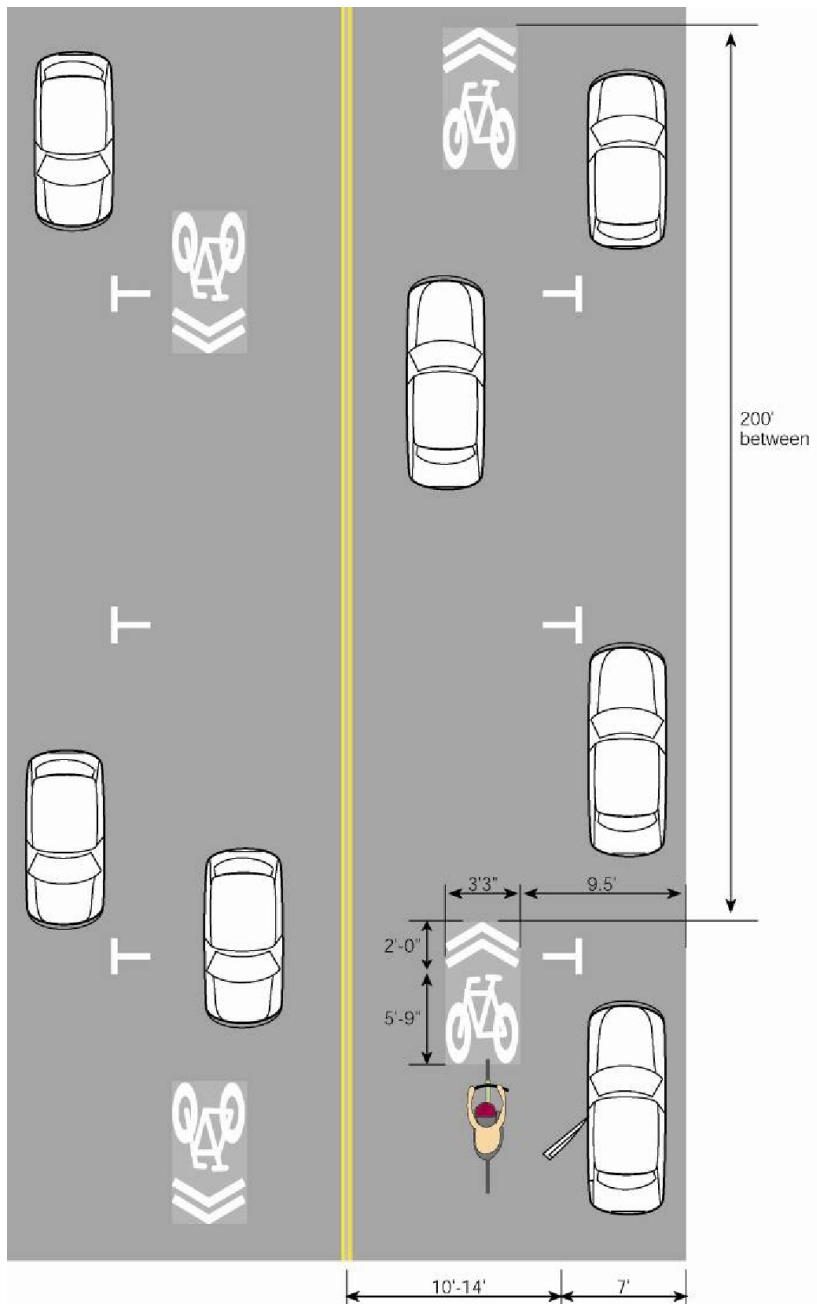
Edgeline stripes can function similar to bicycle lanes, but they are often narrower and do not have bicycle pavement markings. Edgeline stripes could be added to NC 24 in Swansboro by restriping the currently over-sized travel lanes and extra wide center turn lane. Full bicycle lanes are recommended (rather than edgelines) if it is possible to stripe the line four-feet or more from the edge of the gutterpan.



Colors & symbology correspond to Map 3.1

SIGNED BICYCLE ROUTES AND SHARED-LANE MARKINGS

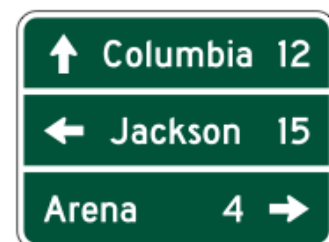
This Plan recommends several strategic locations for signed bicycle routes that connect the overall network in areas with lower traffic speeds and volumes. A more comprehensive wayfinding system is recommended after significant portions of the overall network are complete. Shared-lane markings (a.k.a. Sharrows) are on-street pavement markings that could enhance the signed route locations. With sharrows, motorists more aware of the potential presence of cyclists; they direct cyclists to ride in the proper direction; and they remind cyclists to ride further from parked cars to avoid ‘dooring’ collisions.



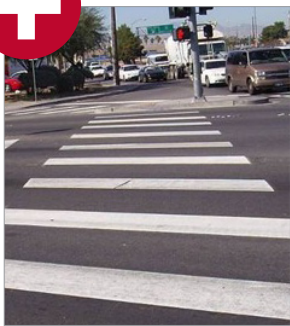
Above & left: Shared lane marking placement standards. Below: Examples of bicycle-related directional Signs (from the 2009 MUTCD)



D1-2b



D1-3a



Colors & symbology correspond to Map 3.1

BIKE/PED CROSSING IMPROVEMENTS

This plan recommends crossing improvements for existing intersections and future trail-roadway crossings. Improvements to existing intersections include high visibility crosswalks, countdown signals, and signage, such as 'No Right on Red When Peds Present'. High visibility crosswalks and signs that alert motorists are also recommended for trail-roadway crossings.

- Signalized crossings may be necessary on trails with significant usage when intersecting with demanding roadways, but the Manual for Uniform Traffic Control Devices (MUTCD) warrants must be met for the installation of a signalized crossing. Consult the MUTCD or NCDOT for signal, sign and light placement.

- The Federal Highway Administration (FHWA) issued an interim approval for the optional use of rectangular rapid flashing beacons (RRFBs, shown at left) as warning beacons supplementing pedestrian crossing or school crossing warning signs at crossings across uncontrolled approaches. An analysis by the Center for Education and Research in Safety found them to have much higher levels of effectiveness in making drivers yield at crosswalks than the standard overhead and side-mount round flashing beacons.



Example of a rectangular rapid flashing beacon (RRFB), used for crossing improvements at uncontrolled approaches.



Colors & symbology correspond to Map 3.1

BICYCLE PARKING

This plan recommends adding bicycle racks to destinations throughout town, including Downtown Swansboro, at parks, schools, the library, post office, grocery stores, and other shopping/employment centers. When choosing bike racks, there are a number of things to keep in mind:

- The rack element (part of the rack that supports the bike) should keep the bike upright by supporting the frame in two places allowing one or both wheels to be secured.
- Install racks so there is enough room between adjacent parked bicycles. If it becomes too difficult for a bicyclist to easily lock their bicycle, they may park it elsewhere and the bicycle capacity is lowered. A row of inverted "U" racks should be installed with 15" minimum between racks.
- Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.
- When possible, racks should be in a covered area protected from the elements.



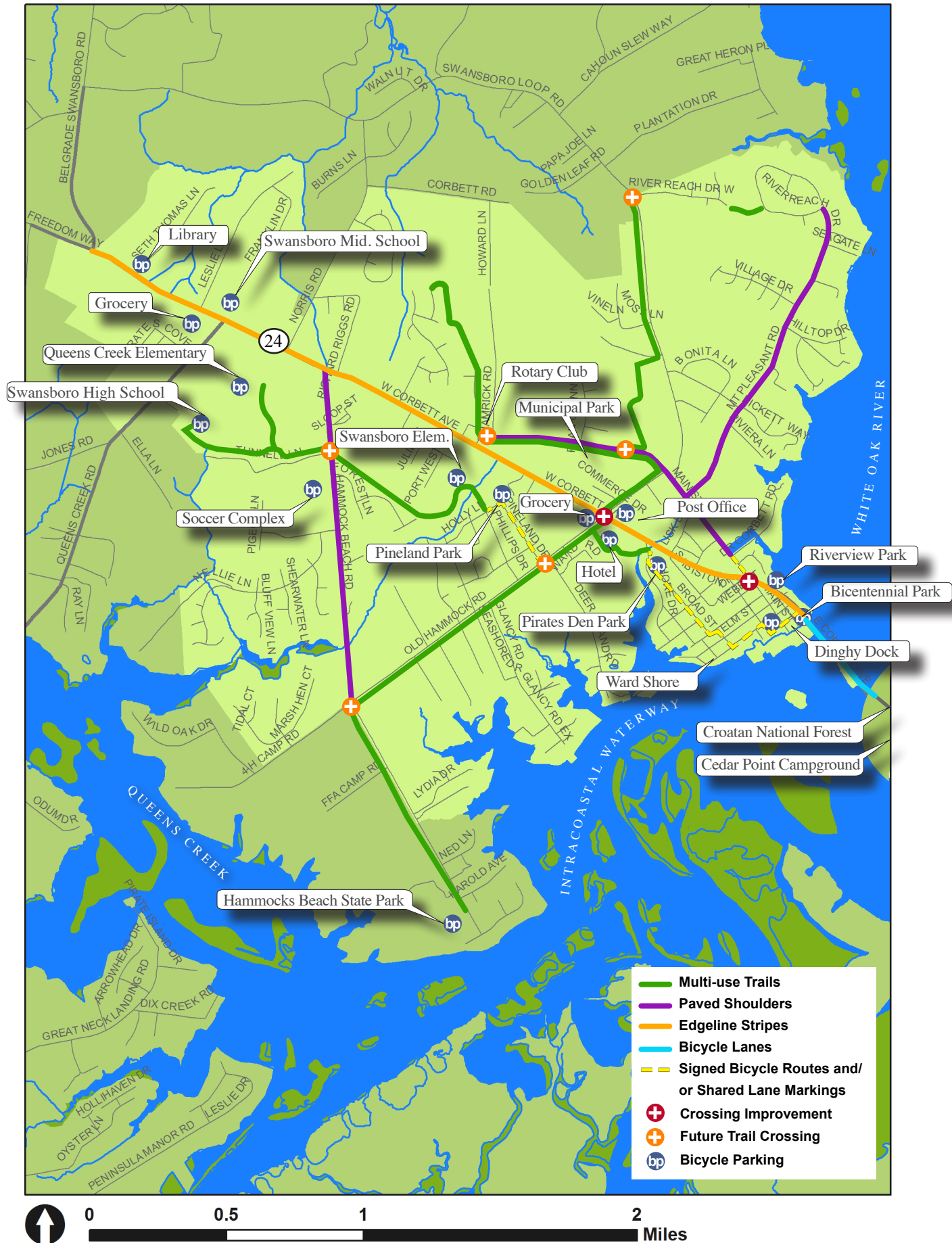
INVERTED "U"
One rack element supports two bikes.



POST AND LOOP
One rack element supports two bikes.



Map 3.1 Recommended Bicycle Network





Map 3.2 Project Cutsheet Key

The following pages offer detailed information for bicycle facility recommendations on roadways and potential trail corridors in Swansboro. The numbers on the map below correspond to the following table and project cutsheets, providing Town staff, NCDOT staff, and related transportation agencies with a clear picture of this plan's recommendations.

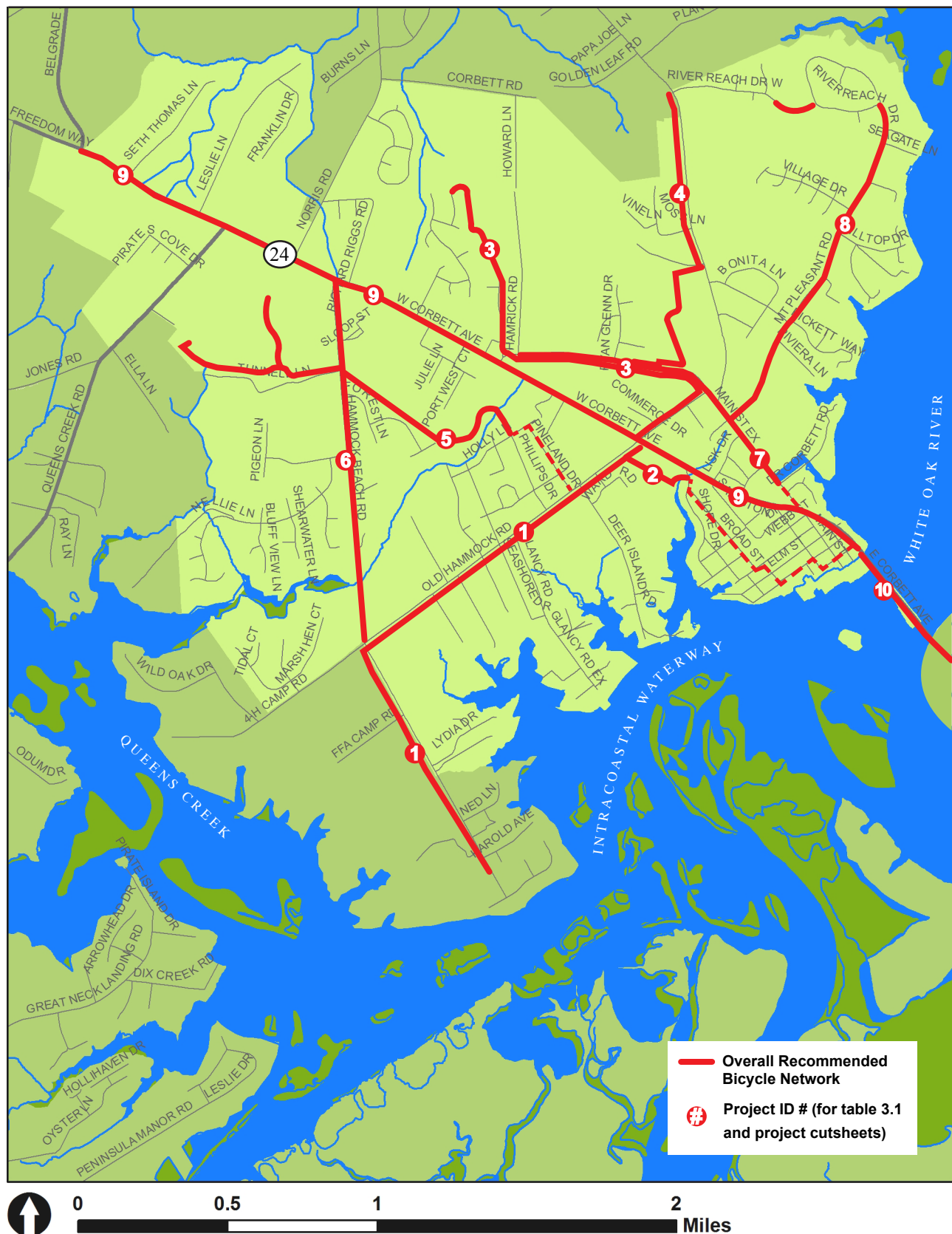


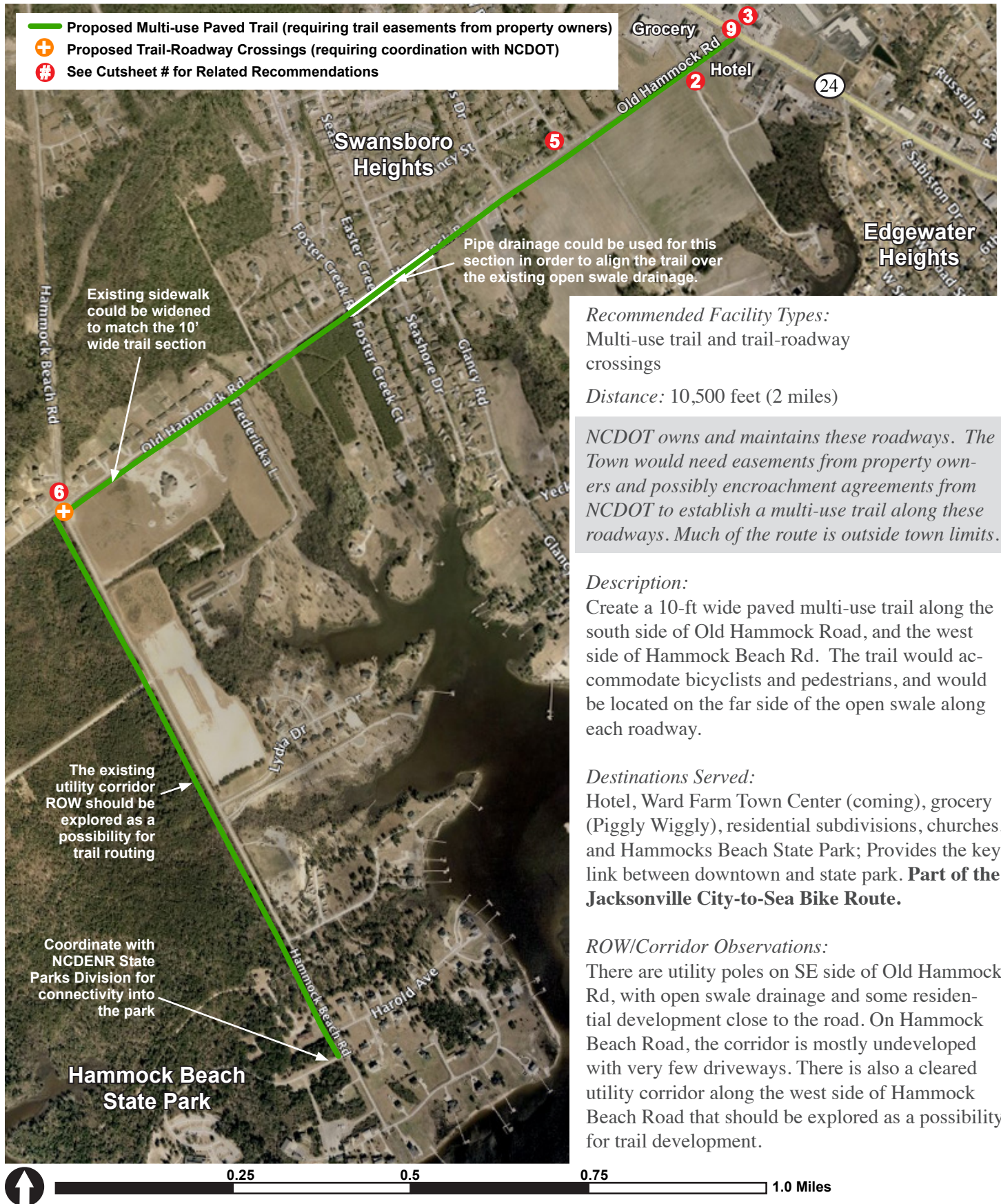


TABLE 3.1 SUMMARY OF RECOMMENDED BICYCLE FACILITIES

ID #	Road/Corridor	Facility Type	Feet	Miles	Description
1	Old Hammock Road and Hammock Beach Road (from NC 24 to Hammock Beach State Park)	Multi-use trail, and trail-roadway crossings	10,500	2.0	Create a 10-ft wide paved multi-use trail along the south side of Old Hammock Road, and the west side of Hammock Beach Rd. The trail would accommodate bicyclists and pedestrians, and would be located on the far side of the open swale along each roadway. See cutsheet for additional site-specific notes.
2	Trail connecting Downtown to Old Hammock Road	Multi-use trail, boardwalk, and signed bicycle route	Signed route: 4,300 Trail: 1,275	Signed route: 0.81 Trail: 0.24	Create a multi-use trail from W. Shore Drive to Old Hammock Road. Signs and/or pavement markings should be used to establish a signed route directing trail users from the downtown waterfront to a trailhead at the north end of W. Shore Drive. See cutsheet for additional site-specific notes.
3	Trails connecting Municipal Park to nearby residential /commercial areas	Multi-use trail, and a trail-roadway crossing	8,600	1.6	Create two 10-ft wide paved multi-use trails from Municipal Park to 1) the intersection of NC 24/Old Hammock Road, and 2) residential areas NW of the park. The trail would accommodate bicyclists and pedestrians.
4	Trail connecting northeastern Swansboro	Multi-Use trail, Trail roadway crossings	6,700	1.3	Create a 10-ft wide paved multi-use trail from Municipal Park to residential areas in NE Swansboro. Trail routing would be along Main Street Ext., then off road heading north (requiring easements), then further north along Swansboro Loop Road, and continuing past the Baseball-Softball Cmplx, ending at River Reach West. The trail would accommodate bicyclists and pedestrians.
5	Trail connecting west and central Swansboro	Multi-use trail, boardwalk, and trail-roadway crossings	Signed route: 3,700 Trail: 8,670	Signed route: 0.7 Trail: 1.6	Add signage and/or pavement markings to establish a signed route along Pineland Drive directing trail users from the proposed trail along Old Hammock Road to a trailhead at the north end of Phillips Drive. Create a multi-use trail using the existing cleared corridor and bridge from Phillips Drive to Swansboro Elementary School. Continue the trail to the Swansboro Soccer Complex, and possibly to Swansboro High School. See cutsheet for additional site-specific notes.
6	Hammock Beach Road (from W. Corbett Ave/ NC 24 to Old Hammock Road)	Paved shoulders	6,438	1.2	The Town requests that NCDOT add paved shoulders as wide as practicable along Hammock Beach Road, from NC 24 to Old Hammock Rd, while retaining the existing travel lane widths.
7	Main Street Ext.	Paved shoulders	6,480	1.2	The Town requests that NCDOT add paved shoulders as wide as practicable along most of Main Street Ext., while retaining the existing travel lane widths. See cutsheet for additional site-specific notes.
8	Mt Pleasant Road	Paved shoulders	5,869	1.1	The Town requests that NCDOT add paved shoulders as wide as practicable from Main Street Ext. to River Reach Drive, while retaining the existing travel lane widths.
9	W. Corbett Ave / NC 24 (from Belgrade-Swansboro Road to White Oak River Bridge)	Edgeline Stripes or Bicycle Lanes, crosswalks, & pedestrian countdown signals	15,700	3.0	At a minimum, the Town requests that NCDOT paint crosswalks at the intersections of NC 24/Old Hammock Rd, and NC 24/Main St. Ext.; if possible, also include pedestrian countdown signals. This section of NC 24 in Swansboro could also better accommodate bicyclists by restriping for edgeline stripes (or bicycle lanes if width allows). For example the lane widths could become: 4' 11' 11' 12.5' 11' 11' 4'
10	White Oak River Bridge (NC 24)	Bicycle Lanes (or Edgeline Stripes)	2,460	0.5	The existing travel lanes could be restriped to accommodate either bicycle lanes or edgeline stripes across the bridge. This would be in-line with recommendations from the Croatan Regional Bicycle Plan, which recognizes this bridge as a key connection for bicyclists in the region. The East Coast Greenway, a multi-state trail system, also recognizes this bridge as part of it's eastern route through North Carolina.



1 TRAIL ALONG OLD HAMMOCK ROAD AND HAMMOCK BEACH ROAD (from NC 24 to Hammock Beach State Park entrance)



*Recommended Facility Types:*

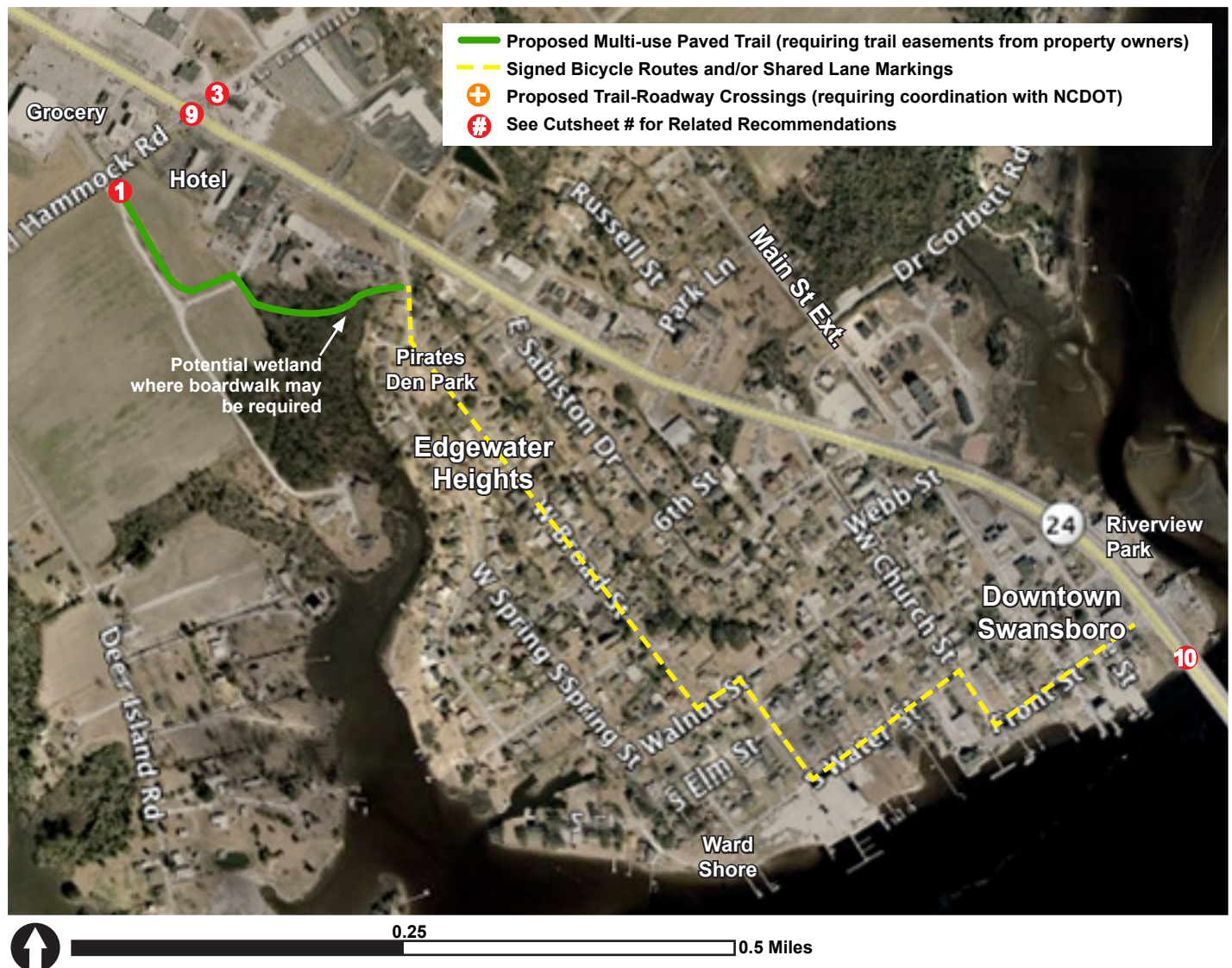
Multi-use trail, boardwalk, and signed bicycle route

TRAIL CONNECTING DOWNTOWN
TO OLD HAMMOCK ROAD **2***Signed Route Distance:* 4,300 feet (0.81 miles)*Trail & Boardwalk Distance:* 1,275 feet (0.24 miles)*Total Distance:* 5,575 feet (1.05 miles)*The Town would need easements from property owners to establish the multi-use trail.*

Description: Create a multi-use trail from W. Shore Drive to Old Hammock Road. Signs and/or pavement markings should be used to establish a signed route directing trail users from the downtown waterfront to a trailhead at the north end of W. Shore Drive.

Destinations Served: Downtown Swansboro, Historic Waterfront, Riverview Park, Hotel, Ward Farm Town Center (coming), grocery (Piggly Wiggly); serves as a key link between Downtown Swansboro and Hammock Beach State Park. This trail would also help link downtown to Municipal Park and the northern half of the Town (via the intersection of NC 24 and Old Hammock Rd).

ROW/Corridor Observations: The downtown streets in this section are low-speed and low-volume, allowing for a relatively safe bicycling environment without the need for any infrastructure improvements. Small sections of boardwalk would be needed where the trail crosses wetland areas.





3 TRAILS CONNECTING TO MUNICIPAL PARK (and nearby residential and commercial areas)

Recommended Facility Type:

Multi-use trail and a trail-roadway crossing

Distance (Feet): 8,600 feet (1.6 miles)

NCDOT owns and maintains Main Street Ext. The Town would need easements from property owners and possibly encroachment agreements from NCDOT to establish the multi-use trail along these corridors and roadways.

Description:

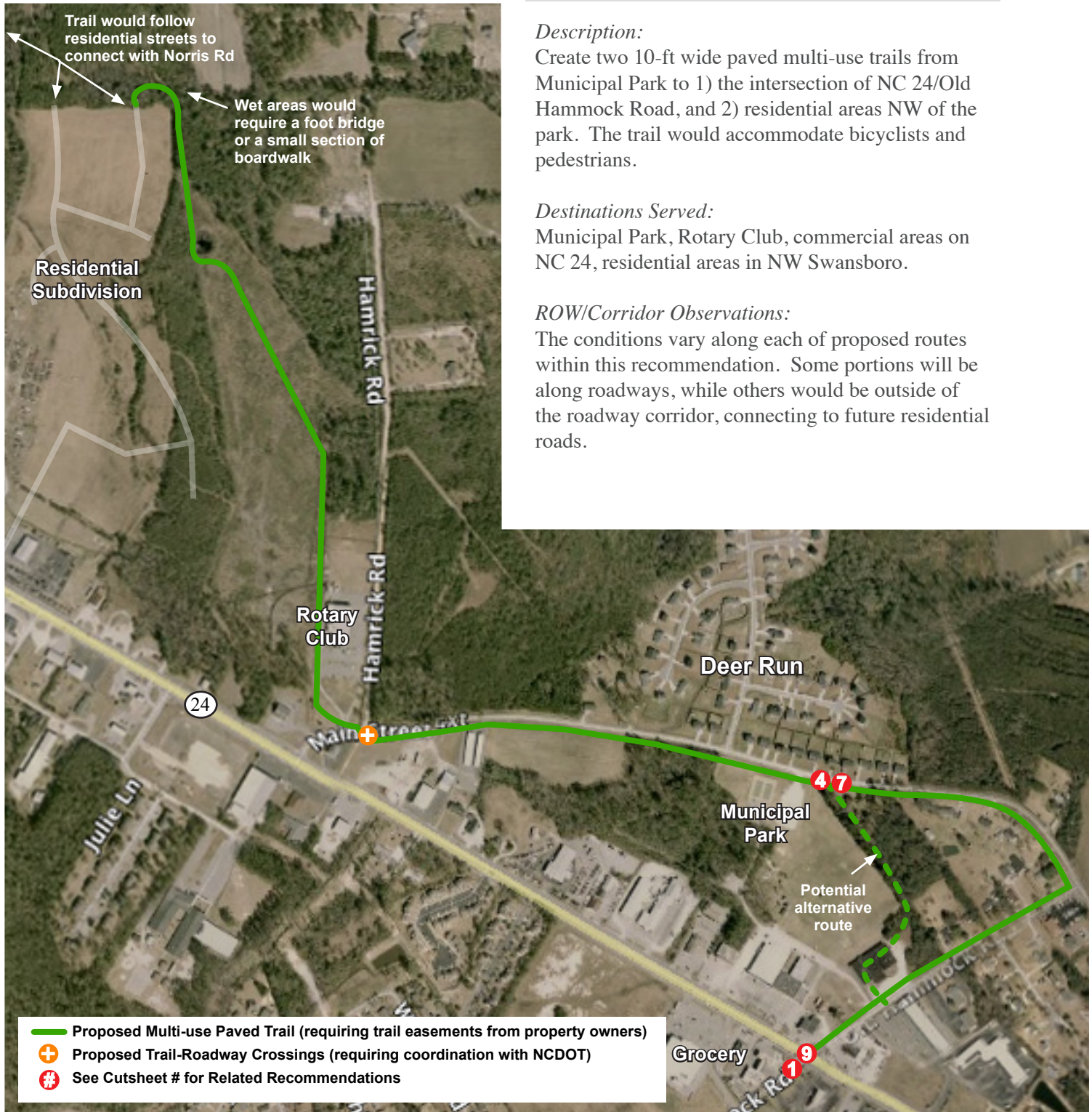
Create two 10-ft wide paved multi-use trails from Municipal Park to 1) the intersection of NC 24/Old Hammock Road, and 2) residential areas NW of the park. The trail would accommodate bicyclists and pedestrians.

Destinations Served:

Municipal Park, Rotary Club, commercial areas on NC 24, residential areas in NW Swansboro.

ROW/Corridor Observations:

The conditions vary along each of proposed routes within this recommendation. Some portions will be along roadways, while others would be outside of the roadway corridor, connecting to future residential roads.





Recommended Facility
Type: Multi-use trail and
trail-roadway crossings

Distance 6,700 feet
(1.3 miles)

NCDOT owns and maintains the roadway crossing locations along this proposed trail. The Town would need easements from property owners to establish a multi-use trail along these corridors and roadways. Much of the route is outside town limits.

Description:

Create a 10-ft wide paved multi-use trail from Municipal Park to residential areas in NE Swansboro. Trail routing would be along Main Street Ext., then off road heading north (requiring easements), then further north along Swansboro Loop Road, and continuing past the Baseball-Softball Complex, ending at River Reach West. The trail would accommodate bicyclists and pedestrians. **It is also part of the Swansboro Bicentennial Bicycle Trail and the Jacksonville City-to-the-Sea Bicycle Route.**

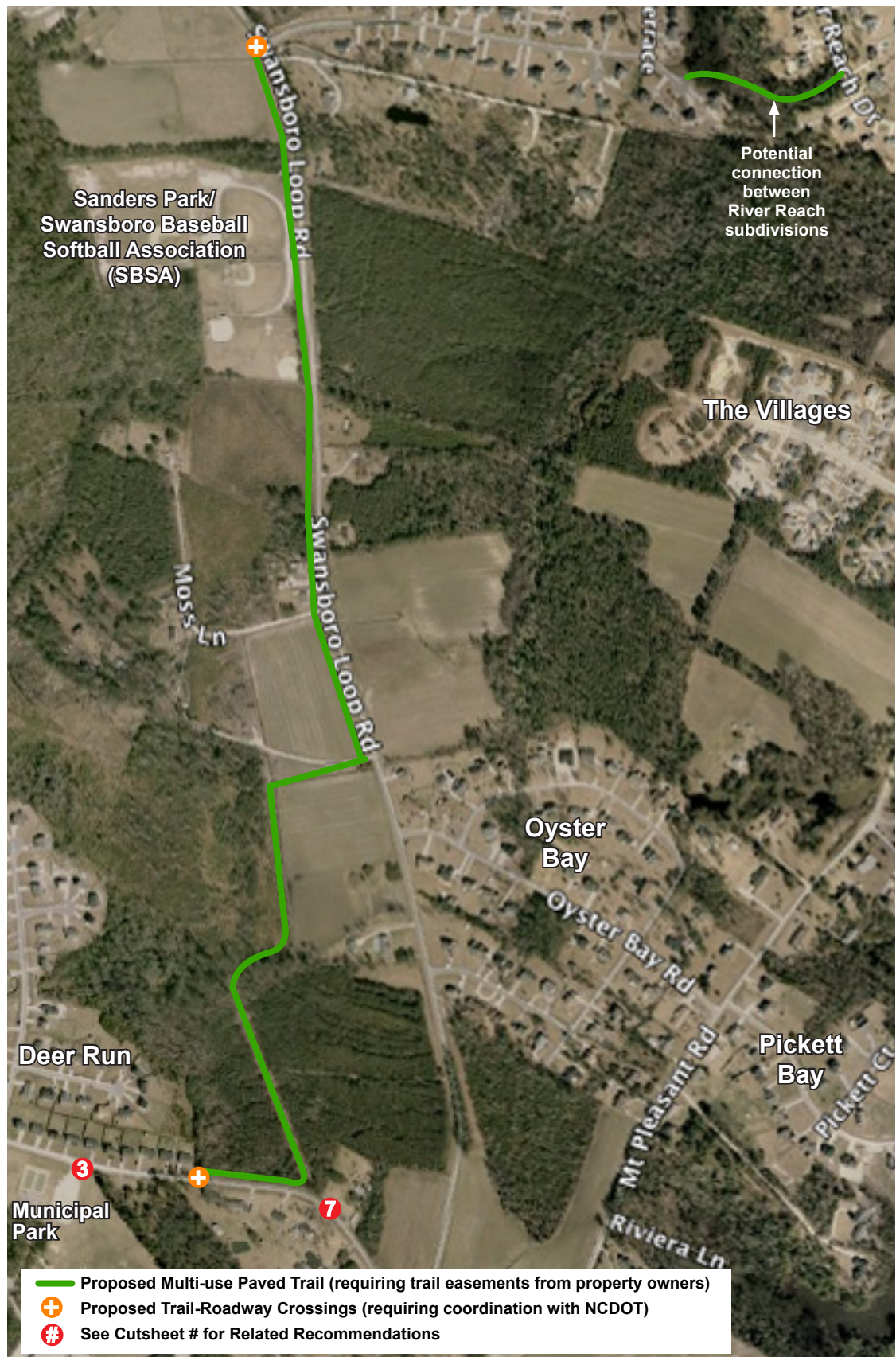
Destinations Served:

Municipal Park and residential areas in NE Swansboro.

ROW/Corridor Observations: Main Street Ext. and Swansboro Loop Road have constraints for creating a multi-use trail, most notably private residential property and open swale drainage.

TRAIL CONNECTING NORTHEASTERN SWANSBORO & MUNICIPAL PARK 4

(and proposed trail network via Municipal Park)



0.25

0.5 Miles



5 TRAIL CONNECTING WEST AND CENTRAL SWANSBORO

Recommended Facility Type: Multi-use trail, boardwalk, and trail-roadway crossings

Signed Route Distance: 3,700 feet (0.7 miles)

Trail Distance: 8,670 feet (1.6 miles)

Total Distance: 12,370 feet (2.4 miles)

NCDOT owns and maintains the roadway crossing locations at Hammocks Beach Road and at Old Hammock Road. The Town would need easements from property owners and agreements with public schools to establish the multi-use trail.

Description: Signage and/or pavement markings should be used to establish a signed route along Pineland Drive directing trail users from the proposed trail along Old Hammock Road to a trailhead at the north end of Phillips Drive. Create a multi-use trail using the existing cleared corridor and bridge from Phillips Drive to Swansboro Elementary School. Continue the trail to the Swansboro Soccer Complex, then along Tunnel Lane to Swansboro High School. Also consider a connector trail to the Forestbrook subdivision. See cutsheet for additional site-specific notes.

Destinations Served: Swansboro High School, Queens Creek Elementary School, Swansboro Elementary School, Pineland Park, Swansboro Soccer Complex, residential areas, and the future trail along Old Hammock Road.

ROW/Corridor Observations: Pineland Drive and Holly Lane are low-speed and low-volume residential roads, allowing for a relatively safe bicycling environment with little to no infrastructure improvements. According to public input, the trail corridor from Holly Lane to the Swansboro Elementary is already used by students for walking to school.





Recommended Facility Type: Paved Shoulders

Distance: 6,438 feet (1.2 miles)

NCDOT owned and maintained.

Description: The Town requests that NCDOT add paved shoulders as wide as practicable along Hammock Beach Road, from NC 24 to Old Hammock Rd, while retaining the existing travel lane widths. In the long term, the preferred cross section would have curb & gutter, bicycle lanes and a multi-use path. Also, see image below for an example of piped drainage that could allow for more cost effective placement of multi-use paths in roadway corridors.

Destinations Served: Residential subdivisions, apartments, Swansboro Soccer Complex.

ROW/Corridor Observations:

Drainage ditches are off-set from the road enough to allow for room for some paved shoulder -- however, this may lead to steeper slopes to the ditches.

Below: Existing conditions on Hammock Beach Road

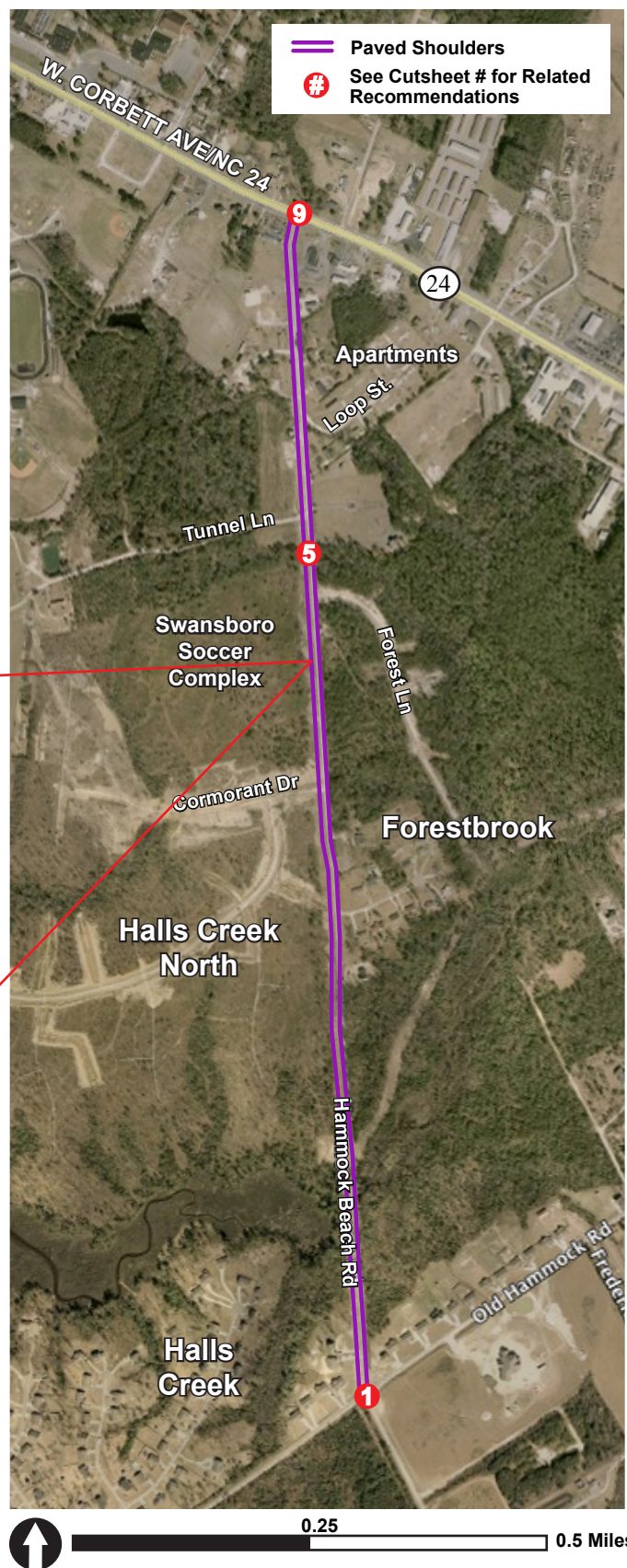


Above: Existing conditions on a state road in Burgaw, NC, where the drainage ditch was piped and covered to create a shallow grass swale. The elimination of the steeper and wider areas used for the ditches tends to free up some right-of-way for pathway construction. Also, eliminating the curb and gutter and some of the associated grading and elevation issues tends to significantly reduce the cost.

PAVED SHOULDERS ON HAMMOCK BEACH ROAD

6

(from W. Corbett Ave/ NC 24 to Old Hammock)





7 PAVED SHOULDERS ON MAIN STREET EXT.

(entire length, from NC 24 to NC 24)

Recommended Facility Type: Paved Shoulders

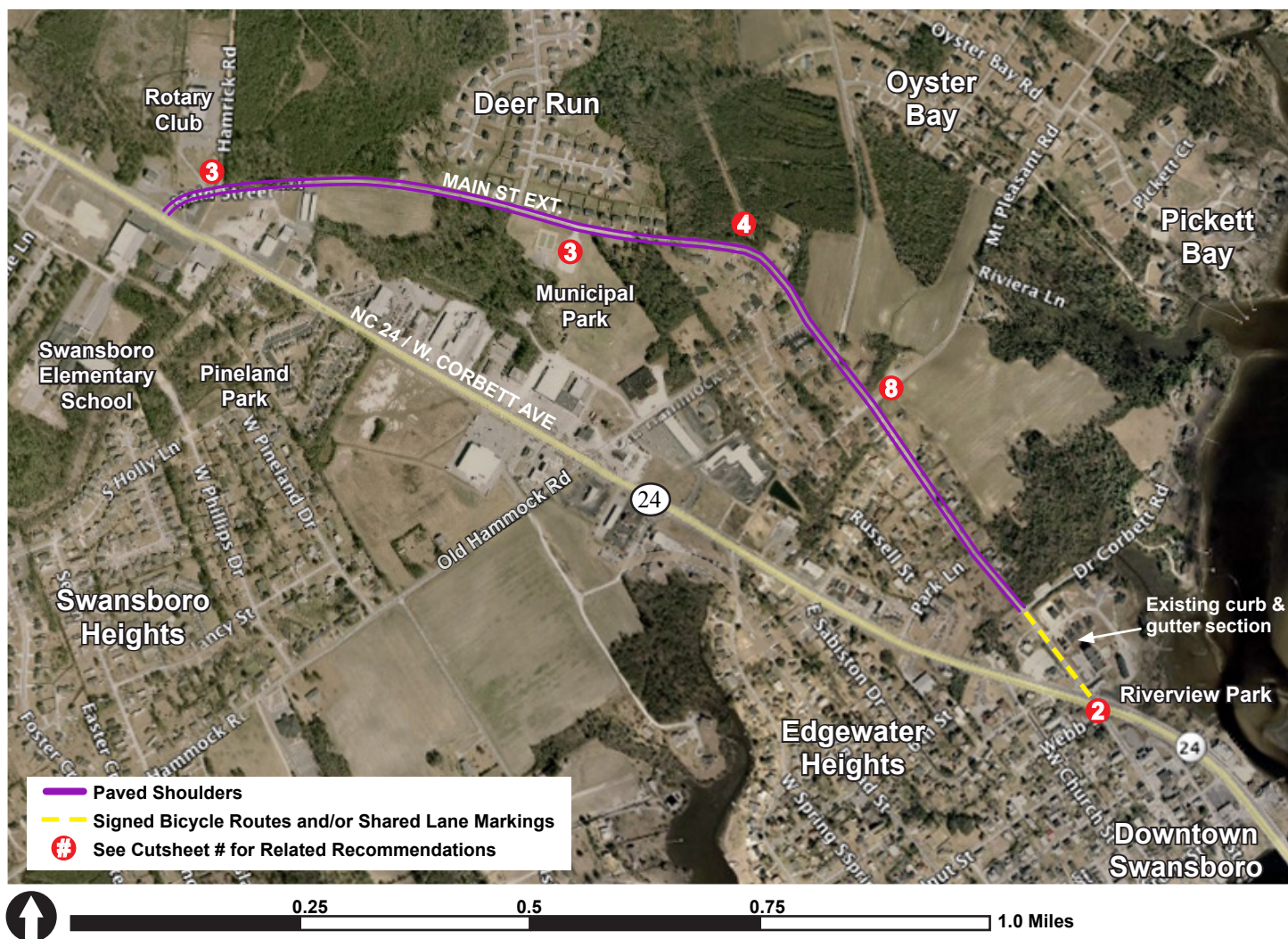
Distance: 6,480 feet (1.2 miles)

NCDOT owned and maintained.

Description: The Town requests that NCDOT add paved shoulders as wide as practicable along most of Main Street Ext., while retaining the existing travel lane widths. In the long term, the preferred cross section would have curb & gutter, bicycle lanes and a multi-use path (see image on Cutsheet 6 for an example of piped drainage that could allow for more cost effective placement of multi-use paths in roadway corridors). This would be in-line with recommendations from the **Croatan Regional Bicycle Plan, which recognizes parts of this road as a key connection for bicyclists in the region.** Also part of the **Swansboro Bicentennial Bicycle Trail.**

Destinations Served: Riverview Park, Municipal Park, Rotary Club, and residential areas. Would also serve as a connector for residential areas along Mt. Pleasant Road to Downtown Swansboro.

ROW/Corridor Observations: Paved shoulders will not be possible on Main Street Ext. from Dr. Corbett Rd, south to NC 24, due to existing curb and gutter. Bicycle signage and/or shared lane markings could be considered for that section.





8

PAVED SHOULDERS ON MT. PLEASANT ROAD

(from Main Street Ext. to River Reach Drive)

Recommended Facility Type:

Paved Shoulders

Distance: 5,869 feet (1.1 miles)

NCDOT owned and maintained.

Description:

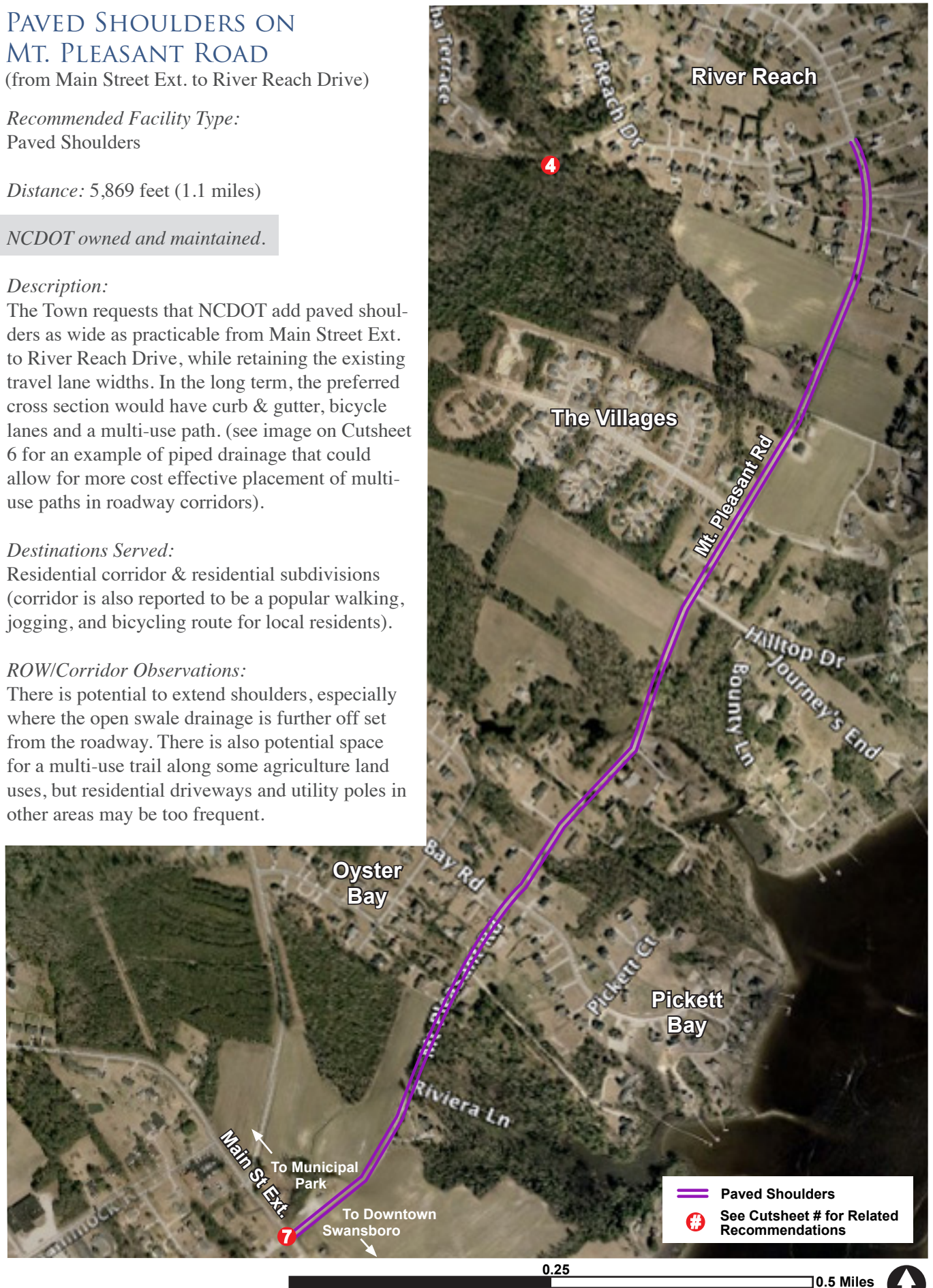
The Town requests that NCDOT add paved shoulders as wide as practicable from Main Street Ext. to River Reach Drive, while retaining the existing travel lane widths. In the long term, the preferred cross section would have curb & gutter, bicycle lanes and a multi-use path. (see image on Cutsheet 6 for an example of piped drainage that could allow for more cost effective placement of multi-use paths in roadway corridors).

Destinations Served:

Residential corridor & residential subdivisions (corridor is also reported to be a popular walking, jogging, and bicycling route for local residents).

ROW/Corridor Observations:

There is potential to extend shoulders, especially where the open swale drainage is further off set from the roadway. There is also potential space for a multi-use trail along some agriculture land uses, but residential driveways and utility poles in other areas may be too frequent.





9 EDGELINE STRIPES & CROSSING IMPROVEMENTS ON W. CORBETT AVE/NC 24 (from Belgrade-Swansboro Road to the White Oak River Bridge)

Recommended Facility Types: Edgeline stripes (or bicycle lanes, if width allows), crosswalks, and pedestrian countdown signals.

Distance: 15,700 feet (3 miles)

NCDOT owned and maintained.

Description: At a minimum, the Town requests that NCDOT paint crosswalks at the intersections of NC 24/Old Hammock Rd, and NC 24/Main St. Ext.; if possible, also include pedestrian countdown signals. This section of NC 24 in Swansboro could also better accommodate bicyclists by restriping for edgeline stripes or bicycle lanes. For example, the lane widths could become: 4' | 11' | 11' | 12.5' | 11' | 11' | 4'.

This would be in-line with recommendations from the **Croatan Regional Bicycle Plan**, which recognizes parts of this road as a **key connection for bicyclists in the region**. It is also part of the **Swansboro Bicentennial Bicycle Trail** and the **Jacksonville City-to-the-Sea Bicycle Route**.

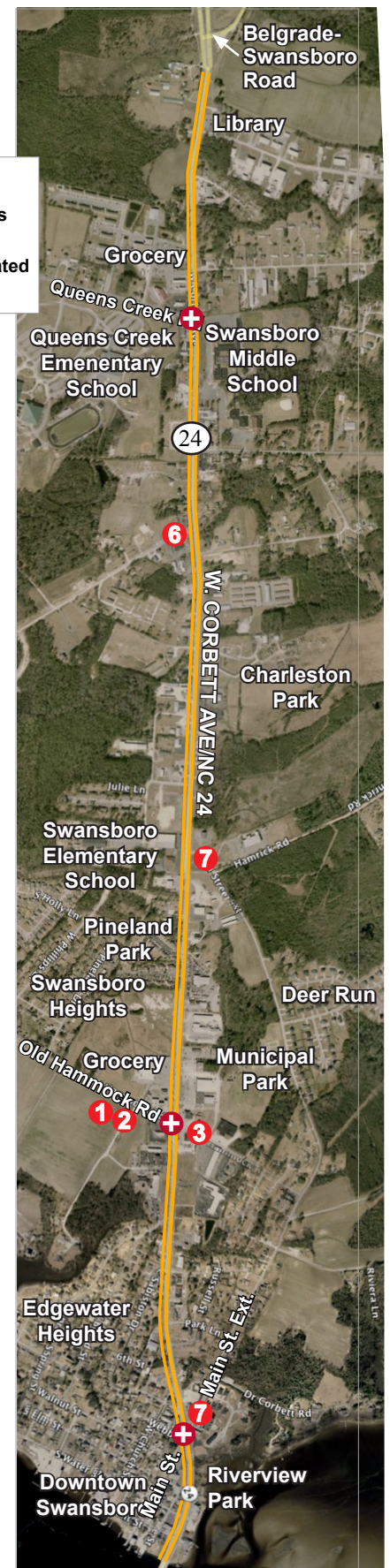
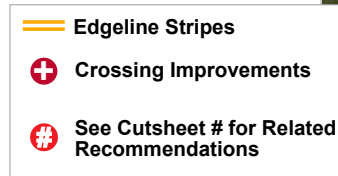
Destinations Served: Commercial areas and businesses along NC 24, Downtown Swansboro, grocery stores, and schools. Note that seven bike/ped crashes have been recorded along NC 24.

ROW/Corridor Observations:

Building a multi-use trail along NC 24 in Swansboro is not recommended due to the high frequency of at driveways and curb cuts, presenting many potential conflict points for trail users. However, the extra wide center turn lane (16.5') offers an opportunity for restriping lane widths to better accommodate bicyclists. The narrower median provides an additional benefit for motorized users due to the improved off-sets providing better views for opposing left-turning vehicles.

Note:

In addition to the crossings described on the facing page, the Town is also seeking roadway crossing improvements and pedestrian signal relocations at NC 24 and Queen's Creek Road, between Swansboro Middle School and Queen's Creek Elementary.

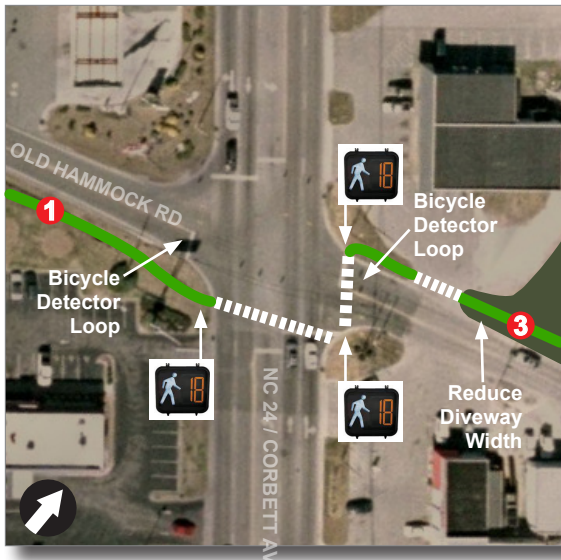


CROSSING IMPROVEMENTS ON
W. CORBETT AVE/NC 24

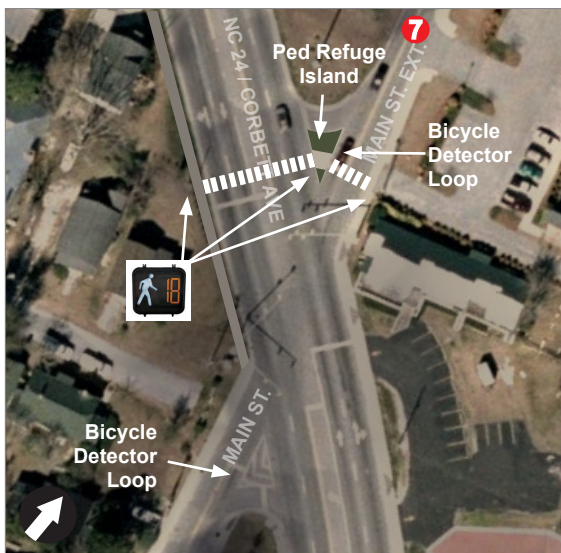
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(Continued from previous page)

NC 24 & Old Hammock Road



NC 24 & Main Street Ext.



NC 24 & Main Street Ext.



NC 24 & OLD HAMMOCK ROAD:

This proposed crossing improvement includes painting crosswalks, installing pedestrian countdown signals and bicycle detector loops. Stop lines would also need to be set back from the crosswalks. Where possible, reduce driveway widths to increase safety for trail users crossing driveways.

NC 24 & MAIN STREET (ALTERNATIVE 1):

For alternative one, the proposed crossing improvement includes creating a pedestrian refuge island, and installing pedestrian countdown signals and bicycle detector loops. Stop lines would also need to be set back from the crosswalks. The drawback of this alternative is that it would require pedestrians to wait in the crossing island between signal phases.

NC 24 & MAIN STREET (ALTERNATIVE 2):

For alternative two, the proposed crosswalk is aligned diagonally due to the intersection's unique configuration and the location of existing sidewalk on Main Street Ext. The diagonal alignment of the crosswalk requires traffic to stop in all directions during the crossing phase. Since there is also interest in preserving the regular flow of traffic on NC 24, the green phase for Main St. could be substituted for the crossing phase when pedestrians are present (requiring a pedestrian-activated signal).



Recommended Facility Type:
Bicycle Lanes (or Edgeline Stripes)

BICYCLE LANES (OR EDGELINE STRIPES) ON WHITE OAK RIVER BRIDGE

10

Distance 2,460 feet (0.5 miles)

NCDOT owned and maintained

Description: The existing travel lanes could be restriped to accommodate either bicycle lanes or edgeline stripes across the bridge. This would be in-line with recommendations from the **Croatan Regional Bicycle Plan**, which recognizes this bridge as a key connection for bicyclists in the region.

Destinations Served: Essential regional connection for bicyclists, connecting Swansboro with Cedar Point and Croatan National Forest. **Part of the Swansboro Bicentennial Bicycle Trail. The East Coast Greenway, a multi-state trail system, also recognizes this bridge as part of it's eastern route through North Carolina.**

ROW/Corridor Observations: The painted median of the bridge offers some flexibility for restriping bicycle lanes or edgeline stripes. One pedestrian crash has been recorded on NC 24 near the waterfront area, and one bicycle crash was recorded on the White Oak River Bridge.

Right: The space for the existing striped median could be reallocated to the shoulders.



0.25

0.5 Miles



TABLE 3.2 PLANNING LEVEL BUDGET ESTIMATES

ID# (& Facility Type)	Implementation Team	Road/Corridor	Facility Length (Feet)	\$52/LF multi-use trail	\$300/Sign and \$155/ Sharrow Marking	\$75/LF Adding Paved Shoulder	\$2.5/ LF Lane Restripe (specific to NC 24)	\$10K/ NC 24 X-ing Improve-ments	Totals
1 (Trail)	Town (and potentially State Parks)	Old Hammock Road and Hammock Beach Road (from NC 24 to Hammock Beach State Park entrance)	10,500	\$546,000	-	-	-	-	\$546,000
2 (Signed Route)	Town	Route connecting waterfront to Pirates Den Park	4,300	-	\$6,740 (8 signs & 28 markings)	-	-	-	\$6,740
2 (Trail)	Town, Private Development	Trail connecting Pirates Den Park to Old Hammock Road	1,275	\$66,300	-	-	-	-	\$66,300
3 (Trail)	Town	Trails connecting Municipal Park to nearby residential and commercial areas.	8,600	\$447,200	-	-	-	-	\$447,200
4 (Trail)	Town	Trail connecting northeastern Swansboro	6,700	\$348,400	-	-	-	-	\$348,400
5 (Signed Route)	Town	Route connecting Old Hammock Rd to Pineland Park	3,700	-	\$2,150 (2 signs & 10 markings)	-	-	-	\$2,150
5 (Trail)	Town, Schools	Trail connecting Pineland Park to 3 Schools & Soccer Complex	8,670	\$450,840	-	-	-	-	\$450,840
6 (Paved Shoulders)	NCDOT	Hammock Beach Road (from W. Corbett Ave/ NC 24 to Old Hammock Road)	6,438	-	-	\$482,850	-	-	\$482,850
7 (Paved Shoulders)	NCDOT	Main Street Ext.	6,480	-	-	\$486,000	-	-	\$486,000
8 (Paved Shoulders)	NCDOT	Mt Pleasant Road	5,869	-	-	\$440,175	-	-	\$440,175
9 (Edgeline/ Bike Lane)	NCDOT	W. Corbett Ave / NC 24 (from Belgrade-Swansboro Road to White Oak River Bridge)	15,700	-	-	-	\$39,250	\$20,000	\$59,250
10 (Edgeline/ Bike Lane)	NCDOT	White Oak River Bridge (NC 24)	2,460	-	-	-	\$6,150	-	\$6,150
Bicycle racks	Town, Private Development	Throughout town (see Map 3.1)	15 Racks	-	-	-	-	-	\$3,000

Total for All Implementation Team Members \$3,345,055



BUDGET COST ESTIMATE SOURCES AND PER COST BREAKDOWN

The multi-use trail cost of \$52/LF is based on all-inclusive 2010 project examples supplied by the Town of Emerald Isle. Budget estimates for paved shoulders, signed routes, and lane restripe ‘per’ costs were provided by NCDOT. All other ‘per’ cost figures are based on estimates from the Pedestrian and Bicycle Information Center (PBIC) of Chapel Hill, North Carolina.

Budget estimates for the NC 24 intersection crossing improvements include \$4.80/LF for high visibility thermoplastic x-walks; \$800/pedestrian signal; and \$1,500/curb ramp retrofit. If a median island is used with raised curbs at NC 24 and Main Street, costs for that intersection improvement would increase.



4. IMPLEMENTATION

Overview

The three main ways to improve bicycling conditions in Swansboro are through facility construction, program implementation and policy enforcement. This chapter outlines the implementation priorities, key partners in implementation, facility development methods, and over 30 specific action steps and implementation resources.

Implementation Priorities

The following action steps are integral to achieving the goals and vision of this Plan. As guiding recommendations and the clearest representation of specific items to accomplish, they should be referred to often. Table 4.1 summarizes these action steps, along with all other recommendations made throughout the plan, and defines recommended actions, responsible agency, resources, keys to success and listing of stakeholders. Finally, this plan's appendices provide a variety of in-depth resources for carrying out these tasks.

1. ADOPT THIS PLAN

The first action to take place must be for the Town of Swansboro to adopt this plan. By doing so, Swansboro will be better able to shape transportation and development decisions so they fit with the recommendations of this plan. Most importantly, having an adopted plan is helpful in securing funding from state, federal, and private agencies because it demonstrates that there was an intentional and public process involved in designing the projects for which funding is requested. Adopting this plan does not commit the Town to dedicate or allocate funds, but rather indicates the intent of the Town to implement this plan over time.

2. DESIGNATE STAFF

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 town staff from the Planning Department, Public Works Department, and the Parks and Recreation Department oversee the day-to-day implementation of this plan. In many municipalities this task is covered by a full-time bicycle and pedestrian coordinator, but in smaller towns, such as Swansboro, it makes more sense to fold these responsibilities into current staff responsibilities.

3. CREATE A BICYCLE AND PEDESTRIAN COORDINATING COMMITTEE

The Town Board's current goals include: "Significantly improve the Town's comprehensive planning focus, capacity, and tools." A proposed implementation measure under this goal includes "improving community planning for transportation", which could be accomplished in several fashions. One primary method of support is for the Town of Swansboro to create a Transportation Advisory Board (TAB) and a Bicycle and Pedestrian Coordinating Committee, composed of representatives [perhaps 2 each] from the TAB, the Parks and Recreation Board, and the Planning Board. The meeting schedule for the TAB could be modeled after the schedule for the existing Parks and Recreation Board, and the Bicycle and Pedestrian Coordinating Committee could meet on a schedule (to be determined) that allows them to support and oversee the implementation of programs and projects included in this plan.



Even though this is a bicycle plan, the needs and objectives of bicycle and pedestrian advocates are closely related, and stand to benefit mutually from their combined efforts. Bicycle facilities and programs relate to the overall quality of life in the community, have a transportation function, and also have recreational uses. Local advocacy groups such as a Bicycle and Pedestrian Coordinating Committee are beneficial resources for promoting safety, providing feedback on opportunities and obstacles within the bicycle and pedestrian system, and coordinating events and outreach campaigns. Advocacy groups also play a critical role in encouraging and evaluating the progress of overall plan implementation.

4. BEGIN SEMIANNUAL MEETING WITH KEY PROJECT PARTNERS

Coordination between key project partners will establish a system of checks and balances, provide a level of accountability, and ensure that recommendations are implemented. This meeting should be organized by the Town Manager, and should include representatives from the Organizational Chart shown on page 4-3. The purpose of the meeting should be to ensure that this Plan's bicycle recommendations are integrated with other transportation projects, as well as long-range and current planning, economic development strategies, and parks and recreation planning. Attendees should work together to identify and secure funding necessary to immediately begin the first year's work, and start working on a funding strategy that will allow the Town to incrementally complete each of the suggested physical improvements, policy changes and programs over a 5-10 year period. A brief progress benchmark report should be a product of these meetings, and goals for the year should be reconfirmed by participants. The meetings could also feature special training sessions on bicycle, pedestrian, and trail issues, preferably led by local experts, such as a League of American Bicyclists (LAB) instructor.

5. SEEK MULTIPLE FUNDING SOURCES AND FACILITY DEVELOPMENT OPTIONS

Multiple approaches should be taken to support bicycle and trail facility development and programming. It is important to secure funding for priorities, but also to develop a long-term strategy to allow continued development of the overall network. A priority action is to immediately evaluate the recommendations against transportation projects that are currently programmed in the Transportation Improvement Program (TIP) to see where projects overlap, complement, or conflict with each other. The Town should also seek to add proposed projects (recommended paved shoulders, for example) during TIP updates.

Capital and local funds for bicycle facilities and trail construction should be set aside every year, even if only for a small amount (small amounts of local funding can be matched to outside funding sources). A variety of local, state, and federal options and sources exist and should be pursued. See page 4-4 for top funding recommendations. Other methods of trail and bicycle facility development that are efficient and cost-effective are described in the 'Facility Development Methods' section of this chapter.

6. IMPROVE BICYCLE POLICIES

While Swansboro's Comprehensive Transportation Plan and Unified Development Ordinance (UDO) address non-motorized transportation in a number of important ways, some policy updates are recommended to ensure future development provides pedestrian and bicycle facilities and improves bicycle/pedestrian friendliness. A table of UDO policies and comments regarding bicycle policy can be found in Chapter 2. See page 4-4 for top policy recommendations.

7. DEVELOP TRAIL CONSTRUCTION DOCUMENTS AND SIGNAGE PLANS

Develop trail construction documents and signage plans, using the design guidelines of this plan and the project cut-sheets as starting points. Specifically, the resources listed on page A-3 will be very useful in drafting such documents. The Bicycle and Pedestrian Coordinating Committee and the related advisory boards should have an opportunity to comment on the design of new facilities.

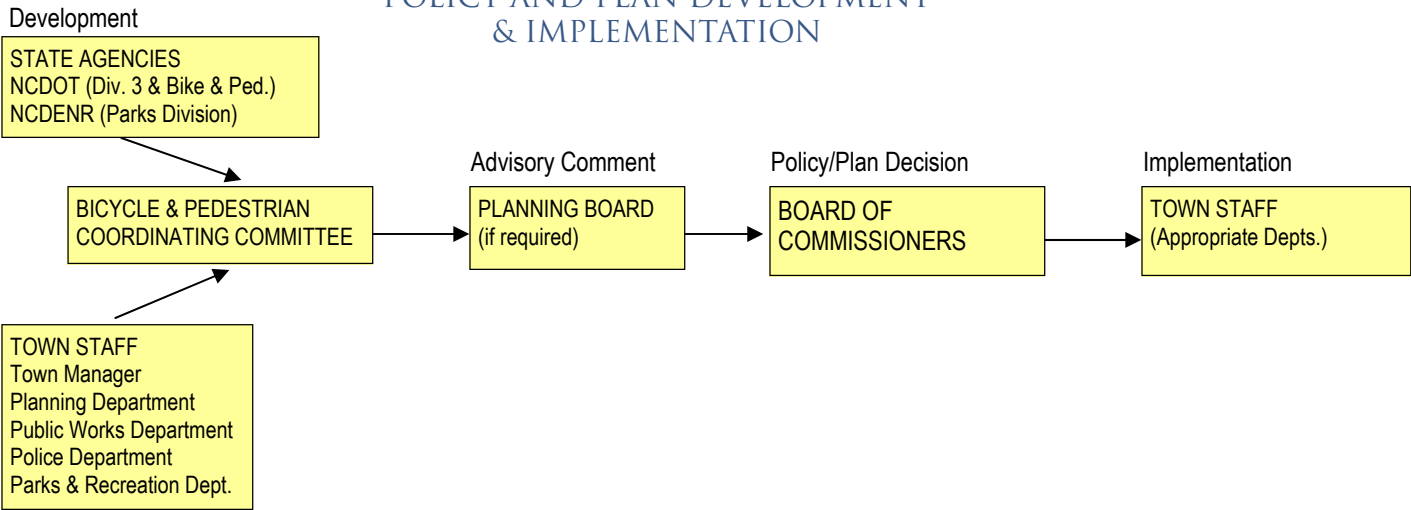
8. LAUNCH PROGRAMS AS NEW PROJECTS ARE BUILT

Strong education, encouragement, and enforcement campaigns could occur as new facilities are built, through cooperation with the Town of Swansboro and groups such as the Chamber of Commerce and the local school system. When an improvement has been made, the roadway environment has changed and proper interaction between motorists and bicyclists is critical for the safety of all users. A campaign through local

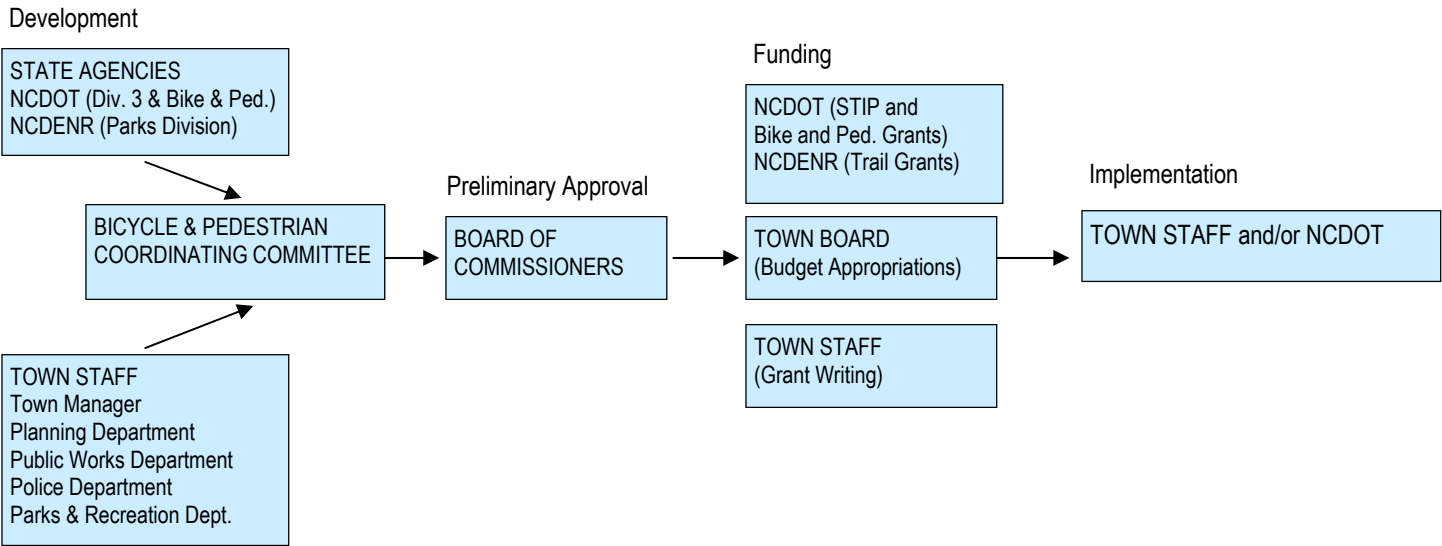


ORGANIZATIONAL FRAMEWORK FOR BICYCLE PLAN IMPLEMENTATION

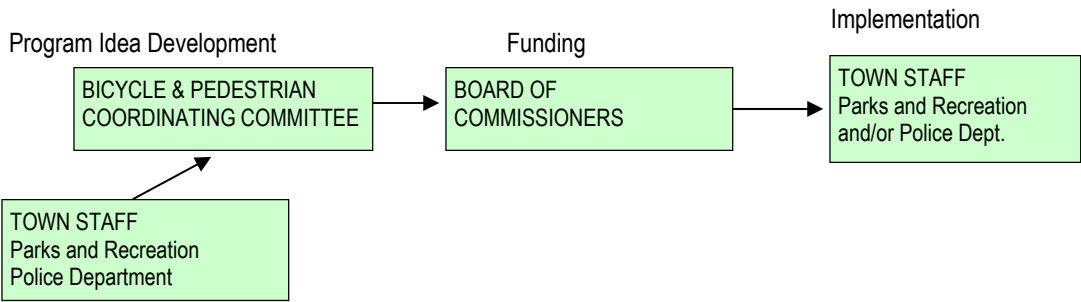
POLICY AND PLAN DEVELOPMENT & IMPLEMENTATION



PROJECT DEVELOPMENT & IMPLEMENTATION



PROGRAMMING





Top Funding Recommendations through NCDOT

- SPOT Safety - \$9.1 million total. Competitive across State divisions. Can be used for ROW, utility relocation, etc. Based on cost-benefit and safety analysis.
- Small urban money/small construction funds - \$150K maximum in flexible funds. Strong engineering analysis and recommendation required. Cannot be used for ROW
- Contingency funding – Secretary of Transportation and other state leaders determine where this goes. Pedestrian projects are attractive in this category.
- Division pedestrian funds - \$100K per Division. Sometimes this money will be saved up over years to do a better, longer sidewalk project down the line.
- SRTS funds – Has to be within two miles of school. NCDOT has difficulty finding workable projects because they have to be ADA accessible, making projects costly. Division gets about \$100k – best used for crosswalks and smaller, straightforward projects.
- Do projects during resurfacing/reconstruction. Know roadway project schedules (resurfacing, reconstruction, etc.) well in advance, preferably one year in advance.
- Additional tips for funding: 1) Have good relationship with Division and District engineers; 2) Involve them early in projects and let them be involved in determining projects; and 3) It also helps if they are involved in public input component as it can be a motivator for implementation.

Top Policy Recommendations

- *Complete Streets Policy:* There is a growing national trend towards integrating bicycling, walking and transit as a routine element in the design and layout highway and transportation-related projects. This movement has developed under the name of “Complete Streets,” which is defined by the Complete the Streets Coalition as follows: “Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.” By adopting a “Complete Streets” policy, the Town of Swansboro commits to developing new roadways and reconstructing existing roadways to accommodate all users.
- *Land Use & Coordinated Development:* Ensure that adopted bicycle and multi-use path recommendations from this plan are part of future residential and commercial developments that connect with such proposed facilities.
- *Driveway Access Management:* Refer to the NCDOT policy on ‘Street and Driveway Access to North Carolina Highways’ for examples on how to reduce conflict points between motor vehicles and pedestrians and bicyclists. Consider developing and adopting an access management policy for both future development and retrofits to existing development: www.ncdot.org/doh/preconstruct/altern/value/manuals/pos.pdf

Top Program Recommendations

- Offer joint adult and kids bicycle classes, to be provided in partnership between a locally certified League of American Bicyclists (LAB) instructor and the Town of Swansboro. The actual curriculum could focus on riding safety and personal trip coaching/promotion for non-car modes.
- Training for Swansboro’s officers could be done through free online resources available from the National Highway Traffic Safety Administration (NHTSA). If the Town is able to find and secure grants for education, the Town could also seek instructor-led courses offered by the NHTSA or groups such as the League of American Bicyclists (LAB).



television, on-site enforcement, education events, and other methods will bring attention to the new facility, and educate, encourage, and enforce proper use and behavior. See page 4-4 for top program recommendations.

9. OFFER TRAINING FOR ENFORCEMENT

Law enforcement officers have a wide range of responsibilities. With their crash investigation experience, they are very aware that bicyclists and pedestrians remain the most vulnerable forms of traffic. The Swansboro Police Chief has been involved in this planning process, and should continue to participate in implementation. In many cases, citizens and even sometimes, officers, do not fully understand state and local laws related to bicyclists and pedestrians. Training on this topic can lead to additional education and enforcement programs that promote safety. Free training is available to Swansboro's officers through online resources from the National Highway Traffic Safety Administration (NHTSA) (see links at www.bicyclinginfo.org/enforcement/training.cfm). The Town could also seek instructor-led courses offered by the NHTSA or groups such as the League of American Bicyclists (LAB).

10. BECOME DESIGNATED AS A BICYCLE FRIENDLY COMMUNITY

One of the goals for this Bicycle Plan is to transform Swansboro into a "Bicycle Friendly Community" (BFC). The Bicycle Friendly Community Campaign is an awards program that recognizes municipalities that actively support bicycling. A Bicycle Friendly Community provides safe accommodation for cycling and encourages its residents to bike for transportation and recreation. The League of American Bicyclists (LAB) administers the Bicycle Friendly Community Campaign and a committee of the LAB reviews and scores the BFC application. An award of platinum, gold, silver or bronze status is designated for a period of four years. The LAB and technical assistance staff continue to work with awardees and those communities that do not yet meet the criteria to encourage continual improvements.

The development and implementation of this Plan is an essential first step in eventually becoming a Bicycle Friendly Community. Having a citizen's board officially dedicated to these issues also helps tremendously. For example, Emerald Isle has had a BPAC in place for many years (www.emeraldisle-nc.org/bikeped/bikepedmain.htm) and they recently received an Honorable Mention from the LAB. Other small communities, such as Davidson, NC, and Carrboro, NC, also have BPACs and are among the few communities in NC that are designated as "Bicycle Friendly". Swansboro should make progress in accomplishing the goals of this Plan, and then apply for BFC status.

Key Partners in Implementation

ROLE OF SWANSBORO TOWN BOARD OF COMMISSIONERS

With the adoption of this plan, the Town's leadership is recognizing the value of bicycle transportation and is putting forth a set of recommendations for improving public safety and overall quality of life (see pages 1-4 to 1-9: The Benefits of a Bicycle-Friendly Community). By adopting this Plan, the Town Board is also signifying that they are prepared to support the efforts of other key partners in the plan's implementation, including the work of its own departments and NCDOT Division 3.

ROLE OF THE TOWN OF SWANSBORO PLANNING BOARD

The Town of Swansboro Planning and Zoning Board serves as an advisory board to the Town Commissioners on all matters of planning and zoning. The Planning Board should work on the following action items and responsibilities:

- Become familiar with the recommendations of this Plan, and support its implementation.
- Learn about bicycle-related policies in this Plan's Bicycle Policy Toolbox (available from Town planning staff).



ROLE OF THE TOWN OF SWANSBORO PLANNING DEPARTMENT

The Planning Department will take primary responsibility for the contact with new development to implement the plan and will coordinate with other agencies for implementation. For example, the department should work on the following action items and responsibilities:

- Communicate and coordinate with local developers on adopted recommendations for bicycle facilities, including paved multi-use trails.
- Communicate and coordinate with Onslow County, ECCOG, and neighboring municipalities on regional bicycle facilities and trails; partner for joint-funding opportunities.
- Communicate and coordinate with NCDOT Division 3 on this Plan's recommendations for NC-DOT-owned and maintained roadways. Provide comment and reminders about this Plan's recommendations no later than the conceptual or preliminary design phases.
- Work with Division 3 to ensure that when NCDOT-owned and maintained roadways in Swansboro are resurfaced or reconstructed, that this Plan's adopted recommendations for bicycle facilities are included on those streets. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives.
- Meet with the Bicycle Plan Coordinating Committee and related advisory boards to provide progress updates for plan implementation and gather input regarding bicycle and trail-related issues.
- Present bicycle-related policy and policy revisions to the Town Board of Commissioners for their approval. Encourage commissioners to approve funding for plan implementation (even if only for small amounts to be matched with outside sources).

ROLE OF THE TOWN OF SWANSBORO PARKS & RECREATION PROGRAM

The Town of Swansboro Parks and Recreation program currently consists of seven facilities that serve the needs of Town residents and visitors to the community. Trails should become part of this list of facilities, along with bicycling-related event programs for the citizens of Swansboro. The Parks and Recreation program should be prepared to:

- Work with local advocacy groups and the Bicycle and Pedestrian Coordinating Committee to assist in organizing bicycle-related events, educational activities, and enforcement programs.

ROLE OF THE TOWN OF SWANSBORO PUBLIC WORKS DEPARTMENT

The Public Works Department will take responsibility for the construction and maintenance of bicycle facilities on town-owned and maintained roadways, as well as on NCDOT roadways, where encroachment agreements are secured. For example, the department should be prepared to:

- Become familiar with the standards set forth in this Plan's Design Toolbox (available from Town planning staff).
- Design, construct and maintain bicycle facilities using the standards set forth in this Plan's Design Toolbox. Secure encroachment agreements before work on NCDOT-owned and maintained roadways.

Estimated Maintenance Budget for One Mile of Trail

<i>Description of Activity</i>	<i>Estimated Annual Budget</i>
Drainage maintenance (12x/year)	\$1,000
Maintenance of trail surface (52x/year)	\$2,000
Pick up and removal of trash (52x/year)	\$2,000
Weed and vegetation mgt. (12x/year)	\$1,200
Mowing of 3-ft grass safe zone (52x/year)	\$2,000
Minor repairs trail furniture/safety features	\$500
Maintenance supplies	\$300
Equipment fuel and repairs	\$1,000
Total Maintenance budget for one mile of trail	\$10,000



- Communicate and coordinate with the Town of Swansboro Parks and Recreation Department on priority projects for town trail corridors/easements.
- Keep track of all upcoming roadway reconstruction or resurfacing/restriping projects in Swansboro, as they relate to the recommendations in this Plan.
- Propose annual budget appropriations for the acquisition and development of bicycle and multi-path facilities.

ROLE OF THE BICYCLE AND PEDESTRIAN COORDINATING COMMITTEE

See pages 4-1 and 4-2 for information about the potential creation of this committee. This committee should be prepared to:

- Meet with staff from the Planning Department; evaluate progress of the plan's implementation and offer input regarding bicycle, pedestrian and trail-related issues;
- Provide town staff, as needed, with advisory assistance in the development of grant proposals to fund priority projects and programs.
- Build upon current levels of local support for bicycling and trail issues, and advocate for local project funding.

ROLE OF THE TOWN OF SWANSBORO POLICE DEPARTMENT

The Town of Swansboro Police Department works to protect the lives and property of Swansboro residents, and is responsible for traffic safety enforcement, among other important tasks. The Police Department should be prepared to:

- Become experts on bicycling-related laws in North Carolina (see www.ncdot.gov/bikeped/lawspolicies/laws/)
- Continue to enforce not only bicycling-related laws, but also motorist laws that affect bicycling, such as speeding, running red lights, aggressive driving, etc.
- Participate in bicycle-related education programs.
- Review safety considerations with the Planning Department as projects are implemented.

ROLE OF THE NCDOT DIVISION 3

Division 3 of the NCDOT is responsible for the construction and maintenance of bicycle facilities on NC-DOT-owned and maintained roadways in the Town of Swansboro. Division 3 should be prepared to:

- Recognize this Plan as not only as an adopted plan of the Town of Swansboro, but also as an approved plan of the NCDOT.
- Become familiar with the bicycle facility recommendations for NCDOT roadways (including future trail-roadway crossings) in this Plan (Chapter 3); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements whenever possible.
- Become familiar with the standards set forth in this Plan's Design Toolbox, as well as state and national standards for bicycle facility design; construct and maintain bicycle facilities using the highest standards allowed by the State.



- Notify the Town of Swansboro Planning Department of all upcoming roadway reconstruction or resurfacing/restriping projects in Swansboro, no later than the conceptual or preliminary design phases; Provide sufficient time for comments from the planning staff.
- If needed, seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this Plan and its implementation.

ROLE OF DEVELOPERS

Developers in Swansboro can play an important role in facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of trails. Developers should be prepared to:

- Become familiar with the benefits, both financial and otherwise, of providing amenities for walking and biking (including trails) in residential and commercial developments (Chapter 1).
- Become familiar with the standards set forth in this Plan's Design Toolbox, as well as state and national standards for bicycle facility design.
- Become familiar with the UDO policies related to bicycle facilities.

ROLE OF LOCAL RESIDENTS, CLUBS AND ADVOCACY GROUPS

Local residents, clubs and advocacy groups (e.g., cycling clubs, bicycle-related businesses, etc.) play a critical role in the success of this plan. They should be prepared to:

- Continue offering input regarding bicycling issues in Swansboro.
- Assist town staff and the Bicycle and Pedestrian Coordinating Committee by volunteering for bicycle-related events and educational activities and/or participate in such activities.
- Assist town staff and the Bicycle and Pedestrian Coordinating Committee by speaking at Town Board meetings and advocating for local bicycle project and program funding.

Facility Development Methods

NCDOT TRANSPORTATION IMPROVEMENT PROGRAM (TIP) PROCESS

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. Bicycle facility and safety needs are an important part of this process. The primary NCDOT source for developing pedestrian and bike facilities is securing identification of a project in the State Transportation Improvement Program (STIP). Every two years projects are submitted by regional planning organizations (metropolitan planning organizations (MPO) and rural planning organizations (RPO)) throughout the state. Submitted bike and pedestrian projects are prioritized by the Division of Bike and Pedestrian Transportation staff. High priority projects will be used to populate the 5-Year Work Program and the delivery STIP. Please see this site – <http://www.ncdot.gov/performance/reform/> – for further information.

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 greenway, not related to a particular roadway.

The Town of Swansboro, guided by the priority projects within this plan, should present bicycle projects along State roads to the Down East Rural Transportation Planning Organization and State on a recurring



basis. Local requests for small bike/pedestrian projects, such as crosswalks, signage, and shared-lane markings, can be directed to the Down East Rural Transportation Planning Organization or the local NC-DOT Division 3 office.

LOCAL ROADWAY CONSTRUCTION AND RECONSTRUCTION

Bicyclists should be accommodated when new roads are constructed or an existing road is reconstructed. All new roads with moderate to heavy motor vehicle traffic should have bicycle accommodations (see various types and applications in this Plan's Design Toolbox, available from Town planning staff). The Town of Swansboro seek bicycling improvements on all planned construction projects, including roadway projects outlined in local comprehensive and transportation plans. In addition, such maintenance programs as asphalt overlay and stormwater infrastructure should all be considered for opportunities to add bicycling improvements. Routine culvert and bridge replacements also offer opportunities to add bicycling facilities.

RESIDENTIAL AND COMMERCIAL DEVELOPMENT

The construction of bicycle facilities that are part of an adopted plan should be required during development. Construction of bicycle facilities that corresponds with site construction is more cost-effective than retrofitting. In commercial development, emphasis should also be placed on the need for driveway access management, which reduces potential conflict points in and out of parking lots. For more information, see: www.ncdot.org/doh/preconstruct/altern/value/manuals/pos.pdf

MULTI-USE TRAIL DEVELOPMENT

The development of multi-use trails can be broken down into main tasks, as outlined below. The order of these steps may vary according to actual circumstances, but the basic flow can be expected as follows (starting at the top, going clockwise):





Action Steps

TABLE 4.1 POLICY, PROGRAM, AND ADMINISTRATIVE ACTION STEPS TABLE

Task	Lead Agency	Support	Details	Phase	Page Reference
Present Plan to Town Board	Planning Department/Town Manager	Project Consultants	Presentation to Town Board in August 2011	Summer 2011	n/a
Approve this Plan	NCDOT Bike/Ped Division	Project Consultant	Official letter of approval expected by June 2011	Summer 2011	n/a
Adopt this Plan	Town Board	Planning Department; Parks & Recreation Board	Through adoption, the Plan becomes an official planning document of the Town. Adoption shows that the Town of Swansboro has undergone a successful, supported planning process.	Summer 2011	4-1
Designate Staff	Town Manager	Town Board	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 staff oversee the day-to-day implementation of this plan.	Summer 2011	4-1
Create a Bicycle and Pedestrian Coordinating Committee	Town Board	Bicycle Plan Steering Committee	This committee should cover issues related to bicycling, walking, and trails in Swansboro, and could assist in the implementation of this Plan. Refer to page 4-1 for more on this committee, as well as the potential creation of a Transportation Advisory Board (TAB).	Fall 2011	4-1 and 4-2
Begin Semi-Annual Meeting With Key Project Partners	Town Manager	Planning Department; Parks & Recreation Board	Key partners should meet on a semi-annual basis for goal-setting and progress evaluation related to the implementation of this Plan.	Fall 2011/ Ongoing	4-3
Seek Multiple Funding Sources and Facility Development Options	Town Manager & Finance Department	Planning Department and Parks & Recreation Board	The Funding Toolbox and page 4-4 contains potential funding opportunities.	Fall 2011/ Ongoing	Funding Toolbox
Improve Bicycle Policies	Town Board	Planning Department and Planning Board	Considerations for policy revisions to the Town of Swansboro UDO are outlined in Chapter 2. The changes suggested clarify some basic policy positions regarding future development and the provision of bicycle facilities. Some edits are also suggested for consistency in terminology.	Short Term (2012)	Chapter 2 & the Policy Toolbox
Develop Bicycle Facility Striping Plans and Trail Construction Documents	Planning Department (or engineering consultant) and NCDOT Division 3	NCDOT Bike/ Ped Division, Swansboro Public Works	The design guidelines of this plan and the project cut-sheets should be used as starting points. Specifically, the resources listed in the Design Toolbox will be very useful in drafting such documents. The Bicycle and Pedestrian Coordinating Committee should have an opportunity to comment and provide input on the design of new facilities.	Short Term (2012)	Chapter 3 Cutsheets and the Design Toolbox
Launch Programs as New Projects are Built	Parks and Recreation Program	Parks & Recreation Board; and the League of American Bicyclists	Assist in the coordination of joint adult and kids bicycle classes, to be provided in partnership between a locally certified League of American Bicyclists (LAB) instructor and the Parks & Recreation Board. The actual curriculum would be developed by these groups, and could focus on personal trip coaching/promotion for non-car modes.	Short Term (2012) /Ongoing	Program Toolbox



Task	Lead Agency	Support	Details	Phase	Page Reference
Offer Training for Enforcement	Police Department	National Highway Traffic Safety Administration (NHTSA) or League of American Bicyclists	Training for Swansboro' officers could be done through free online resources available from the National Highway Traffic Safety Administration (NHTSA). The Town could also seek instructor-led courses offered by the NHTSA or groups such as the League of American Bicyclists (LAB).	Short Term (2012)	4-4
Complete Project #s 1 & 2 (Downtown Swansboro to Hammocks Beach State Park)	Town Manager & Planning Department	Public Works, NCDOT Division 3, and NCDENR State Parks Division	Immediate attention to this project will instantly have a large impact on bicycling conditions in Swansboro. Aim to complete Project # 1 by the end of 2013, and project #2 by 2016.	Mid-Term (2012-2016)	Chapter 3; Diagram on page 4-9
Present this Plan to other local and regional bodies and agencies.	Town Manager & Planning Department	Bicycle and Pedestrian Coordinating Committee	This Plan should be presented to other local and regional bodies and agencies. Possible groups to receive a presentation might include: the East Carolina Council, local bike store owners, regional transportation planners, Onslow County park planners, health clubs and fitness facilities, schools and youth organizations, riding clubs, major employers, large neighborhood groups, and civic organizations such as the Rotary Club and Chamber of Commerce.	Short Term (2012)	Primarily Chapter 3
Develop a long term funding strategy	Town Board & Town Manager	Bicycle and Pedestrian Coordinating Committee	To allow continued development of the overall system, capital and Powell Bill funds for bicycle facility construction should be set aside every year, even if only for a small amount (small amounts of local funding can be matched to outside funding sources). Funding for an ongoing maintenance program should also be included in the Town's operating budget.	Short Term (2012-2013)	Funding Toolbox
Maintain bicycle facilities	Public Works, Parks and Recreation Program, and NCDOT Division 3	Bicycle and Pedestrian Coordinating Committee (for reporting maintenance needs)	The Town of Swansboro Public Works Department and NCDOT should make repairs to any bicycle facilities that become damaged or have hazardous conditions.	Ongoing	4-6 (for typical trail maintenance costs)
Provide bicycle parking in key locations throughout Town by mid-2012.	Swansboro Public Works	Planning Department and Parks & Recreation Board	Provide bicycle racks throughout Swansboro at key locations (see Map 3.1).	Short Term (2012)	Map 3.1, Design Toolbox
Communicate and coordinate with NCDOT Division 3 on priority projects for NCDOT-maintained roadways.	Town Manager and Transportation Advisory Board	NCDOT Bike/Ped Division	Ensure that when NCDOT-maintained roadways in Swansboro are resurfaced or reconstructed, that this Plan's adopted recommendations for bicycle facilities are included on those streets.	Ongoing	Map 3.1, Table 3.1, and project cutsheets
Notify the Town of Swansboro Planning Department of all upcoming roadway reconstruction or resurfacing/restriping projects, no later than the design phase.	NCDOT Division 3	Swansboro Planning Department, NCDOT Bike/Ped Division	Provide sufficient time for comments; Incorporate bicycle recommendations from this Plan. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives.	Ongoing	Map 3.1, Table 3.1, and project cutsheets



Task	Lead Agency	Support	Details	Phase	Page Reference
Ensure planning efforts are integrated regionally	Planning Department	ECC, Onslow County, neighboring municipalities	Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial. Communicate and coordinate with ECC, Onslow County, neighboring municipalities on regional trails and bicycle facilities; partner for joint-funding opportunities. After adoption by the Town, this document should also be recognized in regional transportation plans	Ongoing	Map 3.1, Table 3.1, and project cutsheets
Apply for additional Safe Routes to School Grants	Town Manager	Public Works, Transportation Advisory Board, and the Bicycle and Pedestrian Coordinating Committee	Establish 'bike-to-school' groups, 'walking school buses' or other similar activities for children through the Safe Routes to School Program.	Ongoing	Program Toolbox
Coordinate Special Events (such as Family Rides)	Parks & Recreation Program	Parks & Recreation Board	The Parks & Recreation Board could lead a monthly family ride during the months of April through October as part of their regular programming schedule); citizens (or Parks & Recreation Board members) might be willing to coordinate and lead such rides. Use bicycle facilities, particularly trails, to promote causes and hold special events for causes.	Ongoing	Program Toolbox
Policy Orientation	Town Manager, Town Board, Planning Board, Planning Staff	NCDOT Bike/Ped Division	Become familiar with State and Federal bicycle policy, as outlined in the Policy Toolbox.	Short Term (2012)	Policy Toolbox
Design Orientation	Town Manager, Town Board, Planning Board, Planning Staff, Public Works Director and NCDOT Division 3	NCDOT Bike/Ped Division	Become familiar with the standards set forth in the Design Toolbox for this Plan, as well as state and national standards for bicycle facility design.	Short Term (2012)	Design Toolbox
Become familiar with the bicycle facility recommendations for NCDOT roadways in this Plan (Chapter 3); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements.	NCDOT Division 3	Planning Department, NCDOT Bike/Ped Division	Construct and maintain bicycle facilities using the highest standards allowed by the State (including the possibility of using innovative treatments on a trial-basis). Seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this Plan and its implementation.	Short Term (2012)	Chapter 3
Requests & Review	Planning Staff	NCDOT, Public Works	Seek opportunities to review and add input about adding bicycling facilities to all proposed construction and maintenance projects during the planning and design phases.	Ongoing	-
Initiate a local bicycle safety and courtesy educational campaign by 2012	Parks & Recreation Board and Police Department	Local, regional, state, and national bicycle advocacy groups	The Program Toolbox contains several lists of resources for more information on such educational campaigns that can coincide with the opening of new facilities.	Mid-Term (2012-2014)	Program Toolbox



Task	Lead Agency	Support	Details	Phase	Page Reference
Launch three new programs in three years that aim to increase bicycling among a) children, b) commuter/ utilitarian cyclists, and c) recreational/fitness cyclists.	Parks & Recreation Board and Police Department	Parks & Recreation Program	Sustain such programs with a partnership between the Town, local businesses, and non-profit organizations. See education, encouragement, and enforcement action steps for example programs.	Mid-Term (2011-2014)	Program Toolbox
If the Town determines that there are streets where speeds need to be lowered for safety purposes, contact NCDOT to lower them.	Town Manager, Town Board	NCDOT Division 3, NCDOT Bike/Ped Division	The authority to lower speeds is set out in NC General Statute 20-141(f) - Whenever local authorities within their respective jurisdictions determine upon the basis of an engineering and traffic investigation that a higher maximum speed than those set forth in subsection (b) is reasonable and safe, or that any speed hereinbefore set forth is greater than is reasonable and safe, under the conditions found to exist upon any part of a street within the corporate limits of a municipality and which street is a part of the State highway system (except those highways designated as part of the interstate highway system or other controlled access highway) said local authorities shall determine and declare a safe and reasonable speed limit. A speed limit set pursuant to this subsection may not exceed 55 miles per hour. Limits set pursuant to this subsection shall become effective when the Department of Transportation has passed a concurring ordinance and signs are erected giving notice of the authorized speed limit.	Mid-Term (2011-2014)	-
Produce and distribute a user-friendly bicycle map	Planning Department and Parks & Recreation Board	NCDOT Bike/Ped Division	Once more facilities are in place, produce and distribute a user-friendly bicycle map of Swansboro. Provide basic safety information, commuting information, trail etiquette, transit information, and a list of local resources on the back side of the map.	Mid-Term (2012-2014)	Refer to the PDF map produced as part of this Bike Plan
Provide police officers with educational material to hand out with warnings	NCDOT Bike/Ped Division	Police Department	Provide officers with a handout to be used during bicycle-related citations and warnings. See laws and considerations listed on page B-13.	Mid-Term (2012-2014)	Program Toolbox
Work together to complete Project # 5	Town of Swansboro	Swansboro High School and Swansboro Elementary School	After agreeing upon an alignment, securing an easement, and securing funding, generate construction documents to build the trail. See Cutsheet 5 for more information.	Mid-Term (2013)	3-10
Reassess projects and reevaluate priorities and phases	Planning Department and Parks & Recreation Board	NCDOT Division 3, NCDOT Bike/Ped Division, BPAC	In 2016, reassess projects and reevaluate priorities and phases. Consider updating key sections of the plan such as design standards and programs/policies.	Long Term (2016)	-
Engage in professional opportunities related to bicycling design including attending a bicycle training session	Public Works Department, Planning Department, NCDOT Division 3	NCDOT Bike/Ped Division	Participate in Association for Pedestrian and Bicycle Professionals (APBP) and Pedestrian and Bicycle Information Center (PBIC) on-going professional webinars	Opportunity Based	-



Task	Lead Agency	Support	Details	Phase	Page Reference
Become Designated as a Bicycle Friendly Community	Planning Department	Parks & Recreation Board	Swansboro should make progress in accomplishing the goals of this Plan, and then apply for BFC status. Download and review the application for a Bicycle Friendly Community designation. Determine which action steps of this plan would be the most strategic in terms of applying for the desired designation. Place emphasis on completing those steps, then apply.	Long Term (2016)	4-4 and 4-5

Implementation Resources

A series of supplemental implementation ‘toolboxes’ are available through Town staff as a separate part of this plan. They were not included in the plan itself for the purposes of limiting this document to a reasonable size, and for ease of reproduction and use. These ‘toolboxes’ include the following:

DESIGN TOOLBOX

This toolbox provides design guidelines for bicycle, pedestrian and trail-related facilities that are used in various locations across the United States. These guidelines can be used to determine a comprehensive bike-ped network throughout Swansboro, while still providing for flexibility on a project by-project basis. Although this is for a *bicycle* plan, pedestrian and trail-related facilities are also included here because there are circumstances where these types of facilities overlap, and where quality design integration will be desired.

BICYCLE PROGRAM TOOLBOX

Meeting the goals of the this plan will require more than construction and installation of recommended bicycle facilities. It will also require the initiation and continued support of bicycle-related programs from local officials, local residents, and community organizations. This toolbox outlines programs for the Town of Swansboro to meet the needs of bicyclists that cannot be met through facility construction alone.

BICYCLE POLICY TOOLBOX

This toolbox provides a reference point for local, state, and federal policies that relate to bicycle transportation. Full language for most key state and federal policies that support bicycling and bicycle implementation is provided.

TRAIL DEVELOPMENT TOOLBOX

There are many different ways to secure trail right-of-way for greenway systems. It will be necessary to work with some landowners to secure trail right-of-way when it does not exist. This toolbox provides a list of options that should be considered.

FUNDING TOOLBOX

When considering possible funding sources for the Town of Swansboro’s bicycle projects, it is important to remember that not all construction activities will be accomplished with a single funding source. It will be necessary to consider several sources of funding, that when combined, would support full project construction. This toolbox outlines sources of funding for the projects at the federal, state, local government level and from the private sector.