

Corolla Village

Circulation and Wayfinding Plan



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Acknowledgements

CURRITUCK COUNTY

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Introduction



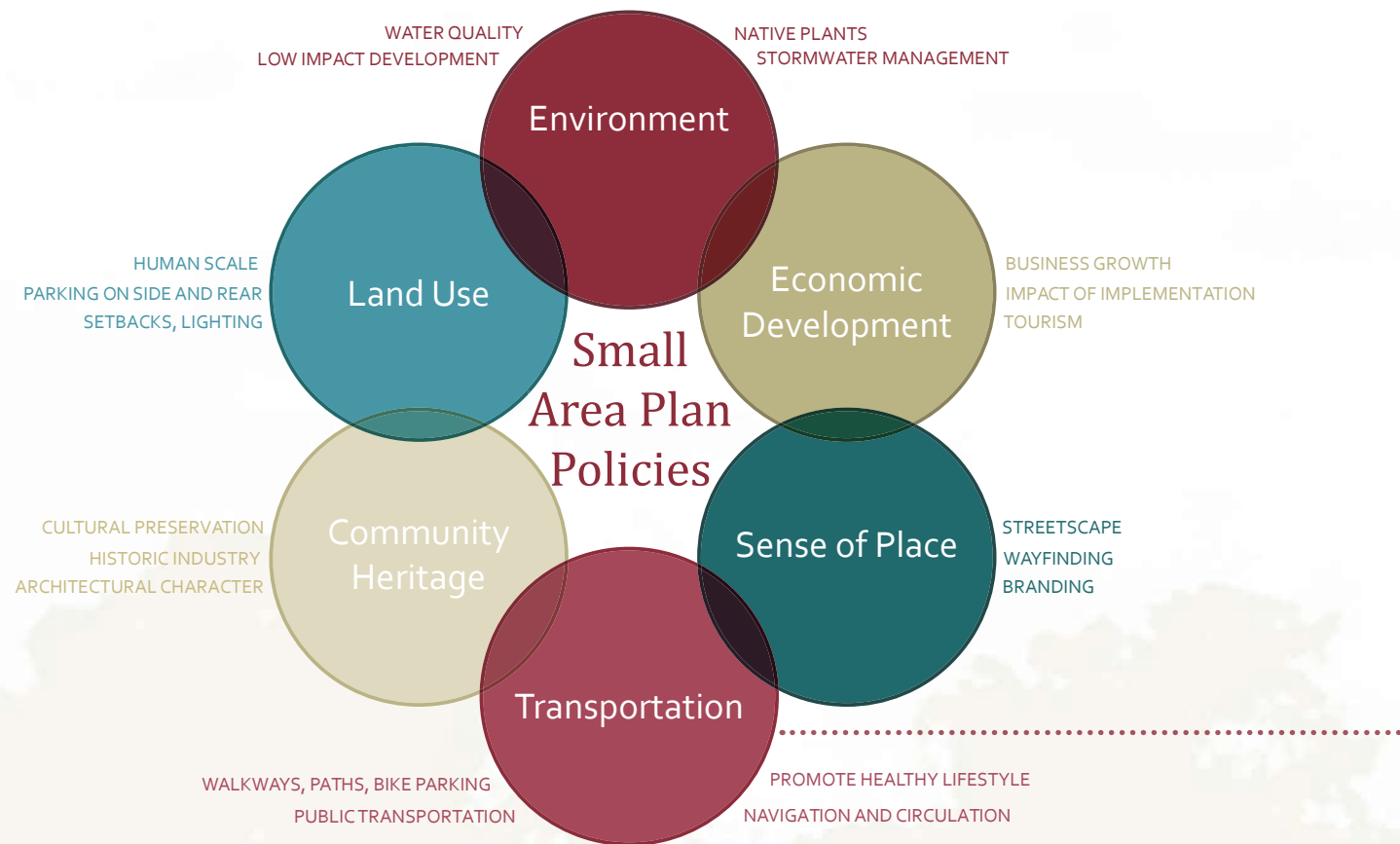
Overview

Corolla Village is distinct from other coastal communities because of its untouched nature, walkable size, magnificent beauty, maritime history, and ecological treasures. Here, the Atlantic Ocean and Currituck Sound are separated by only one half mile. The landmark Currituck Lighthouse is less than one quarter mile from Whalehead and the historic boat basin. Educational attractions for all ages from the Corolla Wild Horse Museum, to a Library, and the Outer Banks Center for Wildlife Education are all less than a ten minute walk apart. Corolla Village visitors and residents can find easy access to quality recreation, dining, culture, history, and ecology all within a one half mile radius. Yet, in many ways, Corolla Village is a hidden gem that some visitors remark as difficult to find, navigate, and access. This Plan seeks to accentuate the quaint heritage of Corolla Village by improving the consistency of connectivity, safety, and wayfinding for all means of transportation.

Purpose

Currituck County completed a *Corolla Village Small Area Plan (SAP)* in 2011 which spurred additional studies to address the categories of land use, transportation, environment, community heritage and sense of place, and economic development. The *Circulation and Wayfinding Plan (CWP)* directly addresses the policies and action plans listed below, but will also influence and affect goals for each of the policy headings.

The *Corolla Village Small Area Plan* directly set the stage for this CWP through transportation policies and actions. This Plan focuses on accomplishing transportation policies and action plans.



POLICY	Encourage the use of alternative transportation options to decrease congestion, provide a safe means of travel for pedestrians and cyclists, promote a healthier lifestyle, and enhance the quality of life.
ACTION	<p>Conduct a study of future pedestrian scale improvements including but not limited to walkways, paths, benches, signage, and bike racks that specifically addresses needed capital improvements and maintenance.</p> <p>Research what types of public transportation or multi-modal facilities are appropriate in order to lessen vehicle congestion in the Corolla Village Area.</p> <p>Determine appropriate locations and allocate funding for "wayfinding" signage that assists visitors in orienting themselves and navigating from place to place.</p>
POLICY	Encourage and design future transportation improvements that are consistent with a "complete streets" policy. A complete streets policy encourages projects to provide facilities for pedestrians, bicyclists, transit, and vehicles.
ACTION	Conduct a study to examine the causes and develop solutions related to traffic congestion, parking problems, and pedestrian-car conflicts.



Process

The process began with developing achievable goals and a clear path to final deliverables. To begin, intelligence was collected via multiple avenues. Past plans, staff ideas, GIS data, and marketing efforts were reviewed to formulate a base understanding of the Village. Data gathering and user perspectives occurred with focus groups, public events, and field studies. Ideation and exploration began after understanding the local challenges and opportunities by assessing national and local standards and applying creative solutions. Round two of public involvement provided a forum for idea sharing and feedback that fueled final recommendations and action items.

Key data gathering included:

- Existing plan analysis
- Case study research
- Public and stakeholder involvement
 - Local business owners
 - Currituck County
 - Corolla Civic Association
 - NCDOT
 - General public at Under the Oaks Festival and Concert Series
- Integration of *Heritage Park Master Plan*
- Field analysis and measurements



Goals

The CWP planning process included significant public and stakeholder involvement, research, and analysis that led to engineering and programmatic recommendations. Through the stakeholder and public input process, more specific goals were established that build upon the SAP policies and actions listed on page 1-3. These goals mirror the 'pillars' of the 2013 *WalkBikeNC Plan* (North Carolina's Statewide Pedestrian and Bicycle Plan).

GOAL 1 Mobility *Improve mobility and accessibility for all modes of transportation.*

Improve pedestrian and bicycle connectivity.

- Make seamless connections between Heritage Park and the Historic Village.
- Create connected walkways/bikeways around the Village.
- Connect the Ocean to the Sound and provide better access to both bodies of water.

Improve wayfinding through a context-appropriate, cohesive signage package.

Consider trolley service to reduce vehicular congestion.

GOAL 2 Safety *Improve safety by reducing pedestrian-bicyclist-car conflicts.*

Separate pedestrians and bicyclists from motor vehicle traffic.

Improve pedestrian and bicycle safety along and crossing NC 12 through improved facilities and traffic calming measures.

Promote better predictability of pedestrian, bicyclist, and motor vehicle movements through the Village.

GOAL 3 **Health & Quality of Life** *Increase number of people walking and biking.*

Create programs that encourage walking and bicycling.

Promote development of pedestrian/bicyclist map and brochure.

Improve pedestrian experience through inviting and appealing spaces.

Provide necessary amenities to make walking/biking more comfortable, feasible activities (e.g. bathrooms).

GOAL 4 **Economic Development**

Improve visitor experience and encourage more day-trip and long-term visitation while maintaining the Village feel of nature, history, and local business character.

Increase awareness of Village offerings by adding programs and providing navigation cues while maintaining its hidden nature and appeal.

Improve entrance and gateway areas to Heritage Park and the Village.

Support human scale policy and development to maintain small village feel.

Attract more people and local businesses to the Village.

GOAL 5 **Environment & History** *Protect and enhance ecological and historic integrity of Village area.*

Provide historic and environment learning opportunities through interpretive signage and programming.

Ensure recommended materials are appropriate for the character of Corolla and are environmentally sensitive choices.

These five goals provided direction for the planning process and are woven throughout the final recommendations. Three case studies of beach communities were also conducted to influence the goals of this study and to incorporate best practices for circulation and wayfinding. The complete case study findings are found in the appendix of this Plan.





Existing Conditions



Overview

Corolla Village is found in the unincorporated area of Corolla, in Currituck County. As an area located in the northern Outer Banks, the Village enjoys proximity to the Atlantic Ocean and Currituck Sound. The Village is a nexus of cultural, historical, and ecological diversity. The County-owned Heritage Park comprises almost 40 acres of the 292 acre study area and is the epicenter historic icon. Early twentieth century architecture is preserved and celebrated in the park as part of the living history of Whalehead, the boat house, and basin. Historic details, site analysis, and new recommendations can be found in the *Heritage Park Master Plan* completed in fall 2013. Other key destinations include the Currituck Beach Lighthouse, NC Wildlife Education Center, and the Corolla Wild Horse Museum.

Approximately 525 people live full-time in Corolla while 50,000-60,000 tourists visit each year. The average age of visitors is 53.16 and Baby Boomers make up the majority of visitors (57%) with GenX coming in second (29%). While average resident age is unknown, the majority are retirees to the area.

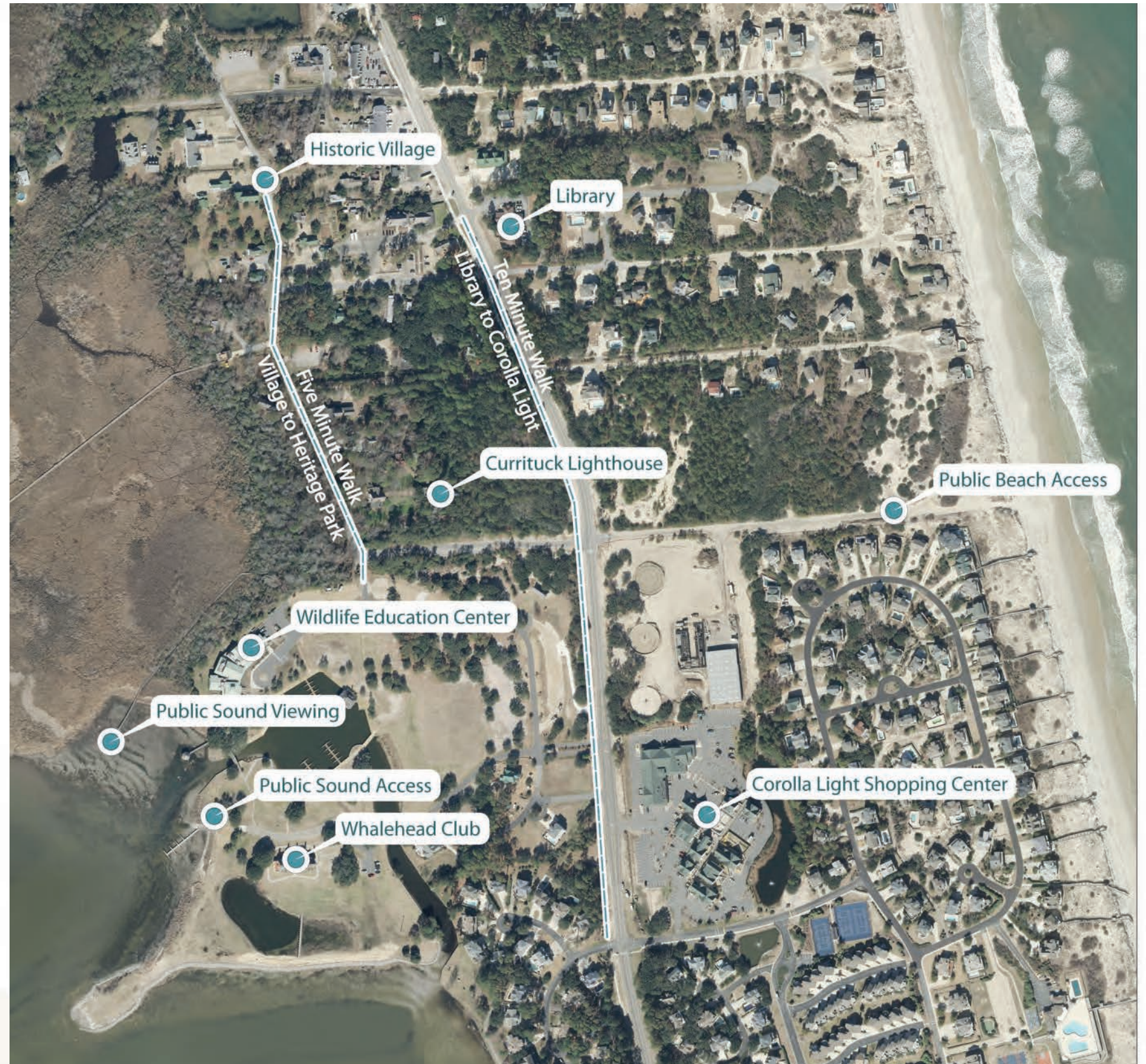
The summer is the busiest time of year (from Memorial Day to Labor Day) with an influx of vacationers. During the summer, traffic congestion, parking, and wayfinding are issues throughout the Village. Also, two major events occur in the Village every year which causes gridlock in terms of traffic and parking (4th of July event, Under the Oaks Arts Festival).

The *Small Area Plan* identified pedestrian and vehicular circulation as needing improvement. This chapter will summarize existing challenges and opportunities related to circulation and wayfinding.

CURRITUCK COUNTY DEPARTMENT OF TRAVEL & TOURISM INTERVIEW RESULTS

2011 Visitation	Wild Horse Museum – 264,755
	Outer Banks Center for Wildlife Education – 135,535
	Currituck Beach Lighthouse – 113,700
	Whalehead – 12,100
Comments	New products that appeal to people – Bike paths (45%)
	We need: Maps/signage, “You are here” kiosks, Parking, Restrooms
	Physical maps will improve the visitor experience

(356 respondents)







Existing Studies

Existing studies were analyzed as part of this planning process to retain consistency with existing recommendations. The key studies include:

- Corolla Small Area Plan* (2011) – The *Small Area Plan* describes a policy foundation for Corolla Village centered around land use, transportation, environment, community heritage, and economic development. Policy goals included environmental protection, recognition of cultural heritage, encouragement of bicycling/walking, and maintaining a human scale, small village feel.


- Heritage Park Master Plan* (2013) - *The Heritage Park Master Plan*, being completed at the same time as this Plan, includes recommendations for park improvements that include a new building, parking, walking paths, and water access.


- Corolla Public Transportation Implementation Study* (2006) – The goal of this study was to mitigate traffic congestion through the recommendation of trolley circulation throughout Corolla. The Plan provided guidance on route, schedule, stops, amenities, marketing, staffing, and budget. The project was never implemented due to political and funding issues.
- Connecting Corolla* (2013) - This Bike, Pedestrian, Access, & Wayfinding Plan explores and examines the existing infrastructure and facilities along with community needs and recommends policies and enhancements to improve overall safety between destinations, increase mobility for all modes of transportation, and enhance the overall sense of place, feel, and quality of life.

User Profile

The physical environment is one of the most important communication tools for influencing motorist, pedestrian, and bicyclist behavior. This is increasingly important in a community with weekly turn-over of transient occupants. In addition to residents, weekly visitors, and day trippers, Corolla experiences an influx of seasonal labor. These people often walk and bike to their places of employment and may hail from countries with different rules and cultures for motorist/pedestrian/bicyclist behavior. With clear organization for each mode and defined spaces and signage, all users can interact safely. It is important to understand different types of motorists, bicyclists, and pedestrians to best plan for reducing user conflict.

Types of Motorists

Many of the motorists in Corolla are not residents of North Carolina and may even be from out of the country. Laws vary from state to state and proper behavior – including whether to stop or yield at crosswalks – may not be clear. Some drivers may also be unfamiliar with proper behavior and rules for interacting with bicyclists within the roadway or at critical points such as driveways and intersections with bike path crossings. Pavement markings, signage, and programs will contribute to encouraging safe motorist behavior.

Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people. A framework for understanding the characteristics, attitudes, and infrastructure preferences of different bicyclists in the United States is illustrated to the right. In Corolla, the majority of bicyclists are recreational, casual riders during the summer (“interested but concerned” group).

STRONG AND FEARLESS (APPROXIMATELY 1% OF POPULATION)

This group is characterized by bicyclists that will typically ride anywhere regardless of roadway conditions, traffic, or weather. These bicyclists can ride faster than other user types, prefer direct routes, and will typically choose roadway connections -- even if shared with vehicles -- over separated bicycle facilities such as shared use paths.

ENTHUSED AND CONFIDENT (5-10% OF POPULATION)

This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or multi-use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes commuters, recreationists, racers, and utilitarian bicyclists.

INTERESTED BUT CONCERNED (APPROXIMATELY 60% OF POPULATION)

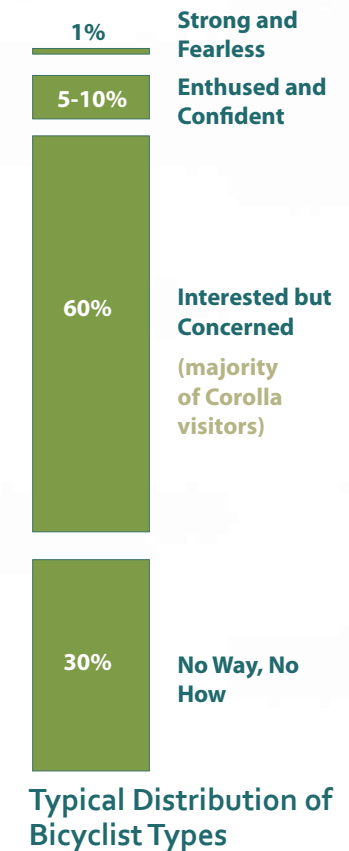
This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or multi-use trails under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become “Enthused & Confident” with encouragement, education, and experience. It is likely that the majority of Corolla bicyclists fall into this category.

NO WAY, NO HOW (APPROXIMATELY 30% OF POPULATION)

Persons in this category are not bicyclists and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.

Types of Pedestrians

Everyone is a pedestrian at some stage in their daily travel. This means pedestrians are a highly diverse road user group which includes children, adults, senior citizens, teenagers, joggers, the disabled and mobility impaired, transit riders, and people using wheeled toys or recreational devices such as skateboards, rollerblades, and foot scooters.



Because pedestrians vary dramatically, the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults walk. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

In Corolla, pedestrians may be exercising or walking to destinations such as shopping, the beach, or Corolla Village. Given the variety of age groups walking in Corolla (young children to retirees), it is important to consider individual needs. The table to the right summarizes common pedestrian characteristics for various age groups, it also indicates trends in North Carolina for each age group. Corolla, however, is unique as it's population of around 500 rises to nearly 50,000 during summer weeks - the majority of whom are not from the within the state. This changes the demographic distribution. Visitor demographics from the 2012 *Randall Study* indicated 57 percent were Baby Boomers and 65 percent of those surveyed travel with children. While the data varies from the chart, it is clear that a large percentage of the transient population would benefit from separation and increased safety measures.



Motorists, cyclists, and pedestrians share the same circulation space in many areas of Corolla, as seen here on Corolla Village Road.

Pedestrian Characteristics by Age and NC Population

	% NC POPULATION, 2000	% NC POPULATION, 2030
Ages 1-4		
<ul style="list-style-type: none"> Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception 	24% (under 18)	25.2% (under 18)
Ages 5-8		
<ul style="list-style-type: none"> Increasing independence, but still requires supervision Poor depth perception 	24% (under 18)	25.2% (under 18)
Ages 9-13		
<ul style="list-style-type: none"> Susceptible to "dart out" intersection dash Poor judgment Sense of invulnerability Improved awareness of traffic environment 	24% (under 18)	25.2% (under 18)
Ages 14-18		
<ul style="list-style-type: none"> Poor judgment 	24% (under 18)	25.2% (under 18)
Ages 19-40		
<ul style="list-style-type: none"> Active, fully aware of traffic environment 	41% (18-44)	34.6% (18-44)
Ages 41-65		
<ul style="list-style-type: none"> Slowing of reflexes 	22.5% (45-64)	22.4% (45-64)
Ages 65+		
<ul style="list-style-type: none"> Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind 	12% (65+)	17.8% (65+)

Source: WalkBike NC (NCDOT Pedestrian and Bicycle Plan) 2013.

Physical Composition

CURRITUCK SOUND AND ATLANTIC OCEAN

Rarely do people have access to the Sound and the Beach within walkable distances. These water features define the area and lifestyle and draw residents and visitors as prime destinations.

Issue: Vehicular, bicycle, and pedestrian access, connectivity, and wayfinding to link these two features are limited.

STUDY AREA

The study area for this Plan is the same boundary as was used for the *Small Area Plan*. It contains Historic Corolla Village, Heritage Park, the Currituck Beach Lighthouse, NC Wildlife Education Center, Corolla Light shopping center, and one public beach access.

Issue: A lack of cohesion between world-class destinations exists within the study area.



Water Features and Study Area



SOUND BOARDWALKS

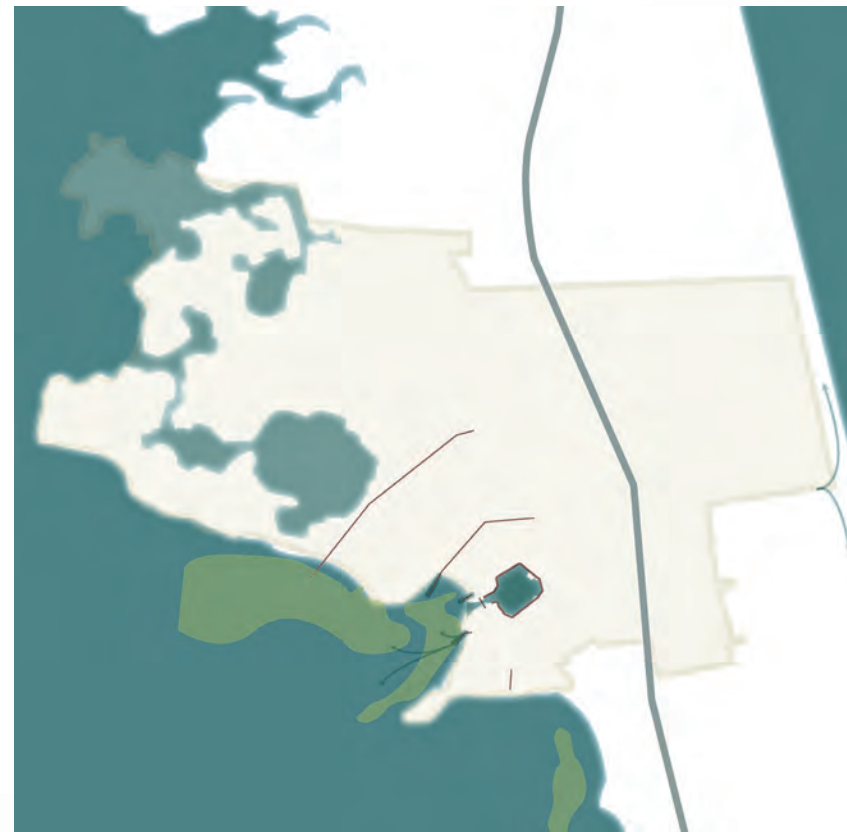
There are multiple boardwalks (public and private) along the Currituck Sound that provide fishing and crabbing access along with scenic vistas.

Issue: The public boardwalks are short, not connected, not easily accessible, and have limited amenities. The northernmost boardwalk features covered seating and is well maintained, but is privately owned.

SUBMERGED AQUATIC VEGETATION

Sites of protected, submerged aquatic vegetation can be found along the Currituck Sound bordering the study area. Any development must have minimal impacts to this vegetation which is found in generally shallow water. Deeper water without submerged aquatic vegetation can be found immediately south of Whalehead offering opportunities for boat access.

Issue: Development opportunities are limited in these areas and will require thorough environmental analysis and conservation/preservation measures.



Water Access and NC 12 ←

CURRITUCK SOUND AND ATLANTIC OCEAN ACCESS

There are two locations of access to the major bodies of water. The public beach access is at the end of Corolla Village Road. The public sound access can be found near the boat launch at Heritage Park.

Issue: The access points are not well-defined and need functional and aesthetic improvements. On the Currituck Sound, better boat access is needed but is difficult with winds, water depth, and aquatic vegetation. At the beachfront, there are no facilities and very little maintenance occurs. ADA access is not currently provided and even minimal physical limitations prevent the public from using this beach access point.

NORTH CAROLINA HIGHWAY 12 (NC 12)

NC 12 splits the study area running parallel to the beachfront and soundfront. It is the only roadway corridor leading people north to the off-road area and southward to the rest of the North Carolina Outer Banks.

Issue: While traffic counts do not exist for this section of NC 12, there are thousands of vehicles per day that travel through Corolla during the summer. NC 12 serves as a barrier for connectivity between Corolla Light shopping center and beach access to Heritage Park, Corolla Village, and sound access. In addition, when entering the Heritage Park and Corolla Village area, speed limits remain at 35 mph and gateways/entrances are lacking which impede visual awareness of world-class attractions.



Boardwalks and Submerged Aquatic Vegetation ←



Sound side boardwalk to gazebo in Heritage Park.



Public boardwalk to sound extending from the west end of Corolla Village Road.



Access to the sound is limited to one boat ramp located in Heritage Park.



There is only one public beach access in the Village area.



NC 12 Sidepath

NC 12 MULTI-USE SIDEPATH

The multi-use sidepath runs along the west side of NC 12. From Heritage Park northward, the sidepath is 10-feet wide. Southward, the sidepath serves more as a sidewalk, only 5-feet in width. This facility provides separated space for the “Interested but Concerned” and “Enthusied and Confident” bicyclist groups along with pedestrians as well.

Issue: The 5-foot wide sidewalk section is too narrow to accommodate both bicyclists and pedestrians. In addition, there are incomplete sections south of the study area that sever connectivity to Duck. Also, there are no pathways along the east side of NC 12. This forces bicyclists and pedestrians to cross NC 12 unnecessarily.



The five-foot sidepath across from Corolla Light Shopping Center is too narrow to accommodate both bicyclists and pedestrians.



Paved and Unpaved Roadways

PAVED ROADWAYS

There are few paved roadways in the study area including NC 12, the Heritage Park entrances, and Corolla Village Road. Residents and visitors prefer that these remain the only paved roads within Corolla Village.

Issue: These two-way roads are used by motorists, bicyclists, and pedestrians for circulation causing significant conflict. This issue is amplified along Corolla Village Road which ranges from 16-18 feet in total pavement width. In addition, cars are often parked along Corolla Village Road creating tighter spaces and reduced visibility.

UNPAVED ROADWAYS

Unpaved roadways can be found east of NC 12 but also for a short section of Corolla Village Road.

Issue: The majority of unpaved roadways are generally private and do not provide beach access, with the exception of Corolla Village Road. Unpaved roadways also create more hazard for bicyclists.



Vehicles and pedestrians share the same space along Corolla Village Road with no organization or separation.



Narrow sections of Corolla Village Road create conflicts between pedestrians, vehicles, and bicyclists.



Vehicles must negotiate for space with a two-way traffic pattern due to narrow conditions.



Conditions are not suitable on some roads (Carotank Drive) for encouraging bicycle circulation.



NC 12 CROSSWALKS

There are four marked, high-visibility crosswalks crossing NC 12 in the study area (Austin Street, Club Road (Heritage Park entrance), Corolla Village Road, and Schoolhouse Lane).

Issue: While the crosswalks designate pedestrian crossing space, many motorists do not behave appropriately. The State law requires yielding to pedestrians yet many motorists do not comply - as observed in the field. In addition, there are no other means to slow traffic at these crosswalks. With the speed limit at 35mph and some motorists traveling faster than 35mph, there is risk for pedestrian or bicyclist injury or fatality.

BUILDINGS - TRIP INITIATORS AND GENERATORS

Building footprints display the development pattern through the Corolla Village area. Single-family homes dominate the east side of NC 12 along with the Corolla Light shopping center. A mix of businesses, historic buildings, church, and single-family homes can be found west of NC 12. Buildings in the Village reflect the coastal and maritime culture of Corolla.



Crosswalks and Buildings ←

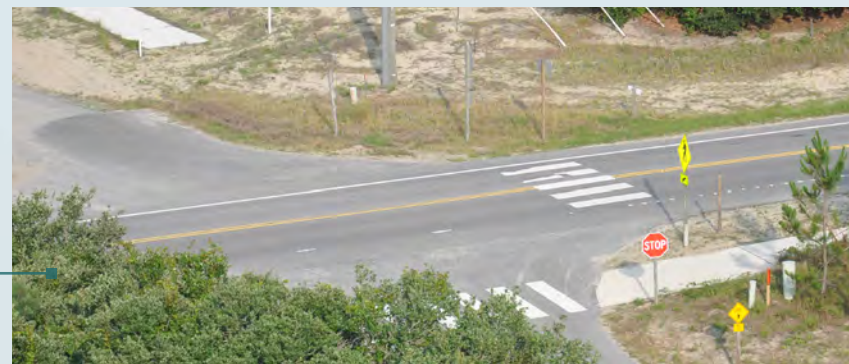
Issue: Corolla Village and the Whalehead historic buildings are scattered, unorganized, and not connected adequately by pathways. With a lack of cohesive wayfinding signage and a large amount of parked and moving cars, visitors are often not aware of all the Village and Park have to offer.



Motorists may not be aware they are required to yield to pedestrians at a crosswalk - even when there is no traffic signal.



The pedestrian and cyclist connection between Heritage Park (where public restrooms are located) and the Lighthouse is not marked.



The crosswalk at NC12 and Corolla Village Road does not link to a sidewalk or sidepath to connect pedestrians and bicyclists to the public beach access.



Key Destinations

KEY DESTINATIONS

World-class destination areas include Corolla Village, Currituck Lighthouse, Wildlife Center, Heritage Park/Sound Access, Corolla Light Shopping Center, and the beachfront. Visitors can enjoy the Under the Oaks Festival, July 4th event, and wine-tasting at Heritage Park and Whalehead. Fees are separate for the Lighthouse and Whalehead.

Issues: Generally, despite the proximity of all the destinations, there is not cohesiveness, connectivity, and wayfinding to link them. Corolla Village is not seamlessly connected to Heritage Park. Maps and kiosks are lacking to orient visitors. In addition, access and amenities such as bathrooms, dog waste stations, and benches are lacking to make travel between destinations more feasible and attractive. Residents and visitors who may easily and willingly walk the full length of a typical mall, do not realize Corolla Village destinations fit within a typical mall footprint (as shown in the map above).

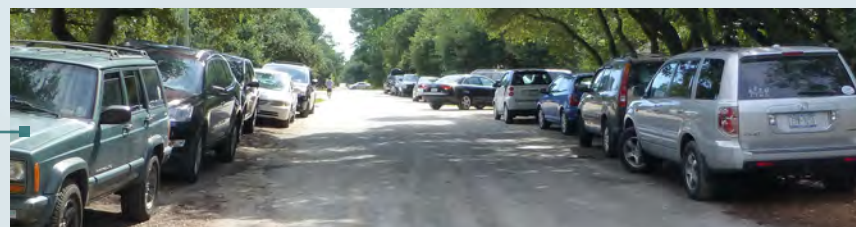


Vehicular Parking

VEHICULAR PARKING

Parking lots are located within Heritage Park, along Corolla Village Road, and in the Corolla Light shopping center. Long-term parking lots are also found in three locations in Corolla Village.

Issue: Cars are often parked alongside roadways in Corolla Village detracting from Village scenery and blocking sightlines. In addition, once visitors have parked at Heritage Park, they often are unaware of easy access to Corolla Village.



Heritage Park provides ample parking but is underutilized, while areas with no parking are overcrowded with unorganized masses of vehicles along narrow roadways.



Bicycle Parking

BICYCLE PARKING

Bicycle parking is sporadically found throughout the Village and Park area.

Issue: Bicycle parking is lacking at the Corolla Light shopping area and public beach access areas. More bicycle parking is needed in strategic areas to accommodate increasing numbers of bicyclists. Bicycle theft is a possibility when bicycles cannot be locked.



Trees are often used for bicycle parking throughout Heritage Park.

SIGNAGE

There are multiple types of directional wayfinding signage found throughout the study area. Signage marks locations such as the Currituck Lighthouse and Corolla Village.

Issue: There is no singular, cohesive signage style and signage is needed in additional places to help direct visitors. In addition, kiosks with maps are lacking.





Needs Assessment



Overview

A professional evaluation of an area will only provide one lens through which recommendations can be crafted. To gain insight into the challenges and opportunities that will fuel appropriate actions, people who live, work, and play in Corolla Village must be involved in the analysis and needs assessment. Public participation during the *Small Area Plan* process revealed strong support for preserving the uniqueness of the area (41%). Historic character was identified as the most unique aspect of the Village (40%). Threats were also identified as big box buildings/chain retail stores (34%), loss of trees and open space (24%), and traffic (21%).

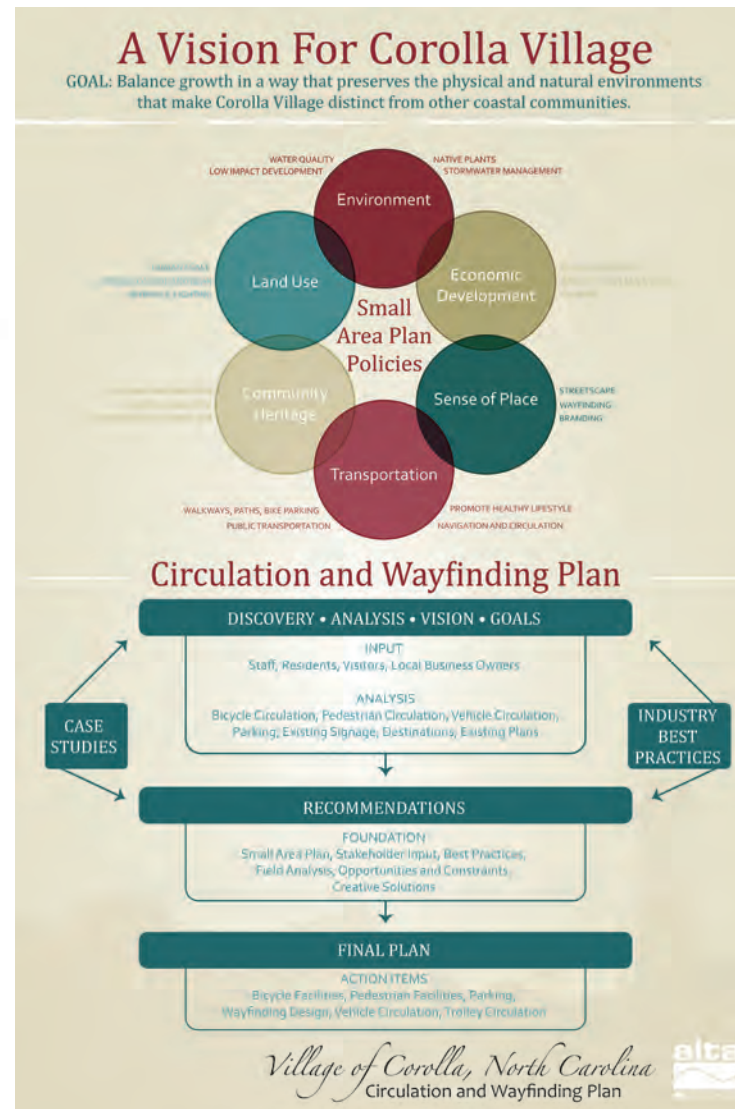
First Round of Public Involvement

The first round of public input served as a link between the goals and action items of the *Small Area Plan* and the process for the *Circulation and Wayfinding Plan*. To garner valuable input, several opportunities were presented to residents, visitors, and business owners to participate in open discussions. A focus group was also held with the board and operations staff of Whalehead. These discussions began with discovering elements each audience considered unique to Corolla. A host of tangible and intangible characteristics including physical composition, values, perception, and activities were noted to form the foundation for plan outcomes.

This round also allowed the community to voice their thoughts on elements to preserve and challenges of the physical environment and human behavior. Unpaved roads, the untouched natural environment, and proximity of the sound to the ocean surfaced as unique characteristics. Haphazard parking, unclear separation of pedestrians and bicyclists from vehicles, and crossings were noted as challenges in the Village.

In addition to focus group meetings, a booth at Under the Oaks Art Festival enabled open discussions and input from staff at Whalehead, residents, and visitors. Traditionally, visitors to the Outer Banks plan yearly trips and travel with multiple generations. Most of the families who shared input expressed a sense of ownership and interest in preserving the hidden nature of Corolla, but also noted safety and congestion issues. Crossing challenges and separation of modes appeared again as concerns for visitors. Meeting reports from the first round of public input can be found in the appendix.

Round 1 Public Input Materials



Establishing a connection between the Small Area Plan and the existing effort to complete a Circulation and Wayfinding Plan was imperative to capitalize on the momentum of action items and public support generated by the County's efforts. Meetings in round one began with recording ideas from the public and asking what facilities they would like to see implemented and which wayfinding sign styles complement the character of the Village.





Second Round of Public Involvement

The second round of public input was organized in the same fashion as the first. Focus group meetings were held with residents, business owners, and Whalehead to present potential design and programmatic solutions. Recommendations were also presented at the weekly concert series at Heritage Park.

Topics covered included a logo for the Village, a wayfinding signage package, physical improvements, and programmatic ideas. Each meeting began with a brief overview of outcomes from the first round of public involvement. Goals, challenges, and ideas for improvements were shared to set a baseline for understanding the current project stage. A series of diagrams was used to present the existing conditions and potential design solutions to increase safety and improve circulation throughout the Village. The logo and wayfinding sign package were presented on boards for each group to review.

A meeting with NCDOT and the County Manager was also conducted to discuss the public's reaction to physical changes within the Village. This meeting provided a foundation for feasibility and implementation in the future. A summary to the right indicates some of the physical recommendations presented during the second round of public input. Overall, the community was very receptive to the changes and approved of safety measures and improvements to circulation for residents and visitors. NCDOT supported most of the changes but will require documentation from the County for public support of the one-way conversion of Corolla Village Road. Refinements to the recommendations below, as well as programmatic recommendations that will support the goals of the plan, can be found in the next two chapters.



The Summer Concert Series at Heritage Park presented a perfect opportunity to reach residents and visitors in a casual atmosphere.

Round Two Public Input Materials

Goals & Findings

SMALL AREA PLAN GOAL: Balance growth in a way that preserves the physical and natural environments that make Corolla Village distinct from other coastal communities.

Circulation and Wayfinding Plan Goals

Goal 1 Transportation and Mobility
Improve mobility and accessibility for all modes of transportation.

- Improve pedestrian and bicycle connectivity
 - Make seamless connection between Heritage Park and Village
 - Create connected walkways/bikeways around Village
- Connect the Ocean to the Sound and provide better access to both bodies of water
- Improve wayfinding through a context-appropriate, cohesive signage package
- Consider trolley service to reduce vehicular congestion

Goal 2 Safety
Improve safety by reducing pedestrian-bicyclist-car conflicts.

- Separate pedestrians and bicyclists from motor vehicle traffic
- Improve pedestrian and bicycle safety along and crossing NC 12 through improved facilities and traffic calming measures
- Promote better predictability of pedestrian, bicyclist, and motor vehicle movements

Goal 3 Health and Quality of Life
Increase the number of people walking and biking in Corolla.

- Create programs that encourage walking and bicycling
- Promote development of pedestrian/bicyclist map and brochure
- Improve pedestrian experience through comfortable, inviting, and appealing spaces
- Provide necessary amenities to make walking and biking more comfortable, feasible activities (e.g. bathrooms)

Goal 4 Economic Development
Improve visitor experience and encourage more day-trip and long-term visitation while maintaining the Village feel of nature, history, and local culture.

- Establish Village as easier to find while maintaining its hidden nature and appeal
- Improve entrance and gateway areas to Heritage Park and Village
- Support human scale policy and development to maintain small village feel
- Draw more people and local businesses to the Village

Goal 5 Environment and History
Protect and enhance ecological and historic integrity of Village area.

- Provide historic and environment learning opportunities through interpretation
- Ensure recommended materials complement and protect the existing environment

Village of Corolla, North Carolina
 Circulation and Wayfinding Plan

The findings from the first round of public involvement were summarized at the beginning of each meeting in round two. This provided an opportunity for round one participants to recall what was discussed previously and bring new participants up to speed on the opportunities and challenges discussed earlier in the year.

Wayfinding & Signage in Corolla

Existing Signage

Proposed Logo

Proposed Unifying Sign Package

Village of Corolla, North Carolina
 Circulation and Wayfinding Plan

The logo and wayfinding package was well received by the public, stakeholders, County staff, and NCDOT.

Round Two Public Input Materials (Greenway and Path Recommendations)



Additional greenways and paths will help define spaces for pedestrian and bicycle circulation.

Physical recommendations presented during round two of public input included:

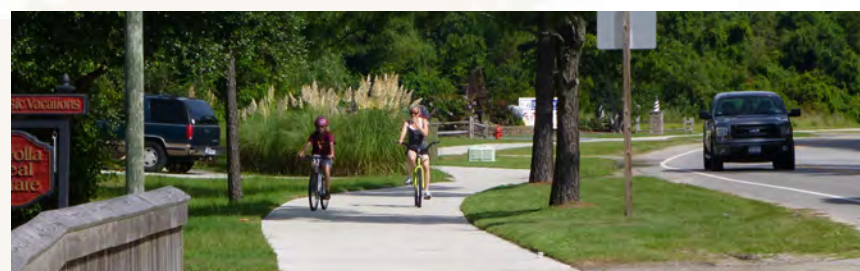
- Greenways and Paths
 - Increase the width of all existing sidepaths to 10 feet to improve passing space for pedestrians and bicyclists.
 - Add a sidepath to the east side of NC 12 to improve circulation and decrease unnecessary crossings.
 - Add a system of boardwalks within the Village to organize and provide separation for pedestrians while maintaining the character of the maritime history as exemplified in Heritage Park.
 - Add an Interpretive and Learning Boardwalk across the sound with opportunities for historic, cultural, and environmental education. Floating wetlands or other habitat and environmental protection improvements should be a component of the boardwalk planning, design, and implementation.



People understand that boardwalks are places for walking. By adding additional boardwalks throughout the Village, pedestrians will receive the message that there are destinations ahead and this is a safe place to walk.



Separation of modes is important in an area with many visitors. On Corolla Village Road, these three children are sharing the same space with an SUV.



The northern portion of the study area sets the benchmark for good sidepath design. The path is separated from the roadway with ample space and vegetation.



Additional stepping stones and benches would clarify spaces for people along the sound south of Whalehead.



- Pedestrian Safety Methods
 - Pedestrian Zone
 - Define a pedestrian zone for the Village throughout the extent of the small area as defined by the *Small Area Plan*. Punctuate the limits of the area with entry monuments and signage indicating the pedestrian zone. Reduce vehicular speed to 25mph in this area.
 - Crosswalks
 - Install speed tables or patterned crosswalks to slow motor vehicles and enhance visibility of pedestrians crossing NC 12, cross roads of NC 12, and driveways.
 - Vegetation
 - Create a buffer from vehicular traffic and provide shade to pedestrians and bicyclists by adding trees between the sidepaths and roadway where space is available for appropriate tree growth. Shrubs and bioswales can be added where trees may not thrive and stormwater control is needed.
 - Vegetated Medians and Pedestrian Refuges
 - Add vegetated medians to NC 12 in varying widths to calm traffic and enhance the character of the Village. This will provide refuge islands for pedestrians crossing NC 12 as well as better organize turning queues for motor vehicles.
 - Vegetated medians can also contribute to stormwater management and air quality along the Outer Banks.

Round Two Public Input Materials (Pedestrian and Bicycle Safety Recommendations)



NC 12 is often densely lined with vehicles within the study area. Methods to slow vehicles and communicate clearly where pedestrians are likely to cross will increase efficient movement and safety.

Multiple layers of safety measures will create an environment that clearly communicate this is a pedestrian zone.



Low native grasses can provide bioretention benefits, stabilize soil, and contribute to the character of the Village.



Bicyclists vary in age and experience throughout Corolla. Here, a crosswalk and bike facility is needed to improve safety for visitors traveling from Heritage Park to the Lighthouse.

Round Two Public Input Materials (Corolla Village Road Recommendations)



10 MPH, ONE-WAY VEHICLE CIRCULATION ON COROLLA VILLAGE RD WITH BIKE PATH, PEDESTRIAN BOARDWALK, & BIORETENTION

Defining spaces for motorists, bicyclists, and pedestrians will improve efficiency and safety.

- Roadway Improvements for Motor Vehicles and Bicycles
 - Convert Corolla Village Road to one-way for motor vehicles. Currently vehicles are negotiating space to pass on a roadway that is too narrow for two-way traffic.
 - Separate bicyclists and pedestrians from vehicular traffic on Corolla Village Road to reduce conflicts and define circulation.



To avoid pedestrians, motorists often travel in the middle of two-way roadways.



Pedestrians do not have a choice but to walk in the roadway throughout the Village.



Pedestrians should walk against traffic to avoid being approached from behind by vehicles, but they often walk with the flow of traffic, as seen here on Corolla Village Road.



Corolla Village Road appears more like a greenway than a roadway when cars are not present.



Without separated spaces, motorists and pedestrians have many points of potential conflict.



• Park and Village Amenities

■ Sound Access

- Create a harbor at Heritage Park to encourage visitors to travel by boat. This will decrease vehicular traffic and increase the exposure of Heritage Park and the Village.
- Enhance the area along the sound in Heritage Park to include logo stepping stone pathways, benches, and interpretive signage.

■ Ocean Access

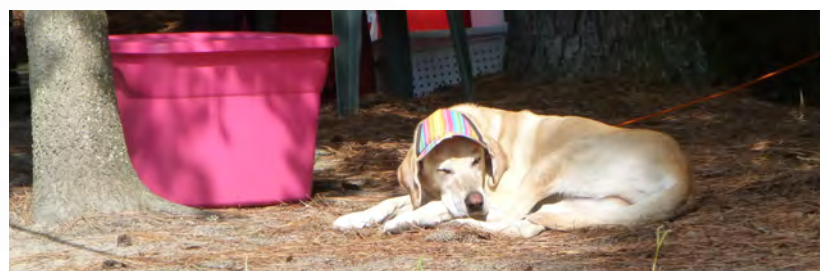
- Improve public access to the ocean by providing a pedestrian connection, loading area, showers, benches, and shade structure.
- Provide a safe, stable route for ADA access to the beach.

■ Dog Waste Receptacles

- Install dog waste receptacles throughout the Park, Village, and along greenways to protect the environment from the effects of solid waste.

■ Comfort Stations

- Provide additional locations for restrooms and water fountains throughout the park and Village to provide safe, clean facilities for visitors. A public-private partnership can be established to implement these mutually beneficial facilities.



According to the visitors bureaus and rental management companies, dog visitorship is increasing each year. Amenities such as drinking fountains and waste stations are needed throughout the Village and Heritage Park.

Round Two Public Input Materials (Park and Village Amenities)



The built environment can enhance user experience by communicating to people where they are permitted to explore. For example, paths should lead to destinations.



Visitors naturally station themselves near bodies of water. This family is sitting along the water instead of on a nearby bench.



Access to the sound is equally important as access to the beach as it offers different activities to attract visitors to the area.

Round Two Public Input Materials (Parking)



- Parking
 - To decrease the clutter of cars along the road within the Village, encourage motorists to park in Heritage Park and walk to other places within the Village.
 - Use plantings to discourage vehicles from parking along the narrow roadways of the Village.
 - Increase the amount of bicycle parking within the Village and Heritage Park to provide more secure options for bicyclists.
- Trolley
 - Establish a trolley system that circulates throughout Corolla with stops at key destinations. Provide stops with route information, schedules, shelters, trash receptacles, and regulations.



Heritage Park has ample space for parking which is left empty while vehicles crowd the sides of the narrow Village streets.

Providing guidance for vehicular and bicycle parking will help organize spaces. The visibility of Trolley amenities will help encourage ridership.



Limited bicycle parking often forces visitors to take their bicycles everywhere, including here along this narrow boardwalk.



Bicycle parking provides a sense of security and can be a component of encouraging ridership.



Recommendations



Overview

The recommendations of this Plan have been vetted from multiple perspectives. The needs of residents, visitors, business owners, and families are considered through the lens of planners, designers, landscape architects, and engineers. Feasibility and constructability are also considered for ease of implementation by County managers, County planning staff, County maintenance staff, and NCDOT. Most importantly, each project created by this Plan is geared toward creating a safer and more comfortable environment for pedestrians and bicyclists.

A common theme throughout the planning process was to preserve the “untouched” character of Corolla Village. Many of the roads throughout the Village area remain unpaved; dense vegetation conceals some structures; and remnants of history punctuate pathways and shorelines. Ecological preservation and conservation of North Carolina’s Outer Banks also surfaced as a guiding principal for recommendations. Waterfowl populations, sub aquatic vegetation, water quality, habitat, and native vegetation play key roles in the delicate treatments aimed at improving safe movement throughout the Village for all modes of travel.

Encouraging visitors and residents to circulate using a well-connected system of bikeways and foot paths provides a multitude of benefits. Better walking and bicycling facilities improve safety and encourage more people to walk and bike, which in turn improves health, provides a boost to the local economy, creates a cleaner environment, reduces congestion and fuel costs, and contributes to a better quality of life and sense of community.

The following recommendations begin with overarching methods behind the creation of nodes and how vehicles, bicyclists, and pedestrians move between nodes. Recommendations then focus on specific improvements for greenways and paths, pedestrian safety, roadway improvements for vehicles and bicycles, and Park and Village amenities. Signage and wayfinding complete the recommendations providing a clear, standardized, and branded method for instructing people how to move through Historic Corolla Village. Each recommendation is coded in the narrative, on a map, and is used in the Implementation Tables in Chapter 6 for prioritization.

Integration with Whalehead and Heritage Park (WH)

In parallel to this study, Whalehead and Heritage Park conducted a study to improve user experience and enhance awareness and accessibility. Final master plan improvements to the park include organization of vehicular parking, pedestrian pathways, a new Visitor Center, and interpretive

signage. The *Circulation and Wayfinding Plan* concentrates on how best to connect people with the amenities of the Park and improve navigation for all modes. Key elements addressed in the recommendations below include ingress and egress to the Park, utilizing the abundance of vehicular parking spaces to mediate unorganized parking throughout the Village, and enhancing access to the Sound. The below recommendations should be executed in conjunction with the final Whalehead Master Plan and may be modified based on final feasibility and design.

WH1: Create a more legible entrance by improving the entrance sign and landscaping and remove the guard shack so Heritage Park does not appear to be private property.

WH2: Emphasize the priority of bicycle and pedestrian circulation by creating a brick raised table at the entrance of Heritage Park to slow vehicles and act as crossings for bicyclists and pedestrians.

WH3: Ensure preference is given to bicyclists and pedestrians by enhancing the sidepath entrance to the park with map kiosk signage and maintaining the viewshed from the path into the Park.

WH4: Provide brick pattern crosswalks throughout the Park where pedestrians and bicyclists intersect with vehicular traffic.

WH5: Provide boardwalk (or similar natural sustainable material path) to indicate Sound access.

WH6: Identify key vistas and provide benches and landscape areas with interpretive signage along the Sound.

WH7: Add a day dock access area to the south of Whalehead. Encourage visitors to travel by boat from the mainland. Explore the possibility of renting seasonal slips to residents.



Heritage Park Recommendations

NOTE: Not all recommendations on the diagram are precisely located. All recommendations should be vetted for correct placement.



Overarching Methods

When developing final recommendations, it is imperative to revisit the original goals and objectives that stemmed from the *Small Area Plan*. These goals will continue to guide the implementation of projects generated by this plan and can serve as a method by which the County prioritizes future projects.

GOAL 1 Mobility *Improve mobility and accessibility for all modes of transportation.*

Communication and organization are keys to increasing mobility for all modes. Cohesive and consistent wayfinding, regulatory signs, materials, and roadway striping will indicate to pedestrians, bicyclists, and motorist where they belong in relationship to one another allowing each to move in a more efficient manner. Closing gaps and providing connectivity will be accomplished by adding paths and making destinations more visible. Adding trolley service to the Village will help alleviate congestion by removing some vehicles from the roadways, reducing pollution, and increasing awareness of destinations within the Village.

GOAL 2 Safety *Improve safety by reducing pedestrian-bicyclist-car conflicts.*

Organization is essential to helping travelers understand where they belong and how to interact with one another. Calming traffic and creating a better sense of predictability for all users will improve safety. Providing separation in areas such as Corolla Village Road will reduce potential conflict. Providing highly visible crosswalks along NC 12 will alert drivers of where to expect pedestrians and bicyclists to cross.

GOAL 3 Health & Quality of Life *Increase number of people walking and biking.*

The built environment can be one of the most valuable communication tools. Providing facilities for biking and walking can encourage people to use these modes for transportation. Sidepaths along both sides of

NC 12 will create a sense of safety for families and decrease the amount of unnecessary crossings. More trips taken by foot or bike can increase cardiovascular health, combat obesity, and improve mental health.

GOAL 4 Economic Development *Improve visitor experience and encourage more day-trip and long-term visitation while maintaining the Village feel of nature, history, and local business character.*

The “untouched nature” and village-scale environment largely contribute to visitors’ repeat journeys to Corolla. Preserving this sense of place will continue to attract multiple generations of families who will continue to build their knowledge of the area. By increasing awareness through wayfinding signage, families will recall businesses to visit and recreational experiences they will want to share with family and friends. Providing information kiosks throughout the Village and implementing a trolley system will educate visitors about destinations they may yet to have explored which will generate revenue for local businesses and the County.

GOAL 5 Environment & History *Protect and enhance ecological and historic integrity of Village area.*

Sensitive design solutions will acknowledge the importance of preserving native vegetation and habitats. Improvements can be made to alleviate stormwater challenges along roads which currently experience flooding in large rain events. These treatments, along with the many historic destinations throughout the Village, will be celebrated with interpretive signage to educate the public about the culture of this historic barrier island.

Nodes (ND)

A series of nodes already exists within Historic Corolla Village as defined by destinations and origins. However, there are several key decision points throughout the Village that are not defined spaces. These nodes (as shown on the map on page 4-5) provide moments of pause, places to reflect, and information to aid in navigation. Nodes are also created by places that have significant cultural value and should have interpretive signage, benches, and vegetation to create a sense of place.

ND1: (In conjunction with WH3) Create a node to serve as the entrance to Heritage Park. Provide clear navigation and information about activities within the Park with a map kiosk. Install benches and vegetation.

ND2: Provide a pedestrian and bicycle plaza as an entrance to the Corolla Light Shopping Center. Use trees to define the space and create shade. Benches should be placed in the plaza to define the space as a meeting place. Install bicycle parking and a map for shops at Corolla Light.

ND3: Add a navigation node at the corner of Corolla Village Road and NC12. This node will intercept bike and pedestrian travelers as well as indicate to motorists that there is a destination (Lighthouse, Heritage Park) to the west. Include landscaping, benches, interpretive signage, and a map kiosk.

ND4: Integrate a decision making node at the entrance to the public Sound access boardwalk. Provide a map kiosk and interpretive signage. Announcements about weekly events should also be posted here.

ND5: Enhance the boathouse area as a node. Provide seating and additional interpretive signage.

ND6: Design the open space at the terminus of Schoolhouse Lane to serve as a node. Use landscaping and picnic benches to define the space. Add a kiosk to post weekly events and announcements. Waste receptacles should also be placed in this area.

ND7: At the corner of Persimmon and Corolla Village Road, another map kiosk area should define the western corner. This will aid in navigation for pedestrians and bicyclists and define the northern limits of the Village.

ND8: Coordinate with land owner to create a node to serve as another main entrance to the Village. Add a map kiosk, benches, and vegetation to define the space.

Access (AC)

Some visitors are unaware of the adventures, cultural stories, shopping, dining, and recreation that Corolla Village has to offer. To generate awareness of these places, clear signage and paths should be implemented to draw people. An improved entrance to Heritage Park will encourage motorists to visit and use this space for parking. Simple touches, like stepping stones and benches, will attract users of Heritage Park to explore the shore of the Sound. A boardwalk connecting the Sound to the Ocean will highlight this unique experience to visitors and provide pedestrians

and bicyclists a safe, ADA accessible pathway to the Sound pier and the public beach access. To make the beach access point more inviting and functional for those driving, walking, and biking, a semi-circle loading area will be added that includes a platform with benches, showers, and shade.

AC1A: The design vocabulary of “places to walk” already exists in the boardwalks of Heritage Park. By continuing this material in other areas, the built environment communicates where people are permitted to circulate. Install a boardwalk (minimum width 10 feet) to emphasize the uniqueness of the Sound to Ocean access. The first phase will be a boardwalk from Heritage Park along Corolla Village Road to NC 12. Properly treated timber, composite wood, or molded concrete are recommended to provide long term maintenance benefits while maintaining the aesthetic of a “wood” boardwalk.

AC1B: Phase two of the Sound to Ocean walk will be along Corolla Village Road to the beach access. The width and material should be selected to match the final design and implementation standards of AC1A.

AC2: Enhance the public beach access by adding a loading area. Include a platform with shade, showers, and benches. This access should be designed to be ADA accessible.

AC3: Extend the boardwalk system along the Sound to create a walking loop and interpretive trail. Provide educational signage, crabbing platforms, and benches.



Enhancing the beach access will create a more user-friendly entrance to the Atlantic Ocean. The boardwalk will provide separation for pedestrians and bicyclists from vehicles and encourage visitors to walk to the beach access. ATV paths should remain to accommodate emergency and maintenance vehicles.



Nodes and Access



Circulation (CR)

Existing circulation patterns throughout the Village are not well defined and can lead to conflicts. In some areas, bicyclists, pedestrians, and motorists share the same space and do not have sufficient room to circulate without careful attention and negotiation for space. The recommended network reduces conflict points, provides separation and organization, uses the built environment to communicate permission, and enhances exposure of the Village businesses. **Improving circulation with better walking conditions can increase the value of a home in the area from \$4,000 to \$34,000.¹** A trolley will provide public transportation for multiple passengers with fixed routes/stops or flexible stop locations. In beach communities, trolleys are often provided during the busier summer months in efforts to mitigate traffic congestion and parking issues. Initially, a trolley should run during summer months using key nodes as stops and large parking lots as hubs.

CR1: Initiate a trolley system for Corolla. Stops should include commercial areas, public beach accesses, Heritage Park, and the Village. Trolley stops are recommended to be equipped with route maps, route timing, shelters, benches, and waste receptacles.



Bicycle Circulation



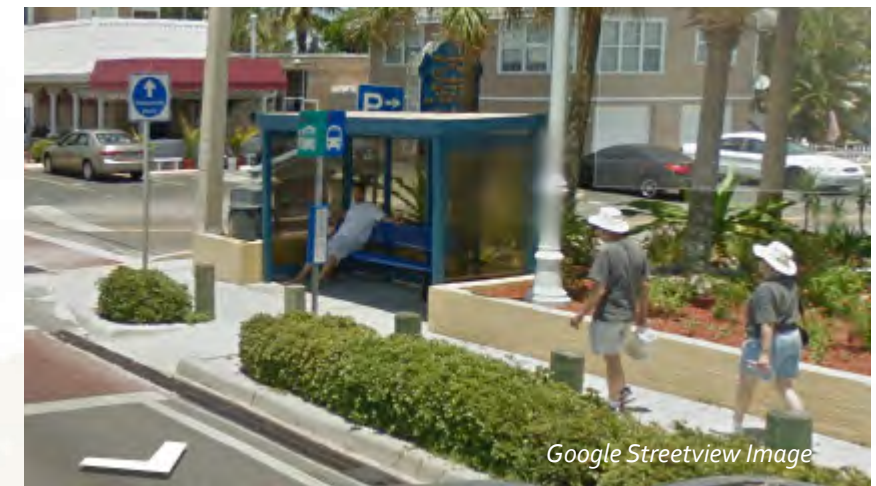
Trolley Circulation: Final stops and routes should be vetted depending on the stage of other recommendations when the Trolley System is implemented. The circulation pattern should include points south and north including shopping centers, periodic stops at neighborhood entrances, and the trailhead south of the off-road portion of NC12.



Pedestrian Circulation



Vehicular Circulation



Trolley Stop Amenities: The trolley stops should include shelters and signage as seen in this image from Bradenton, FL. In addition, route maps and approximate schedules should be posted to encourage use.

¹ Cortright, J. (2009). Walking the Walk: How walkability raises housing values in U.S. cities. CEOs for Cities.

Detailed Recommendations

Greenways and Paths (GP)

MULTI-USE SIDEPATH

Multi-use sidepaths are located exclusively adjacent to a roadway, typically within the road right of way. These provide space for bicycle and pedestrian travel where on-road bicycle facilities are not preferred. This is the most comfortable option for pedestrians and bicyclists in Corolla, as many users are transient and range from young children to retired adults with varying levels of experience. This separation is critical to encouraging more timid bicyclists to travel throughout the area. Both personal health and environmental health will be impacted by replacing driving with walking and bicycling. This will also enhance the sense of place - as the village feel of walking and biking is a component of the area's tourism strategy.

While most destinations within the Village are less than a half mile apart, many visitors are driving between destinations. **By replacing just two miles of driving with walking or biking, 730 pounds of carbon dioxide can be saved from entering the atmosphere.**² Sidepaths also contribute to economic development. **In the Outer Banks, a one-time public investment of \$6.7 million in paths and wide paved shoulders has generated \$60 million in annual tourism revenue from bicyclists.**³ Multi-use sidepaths are recommended along both sides of NC 12 where they currently do not exist. A minimum width of 10 feet is recommended.

GP1: Extend the multi-use sidepath beyond the study area to connect with all destinations along NC 12 south to Duck.

GP2: Widen the sidepath on the west side of NC12 to 10 feet where it does not already meet this width guideline.

GP3: Add a sidepath to the east side of NC12 through the Village area. This will reduce unnecessary crossings, therefore decreasing potential conflicts between pedestrians, bicyclists, and vehicles.

BOARDWALK

Boardwalks are wooden structures that are used most often to provide trail access across wetlands and other sensitive landscapes. Materials can also be composite products that mimic the appearance of wood, or concrete products that can be cast with wood grain patterns. As projects are implemented, care should be taken to match the design guidelines of the first project (i.e. AC1A and AC1B will be the standard for GP4). Installing



Nodes and Access

² Federal Highway Administration. (1992). *Benefits of bicycling and walking to health.*

³ 2004 *The Economic Impact of Investments in Bicycle Facilities*, NCDOT.



boardwalks throughout the Village will provide separation from vehicles and communicate permission to pedestrians. The unique hidden nature of the Village is charming, but also prevents some visitors from walking along Corolla Village Road north of Heritage Park. By providing a well-defined path for pedestrians, they will understand there is a destination ahead. Boardwalks are recommended here to complement the existing boardwalks throughout Heritage Park. A minimum 10-foot wide boardwalk should be provided parallel to Corolla Village Road to provide separation between pedestrians and motorists.

GP4: Add a boardwalk throughout the Village to provide separation of modes. This is a component of RI2. ROW and roadway placement will need to be verified via survey to initiate feasibility and design.

Pedestrian Safety Methods (PS)

CROSSWALK

Pedestrian crossings and/or crosswalks are a crucial element in any pedestrian network. Crosswalks are used to alert motorists to locations where they should expect pedestrians and to identify a designated crossing location for pedestrians. High-visibility marked crosswalks or textured crosswalks are the most visible and effective crosswalk style and communicate a pedestrian-friendly area. Textured crosswalks are recommended across NC 12 to enhance the Village character. Brick is recommended to complement the brick paths around the historic Currituck Beach Lighthouse.

PS1: Add brick textured crosswalks along NC12 and crossroads of NC12.



Image from: bikewalklincolnpark.com

Brick texture will add to the character of the Village and be more visible to motorists than standard crosswalks.

RAISED INTERSECTION/RAISED CROSSWALK

A raised crosswalk or intersection can eliminate grade changes from the pedestrian path and increase visibility of pedestrians as they cross the street. Raised crosswalks and intersections slow traffic and create a sense of arrival to a special place. **These facilities can also serve as a traffic calming treatment and reduce pedestrian/vehicle conflicts by 46%.⁴** A raised intersection is recommended at the Heritage Park main entrance. Along with improving safety, it will signify the entrance of a significant node and help build awareness and draw people to the Park.

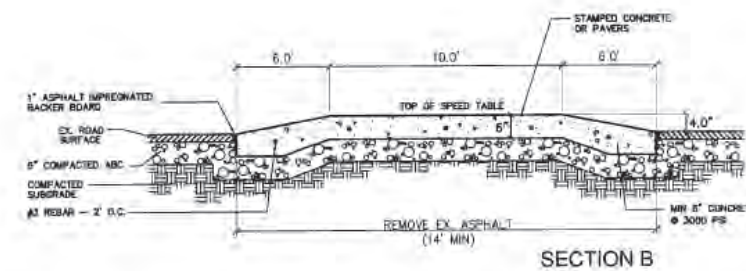
PS2: (In conjunction with WH2) Create a raised intersection at the entrance of Heritage Park.

PS3: Install a raised crosswalk between Heritage Park and the main entrance to the Currituck Lighthouse.



Image from: newhavensafeststreets.org

Raised intersections elevate cars slightly and communicate important messages.



This design detail for a raised intersection is from Chapel Hill, NC.

⁴ Federal Highway Administration. (2008). *Desktop reference for crash reduction factors.*

VEGETATED MEDIAN OR CROSSING ISLANDS

Crossing islands—also known as center islands, refuge islands, and pedestrian islands—are raised islands placed in the center of the street at intersections or midblock to help protect crossing pedestrians from motor vehicles. Center crossing islands allow pedestrians to monitor one direction of traffic at a time. This also provides a refuge to young children, seniors, and physically challenged people who may move at a slow pace. **They are a proven crash reduction device for pedestrians, reducing crash rates by 56%.⁵** In addition, vegetated median islands may serve as a traffic calming device with or without defined crosswalks. They also enhance the character and sense of place by defining space and providing seasonal color. Median islands are recommended along NC 12 to communicate the Village entrance and to slow traffic.

PS4: Add a vegetated median across from the gateways to Historic Corolla Village. This median will be narrow and contain grasses at the southern entrance and will widen as space allows. Installing turn pockets will help organize vehicles as they queue to enter Heritage Park and Corolla Light. Actual width and placement of turn pockets both north and south of entrances to Corolla Light and Heritage Park should be vetted in a feasibility study prior to final design.

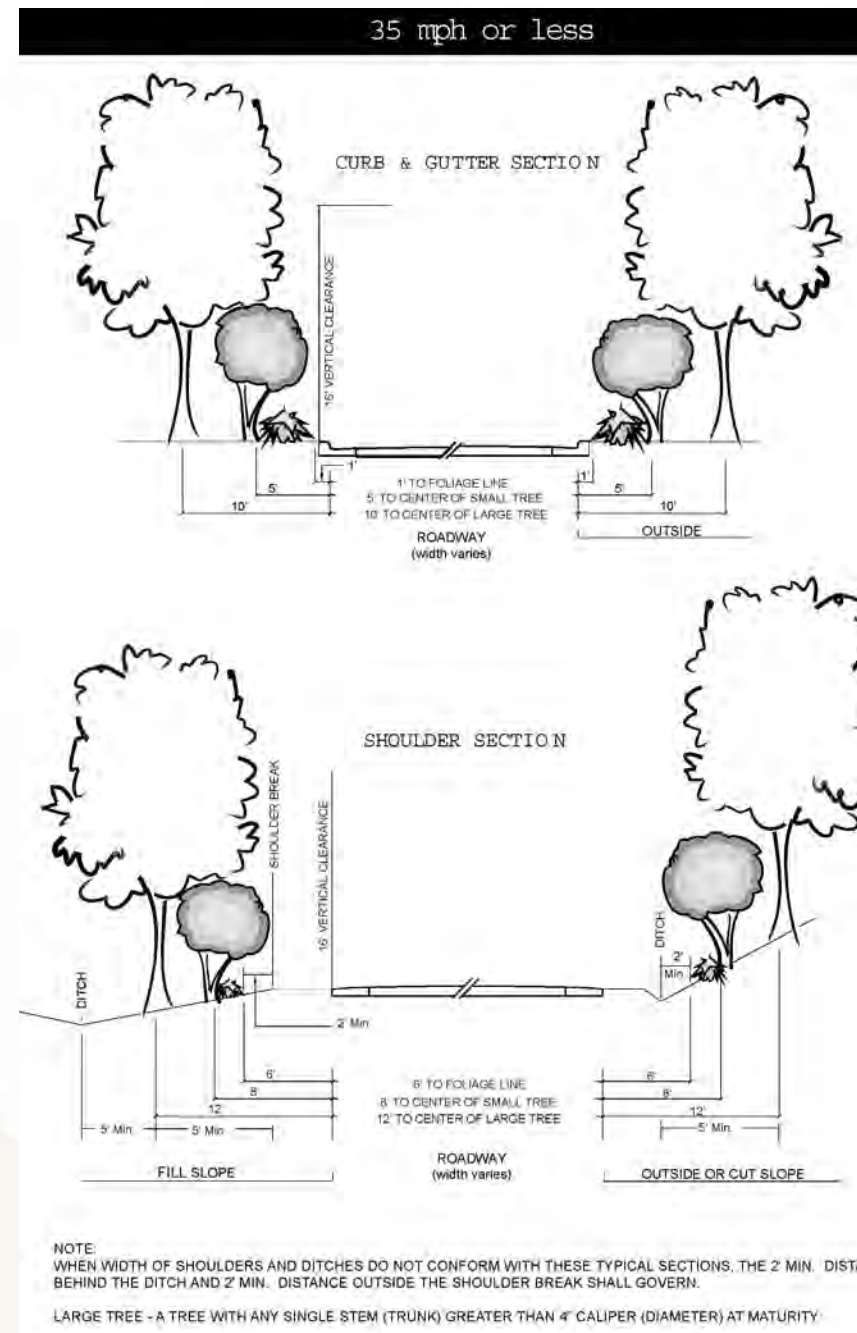
STREET TREES AND NATIVE VEGETATION

Street trees provide a number of benefits including providing a physical barrier between pedestrians and the street, providing shade, visually narrowing the street (which may slow traffic), and enhancing character. A context-sensitive approach should be used when selecting street tree varieties to ensure they can survive and not damage surrounding sidewalks or streets. Prior to installation, appropriate soil amendments and irrigation techniques should be implemented to increase the success of survival. Local nurseries should be contacted to source trees that can withstand wind and salt. Trees approved by NCDOT are listed in the following table and can be considered along NC 12.

PS5: (In conjunction with PS4) Install native vegetation within the median islands. During the feasibility and design stage, consider the possibility of using the median along NC 12 to serve as a bioswale.

⁵ Federal Highway Administration. (2008). *Desktop reference for crash reduction factors.*

PS6: (In conjunction with GP improvements) As greenways and paths are designed for implementation and widening (including the AC1A, AC1B and AC2), determine where space allows for street trees and native vegetation. Bioswales should also be considered to mitigate flooding throughout the Village area. Accommodations should be made for areas where vehicles may have to pull along the side of the road to make way for emergency vehicles.



NCDOT planting guidelines.

Tree Species Commonly Used by NCDOT

- Acer rubrum, Red Maple- D, LT, XFC
- Acer saccharum, Sugar Maple- D, LT, XFC
- Amelanchier arborea, Downy Serviceberry, D, ST, FL, FR, BK, XFC
- Betula nigra, River Birch- D, LT, BK
- Cercis canadensis, Eastern Red Bud- D, ST, FL
- Chionanthus virginicus, White Fringetree- D, ST, FL, FR
- Cladrastis lutea (kentukea)- American Yellowwood- LT, FL, XFC
- Cornus florida, Flowering Dogwood- D, ST, FL, FR, XFC
- Cryptomeria japonica, Japanese Cryptomeria- E, LT, H/S
- Fagus grandiflora, American Beech- D, LT, FR, BK, XFC
- Fraxinus pennsylvanica, Green Ash- D, LT
- Halesia carolina, Carolina Silverbell- D, LT, FL, FR
- Juniperus virginiana- Eastern Red Cedar- E, LT, H/S
- Koelreuteria paniculata, Golden Raintree- D, LT, FL, FR, XFC
- Lagerstroemia indica, Crape Myrtle - D, ST, FL, BK, XFC
- Lagerstroemia fauriei, Japanese Crape Myrtle- cultivars are highly resistant to mildew and more cold hardy)- D, ST, FL, BK, XFC
- Liquidambar styraciflua, Sweetgum (the fruitless variety may be more practical for residential use)- D, LT, FR, XFC
- Liriodendron tulipifera, Tulip Poplar- D, LT, FL, XFC
- Magnolia grandiflora, Southern Magnolia- E, LT, FL, FR, H/S
- Magnolia- a large selection of deciduous native and cultivated magnolia species are worthy of use- LT to ST, FL, FR, BK
- Malus, Flowering Crabapple- variety of sizes fit well into the landscape (research selection for disease and insect resistance) - D, ST, FL, FR
- Metasequoia glyptostroboides, Dawn Redwood- D, LT, H/S, XFC
- Nyssa sylvatica, Black Gum- D, LT, FR, BK, XFC
- Oxydendrum arboreum, Sourwood- D, ST, FL, FR, BK, XFC
- Picea abies, Norway Spruce- E, LT, FR
- Pinus strobus, White Pine- E, LT, H/S
- Pinus taeda, Loblolly Pine- E, LT
- Pinus thunbergiana, Japanese Black Pine- E, LT
- Pinus virginiana, Virginia Pine- E, LT, H/S
- Pistacia chinensis, Chinese Pistachio- D, ST, FR, BK, XFC
- Platanus x acerfolia, London Plane Tree (or Sycamore)- D, LT, FR, BK
- Platanus occidentalis, American Plane Tree (or Sycamore)- D, LT, FR, BK
- Prunus cerasifera, Flowering Plum- D, ST, FL
- Prunus mume, Japanese Apricot- D, ST, FL
- Prunus serrulata, Japanese Flowering Cherry- D, ST, FL, BK
- Prunus subhirtella, Higan Cherry- D, ST, FL, FR, BK
- Prunus x yedoensis- Yoshino Cherry- D, LT, FL, FR, BK
- Quercus alba, White Oak, D, LT,
- Quercus acutissima, Sawtooth Oak- D, LT, FR
- Quercus coccinea, Scarlet Oak- D, LT, FR, XFC
- Quercus falcata, Southern Red Oak- D, LT, FR
- Quercus palustris, Pin Oak- D, LT, FR, XFC
- Quercus phellos, Willow Oak- D, LT, FR
- Quercus virginiana, Live Oak- E, LT, FR
- Sophora japonica, Japanese Sophora- D, LT, FL, FR
- Taxodium distichum, Bald Cypress- E, LT, BK, XFC
- Tsuga canadensis, Canadian (Eastern) Hemlock- E, LT, FR, H/S
- Tsuga caroliniana, Carolina Hemlock- E, LT, FR, H/S
- Vitex agnus-castus, Chastetree (or Vitex)- D, ST, FL
- Zelkova serrata, Japanese Zelkova- D, LT, BK, XFC

Shrubs/Groundcover/Grasses Commonly Used by NCDOT

- Abelia x grandiflora- Glossy Abelia - E, MS, FL, H/S
- Aesculus parviflora, Bottlebrush Buckeye- D, LS, FL, FR
- Aronia arbutifolia, Red Chokeberry- D, LS, FR, XFC
- Berberis thunbergii, Japanese Barberry- D, MS, FR, XFC
- Buddleia davidii, Butterfly-bush- D, MS, FL
- Callicarpa americana, American Beautyberry- D, MS, FL, FR
- Callicarpa dichotoma, Purple Beautyberry- D, SS, FL, FR
- Caryopteris x clandonensis, Bluebeard (or Blue-spirea)- D, SS, FL
- Chaenomeles speciosa, Common Flowering Quince- D, LS, FL, FR
- Clethra alnifolia, Summersweet- D, MS, FL, FR, XFC
- Cornus alba, Tatarian Dogwood- D, LS, BK, XFC
- Cornus sericea, Redosier Dogwood - D, LS, BK, XFC
- Cotinus coggygria, Smokebush (or Smoke Tree)- D, LS (ST), FL, XFC
- Elaeagnus pungens, Thorny Elaeagnus- E, LS, H/S
- Euonymus alata 'compacta', Compact Burning-bush- D, LS, FR, BK, H/S, XFC
- Forsythia x intermedia, Border Forsythia- D, LS, FL
- Fothergilla gardenii, Dwarf Fothergilla- D, SS, FL, XFC
- Hamamelis virginiana, Witchhazel- D, LS (ST), FL, XFC
- Hamamelis x intermedia- group of hybrid Witchhazels- D, LS (ST), FL, XFC
- Hemerocallis- Daylily (thousands of varieties available)- D to E, G, FL
- Hydrangea quercifolia, Oakleaf Hydrangea- D, MS, FL, XFC
- Hypericum frondosum, Golden St. Johnswort- D, SS, FL
- Ilex x attenuata- group of hybrid hollies (Foster)- E, LS (ST), FR, H/S
- Ilex cornuta, Chinese Holly- E, LS, FR, H/S
- Ilex crenata, Japanese Holly- E, LS, H/S
- Ilex glabra, Inkberry- E, LS, FR, H/S
- Ilex latifolia, Lusterleaf Holly- E, LS (ST), FR, H/S
- Ilex opaca, American Holly (upright hollies)- E, LS (ST), FR, H/S
- Ilex verticillata, Winterberry- D, LS, FR
- Ilex vomitoria, Yaupon Holly- E, LS (ST), FR, H/S
- Ilex x 'Nellie R. Stevens', Nellie R. Stevens Holly- E, LS (ST), FR, H/S
- Itea virginica, Virginia Sweetspire- D, MS, FL, XFC
- Jasminum nudiflorum, Winter Jasmine- D, SS, FL
- Juniperus- multitude of junipers ideal for various landscape uses- E, LS to G
- Kerria japonica, Japanese Kerria- D, MS, FL
- Lagerstroemia- many smaller (shrubby) Crape Myrtles are introduced annually - D, SS (MS), FL, XFC
- Liriope muscari, Big Blue Liriope- E, G
- Loropetalum chinense, Loropetalum- E, LS, FL, H/S
- Myrica cerifera, Southern Wax Myrtle- E, LS, FR, H/S
- Myrica pensylvanica, Northern Bayberry- E, LS, FR, H/S
- Osmanthus x fortunei, Fortune's Osmanthus- E, LS, FL, H/S
- Pyracantha coccinea, Scarlet Firethorn- E, LS, FL, FR, H/S
- Pyracantha koidzumii, Formosa Firethorn- E, LS, FL, FR
- Raphiolepis umbellata (indica), Indian Hawthorn- E, MS, FL, FR
- Spiraea cantoniensis, Reeves Spirea- D, MS, FL
- Spiraea x bumalda- Bumald Spirea- D, SS, FL
- Taxus x media, Spreading Yew- E, height varies, FR, H/S
- Terstroemia gymnanthera, Japanese Cleyera - E, LS, FL, FR, H/S, XFC
- Viburnum - E to D, LS to MS, FL, H/S
- Weigela florida, Weigela (various sizes, colors, etc.)- D, LS, FL

E-evergreen	LS- large shrub	FL- conspicuous flower	XFC- exceptional fall color	LT (Large Tree): 30'- taller	MS (Medium Shrub): 4'- 8'
D-deciduous	MS- medium shrub	FR- conspicuous fruit		ST (Small Tree): 15'- 30'	SS (Small Shrub): less than 4'
LT- large tree	SS- small shrub	BK- attractive bark or stem color		LS (Large Shrub): 8'-taller	
ST- small tree	G-groundcover	H/S-good hedge/screen			



LIGHTING

Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections. Foot lighting should be provided along greenways, sidepaths, boardwalks, and beach access steps/ramps in the Village and throughout Heritage Park - with care taken to preserve visual access to the sky/avoid light pollution. Prior to installation, a design plan should be created to vet lighting placement to avoid interfering with wildlife habitat. Special care should be taken to identify foot lighting products that are low, emit minimal light pollution, and have minimal effects on nearby habitats.

PS7: (In conjunction with GP improvements) Install pedestrian lighting throughout the Village including all greenways and paths, boardwalks, and major crossings of NC 12.

SPEED REDUCTION

A pedestrian zone will be established throughout the Historic Village area. Signage will indicate a pedestrian zone and speed limits will be lowered to enhance the safety within this corridor along NC 12. Lowering motorist speed will have a significant impact on severity of pedestrian/vehicle conflicts. **When pedestrians are struck by a 40mph vehicle, there is an 85% chance of fatality versus 45% at 30mph and 5% at 20mph.**⁶

PS8: Create a pedestrian zone by adding signage (further detailed in signage section) and reducing the speed along NC 12 to 25mph and along other Village roads to 10mph.

Roadway Improvements for Vehicles and Bicycles (RI)

VILLAGE BICYCLE BOULEVARD

An on-road bikeway or bicycle boulevard is typically found on low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists with clearly delineated space.

Roadway width on Corolla Village Road varies from 18' to 16' with paved and unpaved conditions. This is the main thoroughfare through the Village and connects Heritage Park to museums, restaurants, shops, and rental check-in locations. With narrow widths, this roadway is not sufficient enough to carry two-way traffic without one vehicle leaving the roadway to accommodate passing. This condition is hazardous to motorists and

substantially less safe for any pedestrians or bicyclists who also share the space. With no alternative routes for circulation of the three modes, the best solution is to accommodate separation by transforming the two-way vehicular circulation to one-way, leaving space for pedestrians and bicyclists.

This one-way conversion will also increase awareness of the destinations in the Village, and thereby supports the goal of economic development. This circulation pattern will also alleviate the confusion at the northern entrance/exit to Heritage Park. Currently a tree in the right of way creates conflicts between drivers who interpret this as a roundabout, and those who do not. By converting the northern entrance/exit of Heritage Park to a two-way stop with one-way northbound circulation, vehicle conflicts will be reduced. This also provides better direction to motorists along Corolla Village Road who will now be required to stop before turning from westbound to northbound. This allows pedestrians and bicyclists to cross from the Park to Corolla Village Road between stopped vehicles.

This roadway recommendation, in concert with the recommendation to add a boardwalk through the Village will occur in two stages. The initial separation will be achieved by establishing the one-way vehicular route with signage and pavement markings, and striping a multi-use path within the roadway. This application is similar to the sidepath along NC 12 in Nags Head and Duck. Bicycle and pedestrian markings will be placed within the multi-use path with double sided chevrons to indicate travel is permissible in both directions. This will provide an initial organization and separation.

Phase two of this improvement will occur when the boardwalk is designed and constructed along Corolla Village Road. This will remove the pedestrians from the roadway and provide separation for all modes. The sidepath will then be converted into a multi-directional bikeway.

RI1: Convert Corolla Village Road to one-way and stripe a multi-use roadway space for pedestrians and bicyclists.

RI2: (In conjunction with AC1A and GP4) With completion of the pedestrian boardwalk along Corolla Village Road from NC12 west to the Sound access boardwalk and the boardwalk through the Village, convert the multi-use roadway path into a two-way bike facility.



The first phase of the one-way conversion employs precedents set by Duck and Nags Head in the Outer Banks. Striping will provide separation within the roadway for pedestrians and cyclists. Parking will remain on the south side of Corolla Village Road.

⁶ UK Department of Transportation, 1987. *Killing speed and saving lives.*

Reduced crossing conflicts with other vehicles

Reduced friction with other vehicles

Eliminates parking chaos and safety issues

Better defines movements

Clarity of movements

Better sight lines



Better sight lines

Reduced conflicts with pedestrians

Slow down at crossings

Minimize crossing distance/exposure

Reduced number of crossing conflicts with vehicles

Better sight lines

Removes faster cyclists out of pedestrian mix

EMERGENCY VEHICLES

No change to pavement widths or turning radii

Still allows large vehicle access (emergency, moving, etc.)

Modifications to vehicular movements have multiple benefits. By providing organized space for each mode of travel, conflicts can be reduced. Separation also acts as an encouragement method for interested but concerned bicyclists, who often entertain riding a bike when on vacation. The installation of the boardwalk should be located on the Heritage Park property to preserve parking potential on the south side of the road right of way.



Park and Village Amenities (PVA)

DOG WASTE RECEPTACLES

Facilities and enforcement improve the success of proper behavior by pet owners. Dog waste stations should be installed throughout Heritage Park, along the multi-use paths, and at public beach accesses. These stations should include biodegradable bags and waste cans. Staff should be encouraged to police the site periodically to enforce behavior. Maintenance will be key to the success of this program. Stations should be added when the appropriate maintenance crews can be assigned to bi-weekly can-emptying. The schedule for removal should be re-evaluated each season to ensure the frequency is appropriate for the amount of use.

PVA1: Install pet waste stations around Heritage Park. Placement guidance: 1 per entrance/exit, one or two per open area frequented by pets, linear spaces such as along the sound - "always one in sight." Whenever possible, place in the shade.

PVA2: Install pet waste stations at public beach accesses (one beach side, one road side).

PVA3: Install pet waste stations along the NC12 sidepaths. Placement guidance: 1 per mile initially, monitor problem areas and install where needed.

COMFORT STATIONS

Comfort Stations are facilities that house restrooms, water fountains (for humans and pets), and information. Consideration should be made for adding one or two comfort stations to Heritage Park to serve the public daily and during large events. Another facility should be located in the heart of the Historic Village. This will serve patrons of shops and restaurants while also becoming a central location for information about weekly events. A public/private partnership should be established to fund and maintain the facility within the Village.

PVA4: Add additional comfort stations to Heritage Park.

PVA5: Create a public/private partnership to fund and maintain a comfort station within the Village.

PARKING

To alleviate the parking congestion along the road within the Village, motorists will be encouraged to park in Heritage Park. The Park has ample

spaces and is being redesigned to have several "parking rooms." Each room should have a clear pedestrian path with access to a map kiosk so pedestrians can orient themselves, understand the nodes and destinations within the Village, and view walking and biking times on a map. Vegetation should also be planted along roads where vehicles currently park. This vegetation and signage will help modify traditional behaviors. An awareness campaign should also accompany this to inform business owners in the Village to direct their patrons elsewhere to park.

PVA6: Install signage throughout the Village that encourages motorists to park at Heritage Park to circulate throughout the Village area.

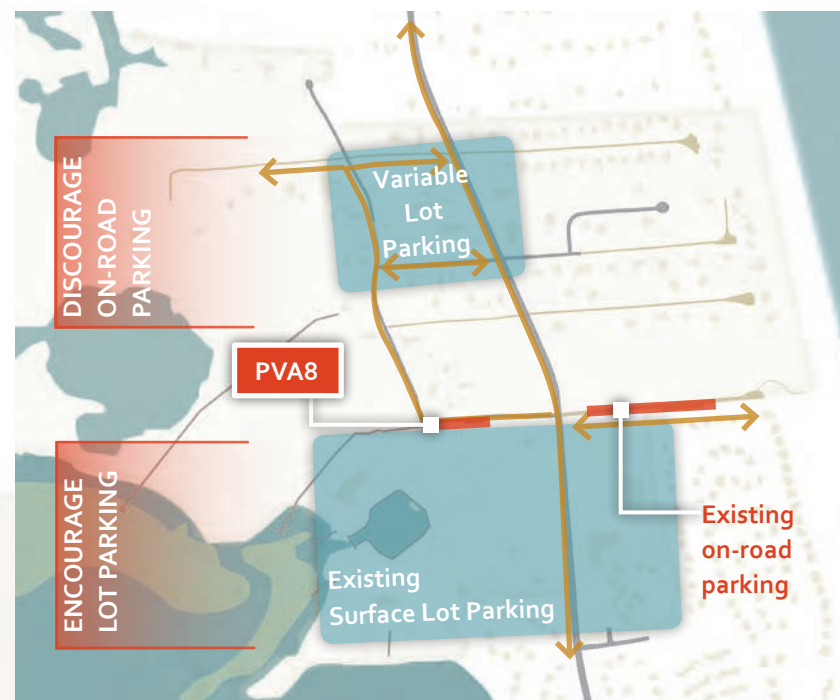
PVA7: Plant low, hardy vegetation along the roadway throughout the Village to discourage parking along the side of the road.

PVA8: (In conjunction with R11) Use back-in angled parking along Corolla Village Road near the Lighthouse to improve pedestrian and bicyclist safety by increasing visibility for motorists when departing parking spaces.

PVA9: Install bicycle parking racks at strategic, geographically distributed locations throughout Heritage Park and the Village, especially at key destinations.



Back-in angle parking on Corolla Village Road would work similar to this example from Bike Denton showing back-in angle parking with a contraflow bike lane. <http://bikedenton.wordpress.com/>



Vehicle Circulation with Vehicle Parking Areas

Figure 7 Cities using back-in/head-out angle parking.

City	Source	
Arlington, VI	Dan Burden	Walkable Communities, Inc.
Birmingham, AL	Russ Soyring	City of Traverse City, MI
Burnaby, Canada	Dan Burden	Walkable Communities, Inc.
Charlotte, NC	Dan Burden	Walkable Communities, Inc.
Chico, CA	Patrick Siegman	Nelson/Nygaard
Everett, WA	Michael M. Moule	Livable Streets, Inc
Honolulu, HI	Dan Burden	Walkable Communities, Inc.
Indianapolis, IN	Michael M. Moule	Livable Streets, Inc
Knoxville, TN	Michael M. Moule	Livable Streets, Inc
Marquette, MI	Russ Soyring	City of Traverse City, MI
Montreal, Canada	Michael M. Moule	Livable Streets, Inc
New York, NY	Dan Burden	Walkable Communities, Inc.
Olympia, WA	Dan Burden	Walkable Communities, Inc.
Plattsburgh, NY	Dan Burden	Walkable Communities, Inc.
Portland, OR	Michael M. Moule	Livable Streets, Inc
Pottstown, PA	Michael M. Moule	Livable Streets, Inc
Salem, OR	Todd Boulanger	City of Vancouver, WA
Salt Lake City, UT	Dan Burden	Walkable Communities, Inc.
San Francisco, CA	Michael M. Moule	Livable Streets, Inc
Seattle, WA	Dan Burden	Walkable Communities, Inc.
Tacoma, WA	Dan Burden	Walkable Communities, Inc.
Tucson, AZ	Michael M. Moule	Livable Streets, Inc
Vancouver, WA	Todd Boulanger	City of Vancouver, WA
Ventura, CA	Todd Boulanger	City of Vancouver, WA
Washington, DC	Dan Burden	Walkable Communities, Inc.
Wilmington, DE	Michael M. Moule	Livable Streets, Inc

Figure 7 from the 2005 Nelson/Nygaard *Back-in/Head-out Angled Parking* report shows cities that have successfully implemented back-in angled parking.



Bicycle Parking

Signage and Wayfinding

Many of the improvements above rely on a clear wayfinding and signage package. First, a brand must be established to improve clarity and reduce sign clutter. Second, a concept package needs to be crafted to provide a family of sign types. The following logo and sign package were approved by the County, public, and NCDOT during the second phase of public involvement. Placement and final design of the package will be determined in a future study with demolition plans to remove unnecessary signs and an installation plan to guide the County through implementation of the new sign package.

LOGO

The logo was created to celebrate the unique features of Historic Corolla Village. Whalehead history and architecture play an important role in the history of the island, its residents, and visitors. The unique roof line is captured in gestural motions along with the shoreline and lighthouse. The color palette alludes to the sandy beaches, unpaved roads, and crisp blue water – which complements the new logo for Whalehead.



SIGN PACKAGE

The sign package is inspired by the maritime history of the island and blends well with the new logo. The look of copper with a green patina serves as embellishments to the wood posts. Within the Park, this post and bracket design should be used. On NC12, break-away posts will be used for safety.

SIGN PLACEMENT

Preliminary sign placement is detailed on the following pages. Adjustments to this placement will be made during the next phase of Signage and Wayfinding Implementation.



Concept illustration of gateway signage.



Wayfinding and signage package.



 BIKE/PED WARNING

  MAP KIOSK

MAP KIOSK
IN PLAZA  

- <- HERITAGE PARK
- <- VILLAGE PARKING
- ^ BEACH ACCESS
- ^ CURRITUCK LIGHTHOUSE 

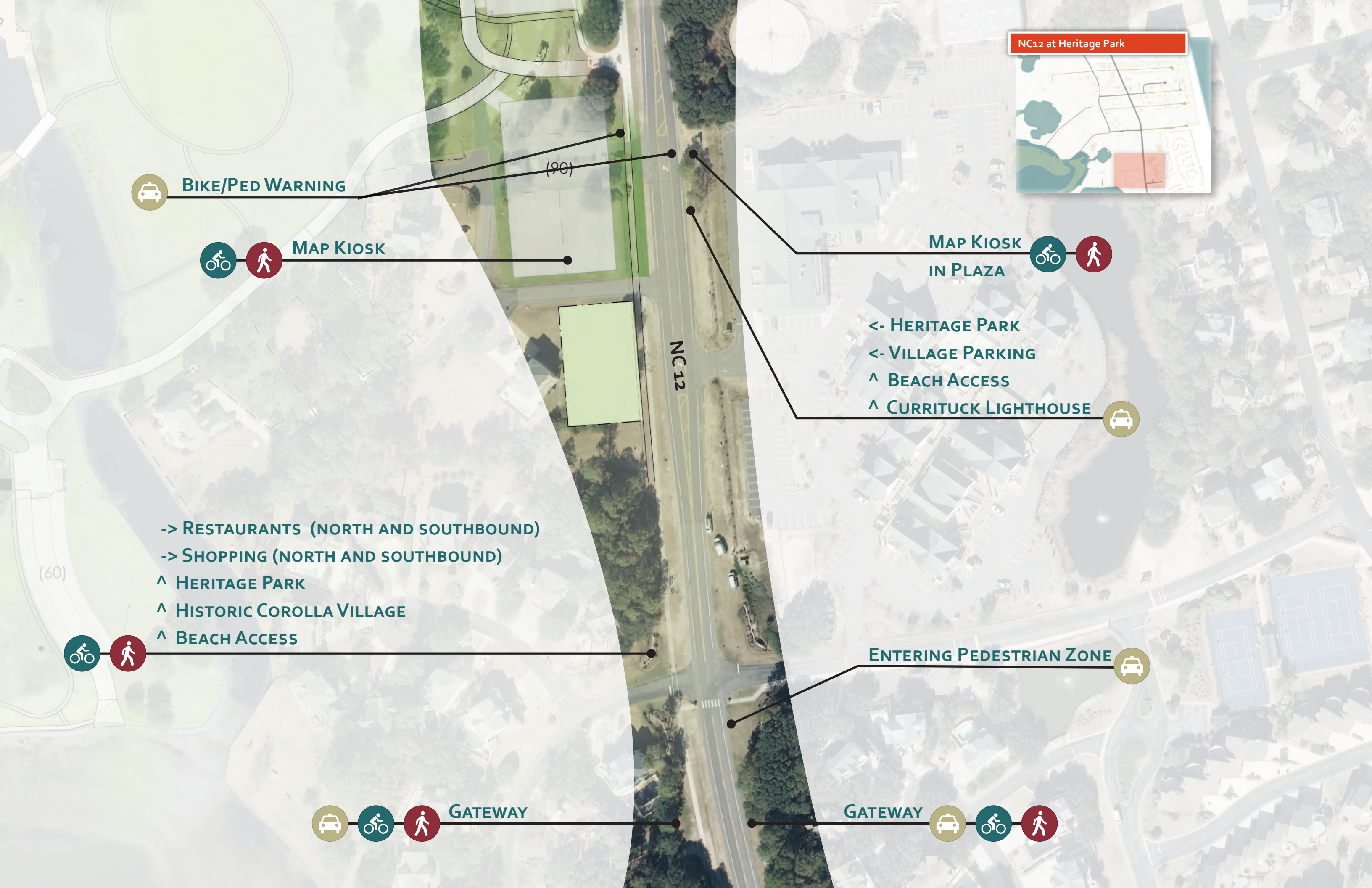
- > RESTAURANTS (NORTH AND SOUTHBOUND)
- > SHOPPING (NORTH AND SOUTHBOUND)
- ^ HERITAGE PARK
- ^ HISTORIC COROLLA VILLAGE
- ^ BEACH ACCESS

ENTERING PEDESTRIAN ZONE 

   GATEWAY

GATEWAY   





ONE WAY

INDICATING HERITAGE PARK TRAFFIC CAN NOT TURN RIGHT

^ HISTORIC COROLLA VILLAGE

<- SOUND ACCESS

-> BEACH ACCESS

-> RESTROOMS



STOP

LEAVING HERITAGE PARK



DO NOT ENTER

PREVENTING DRIVERS FROM TURNING RIGHT OUT OF HERITAGE PARK



MAP KIOSK



MAP KIOSK



MAP KIOSK

STOP

WB ON COROLLA VILLAGE RD
VEHICLES MAY TURN RIGHT OR LEFT



<- VILLAGE PARKING



RESTROOMS

DOUBLE SIDED



COROLLA VILLAGE ROAD

NC 12

(45)

(45)

(80)

(90)

Northeast Corner of Heritage Park



NCC 12

-> CURRITUCK LIGHTHOUSE

-> VILLAGE PARKING

<- PUBLIC BEACH ACCESS

SOUTHBOUND



COROLLA VILLAGE ROAD

FUTURE PUBLIC BATH HOUSE

<- CURRITUCK LIGHTHOUSE

<- VILLAGE PARKING

-> PUBLIC BEACH ACCESS



BEACH RULES/REGS



MAP KIOSK



Corolla Village Road and Public Beach Access



(80)

(90)

^ CURRITUCK LIGHTHOUSE

^ BEACH ACCESS

-> RESTAURANTS

-> SHOPPING



SOUTHBOUND



MAP KIOSK

SCHOOLHOUSE LANE

^ RESTAURANTS

^ SHOPPING



^ CURRITUCK LIGHTHOUSE

^ BEACH ACCESS

^ RESTAURANTS

^ SHOPPING



SOUTHBOUND

CAROTANK DRIVE

^ RESTAURANTS

^ SHOPPING

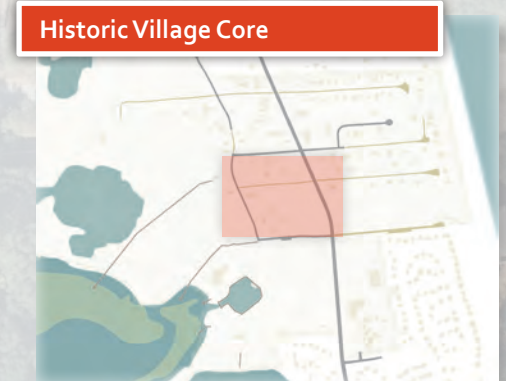


COROLLA VILLAGE ROAD

<- RESTAURANTS

<- SHOPPING

^ LIBRARY

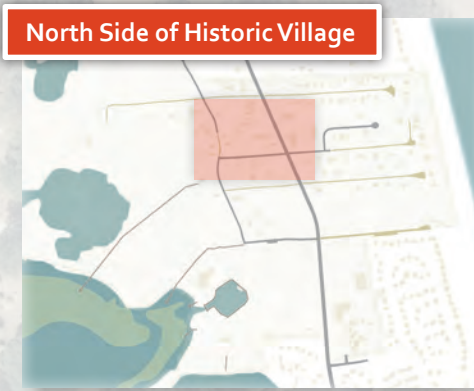


^ RESTAURANTS

^ SHOPPING

^ LIBRARY

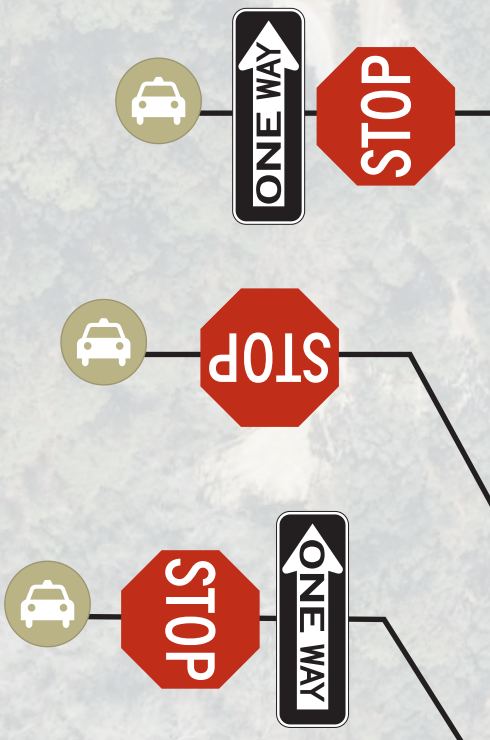




   GATEWAY

NC 12

^ CURRITUCK LIGHTHOUSE
^ BEACH ACCESS
^ HISTORIC COROLLA VILLAGE
SOUTHBOUND



^ 4-WHEEL DRIVE BEACH ACCESS

PERSIMMON STREET

DO NOT ENTER
PREVENTING
DRIVERS FROM MOVING SOUTHBOUND
ONTO COROLLA VILLAGE ROAD



  MAP KIOSK

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Programming and Marketing



Overview

Meeting the goals of the *Corolla Circulation and Wayfinding Plan* will require more than construction and installation of recommended walking and bicycling facilities. It will also require the initiation and continued support of walking and bicycle-related programs from local officials, residents, visitors, businesses, and community organizations. This chapter outlines a program toolbox for Corolla Village to meet the needs of pedestrians and bicyclists that cannot be met through facility construction alone.

New programs will engage people, encourage increased participation, and educate residents and visitors about safety. A program may be presented as a marketing campaign, single effort, on-going initiative, or one-time event, depending on its purpose. Every initiative should have a well-defined purpose or focus, a clearly identified goal (or goals), a lead agency/organization, and a logical timeline or schedule. In essence, these different efforts market walking and bicycling to the general public and ensure the maximum “return on investment” in the form of increased mode shift to walking and bicycling. The programs recommended here reflect public input and best practices from other bikable and walkable communities including similar beach villages.

When considering future programming for Corolla, it is necessary to consider the local population and the seasonal aspect of community life including the distinct needs and differing travel patterns or backgrounds of the following groups:

- Local, year round residents
- Seasonal summer workers
- Seasonal summer visitors: long-term and property owners
- Seasonal summer visitors: occasional and one-off visitors

The ability to communicate and effectively reach each of these groups may vary greatly and each program should be evaluated to target each of the above populations.

Programming Summary

Type	Project	Description	Need/Benefit	Key Contacts	Next Steps
Education					
Child safety education	Traffic Garden	Partner with real estate company to create on-site traffic garden for young visitors.	<ul style="list-style-type: none"> • Families spend time waiting for rentals during turn over time and children are restless • Entertains while educating children about walking and biking safety • Secondary benefit of educating and increasing awareness among parents about good practices and local rules and regulations • Captive audience • Provides appropriate safety information prior to start of visit 	Real Estate Company And Staff	The County and real estate company should meet to discuss this opportunity and what roles each entity will play to ensure safety and success of the program.
Child/young teen safety education	Walking & Bicycling Safety Coloring/Poster Contest	<ul style="list-style-type: none"> • Partner with property rental offices and bicycle rental facilities to create local weekly coloring or poster contest with walking and biking safety themes. • Provide token prizes and display winning entries online. • Create pool of safety posters for possible use in promotion and local safety messaging. 	<ul style="list-style-type: none"> • Many children have biking freedom on vacation which they may not have at home but may not have had safety awareness training. • Friendly way of focusing children on safety issues with secondary benefit of reminding parents about rules, regulations and good practices. • Positive publicity opportunities. 	Real Estate Rental Companies	<ul style="list-style-type: none"> • Identify key locations and meet with business owners. • Research sources for art and safety information.
General visitor safety and rule awareness	Safety Basics With Rental Units & Keys	<ul style="list-style-type: none"> • Create walking and biking poster with basic safety tips and rules for distribution to all rental offices, apartments, and houses. • Design magnetic versions (abridged) for rental property refrigerators. • May serve as tools to encourage visitors to consider walking or biking for local trips. 	<ul style="list-style-type: none"> • Current lack of local guidance on safety and rules. • Many pedestrians and bicyclists have unsafe behaviors and practices. • Visitors may be inexperienced in biking or unfamiliar with walking/biking rules, regulations and etiquette. • Visitors may be unaware of etiquette and rules for sharing trails and road riding. 	<ul style="list-style-type: none"> • Vacation Rental Property Agencies • Longer-Term Property Rental Agencies • Private Renters • Visitor Agency 	Secure funding for the program and artist to create the safety poster.
Visitor safety and rule awareness	Safety Information With Rental Bikes	Brochure version of walking and biking poster with basic safety tips and rules for distribution with every bicycle rented. May serve as tool to encourage visitors to consider biking for local trips.	<ul style="list-style-type: none"> • Lack of current local guidance on safety and rules. • Many pedestrians and bicyclists have unsafe behaviors and practices. • Visitors may be inexperienced in biking or unfamiliar with walking/biking rules. • Visitors may be unaware of etiquette and rules for sharing trails and road riding. 	<ul style="list-style-type: none"> • Bike Rental Agents • Bike Stores And Repair • Bike Vacation Companies • Other Outdoor Activity Centers 	Identify sources for existing safety brochures and posters.
Visitor safety and rule awareness	Share The Road Posters (Public Location)	Distribute and deploy standard ‘Share the Road’ posters at key public locations. Distribute to library, coffee shops, visitor center, bike rental, real estate rental, etc.	<ul style="list-style-type: none"> • Lack of current local guidance on safety and rules. • Many drivers may be unfamiliar with local walking/biking rules. • Drivers may need reminders about how to/the need to drive safely in the presence of pedestrians and bicyclists. 	<ul style="list-style-type: none"> • Law Enforcement • Local Businesses • Real Estate Rental Companies • Bike Rental Agents • Bike Store 	Identify potential business participants and research if NCDOT has camera ready art.



Type	Project	Description	Need/Benefit	Key Contacts	Next Steps
Visitor safety and rule awareness	Summer Bike Ambassadors	Create Summer Intern Program and training. Bike ambassadors can communicate directly with visitors and riders as they engage in activities. They also attend events and gatherings to communicate and distribute information and will be positive role models and communicators for residents and visitors.	<ul style="list-style-type: none"> • Currently no mechanism to perform direct outreach on rules, safety and best practices. • Can serve also to provide feedback and reporting. 	<ul style="list-style-type: none"> • Local Non-Profit Or Biking Group • Local Companies Providing Sponsorship 	Explore models from other locations.
Visitor and worker awareness	Public Service Announcements	Identify materials that can be displayed from year to year to reinforce basic messages.	Currently no established avenues to educate visitors and seasonal staff on rules, safety and best practices.	Large Vacation Rental Companies	Identify available state materials and resources.
Child and parent safety awareness	Bike Rodeo	<ul style="list-style-type: none"> • Partner with law enforcement to create fun and educational family event. • Add participation measurements and reporting. • Forges local alliances and cooperation on safety issues. 	No established avenues for law enforcement to communicate safety and behavior messages to pedestrians and bicyclists.	<ul style="list-style-type: none"> • Law Enforcement • Other Municipalities • Vendor/Sponsor Businesses 	Discuss with law enforcement officials and explore potential of success in a transient environment.
Encouragement					
Visitors and locals opportunity awareness	Wayfinding	Display local trails and paths and maps and map kiosks to illustrate time and distance for walking and biking. Include destinations and points of local interest. Add basic safety information and rules. This will serve as an encouragement tool for those who may not otherwise consider local walking/biking options.	<ul style="list-style-type: none"> • Visitors may be unfamiliar with area and its resources. • For many it may be first time in area and they may not be readily or timely reached by other media. 	<ul style="list-style-type: none"> • Parks And Rec Officials • Tourism Agency • Visitor Centers 	Seek local sponsorship for preparation, production and distribution.
Visitors and locals opportunity awareness	Walks And Rides: A Community Guide	Lists walks and rides for season. Add basic safety information and tips. This guide should be included in marketing materials and visitor centers. This program may need to start with an effort to market Corolla as a destination for ride and walk events.	<ul style="list-style-type: none"> • Visitors may be unfamiliar with area and its resources. • For many it may be first time in area. • Walk and Ride events contribute to economic development and present Corolla as a walkable and bikable destination. • These events can encourage visits on the shoulder seasons. 	<ul style="list-style-type: none"> • Parks And Rec Officials • Tourism Agency • Local And Statewide Advocacy Groups 	<ul style="list-style-type: none"> • Seek local sponsorship for preparation, production and distribution of the material. • Meet with local and statewide advocacy groups to encourage using Corolla as a destination for ride and walk events.
Visitors and locals learning to get around without vehicles	Promote Taking A Bike Or Walking To Weekly Events	Incorporate biking encouragement and information into publicity for weekly events (Whalehead Wine Festival, Summer Concert Series, etc.). This will become an additional draw for vacationing in the area.	<ul style="list-style-type: none"> • Visitors may be unfamiliar with area and its resources. • For many it may be first time in area. • Walking and Biking to events will relieve roadway congestion and combat atmospheric pollutants. 	<ul style="list-style-type: none"> • Parks And Rec Officials • Tourism Agency • Whalehead 	Populate a list of local events and event leaders who may be receptive to including this message in their marketing.
Visitors and year-round population	Marsh Walks (Sound Side)	<ul style="list-style-type: none"> • Serves as an encouragement tool for those who may not otherwise consider local walking/biking options. • Serves to maintain and build community ties off-season. • Additional potential for bench and trail sponsorship. • Potential to create route maps. 	Healthy year-round encouragement for the entire community, not just visitors.	<ul style="list-style-type: none"> • Parks And Rec Officials • Tourism Agency • Non-Profits • Foundations • Nc Wildlife Staff • Audubon Staff • EcoTourism Companies 	Seek a champion of the program that will guide the tours and is well versed in local ecology.

Type	Project	Description	Need/Benefit	Key Contacts	Next Steps
Visitors and year-round population	Open Street Events (Art Walk)	Open (or "Car-free") Streets events have many names: Ciclovias, Summer Streets, and Sunday Streets. The events are periodic street "openings" (i.e., "open" to users besides just cars; usually on Sundays) that create a temporary park open to the public for walking, bicycling, dancing, hula hooping, roller-skating, etc. Events can be weekly events or one-time occasions such as an artwalk/street party in the Historic Village area. For example, every Wednesday Corolla Village Road could be opened to all non-motorized traffic only (foot, bike, other wheeled devices).	<ul style="list-style-type: none"> Builds community and increases familiarity with local resources. Allows local vendors an opportunity to display their wares in a new way. Improves visibility of local vendors and supports economic development. Promotes health by creating a safe and attractive space for physical activity. 	<ul style="list-style-type: none"> Law Enforcement Local Business Community Partners Local Food Truck Vendors 	<ul style="list-style-type: none"> Meet with Whalehead and local vendors to determine interest in the program. Identify vendors, themes, and a schedule.
Year-round and seasonal populations	Bike-To-Work Day And Bike Month (May) Events	<ul style="list-style-type: none"> Serves as an encouragement tool for those who may not otherwise consider local walking/biking options. Serves to maintain and build community ties off-season. 	<ul style="list-style-type: none"> Healthy encouragement for the entire community. Provides recognition and social connections for those who bike to work. 	<ul style="list-style-type: none"> Local Advocacy Groups Local Businesses 	Identify local businesses that may encourage their employees to participate.
Visitors and locals engaging with community resources	Weekend Themed Walkabouts (Guided Or Self Paced)	<p>Create year-round themed walks which tell local stories (historical, nature-based) which promote local pride and visitor interest.</p> <ul style="list-style-type: none"> Hidden Historic Corolla Walking Tour Currituck Banks National Estuarine Reserve Walk CAMA Sound boardwalk stroll Seasonal Beach walks Winter walks Nature walks 	<ul style="list-style-type: none"> Topics will enhance visitor appreciate of Corolla's resources. Healthy year-round encouragement for the entire community, not just visitors. Walks provide activities for families to add variety to their vacation. 	<ul style="list-style-type: none"> Parks And Rec Officials Tourism Agency Non-Profits 	<ul style="list-style-type: none"> Develop themed routes: local history, nature, beach. Identify potential leaders for tours.
Visitors and locals engaging with community resources	Weekend Themed Bike Rides (Guided Or Self Paced)	Create themed slow-paced local rides: Hidden Historic Corolla. Each ride should have paper and/or online maps with key facts and a storyline.	<ul style="list-style-type: none"> Topics will enhance visitor appreciate of Corolla's resources. Healthy year-round encouragement for the entire community, not just visitors. Walks provide activities for families to add variety to their vacation. 	<ul style="list-style-type: none"> Parks And Rec Officials Tourism Agency Non-Profits 	<ul style="list-style-type: none"> Develop themed routes: local history, nature, beach. Identify potential leaders for tours. Identify bike rental facilities to partner with.
Easy access to destinations	Bicycle Parking & Corrals	<ul style="list-style-type: none"> Create bike parking guide. Create an easy application program for businesses to install corrals. Serves as an encouragement tool for businesses to provide high-quality biking amenities. Create Corolla-logo bike parking racks. 	<ul style="list-style-type: none"> Bikes are strewn around and cluttering frontages and access points at many destinations. Property owners, managers and businesses may not be aware of the available parking equipment or how best to install facilities. Reinforce local identity with logo bike parking racks. Lack of bike parking at destinations may be deterring the use of bicycles as a mode of transportation. 	<ul style="list-style-type: none"> Local Jurisdiction Parks And Rec Officials Local Business Owners 	<ul style="list-style-type: none"> Review the APBP Bike Parking Guide and local bike parking guides from other jurisdictions. Modify local policy to require bicycle parking facilities.
Local businesses	Bike Business/ Tourism Workshop	Invite outside presenters to communicate the economic value of bike programs and accommodations to the local economy. This may spur new ideas from business owners and help create a biking culture in Corolla.	<ul style="list-style-type: none"> Business may be unfamiliar with value, resources and economic benefits of a bicycling culture. Seed new business ideas: bike delivery, bike cargo. 	<ul style="list-style-type: none"> Local Chamber Of Commerce Local Business Community 	Identify an expert is bicycle business districts and bicycle tourism to present ideas and guide a discussion of local businesses.
Communicating with visitors and locals	Information Kiosks	Upgrade existing and install new information kiosks at key locations. Include safety information, walking and biking maps, upcoming and recurring event information.	<ul style="list-style-type: none"> Visitors may be unfamiliar with area and its resources and opportunities. For many it may be first time in area. Visitors may not be readily reached through local media. 	<ul style="list-style-type: none"> Parks And Rec Officials Local Businesses And Land Owners Tourism Department 	Explore potential locations for kiosks in the <i>Corolla Wayfinding Plan</i> in 2014.
Visitors (families)	Bike Parade	Stand-alone event or component of existing events such as Heritage Park festivals, holiday activities, and the July 4th celebration. Can include bike decorating and prizes (bike-themed safety items such as bells, lights, etc.)	<ul style="list-style-type: none"> Opportunity to encourage local walking/biking. Opportunity to reinforce safety messages and awareness for pedestrians, bicyclists and drivers. 	<ul style="list-style-type: none"> Parks Officials Local Businesses Real Estate Companies Whalehead 	Determine event logistics and identify appropriate advertising avenues, vendors, dates, and routes.



Type	Project	Description	Need/Benefit	Key Contacts	Next Steps
Locals, visitors (regular and first-time)	County Initiated Public Relations	<ul style="list-style-type: none"> Safety and regulatory information stories. Publicity for events such as bike rodeo, 4th July bike parade. Positive stories and encouragement potential. Showcase poster competition winners, reinforcing safety messages. Highlight implementation initiatives that improve safety. Set benchmarks for research and record keeping statistics that address bicycle and pedestrian safety in Corolla. 	<ul style="list-style-type: none"> Assists media in presenting high quality and correct information. Opportunity to encourage local walking/biking. Opportunity to reinforce safety messages and awareness for pedestrians, bicyclists and drivers. 	<ul style="list-style-type: none"> Local Print And Radio Media Local Tv Stations Local Bloggers 	Create and update a database of media contacts and create a schedule for press release writing and distribution that coincide with important events and topics.
Enforcement					
Equipment inspection event	Bicycle Safety Booth	Secure booth space at local events where a trained professional can provide equipment repair and tune-ups (e.g. brakes) for bikes. While many people rent bicycle in Corolla, this stations can also educate visitors on how to care for their bike when they return home. This booth will also provide an opportunity to distribute safety materials, maps, other bicycle and pedestrian oriented event information.	<ul style="list-style-type: none"> Visitors and residents may be unaware of additional risks associated with poor or malfunctioning equipment (e.g. lights, brakes, etc.). These booths can encourage ridership in Corolla as well as in the hometowns of visitors. 	<ul style="list-style-type: none"> Law Enforcement Community Partners Local Bike Shop Local Advocacy Groups 	Determine who is available and willing to lead the booth activities and which events may be appropriate to attend.
Local law enforcement officers (year-round and seasonal)	Law Enforcement Training Workshop (New And Existing Officers)	Lead a workshop to provide officers with basic training and educations on rules and safe practices.	<ul style="list-style-type: none"> Officers, particularly those who are seasonal, may not be up-to-date on all the rules and recommended safety practices and behaviors. Officers may not be aware of the significance of some factors to bicycling safety. The presence of law enforcement will encourage pedestrians, bicyclists, and motorists to comply with local rules and behavioral expectations. 	Law Enforcement	Base workshop on available course materials such a Community Bicycle safety for Law Enforcement and identify the possibility of a mounted patrol during peak use of the trails along NC 12.

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Implementation



Overview

The implementation of this Plan will require a collaborative effort between Currituck County, NCDOT, NCDENR, local organizations, and private businesses. A comprehensive approach that addresses infrastructure, policy, maintenance, and programs will lead to a more walkable and bikable Village.

A table combining recommendations from Chapter 4 and Chapter 5 is presented in this section segmented by type of project, phasing, planning-level cost opinions, and key implementing partners. There is a wide range of project costs ranging from minimal to significant.

As the lead implementing agency, Currituck County should seek multiple funding sources to supplement its own Capital Improvement Program. A creative approach that seeks multiple funding sources will also be essential for success. Funding opportunities are described later in this chapter.

Phase I Projects

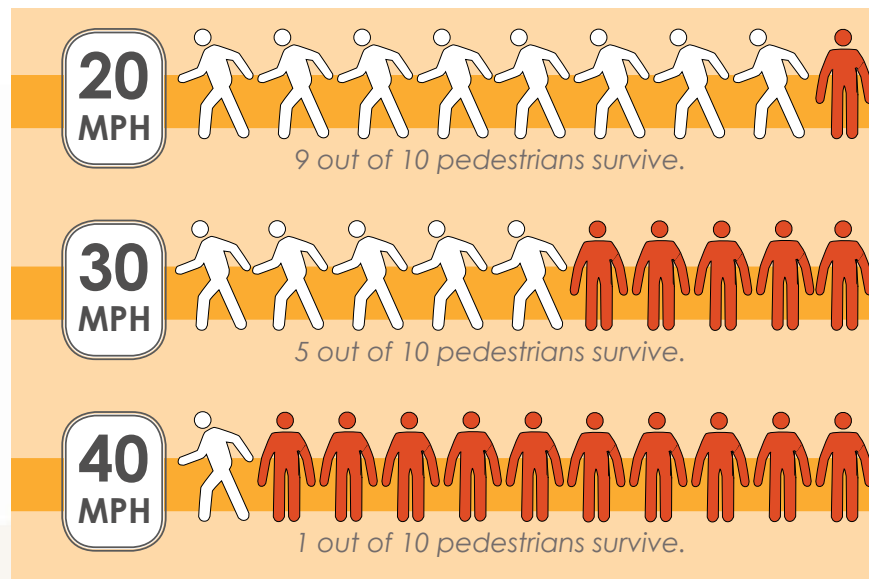
A complete phasing and cost table is presented on the following pages. Phasing was determined from both strategic (impact) and funding perspectives. For each project, 12 percent of implementation costs should be budgeted to fund design and feasibility. Key Phase I projects are listed to the right, broken into low cost and higher costs.

PHASE 1 Low Cost & High Impact

- Reduce speed limits in Village area (PS8).
- Develop pedestrian/bicyclist/parking map (P5).
- Begin programs such as Open Streets Event/Art Walk (P1).
- Convert Corolla Village Road to one-way and stripe a multi-use path for pedestrians and bicyclists (RI1).
- Add raised brick crosswalks at key crossings (PS2, PS3).
- Add bicycle racks (PVA9).
- Add pet waste stations (PVA1, PVA2, PVA 3).

PHASE 1 High Cost & Higher Impact

- Make improvements to NC 12 including the addition of a median island and street trees (PS4, PS5).
- Reconfigure Heritage Park entrance to be more legible and defined with the intersection raised (WH2, PS2).
- Add multi-use sidepaths along both sides of NC 12 (GP3).
- Add boardwalk along Corolla Village Road (Ac1A, Ac1B).
- Develop a cohesive signage and map kiosk system.
- Improve key nodes to feature sitting area, benches, signage, and gateway features (ND1 - 8).



An immediate reduction in speed limit is inexpensive and possibly life-saving. Speed limit enforcement is also an important part of the equation. Above graphic from 2013 WalkBikeNC (North Carolina's Statewide Pedestrian and Bicycle Plan).



Open Streets events give people the opportunity to see new places by bicycle. They also have tremendous economic impacts. Above is Sunday Parkways in Portland, Oregon, a monthly event during the summer.



Multi-use sidepaths are increasing in mileage across the Outer Banks such as this one being constructed along NC 158 in Nags Head in 2013. Most bicyclists prefer a separated facility which is also safer than bicycling in the road.



Project Phasing and Cost Table

ID #	Project	Description	Need	Phase	Estimated Total Cost*	Partners	Next Steps
Whalehead/Heritage Park							
WH1	Entrance	Create a more legible entrance by improving the entrance sign and landscaping and remove the guard shack so Heritage Park does not appear to be private property.	Calm traffic; encourage entrance	I (2014-2016)	Medium (\$35,000)	NCDOT, Currituck County	Obtain site control Design/build
WH2	Entrance	Emphasize the priority of bicycle and pedestrian circulation by creating a brick raised table at the entrance of Heritage Park to slow vehicles and act as crossings for bicyclists and pedestrians.	Calm traffic; encourage entrance	I (2014-2016)	High (\$100,000 for brick or brick paver; \$75,000 for stamped concrete)	NCDOT, Currituck County	Design/build
WH3	Entrance	Ensure preference is given to bicyclists and pedestrians by enhancing the sidepath entrance to the park with map kiosk signage and maintaining the viewshed from the path into the park.	Encourage entrance by bicyclists and pedestrians; safety	I (2014-2016)	Medium (\$25,000); possibly part of WH1	Currituck County	Design/build
WH4	Safety	Provide brick pattern crosswalks throughout the park where pedestrians and bicyclists intersect with vehicular traffic.	Safety for all users	I (2014-2016)	Low (\$10,000)	Currituck County	Design/build
WH5	Access	Provide stepping stones to indicate Sound access.	Better access; encourage access	I (2014-2016)	Medium (\$25,000)	Currituck County	Design/build
WH6	Amenities	Identify key vistas and provide benches and landscape areas with interpretive signage along the sound.	Encourage access and visitation for all users	I (2014-2016)	Medium (\$25,000)	Currituck County	Design/build
WH7	Access	Add a day dock access area to the south of the Whalehead house. Encourage visitors to travel by boat from the mainland. Explore the possibility of renting seasonal slips to residents.	Better access by boat; access to water from land	II (2017-2020)	High (Unknown)	Currituck County	Obtain site control Design/build
Nodes (Nodes should be vetted in a feasibility and design stage to determine appropriate amenities. Costs may vary. Below are estimates based on inclusion of bike parking, interpretive signage, map kiosks, benches, vegetation, and earthwork.)							
ND1	Entrance/ wayfinding	(In conjunction with WH3), Create a node to serve as the entrance to Heritage Park. Provide clear navigation and information about activities within the park.	Encourage entrance by bicyclists and pedestrians; safety, wayfinding	I (2014-2016)	Medium (\$25,000)	NCDOT, Currituck County	Obtain site control Design/build
ND2	Entrance/ wayfinding	Provide a pedestrian and bicycle plaza as an entrance to the Corolla Light Shopping Center.	Encourage entrance by bicyclists and pedestrians; safety, wayfinding	I (2014-2016)	Medium (\$50,000)	NCDOT, Currituck County, Corolla Light Shopping Center	Obtain site control Design/build

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.

ID#	Project	Description	Need	Phase	Estimated Total Cost*	Partners	Next Steps
ND3	Entrance/wayfinding	Add a navigation node at the corner of Corolla Village Road and NC12.	Encourage entrance by bicyclists and pedestrians; safety, wayfinding	I (2014-2016)	Medium (\$25,000)	NCDOT, Currituck County	Obtain site control Design/build
ND4	Entrance/wayfinding	Integrate a decision making node at the entrance to the public Sound access boardwalk.	Encourage entrance by bicyclists and pedestrians; wayfinding	I (2014-2016)	Medium (\$25,000)	Currituck County	Design/build
ND5	Entrance/wayfinding	Enhance the boathouse area as a node	Wayfinding	II (2017-2020)	Medium (\$25,000)	Currituck County	Design/build
ND6	Entrance/wayfinding	Design the open space area (at the terminus of Schoolhouse) to serve as a node.	Wayfinding	II (2017-2020)	Low (\$15,000)	Currituck County, Village businesses	Design/build
ND7	Entrance/wayfinding	At the corner of Persimmon and Corolla Village Road, another map kiosk area should define the western corner.	Encourage entrance by bicyclists and pedestrians; wayfinding	I (2014-2016)	Medium (\$25,000)	Currituck County, Village businesses	Design/build
ND8	Entrance/wayfinding	Add an entrance node at the corner of Schoolhouse Lane and NC12.	Encourage all modes to enter the Village; wayfinding	I (2014-2016)	Medium (\$25,000)	NCDOT, Currituck County, Landowner	Obtain site control or partner with Land Owner Design/build

* WH and ND Estimated Total Costs Were Calculated From the Below Unit Costs. Each Improvement Will Vary Based on Design, Site Work, and Amenities Selected.

ITEM	DESCRIPTION	UNIT COST	ITEM	DESCRIPTION	UNIT COST
Brick Crosswalk	25' x 8'	\$5,500	Bench	Materials Vary	\$500 - \$1,200
Kiosk/Map	4' x 6'	\$20,000	Shrubs	Sizes Vary	\$15 - \$45
Lighting	Fixtures and Spacing per Linear Foot	\$50 - \$100	Trees	Sizes Vary	\$150 - \$300
Bicycle Parking	Per Unit	\$500 - \$1,000	Trash/Recycling Receptacles	Materials Vary	\$250 - \$800

ID#	Project	Description	Need	Phase	Unit Cost(s)	Estimated Total Cost	Partners	Next Steps
AC1A	Boardwalk	Install a boardwalk from Heritage Park along Corolla Village Road to NC 12.	Separation of pedestrians from traffic; safety	I (2014-2016)	Timber \$300/linear foot	High (\$205,500)	NCDOT, Currituck County, DENR	Obtain site control Design/build
AC1B	Boardwalk	Install a boardwalk from NC 12 to Beach access.	Separation of pedestrians from traffic; safety	II (2017-2020)	Timber \$300/linear foot	High (\$360,000)	NCDOT, Currituck County, DENR	Obtain site control Design/build
AC2	Boardwalk/access	Enhance the public beach access by adding a loading area with amenities.	Encourage entrance	II (2017-2020)	Timber \$400-\$750/linear foot	High (\$250,000)	NCDOT, Currituck County, DENR	Obtain site control Design/build
AC3	Boardwalk	Extend the boardwalk system along the Sound to create a walking loop and interpretive trail.	Recreation	III (2021-2024)	Timber \$400-\$750/linear foot	High (\$1,000,000)	Currituck County, DENR	Obtain site control Design/build

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.



ID#	Project	Description	Need	Phase	Unit Cost(s)	Estimated Total Cost	Partners	Next Steps
Circulation/Public Transportation								
CR1	Public transportation	Initiate a trolley system for Corolla	Reduce traffic congestion	III (2021-2024)	N/A	High (\$450,000 purchase price for 3 trolleys; \$180,000 annual operating costs)*	NCDOT, Currituck County, Chamber of Commerce, Corolla Light	Obtain site control Design/build
Greenways and Paths								
GP1	Greenway path	Extend the multi-use side path beyond the study area to connect to Duck.	Separate bicyclists/ pedestrians from traffic	III (2021-2024)	10' Wide Concrete \$60-\$80/linear foot	High (\$60-\$80/linear foot)	NCDOT, Currituck County	Obtain site control Design/build
GP2	Greenway path	Widen the sidepath on the west side of NC12 to 10 feet where it does not already meet this width guideline.	Create space for multi-use and multi-directional traffic	II (2017-2020)	10' Wide Concrete \$60-\$80/linear foot	Medium (\$48,000)	NCDOT, Currituck County	Design/build
GP3	Greenway path	Add a sidepath on east side of NC12.	Reduces unnecessary crossings of NC12.	I (2014-2016)	10' Wide Concrete \$60-\$80/linear foot	High (\$232,000)	NCDOT, Currituck County	Obtain site control Design/build
GP4	Greenway path/boardwalk	Add a boardwalk throughout the Village to provide separation of modes. This is a component of RI2 and AC1A.	Separate pedestrians from traffic	III (2021-2024)	Timber \$300/linear foot	High (\$660,000)	Currituck County	Obtain site control Design/build
Pedestrian Safety								
PS1	Crosswalk	Add brick textured crosswalks along NC12 and crossroads of NC12. (8 locations. Traffic rerouting during installation may increase cost making brick a viable option)	Traffic calming; Bring greater attention to crossings	I (2014-2016)	Stamped Concrete \$12.50/square foot Brick \$20/square foot	Medium (\$66,000 stamped concrete)	NCDOT, Currituck County	Design/build
PS2	Raised intersection	(In conjunction with WH2) Create a raised crosswalk at the entrance of Heritage Park.	Traffic calming; Creating an entrance; Bring greater attention to crossings	I (2014-2016)	\$11,000	Low (\$11,000)	NCDOT, Currituck County	Design/build
PS3	Raised crosswalk	Install a raised crosswalk between Heritage Club and the main entrance to the Currituck Lighthouse.	Traffic calming; Bring greater attention to crossings	I (2014-2016)	\$5,500	Low (\$5,500)	NCDOT, Currituck County	Design/build
PS4	Vegetated Median	Add a vegetated median across from the gateways to Historic Corolla Village.	Traffic calming; Creating an entrance; Bring greater attention to crossings	II (2017-2024)	10' Wide \$60/linear foot Width and costs will vary	Medium (\$50,000)	NCDOT, Currituck County	Design/build

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.

*Costs from Sea Pines Trolley in Hilton Head Island, SC.

ID#	Project	Description	Need	Phase	Unit Cost(s)	Estimated Total Cost	Partners	Next Steps
PS5	Street trees/native vegetation	(In conjunction with PS4) Install native vegetation within the median islands.	Traffic calming; Creating an entrance	II (2017-2020)	N/A	Low (\$10,000)	NCDOT, Currituck County	Design/build
PS6	Street trees/native vegetation	(In conjunction with GP improvements) As greenways and paths are designed for implementation and widening (including the AC1A, AC1B and AC2) determine where space allows for streets trees and native vegetation.	Traffic calming; shade for walking and biking	II (2017-2020)	N/A	Low - Medium (Unknown)	NCDOT, Currituck County	Design/build
PS7	Lighting	(In conjunction with GP improvements) Install pedestrian lighting along greenways and paths, boardwalks, and major crossings.	Safety at night; visibility	II (2017-2020)	\$100/linear foot (varies per fixture selected)	High (\$600,000 for all pathways)	NCDOT, Currituck County	Design/build
PS8	Speed limit reduction	Create a pedestrian zone by adding signage (further detailed in signage section) and reducing the speed along NC 12 to 25mph and along other Village roads to 10mph.	Low-cost solution that slows traffic; reduces crashes and severity of crashes; sets tone for future NC 12 improvements	I (2014-2016)	\$250 per speed limit sign Ped zone sign costs vary from \$250 - \$500	Low (\$4000 for speed limit signs; \$5,000 for ped zone)	NCDOT, Currituck County	Design/build
Village Bicycle Boulevard								
RI1	One-way conversion	Convert Corolla Village Road to one-way and stripe a multiuse path for pedestrians and bicyclists.	Improves predictability; creates space for low-cost bike/ped solution for half of the current paved roadway	I (2014-2016)	Thermoplastic Striping \$1.20/linear foot Symbols \$350 each	Low (\$7,680)	NCDOT, Currituck County	Design/build
R12	Striping for bike facility	(In conjunction with AC1A and GP4) With completion of the pedestrian boardwalk along Corolla Village Road from NC12 west to the Sound access boardwalk and the boardwalk through the Village, convert the multi-use path into a two-way bike facility.	Provides separation of pedestrians from motor vehicles	II (2017-2020)	Thermoplastic Striping \$1.20/linear foot Symbols \$350 each	Low (\$7,680)	NCDOT, Currituck County	Design/build
Park and Village Amenities								
PVA1	Dog Waste Receptacles (multiple stations)	Install pet waste stations around Heritage Park.	Important for environment and enjoyment of place	I (2014-2016)	\$500	Low (\$5,000)	Village businesses, Private partners	Design/build
PVA2	Dog Waste Receptacles (multiple stations)	Install pet waste stations at public beach accesses.	Important for environment and enjoyment of place	I (2014-2016)	\$500	Low (\$1,000)	Village businesses, Private partners	Design/build

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.



ID#	Project	Description	Need	Phase	Unit Cost(s)	Estimated Total Cost	Partners	Next Steps
PVA3	Dog Waste Receptacles (multiple stations)	Install pet waste stations along the NC12 sidepaths.	Important for environment and enjoyment of place	I (2014-2016)	\$500	Low (\$5,000)	Village businesses, Private partners	Design/build
PVA4	Comfort stations	Add additional comfort stations to Heritage Park. Comfort station may include restrooms, water fountains, information kiosks, and shelter areas. Costs will vary based on site preparation, earthworks, stormwater, and amenities selected.	Important for enjoyment of place and comfort	II (2017-2020)	N/A	High (\$125,000 each)	Village businesses, Private partners	Design/build
PVA5	Comfort stations	Create a public/private partnership to fund and maintain a comfort station within the Village. Comfort station may include restrooms, water fountains, information kiosks, and shelter areas. Costs will vary based on site preparation, earthworks, stormwater, and amenities selected.	Important for enjoyment of place and comfort	II (2017-2020)	Public/Private Partnership will decrease cost to county	High (\$125,000 each)	Currituck County, Village businesses, Private partners	Design/build
PVA6	Parking	Install signage throughout the Village that encourages motorists to park at Heritage Park to circulate throughout the Village area.	Predictability for parking creates better, more beautiful, functioning places elsewhere	I (2014-2016)	\$250-\$800/sign <i>Wood posts outside of DOT ROW will increase costs</i>	Low (\$10,000)	Currituck County, Village businesses, Private partners	Design/build
PVA7	Parking	Plant low, hardy vegetation along the roadway throughout the village to discourage parking along the side of the road.	Predictability for parking creates better, more beautiful, functioning places elsewhere	I (2014-2016)	N/A	Low (\$20,000)	Currituck County, Village businesses, Private partners	Design/build
PVA8	Parking	(In conjunction with R11) Use back-in angled parking along Corolla Village Road near the Lighthouse to improve pedestrian and bicyclist safety by increasing visibility for motorists when departing parking spaces.	Predictability in motorist movement when parking and leaving parking spaces	I (2014-2016)	N/A	Low (\$3,000)	Village businesses, Private partners	Design/build
PVA9	Parking	Install bicycle parking racks at strategic, geographically distributed locations throughout Heritage Park and the Village, especially at key destinations.	Allows for key part of making a trip by bicycle (storage)	I (2014-2016)	\$500-\$1,000	Low (\$10,000)	Village businesses, Private partners	Design/build

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.

ID#	Project	Description	Need	Phase	Unit Cost(s)	Estimated Total Cost	Partners	Next Steps
Programs								
P1	Open Streets/Art Walk	Establish event where Corolla Village Road is closed to automobile traffic and open only to bicyclists/pedestrians;	Makes Village more inviting; positive economic impact	I (2014-2016)	N/A	Low	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners	
P2	Historic Corolla Walking Tour and/or Nature Walk	Create a formalized tour and informal self-guide tour.	Encourages more walking and points along a walkway	I (2014-2016)	N/A	Low (\$10,000)	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners, CTG	
P3	Walking/Biking Promotion	Incorporate bicycle and pedestrian safety and encouragement information at existing events such as Whalehead Wednesday Wine Festival and the Summer Concert Series.	Encourages more walking and bicycling	I (2014-2016)	N/A	Low	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners, CTG	
P4	Bike/Walk Parade	Conduct a walk/bike parade surrounding an annual event	Encourages more walking and bicycling	II (2017-2020)	N/A	Low	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners	
P5	Bike/Walk/Parking Map	Generate a map to distribute with rental packets and as handouts at destinations.	Encourages more walking and bicycling; directs visitors along appropriate and safe lines of travel	II (2017-2020)	Price Varies Significantly by Quantity and Design	Low (\$15,000) Printing Only	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners, CTG	
P6	Program evaluation	Evaluate existing programs	Allows for evaluation and consideration to continue successful programs, end unsuccessful programs, and begin new ones.	III (2021-2024)		Low	Currituck County Department of Travel and Tourism, Chamber of Commerce, Village businesses, Private partners, CTG	

Cost estimates are planning-level, "ballpark" numbers only and reflect historic NCDOT bid prices and product research. Actual costs will vary due to unforeseen construction costs and variations in material costs.



Phase I Recommendations 2014-2016

Over \$50,000

ID #	Estimated Total Cost*
Whalehead/Heritage Park	
WH2	High (\$100,000 for brick or brick paver; \$75,000 for stamped concrete)
Access	
AC1A	High (\$205,500)
Greenways and Paths	
GP3	High (\$232,000)
Pedestrian Safety	
PS1	Medium (\$66,000 stamped concrete)

Phase I Recommendations Over \$50,000

Under \$50,000

ID #	Estimated Total Cost*
Whalehead/Heritage Park	
WH1	Medium (\$35,000)
WH3	Medium (\$25,000); possibly part of WH1
WH4	Low (\$10,000)
WH5	Medium (\$25,000)
WH6	Medium (\$25,000)
Nodes	
ND1	Medium (\$25,000)
ND2	Medium (\$50,000)
ND3	Medium (\$25,000)
ND4	Medium (\$25,000)
ND7	Medium (\$25,000)
ND8	Medium (\$25,000)
Pedestrian Safety	
PS2	Low (\$11,000)
PS3	Low (\$5,500)
PS8 (Ped Zone)	Low (\$4000 speed limit signs; \$5,000 ped zone)
Village Bicycle Boulevard	
RI1 (One-way/path)	Low (\$7,680)
Park and Village Amenities	
PVA1 (Dog Waste)	Low (\$5,000) in Heritage Park
PVA2 (Dog Waste)	Low (\$1,000) at Beach Access
PVA3 (Dog Waste)	Low (\$5,000) along Greenways/Paths
PVA6 (Signs)	Low (\$10,000) direct motorists to Heritage Park
PVA7 (Vegetation)	Low (\$20,000) throughout Village
PVA8 (Back-in)	Low (\$3,000) angled parking
PVA9 (Bike)	Low (\$10,000)
Programs	
P1 (Open Streets)	Low
P2 (Tours)	Low (\$10,000)
P3 (Safety Promo)	Low



Phase I Recommendations Under \$50,000



Phase II Recommendations 2017-2020
Over \$50,000

ID #	Estimated Total Cost*
Whalehead/Heritage Park	
WH7	High (Unknown)
Access	
AC1B	High (\$360,000)
AC2	High (\$250,000)
Pedestrian Safety	
PS7 (Lighting)	High (\$600,000 for all pathways)
Park and Village Amenities	
PVA4 (Comfort Station - Location TBD)	High (\$125,000 each)
PVA5 (Comfort Station - Location TBD)	High (\$125,000 each)

Phase II Recommendations Over \$50,000

Under \$50,000

ID #	Estimated Total Cost*
Nodes	
ND5	Medium (\$25,000)
ND6	Low (\$15,000)
Greenways and Paths	
GP2 (Widen to 10')	Medium (\$48,000)
Pedestrian Safety	
PS4 (Median)	Medium (\$50,000)
PS5 (Vegetation)	Low (\$10,000)
PS6 (Street Trees)	Low - Medium (Unknown)
Village Bicycle Boulevard	
R12 (Re-stripe)	Low (\$7,680)
Programs	
P4 (Parade)	Low
P5 (Map)	Low (\$15,000) Printing Only



Phase II Recommendations Under \$50,000



Phase III Recommendations 2021-2024

Over \$50,000

ID#	Estimated Total Cost
AC3	High (\$1,000,000)
Circulation/Public Transportation	
CR1 (Trolley)	High (\$450,000 purchase price for 3 trolleys; \$180,000 annual operating costs)*
Greenways and Paths	
GP1 (Extend to Duck)	High (\$60-\$80/linear foot)
GP4	High (\$660,000)

Under \$50,000

ID#	Estimated Total Cost
Programs	
P6 (Evaluation)	Low

Phase III Recommendations Over \$50,000

FUNDING

Introduction

The most important strategy to making the improvements recommended in this Plan is leveraging and maximizing funding to construct priority projects. To implement the recommendations of this Plan will require partnership between the federal government, NCDOT, Currituck County, Albemarle RPO, and private partners. For example, the New Hanover/Wilmington Greenway Plan was developed through funding from New Hanover County and the City of Wilmington. One of the priority projects is being funded by Blue Cross Blue Shield of North Carolina. The most likely implementation opportunities and funding sources for projects described in this Plan include:

- Currituck County Capital Improvement budget
- Currituck County bonds/taxes
- Recreational Trails Program grants (administered by NC Department of Parks and Recreation)
- Public Beach and Coastal Waterfront Access Funds program (DENR)
- The North Carolina Parks and Recreation Trust Fund (PARTF)
- Projects incidental to NCDOT roadway/resurfacing projects
- NCDOT Statewide Prioritization – through Albemarle RPO and NCDOT Division 1
- Community Transformation Grant (CTG)
- Private partners/businesses

A brief update on the always-changing status of federal and state funding sources is described below followed by a listing of federal, state, and local funding options with potential relevance and application to this project.

Federal and State Funding Update

FEDERAL FUNDING: Effective as of October 2013, new transportation legislation called the Moving Ahead for Progress in the 21st Century Act (MAP-21) contains a new funding program called the Transportation Alternatives Program (TAP). The TAP program is very similar to the Transportation Enhancements program in previous transportation authorizations, but there are some differences of significance to North Carolina DOT and local government partners. North Carolina will use TAP funds on a variety of bicycle and pedestrian improvements, but the funding can also be used on a variety of other eligible activities. Projects must be submitted by local governments or other local sponsors, and require a 20% match.

STATE POLICY: There are several connections between how TAP funding will be administered in North Carolina and the new state law directing all capital transportation investments.

The Strategic Transportation Investments (STI) formula was signed into law in June 2013. The new law will realign funds toward projects selected through a data-driven process. A new slate of projects will be selected, starting in early 2014, using a prioritization process for programming in FY 16 and beyond. This new formula prescribes the process for selecting bicycle and pedestrian projects to be built using federal dollars. Criteria such as safety, connectivity to important community destinations, and project readiness are used to score bicycle and pedestrian projects in the formula. The new state law prohibits NCDOT from applying state dollars as a match to federal funding to most bicycle and pedestrian projects, but bicycle and pedestrian improvements as part of a roadway or bridge project can still receive state funding.

Federal Funding Sources

Federal funding is typically directed through State agencies to local governments either in the form of grants or direct appropriations, independent from State budgets, where shortfalls may make it difficult to accurately forecast available funding for future project development. Federal funding typically requires a local match of approximately 20%, but there are sometimes exceptions, such as the recent American Recovery and Reinvestment Act stimulus funds, which did not require a match. Since these funding categories are difficult to forecast, it is recommended that the local jurisdiction work with its MPO on getting bicycle and pedestrian projects listed in the State Transportation Improvement Program (STIP), as discussed below.

The following is a list of possible Federal funding sources that could be used to support construction of many bicycle and pedestrian improvements. Most of these are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. However, it should be noted that the FHWA encourages the construction of bicycle and pedestrian facilities as an incidental element of larger ongoing projects. Examples include providing paved shoulders on new and reconstructed roads, or building sidewalks, trails and marked crosswalks as part of new highways.

MOVING AHEAD FOR PROGRESS IN THE TWENTY-FIRST CENTURY (MAP-21)

The largest source of federal funding for bicycle and pedestrian is the US DOT's Federal-Aid Highway Program, which Congress has reauthorized

roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141. The Act replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 - June 2012.

MAP-21 authorizes funding for federal surface transportation programs including highways and transit for the 27 month period between July 2012 and September 2014. It is not possible to guarantee the continued availability of any listed MAP-21 programs, or to predict their future funding levels or policy guidance. Nevertheless, many of these programs have been included in some form since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, and thus may continue to provide capital for active transportation projects and programs.

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

There are a number of programs identified within MAP-21 that are applicable to bicycle and pedestrian projects. These programs are discussed below.

More information: <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>

TRANSPORTATION ALTERNATIVES

Transportation Alternatives (TA) is a new funding source under MAP-21 that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did. Unless the Governor of a given state chooses to opt out of Recreational Trails Program funds, dedicated funds for recreational trails continue to be provided as a subset of TA. MAP-21 provides \$85 million nationally for the RTP.



Complete eligibilities for TA include:

1. Transportation Alternatives as defined by Section 1103 (a)(29). This category includes the construction, planning, and design of a range of bicycle and pedestrian infrastructure including “on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.” Infrastructure projects and systems that provide “Safe Routes for Non-Drivers” is a new eligible activity. For the complete list of eligible activities, visit:

http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm

2. Recreational Trails. TA funds may be used to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition or easements of property for trails
- State administrative costs related to this program (limited to seven percent of a State’s funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State’s funds)

NC’s dedicated annual RTC funds for 2012 total \$1,506,344. See this link for funding levels in subsequent years: <http://www.fhwa.dot.gov/MAP21/funding.cfm>.

3. Safe Routes to School. The purpose of the Safe Routes to Schools eligibility is to promote safe, healthy alternatives to riding the bus or being driven to school. All projects must be within two miles of primary or middle schools (K-8).

Eligible projects may include:

Engineering improvements. These physical improvements are designed to reduce potential bicycle and pedestrian conflicts with motor vehicles. Physical improvements may also reduce motor vehicle traffic volumes around schools, establish safer and more accessible crossings, or construct walkways, trails or bikeways. Eligible improvements include sidewalk improvements, traffic calming/speed reduction, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, and secure bicycle parking facilities.

Education and Encouragement Efforts. These programs are designed to teach children safe bicycling and walking skills while educating them about the health benefits, and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive bicycle/pedestrian safety video games; and promotional events and activities (e.g., assemblies, bicycle rodeos, walking school buses).

Enforcement Efforts. These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian sting operations.

4. Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways. At the time of writing, detailed guidance from the Federal Highway Administration on this new eligible activity was not available.

Average annual funds available through TA over the life of MAP-21 equal \$814 million nationally, which is based on a 2% set-aside of total MAP-21 allocations. Current projected obligations for NC are available at this website: <http://www.fhwa.dot.gov/MAP21/funding.cfm>.] Note that state DOT’s may elect to transfer up to 50% of TA funds to other highway programs, so the amount listed on the website represents the maximum potential funding.

Remaining TA funds (those monies not re-directed to other highway programs) are disbursed through a separate competitive grant program administered by NCDOT. Local governments, school districts, tribal governments, and public lands agencies are permitted to compete for these funds.

SURFACE TRANSPORTATION PROGRAM

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of bicycle and pedestrian improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. 50% of each state’s STP funds are suballocated geographically by population; the remaining 50% may be spent in any area of the state.

HIGHWAY SAFETY IMPROVEMENT PROGRAM

MAP-21 doubles the amount of funding available through the Highway Safety Improvement Program (HSIP) relative to SAFETEA-LU. HSIP provides \$2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. MAP-21 preserves the Railway-Highway Crossings Program within HSIP but discontinues the High-Risk Rural roads set-aside unless safety statistics demonstrate that fatalities are increasing on these roads. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for non-motorized users in school zones are eligible for these funds.

FEDERAL TRANSIT ADMINISTRATION PROGRAMS

Federal Transit Administration (FTA) funding is available for projects designed to improve access to transit. Individual grant programs vary on the specific goals, but eligible improvements include crossing improvements, pedestrian signals, sidewalks and trails. Programs of the FTA are described in the following section.

FTA Formula Grants for Other than Urbanized Areas

This program is formula-based and provides funding to states for supporting public transportation in rural areas with populations of less than 50,000. This grant funds routes to transit, bike racks, shelters, and equipment for public transportation vehicles. More information: http://www.fta.dot.gov/funding/grants/grants_financing_3555.html

Bus and Bus Related Facilities

This is capital assistance for new and replacement buses, related equipment and facilities. It has traditionally been designated to specific projects at

a federal level. This grant can be used for pedestrian or bicycle access to transit and bus racks. More information: http://www.fta.dot.gov/funding/grants/grants_financing_3557.html

LAND AND WATER CONSERVATION FUND

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

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation funds available. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may benefit trail development in North Carolina locales indirectly through technical assistance, particularly for community organizations, but is not a capital funding source. More information: <http://www.nps.gov/nrcr/programs/rtca/> or contact the Southeast Region RTCA Program Manager Deirdre “Dee” Hewitt at (404) 507-5691.

DEPARTMENT OF ENERGY

The Department of Energy’s Energy Efficiency and Conservation Block Grants (EECBG) grants may be used to reduce energy consumptions and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. Although the current grant period has passed, more opportunities may arise in the future. More information: <http://www.eecbg.energy.gov>

State Funding Sources

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STATE TRANSPORTATION IMPROVEMENT PROGRAM

NCDOT’s Policy to Projects process uses data regarding pavement condition, traffic congestion and road safety, as well as input from local governments and NCDOT staff, to determine transportation priorities. This approach ranks projects for all modes of transportation in priority order, based on the department’s goals and also determines which projects are included in the department’s State Transportation Improvement Program (STIP), a federally mandated transportation planning document that details transportation improvements prioritized by stakeholders for inclusion in the Work Program over the next seven years. The STIP is updated every two years.

The STIP contains funding information for various transportation divisions of NCDOT including: highways, aviation, enhancements, public transportation, rail, bicycle and pedestrians, and the Governor’s Highway Safety Program. Access to many federal funds require that projects be incorporated into the STIP. STIP is the largest single source of funding within SAFETEA-LU and NCDOT.

To access the STIP: <http://www.ncdot.org/planning/development/TIP/TIP/>. For more about the STIP process: <http://www.ncdot.org/performance/reform/>

SPOT SAFETY PROGRAM

The Spot Safety Program is a state funded public safety investment and improvement program that provides highly effective low cost safety improvements for intersections, and sections of North Carolina’s 79,000 miles of state maintained roads in all 100 counties of North Carolina. The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$250,000.

The Spot Safety Program targets hazardous locations for expedited low cost safety improvements such as traffic signals, turn lanes, improved shoulders, intersection upgrades, positive guidance enhancements (rumble strips, improved channelization, raised pavement markers, long life highly visible pavement markings), improved warning and regulatory

signing, roadside safety improvements, school safety improvements, and safety appurtenances (like guardrail and crash attenuators).

A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

More information: <http://www.ncdot.org/doh/preconstruct/traffic/safety/Programs/>

HIGH HAZARD ELIMINATION PROGRAM

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90% federal funds and 10% state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department’s State Transportation Improvement Program (STIP).

More information: <http://www.ncdot.org/doh/preconstruct/traffic/safety/Programs/>

NCDOT DISCRETIONARY FUNDS

The Statewide Discretionary Fund is administered by the Secretary of the Department of Transportation. This \$10 million fund can be used on any project at any location within the State. Primary, urban, secondary, industrial access, and spot safety projects are eligible for consideration, by the Secretary upon direct appeal from a North Carolina jurisdiction.

NCDOT CONTINGENCY FUND

The Statewide Contingency Fund is a \$10 million fund administered by the Secretary of Transportation. The Division Engineer elicits written requests from municipalities, counties, businesses, schools, citizens, legislative members and NCDOT staff. The appeals are reviewed on their merits by the Contingency and Small Urban Funds Committee, which makes recommendations for funding to the Secretary. Written requests must



provide technical information such as justification, location, improvements being requested, timing, etc. for thorough review.

More information: http://www.ncdot.gov/doh/preconstruct/traffic/tepp/Topics/F-19/F-19_mm.pdf

SPOT IMPROVEMENT PROGRAM

The Division of Bicycle and Pedestrian Transportation (DPBT) budgets \$500,000 per year for “spot” safety improvements throughout North Carolina. Eligible improvements include drain grate replacement, bicycle loop detectors, pedestrian signals and other small-scale improvements. These funds are used for small-scale projects not substantial enough to be included in the STIP. Proposals should be submitted directly to the Division of Bicycle and Pedestrian Transportation.

SMALL CONSTRUCTION FUNDS

The purpose of these funds is to finance improvements on the State System (US, NC, and SR routes) to be used for projects anywhere in the counties. These funds are used to fund a variety of transportation projects for municipalities, counties, businesses, schools, and industries throughout the state. There is a \$250,000 maximum amount per request per fiscal year. Any project with a total cost greater than \$150,000 requires a resolution or a letter of support for the project from the local jurisdiction.

More information: <http://www.nctransportationanswers.org/ourforms/SMALLCONSTRUCTIONFORM.pdf>

GOVERNOR’S HIGHWAY SAFETY PROGRAM

The Governor’s Highway Safety Program (GHSP) funds safety improvement projects on state highways throughout North Carolina. All funding is performance-based. Substantial progress in reducing crashes, injuries and fatalities is required as a condition of continued funding. This funding source is considered to be “seed money” to get programs started. The grantee is expected to provide a portion of the project costs and is expected to continue the program after GHSP funding ends. State Highway Applicants must use the web-based grant system to submit applications.

More information: <http://www.ncdot.org/programs/ghsp/>

INCIDENTAL PROJECTS

Bicycle and pedestrian accommodations such as bike lanes, sidewalks, intersection improvements, widened paved shoulders and bicycle and

pedestrian-safe bridge design are frequently included as incidental features of highway projects. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds or with a local fund match.

ROAD RESURFACING

When space allows the inclusion of a bicycle lane onto a road without requiring significant drainage, Right-of-Way, or grading work, NCDOT can install the improvement during road resurfacing projects. If a project is feasible, the NCDOT can inform the affected community and offer them the opportunity to contribute to the marginal cost associated with these improvements.

EAT SMART, MOVE MORE NORTH CAROLINA COMMUNITY GRANTS

The Eat Smart, Move More (ESMM) NC Community Grants program provides funding to local communities to support their efforts to develop community-based interventions that encourage, promote and facilitate physical activity. The current focus of the funds is for projects addressing youth physical activity. Funds have been used to construct trails and conduct educational programs.

More information: <http://www.eatsmartmovemorenc.com/Funding/CommunityGrants.html>

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

The North Carolina Department of Environment and Natural Resources Division of Coastal Management offers the Public Beach and Coastal Waterfront Access Funds program, awarding \$500,000 to \$1 million a year in matching grants to local governments for projects to improve pedestrian access to the state’s beaches and waterways. Eligible applicants include the 20 coastal counties and municipalities therein that have public trust waters within their jurisdictions.

More information: <http://www.nccoastalmanagement.net/Access/about.html>

THE NORTH CAROLINA DIVISION OF PARKS AND RECREATION

The North Carolina Division of Parks and Recreation and the State Trails Program offer funds to help citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking and horseback riding to river trails and off-highway vehicle trails. This Division administers RTP grants for both construction and education. At this time the 2014 RTP funding has been authorized at \$1.5 million, future funding for 2015 is uncertain pending federal reauthorization of the RTP program. RTP requires a 25 percent match and is a reimbursement grant program.

More information: <http://www.ncparks.gov/About/grants/main.php>

THE NORTH CAROLINA PARKS AND RECREATION TRUST FUND (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to counties, incorporated municipalities and public authorities, as defined by G.S. 159-7. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50% of the total cost of the project, and may contribute more than 50%. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match.

More information: http://www.ncparks.gov/About/grants/partf_main.php

COMMUNITY TRANSFORMATION GRANT (DHHS)

The Community Transformation Grant (CTG) Project includes ten regions in North Carolina and is designed to support public health efforts in local communities, reduce chronic diseases, promote healthier lifestyles, reduce health disparities, and control health care costs. Region 9 incorporates 15 counties in northeastern North Carolina and includes the Corolla area. In order to support efforts to increase active living, the region has established a grant proposal process to fund projects related to priority areas (in this case, “Active Living”).

For more information, visit <http://www.healthync.org/>.

ADOPT-A-TRAIL PROGRAM

The Adopt-A-Trail (AAT) Program is a source of small funds for trail construction, maintenance, and land acquisition for trails. The program funds \$108,000 annually in North Carolina, and awards grants up to \$5,000 per project with no local match required. Applications are due in February. More information is available from Regional Trails Specialists and the Grants Manager.

More information: http://www.ncparks.gov/About/grants/docs/AAT_info.pdf

CLEAN WATER MANAGEMENT TRUST FUND (CWMTF)

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each year, a minimum of \$30 million is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. Funds may be used for planning and land acquisition to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

More information: <http://www.cwmtf.net/#appmain.htm>

NORTH CAROLINA HEALTH AND WELLNESS TRUST FUND

The North Carolina Health and Wellness Trust Fund (HWTF) in partnership with Blue Cross and Blue Shield of North Carolina (BCBSNC) offers the Fit Community Grants, designed to help communities become Fit Community designees. Up to eight communities that demonstrate a compelling need, proven capacity and promising opportunity for policy and environmental change in addressing physical activity and/or healthy eating behaviors will be awarded two-year grants up to \$60,000 each.

More information: <http://www.fitcommunitync.org>

URBAN AND COMMUNITY FORESTRY GRANT

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

of urban and community forests. Grant requests should range between \$1,000 and \$15,000 and must be matched equally with non-federal funds. Grant funds may be awarded to any unit of local or state government, public educational institutions, approved non-profit 501(c)(3) organizations and other tax-exempt organizations. First-time municipal applicant and municipalities seeking Tree City USA status are given priority for funding.

For more about Tree City USA status, including application instructions, visit: http://ncforestservice.gov/Urban/urban_grant_overview.htm

LOCAL GOVERNMENT FUNDING SOURCES

Counties and municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each category is described below. A variety of possible funding options available to North Carolina jurisdictions for implementing pedestrian projects are described below. However, many will require specific local action as a means of establishing a program, if not already in place.

CAPITAL IMPROVEMENT PROGRAM

Counties and municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.

CAPITAL PROJECT ORDINANCES

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

TAX INCREMENT FINANCING

Project Development Financing bonds, also known as Tax Increment Financing (TIF) is a relatively new tool in North Carolina, allowing localities to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Streets, streetscapes, and sidewalk improvements are specifically authorized for TIF funding in North Carolina. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria that are approved by a local governing body. TIF funds are generally spent inside the boundaries of the TIF district, but they can also be spent outside the district if necessary to encourage development within it.

INSTALLMENT PURCHASE FINANCING

As an alternative to debt financing of capital improvements, communities can execute installment or lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

TAXES

Many communities have raised money for general transportation programs or specific project needs through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional \$5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:



SALES TAX

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even if applying to a single county, must gain approval of the state legislature. In 1998, Mecklenburg County was granted authority to institute a one-half cent sales tax increase for mass transit.

PROPERTY TAX

Property taxes generally support a significant portion of a municipality's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance greenway system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund greenways could limit the municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

EXCISE TAXES

Excise taxes are taxes on specific goods and services. These taxes require special legislation and funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

OCCUPANCY TAX

The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

FEES

A variety of fee options have been used by local jurisdictions to assist in funding pedestrian and bicycle improvements. Enabling actions may be required for a locality to take advantage of these tools.

STORMWATER UTILITY FEES

Greenway trail property may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and create a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services.

IMPACT FEES

Developers can be required to pay impact fees through local enabling legislation. Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth so that "growth pays its own way."

In North Carolina, impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements. A developer may reduce the impacts (and the resulting impact fee) by paying for on- or offsite pedestrian improvements that will encourage residents/tenants to walk or use transit rather than drive. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

EXACTIONS

Exactions are similar to impact fees in that they both provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.

IN-LIEU-OF FEES

As an alternative to requiring developers to dedicate on-site greenway or pedestrian facility that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development's proportionate share of the cost of a regional facility serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls short of qualitative interests.

BONDS AND LOANS

Bonds have been a very popular way for communities across the country to finance their pedestrian and greenway projects. A number of bond options are listed below. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount of \$599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of its bicycle and trail system.

REVENUE BONDS

Revenue bonds are bonds that are secured by a pledge of the revenues from a specific local government activity. The entity issuing bonds pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

GENERAL OBLIGATION BONDS

Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. The local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues

generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the payments. Bond measures are typically limited by time, based on the debt load of the local government or the project under focus. Funding from bond measures can be used for right-of-way acquisition, engineering, design, and construction of pedestrian and bicycle facilities. Voter approval is required.

SPECIAL ASSESSMENT BONDS

Special assessment bonds are secured by a lien on the property that benefits from the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

STATE REVOLVING FUND LOANS

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

Funds from Private Foundations and Organizations

Many communities have solicited greenway and pedestrian infrastructure funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available in North Carolina.

LAND FOR TOMORROW CAMPAIGN

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to reject legislation that threatens to reduce funding of conservation focused trust funds. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for many generations. In 2011, the Land for Tomorrow Campaign suffered an 85 percent budget cut and future program funding is uncertain.

More information: <http://www.landfortomorrow.org/>

THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation was established in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

1. To assure that all Americans have access to basic health care at a reasonable cost
2. To improve care and support for people with chronic health conditions
3. To promote healthy communities and lifestyles
4. To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

For more information about what types of projects are funded and how to apply, visit <http://www.rwjf.org/grants/>

NORTH CAROLINA COMMUNITY FOUNDATION

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organization and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina, which makes grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. The foundation also manages various scholarship programs statewide.

More information: <http://www.nccommunityfoundation.org/Grants>.

WALMART STATE GIVING PROGRAM

The Walmart Foundation financially supports projects that create opportunities for better living. Grants are awarded for projects that support and promote education, workforce development/economic opportunity, health and wellness, and environmental sustainability. Both programmatic and infrastructural projects are eligible for funding. State Giving Program grants start at \$25,000, and there is no maximum award amount. The program accepts grant applications on an annual, state by state basis January 2nd through March 2nd.

Online resource: <http://walmartstores.com/CommunityGiving/8168.aspx?p=8979>

THE RITE AID FOUNDATION GRANTS

The Rite Aid Foundation is a foundation that supports projects that promote health and wellness in the communities that Rite Aid serves. Award amounts vary and grants are awarded on a one year basis. A wide array of activities are eligible for funding, including infrastructural and programmatic projects.

Online resource: <http://www.riteaid.com/company/community/foundation.jsf>

Z. SMITH REYNOLDS FOUNDATION

This Winston-Salem-based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. They have two grant cycles per year and generally do not fund land acquisition. However, they may be able to offer support in other areas of open space and greenways development.

More information is available at <http://www.zsr.org>.

BANK OF AMERICA CHARITABLE FOUNDATION, INC.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low- and moderate-income communities and serves to encourage entrepreneurial business development.

More information: <http://www.bankofamerica.com/foundation>.

DUKE ENERGY FOUNDATION

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

- An internal Duke Energy business "sponsor"
- A clear business reason for making the contribution

The grant program has three focus areas: Environmental and Energy Efficiency, Economic Development, and Community Vitality. The Foundation can support programs that support conservation, training and research around environmental and energy efficiency initiatives.

More information: <http://www.duke-energy.com/community/foundation.asp>.



PNC FOUNDATION

The PNC Foundation supports a variety of nonprofit organizations with a special emphasis on those that work to achieve sustainability and touch a diverse population, in particular, those that support early childhood education and/or economic development.

More information: https://www.pncsites.com/pncfoundation/foundation_grantProcess.html

AMERICAN GREENWAYS EASTMAN KODAK AWARDS

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities. Currently, the grant program is on hold until further notice.

More information: http://www.conservationfund.org/kodak_awards.

THE TRUST FOR PUBLIC LAND

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

More information: <http://www.tpl.org>

NATIONAL TRAILS FUND

American Hiking society created the National Trails Fund in 1998 as the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting, and maintaining foot trails in America. The society provides funds to help address the \$200 million backlog of trail maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency

building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project. Projects the American Hiking Society will consider include:

Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.

Building and maintaining trails that will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.

Constituency building surrounding specific trail projects, including volunteer recruitment and support.

More information: <http://www.americanhiking.org/>

THE CONSERVATION ALLIANCE

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. One hundred percent of its member companies' dues go directly to diverse, local community groups across the nation - groups like Southern Utah Wilderness Alliance, Alliance for the Wild Rockies, The Greater Yellowstone Coalition, the South Yuba River Citizens' League, RESTORE: The North Woods and the Sinkyone Wilderness Council (a Native American-owned/operated wilderness park). For these groups, who seek to protect the last great wild lands and waterways from resource extraction and commercial development, the Alliance's grants are substantial in size (about \$35,000 each), and have often made the difference between success and defeat. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to grassroots environmental groups across the nation, and its member companies are proud of the results: To date the groups funded have saved over 34 million acres of wild lands and 14 dams have been either prevented or removed-all through grassroots community efforts.

The Conservation Alliance is a unique funding source for grassroots environmental groups. It is the only environmental grant maker whose funds come from a potent yet largely untapped constituency for protection of ecosystems - the non-motorized outdoor recreation industry and its customers. This industry has great incentive to protect the places in which people use the clothing, hiking boots, tents and backpacks it sells. The industry is also uniquely positioned to educate outdoor enthusiasts about

threats to wild places, and engage them to take action. Finally, when it comes to decision-makers - especially those in the Forest Service, National Park Service, and Bureau of Land Management, this industry has clout - an important tool that small advocacy groups can wield.

The Conservation Alliance Funding Criteria: The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation. The Alliance does not look for mainstream education or scientific research projects, but rather for active campaigns. All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success. The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years). Funding emphasis may not be on general operating expenses or staff payroll.

More information: <http://www.conservationalliance.com/grants>.

BLUECROSS BLUESHIELD OF NORTH CAROLINA FOUNDATION

BlueCross BlueShield (BCBS) focuses on programs than use an outcome approach to improve the health and well being of residents. The Health of Vulnerable Populations grants program focuses on improving health outcomes for at-risk populations. The Healthy Active Communities grant funds projects that enhance the physical environment to create spaces and places for physical activity. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms and, depending on the size of the nonprofit, provide and audit.

More information: <http://www.bcbsncfoundation.org/grants/>.

BIKE BELONG GRANTS

The Bikes Belong Grant program funds important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include greenways and rail trails accessible by pedestrians and bicyclists. Applicants can request a maximum amount of \$10,000 for their project, and priorities are given to areas that have not received Bikes Belong funding in the past three years.

A new Bikes Belong opportunity is Community Partnership Grants. These grants are designed to foster and support partnerships between city or county governments, non-profit organizations, and local businesses to

improve the environment for bicycling in the community. Grants will primarily fund the construction or expansion of facilities such as bike lanes, trails, and paths. The lead organization must be a non-profit organization with IRS 501(c)3 designation or a city or county government office.

More information: <http://www.bikesbelong.org/grants/>

THE CINERGY FOUNDATION

The Cinergy Foundation places special emphasis on projects that help communities help themselves. The Foundation supports local community, civic and leadership development projects. The Cinergy Foundation also views community foundations as positive vehicles for sustaining the long-term health of a community and promoting philanthropic causes. Infrastructure needs by a community will not be considered.

The Cinergy Foundation supports health and social service programs which promote healthy life styles and preventative medical care. United Way campaigns are included in Health and Social Services funding.

More information: <http://www.cinergy.com/foundation/categories.asp>

LOCAL TRAIL SPONSORS

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

VOLUNTEER WORK

Residents and other community members are excellent resources for garnering support and enthusiasm for a greenway corridor or pedestrian facility. Furthermore volunteers can substantially reduce implementation and maintenance costs. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.

CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Municipalities typically

create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can improve capital budgets and / or projects.

TRAIL/GREENWAY SPONSORSHIPS

Wilmington, New Hanover County, and local communities can actively seek sponsorships for events, services, parks, and trail facilities from individuals, foundations, corporations, nonprofit organizations, service clubs, and other entities. The purpose of such sponsorships is to increase the ability to deliver services to the community and/or provide enhanced levels of service beyond general funds.

In appreciation of such support, the government agencies that benefit should provide sponsors with suitable acknowledgement of their contributions. However, such recognition should adhere to the aesthetic values and purpose of the parks, facilities, and services. In addition, such recognition should not detract from the visitor's experience or expectation, nor should it impair the visual qualities of the site or be perceived as creating a proprietary interest.

Below are links to exemplary park/trail sponsorship policies and materials:

Municipal Parks and Recreation Sponsorship Policy Example:

<http://www.portlandonline.com/shared/cfm/image.cfm?id=155570>

Trail Sponsorship Brochure Example:

<http://mtsgreenway.org/events-calendar/greenway-365-sponsorship-brochure>

Corporate Sponsorship and Naming Rights Guidelines:

<http://www.mrsc.org/subjects/parks/parksponsor.aspx>





Appendix A: Case Studies



Introduction

As the Corolla community develops its vision for circulation and wayfinding, this review provides insight to other beachside communities that have sought to create an efficient localized transportation network that benefits all motorized and non-motorized users. Exploring precedents can help spark, refine and/or eliminate ideas. After considering several potential precedent studies, the towns of Hilton Head, SC, Bethany Beach, DE, and Bradenton, FL, were selected based on their size, location, and general context. In gaining a better understanding of the possibilities for Corolla, these towns provide applicable examples and learning opportunities. Although their respective sizes and surroundings differ, the populations of these coastal communities swell during warmer months as tourists and vacationers flock to the coast.

Hilton Head, SC

Overview

Hilton Head Island, SC, is located in Beaufort County along the southeastern coast of South Carolina. Charleston, SC, is an approximately two-hour drive to the north while Savannah, GA and the Georgia border lie approximately 30 miles to the south. The Island is over 40 square miles and its extent reaches 12 miles in length by 5 miles in width. It is separated from the mainland and the neighboring Bluffton community by the May River. The US 278 bridge connects Hilton Head Island and Bluffton.



Population and Character

The year-round population on the island is 38,366. However, during the peak summer months when most tourists arrive, the population can swell to over 200,000. While the 1970s saw a more uneven distribution in terms of seasonal visitation (over 50% of visitors arrived over the summer months), recent counts have shown a more even distribution of visitors with 33% arriving over the summer months. Nearly 10,000 seasonal housing units are located on the island¹ and average monthly renting rates for a place with two bedrooms averages approximately \$900-\$1,000².

Attractions that draw these large numbers of visitors and help drive a growing population include 12 miles of beach, numerous golf courses, over 100 miles of paved trails, and other amenities conducive to the favorable weather. Year-round residents are scattered throughout the island in various subdivisions and privately owned gated communities. Many local residents live across the May River in Bluffton, commuting to work on Hilton Head Island.

Transportation Planning, Existing Systems, and Circulation

With significant numbers of people moving throughout the island, transportation considerations become an important component of daily activities. While public transportation options are limited, the Town of Hilton Head Island has developed a wayfinding system centered on alternative means of transportation to complement the current road network and automobile infrastructure.

The Town of Hilton Head Island does not have a specific transportation plan. However, documents and planning efforts support circulation. A transportation element of their town Comprehensive Plan, the island-wide pathways system designed for non-motorized transportation, and additional planned transportation components (boats, taxis, etc.) play important roles regarding local transportation planning, policy, and programs. Key aspects to note include:

- Data Gathering and Analyses: Automobile Traffic Volumes – The Town monitors traffic volumes closely and conducts build-out analyses in each area of the island. Based on land use and planned developments, this model estimates how many residential, resort, hotel, and office/commercial units will be on Hilton Head Island

¹ Town of Hilton Head Island Comprehensive Plan 2010.

² Rentometer. <https://www.rentometer.com/>. Accessed June 2013.

when all development and redevelopment is completed. Recent analyses have shown that traffic volumes may exceed capacity of the road network in the future and that appropriate steps should be taken to address these concerns. Recommendations of these considerations highlighted in the Comprehensive Plan include:

- The Town should continue to collect appropriate supporting data to assist in traffic modeling.
- Traffic volume effects of zoning classifications should be considered as necessary.
- Incorporate additional regional transportation considerations when evaluating local transportation demand.
- Parking – The Town administers two-year beach parking passes at a cost of \$30 per pass. Only Town residents or property owners may purchase these passes. The passes allow the Town to regulate parking needs, designating certain beach parking spaces for pass holders only. General Beach Park hours are:
 - March-November: 6am-9pm
 - November-February: 6am-6pm
 - Coligny Beach Park is open 24-hours
 - Non-residents may utilize metered parking where available.
- Pathways System – Hilton Head Island currently has over 100 miles of pathways and nature trails designed for pedestrians and bicyclists. Approximately half of these are public pathways open to anyone, and the other half are private pathways located in gated communities. These private pathways are only for use by those within the private gated community. The pathway system serves to relieve traffic congestion, providing an alternative means of transportation in addition to diversifying exercise and outdoor recreation opportunities. The Town of Hilton Head Comprehensive Plan outlines several recommendations and implications of the current pathways system:
 - Pathways do not currently serve all areas of the Island. The Town should continue to move forward with construction of pathways to connect these areas.
 - While the Island currently has an extensive pathway network, opportunities to improve pathway connections between destinations that provide additional recreational opportunities and promote alternative means of transportation on the Island should be considered.



- The Island's pathway network could be enhanced by providing a link to the bridge to the mainland in anticipation that other jurisdictions will connect pathway facilities on the mainland.
- There may be potential benefits of linking private community pathways to destinations such as shopping and entertainment centers immediately adjacent to the PUDs via pathway connections or secondary access points. This could have the potential to reduce the number of automobile trips on Island roadways, reduce the parking area required to accommodate customers and integrate the PUDs and non PUD areas.

In the Land Management Ordinance of the Town of Hilton Head's Municipal Code, Section 16-5-203 – Layout of Lots and Blocks under the Subdivision Standards section encourages but does not necessarily require the inclusion of pathways in new subdivision development:

"Pathways are encouraged throughout the subdivision. Pathways may be required by the Administrator to provide circulation or access to schools, playgrounds, shopping, or other community facilities. Interconnection with other pathways is also desirable."

See public pathways maps on page 2-5.

- Public Bus System – Palmetto Breeze is the only bus-transit system operating in the Town of Hilton Head and the surrounding region. It mainly serves to connect the labor force living in surrounding counties to places of employment on the Island. It is supported by the five counties in the region including Beaufort County. Five stops are located on Hilton Head Island. Public transportation considerations highlighted in the Town's Comprehensive Plan include:
 - The current system may not serve the actual needs of the Island community.
 - Integration of bike racks on buses and linking pathways to bus stops has the potential to enhance the transportation network on the Island and provide a link to off-island users.
 - Internal shuttle systems such as the Sea Pines Trolley and Palmetto Dunes Buggy have the potential to reduce trips on Island roads. Expanding this concept to other areas of the Island and coordinating schedules with public transportation routes should be evaluated.
- Marine transportation – Public marine transportation options such as small ferries for passengers and cargo are generally limited, but private operations are more readily available. Currently, two

county maintained landings are open to the public on Hilton Head Island. Linkages to surrounding mainland communities are encouraged in future developments. The Town Comprehensive Plan recommends expanding this network and integrating with ground transportation options.

- Roundabouts – The Town of Hilton Head Island currently employs over a dozen roundabouts at intersections across the island, with more in the planning and design stages. Their policy toward this effort was instituted in 1996. Roundabouts are generally safer intersection treatments than traffic signals. Collision frequencies are reduced; when collisions do happen, they typically occur at lower speeds.
- Other components of the Hilton Head Island transportation system –
 - Bicycle Rentals – 11 bicycle rental and bicycle repair businesses operate across Hilton Head Island offering various services and bicycle accessories to meet demand.
 - Internal Shuttle Systems
 - Sea Pines Trolley – The Sea Pines Trolley bus system serves the private residential gated community of Sea Pines Plantation located in the southwestern section of Hilton Head Island. It is a free service that has offers residents of the Sea Pines Plantation three different routes shown in the table below.

2013 Trolley Schedule*					
	3/23-5/24	5/25-9/2	11/29-11/30	12/23	12/31
Harbour Town Trolley	No Service	10am-midnight	4pm-10pm	4pm-10pm	4pm-1am
South Beach Trolley	No Service	4pm-midnight	No Service	No Service	No Service
Beach Trolley	10am-9pm	10am-10pm	No Service	No Service	No Service

*Harbour Town Trolley runs approximately every 20 minutes; South Beach Trolley runs at the top of every hour; and the Beach Trolley runs approximately every 30 minutes.

- Palmetto Dunes Buggy – The Palmetto Dunes Buggy provides free transportation for the Palmetto Dunes gated

community, available April through September. These vans are dispatched on a first-come, first-serve basis and generally arrive within 10 minutes of the request.

- Savannah/Hilton Head International Airport (Savannah, GA) – Airport Shuttle – Yellow Cab of Hilton and KShuttle provide taxi services to and from the airport to Hilton Head Island.
- Taxi services – Numerous taxi, limousine and town car services are available across Hilton Head Island.

CASE STUDY: SEA PINES TROLLEY

- The Sea Pines Trolley, well loved by all ages, operates inside of a large gated portion of Hilton Head Island, SC. Running from Memorial Day to Labor Day each year, the number one goal of the trolley is traffic mitigation. The trolley is a free service to residents and guests. The trolley service has two sources of revenue: 1) Assessments of property owners for capital improvements which pays for the trolleys and 2) A \$5 visitor fee paid for by daily guests at the gate for operations (fuel, maintenance, and staffing).
- The Sea Pines Trolley service is a non-profit and runs a fleet of five trolleys (each about \$150,000 purchase price). Each trolley holds 24 passengers and has bike racks which officially hold two bikes each. The yearly operating cost is about \$300,000 for wages, fuel, maintenance, etc. Drivers are paid \$13/hr and are mostly retired and semi-retired people. Drivers are also allowed tips which typically ends up being about \$100/day. Drivers are required to have a CDL license. The non-profit maintains \$25 million in liability insurance.
- The Trolley Service is mostly for summer residents and tourists but is also available for weddings, proms, charity events, and other events. It is also used quite frequently by the resort. The charge for events is \$250/hr for the first hour and \$125/hr each hour after that.
- Ridership in the summer is about 1,000 people per day (200 people for each of the five trolleys). Each year, this equals about 65,000-70,000 riders per year. Spikes in users include holidays like July 4th.
- There are five routes within Sea Pines with designated stops and parking areas at the stops. The trolley will come by each stop every 30 minutes and is equipped with GPS so that riders can monitor the bus location with a smartphone device. The GPS also allows the manager to monitor trolley speeds.

- The trolley is an open-air trolley with plastic curtains for inclement weather. They have found that people prefer the open-air. It is equipped with a back-up camera.
- The Town of Hilton Head had to approve vehicle color, signage, etc. The Town tried pamphlets but found that they created litter. Now, people just receive a brochure at the entry gate. In past, Chamber of Commerce ambassadors (high school or college kids) can ride aboard and give a spiel about history, etc.

- Trolleys can have digital screens inside describing upcoming stops and amenities (Businesses could pay for this). This was not desired in Sea Pines as nature and fresh air were higher priorities.
- There are 3 companies in US that make trolleys.

THE PATHWAYS SYSTEM

As part of the over 50 miles of public pathways, three designated routes have been established by the Town. These three routes serve to connect people and destinations around the Island. These routes are the following:

ADDITIONAL INFORMATION AND CONSIDERATIONS:

- Electric trolleys are grant-eligible for non-profits with grants paying up to 90% of the costs.
- Public transportation not a money-maker. They don't charge because it causes more problems, more accounting work, and more theft.
- Gas can be quite expensive.
- Maintenance can be an issue as well. Not many places that can lift a trolley to do work on it. Tires degrade quickly (good for 20,000 miles).

- Beach Area Pathway Route – 7 miles – This route connects two public beach access areas.
- Island History Pathway Route – 10 miles – This route also connects two public beach access areas on the eastern end of the Island. Points of interest and historical landmarks are also highlighted.
- Long and Short Pathway Routes – (Long – 21 miles; Short – 15 miles) – These two options connect several residential areas with three public beach access areas along the southern shores of the Island.

In addition to the delineation of each pathway route, each route map highlights the location of other nearby public pathways and bike facilities, parks, information kiosks, public beach access areas, hospitals, and fire stations. Bicycle racks are located at most public beach access points.

The kiosks serve as the predominant signage and wayfinding mechanism along each pathway route. Bollards with small signs help pedestrians and bicyclists find their way in higher traffic area intersections, and the Town is exploring options for additional signage in key places.

Each kiosk includes a 24X36 Island-wide pathway map on one side. The 24X36 space on the opposite side is divided into four equal parts – the three pathway route maps and safety information are placed in those four spaces. The Island-wide maps have also been distributed to all local bicycle advocacy groups, the local Chamber of Commerce, and all local bicycle rental and repair shops. The Island-wide map, the three pathway routes, and safety information displayed on each kiosk are shown below.



TIPS FOR SAFE BICYCLING

PLEASE OBEY ALL TRAFFIC SIGNALS AND TRAFFIC LIGHTS. STOP SIGNALS MUST BE OBEYED FOR TRAFFIC SIGNALS. STOP SIGNALS MUST BE OBEYED FOR TRAFFIC SIGNALS. STOP SIGNALS MUST BE OBEYED FOR TRAFFIC SIGNALS.

TRAVEL THE PATHWAYS AT SPEEDS THAT ALLOW FOR THE SAFETY OF PEDESTRIANS AND OTHER USERS.

NEVER RIDE AGAINST TRAFFIC. STATE LAW REQUIRES BICYCLISTS TO RIDE IN THE SAME DIRECTION AS ALL OTHER VEHICLES.

PLEASE AVOID RIDING ON SIDEWALKS A FEETWIDE IS AVAILABLE.

PLEASE WEAR HELMETS AND ALWAYS WEAR SAFETY BELTS FROM OTHER VEHICLES.

WATCH OUT FOR BICYCLISTS IN SOUTH CAROLINA. BICYCLISTS ARE NOT ALWAYS VISIBLE TO OTHER DRIVERS, BUT THEY MAY NOT SEE YOU.

MANY SECTIONS OF THE PATHWAYS ARE NOT LIGHTED. IF YOU MUST RIDE AT NIGHT, WEAR LIGHTS, CARRY A FLASHING LIGHT, AND WEAR REFLECTIVE TAPE.

WHEN APPROACHING SLOWER TRAFFIC, USE YOUR HORN. PLEASE AVOID YOUR PHONE, TEXTING, OR CALLING WHILE RIDING ON YOUR PATH. ALWAYS RIDE ON THE LEFT.

BICYCLISTS SHOULD ALWAYS WEAR A HELMET, PROTECTIVE GLOVES, AND SHOES.

MAKE EYE CONTACT WITH OTHER DRIVERS. AVOID OTHER BICYCLISTS AND PEDESTRIANS. DON'T DRINK AND RIDE. NEVER RIDE UNDER THE INFLUENCE OF ALCOHOL OR DRUGS. ALWAYS WEAR YOUR SEATBELT. ALWAYS WEAR YOUR SEATBELT. ALWAYS WEAR YOUR SEATBELT.

WELCOME TO HILTON HEAD ISLAND'S PUBLIC PATHWAYS

The Town of Hilton Head Island provides nearly 50 miles of public pathways and scenic trails on which pedestrians and cyclists may enjoy the diverse destinations and activities provided by this wonderful place to work and play. In addition, there are more than 50 miles of pathologic and altered roadways within the private developments. These private pathways are for the use of residents and visitors of the respective communities and their guests. Please contact your rental agency or the individual development's security office regarding their policy on entering and leaving the community.

The Town of Hilton Head Island provides 12 miles of the world's finest beaches. As you walk, it is the ideal opportunity for your family to enjoy the coastline on your bicycle. Public beaches can be accessed into the Public Beach Access locations.

For more information visit our website at www.hiltonheadisland.com

BE COURTEOUS, ALERT AND PREDICTABLE

PATHWAY MARKINGS

WHITE DIAMONDS RESTRICTED TRAVEL LANE TRAVEL WITH FLOW OF TRAFFIC

WHITE STRIPE & STOP SIGN ROAD CROSSING STOP AND LOOK FOR MOTORISTS STOP AND LOOK FOR MOTORISTS

YELLOW CENTER LINE TOWNSHIP TRAFFIC FLOW TO THE RIGHT

SEVERAL WHITE DIAGONAL STRIPES CROSSWALK WATCH FOR OTHER BICYCLISTS PEDESTRIANS AND MOTORISTS

PLEASE LOCK YOUR BICYCLE WHEN NOT IN USE! Bicycle thefts are preventable.

ACCIDENT? PHONE 311 IF A REPORT IS REQUIRED, CALL 311 AT 348-3441.

UNSAFE CONDITIONS? If a pathway is in need of repair, please call 348-4550.



Corolla and Hilton Head Island (Learning Opportunities)

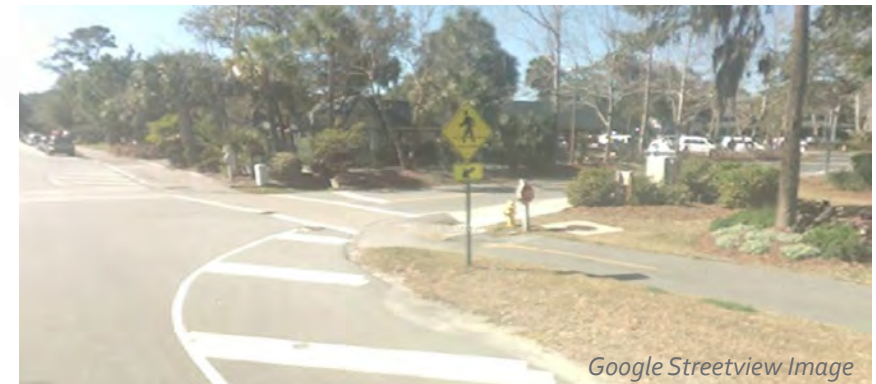
As a beach side destination town with a large influx of people in the warmer months, Hilton Head Island provides a relevant comparison for the Corolla community. Although it is larger, more populated, and more accessible from the mainland, understanding circulation and wayfinding in the context of Hilton Head Island is an opportunity for the Corolla community to improve its own system tailored to the unique context of Corolla. This case study revealed several considerations that should be noted by the Corolla community, in particular:

- The diversification of transportation opportunities linking all sections of the community should be considered including:
 - Multi-use pathways/non-motorized transportation
 - Wayfinding and signage are key components of successful circulation systems. This can include information kiosks with maps, safety information, and regulations.
 - Route themes – These can be ways to connect people to certain destinations while displaying Corolla’s unique character.
 - Incorporate bicycle parking at all destinations.
 - Public Transportation
 - Trolley/bus transit – operation can be tailored to peak season demand.
 - Public marinas and docks – coordinate with private facilities where possible.
- Transportation planning coordination between Corolla transportation systems, neighboring jurisdictions, residential areas, regional transportation, and private transportation vendors will add to a more thoroughly connective and efficient system.
- Traffic calming treatments such as the use of roundabouts will ameliorate conflicts at intersections.
- Town codes can be designed to encourage and/or require new development to include pathways and alternative transportation options in minimizing additional motorized traffic demands.
- Keeping track of traffic demand and data related to existing and future development is essential. This will help inform future transportation needs and planning efforts.

Examples of standard crossing treatments in Hilton Head that could apply to Corolla:

- Clear rules of the road and tips for safe bicycling in their brochures and in kiosks
- Stop or yield signs for trail users at road crossings
- Crosswalk pavers for better delineation and to calm traffic
- Traffic stop signs and stop lines before pathway crosswalk

EXAMPLE PATHWAY CROSSING IMAGES IN HILTON HEAD:



Bethany Beach, DE

Overview

Bethany Beach, DE is located in Sussex County along the southeastern coast of Delaware. Washington D.C., Baltimore, MD, and Philadelphia, PA are each approximately 130 miles to the west, northwest, and north respectively. The Rehoboth and Dewey Beach communities are directly to the north across Delaware Seashore State Park. Directly to the south are South Bethany, Fenwick Island, and Ocean City, MD. The Town of Bethany Beach covers a little over one square mile – one of the reasons why it presents a relevant case study for the Corolla community.



Population and Character

The year-round population on the island is approximately 1,060 according to the 2010 U.S. Census. Thousands of people flock to the Bethany Beach area during the warmer months; many from the nearby metropolitan areas of Washington D.C., Baltimore, MD, and Philadelphia, PA. While the population jumped dramatically from 326 in 1990 to 903 in 2000 (277%), the population grew by a more modest 8.3% from 2000-2009. The Town expects it will continue to steadily grow. Approximately 80% of Bethany Beach's housing stock is used for seasonal, occasional, and summer

rental housing³. This highlights the seasonal population shifts that occur. Average monthly renting rates for a place with two bedrooms averages approximately \$1,000⁴.

Attractions that draw these large numbers of visitors and help drive a growing population include the approximately one mile of free public access beach (which forms the eastern boundary of Bethany Beach), the accompanying boardwalk, and other amenities conducive to a quiet beach town. Besides a small commercial district along the central part of the one mile stretch of beach, the Town of Bethany Beach is principally composed of residential areas. Combined with the proximity of significant areas of park land to the north and south, the larger residential sections lead to a quieter beach setting which is a Bethany Beach characteristic that is attractive for many people. More densely populated residential areas are found closer to the shoreline, while less-densely populated subdivisions are found on the western side of the Town of Bethany Beach.

Transportation Planning – Existing Systems and Circulation

Similar to other beach communities, with significant numbers of people moving throughout Town, especially during the summer months, transportation considerations become an important component of daily activities. Besides DelDOT's 2004 Pedestrian and Bicycle Study in Bethany Beach, the Town does not have a specific transportation plan. However, the Transportation section of their Comprehensive Plan details existing transportation planning and programs as well as recommendations in moving forward. During the summer peak season, a mixture of automobiles, bicyclists, pedestrians, trolley shuttles, and other components of the transportation system can be seen in Bethany Beach. Key considerations regarding these components include:

- Bicycle and Pedestrian Improvements – Identified in the recent Town of Bethany Beach Comprehensive Plan update, DelDOT's 2004 Pedestrian and Bicycle Study in Bethany Beach noted the following problems:
 - Missing pedestrian walkway links
 - Missing pedestrian signage for crosswalks

³ Town of Bethany Beach Comprehensive Plan 2010.

⁴ Rentometer. <https://www.rentometer.com/>. Accessed June 2013.

- Missing bike-route connections
- Cut-through traffic
- Solutions identified included (for pedestrians):
 - Innovative walk/stop signals
 - Crosswalk upgrades (re-striping)
 - Warning lights
- Completing the pedestrian sidewalk/pathway network (for bicyclists):
 - Improved signage along S.R. 1
 - Trail completions along Pennsylvania and Atlantic Avenues
 - Additional bike racks spaced throughout the Town
- Traffic-calming infrastructure (for motorists):
 - Median landscaping along S.R. 1
 - Speed bumps
 - Improved street lighting



Safety improvements shown here in Bethany Beach include curb bulbouts, crosswalks, and bike lanes.



The Town of Bethany Beach has been continuing to expand its bicycle and pedestrian network as funding and support allow. Bicycle facilities are currently found along some of the main corridors including Garfield Parkway/Atlantic Avenue, Kent Avenue, and Pennsylvania Avenue.

- Parking – The Bethany Beach Parking Map outlines areas designated for residential permits and business employee permits as well as pay to park locations along the streets near the beach. Parking is \$1.50/hr or \$.25/10 minutes. The parking map is shown below.
- Town Trolley – During the summer months, the Town of Bethany Beach operates a Trolley shuttle service that circulates throughout Town every half-hour utilizing two Trolley buses. The Trolley runs from Memorial Day through mid-September from 9:30am-10:00pm. Weekend services are provided in the spring and fall

shoulder seasons. The Trolley can generally be flagged anywhere, and it costs \$.25 each way to ride the Trolley. Operating from Memorial Day through Labor Day (ridership table below). Because of these high ridership numbers and the success/demand for the service, the Town may expand the Trolley shuttle service in the future. Bicycle racks are currently not included on the trolleys. The Town Trolley route map is displayed below.

Bethany Town Trolley Ridership 2008-2011	
Year	Total Riders
2008	35,274
2009	40,051
2010	37,989
2011	35,630

- DeDOT Dart regional bus service – This bus service through Bethany Beach has several stops through town but with regular service typically ceasing by 2:30pm. It connects Bethany Beach with surrounding communities. The Carolina Trailways bus stops once per day in Bethany Beach and connects to Washington D.C.
- Beach, Boardwalk, and Comfort Station – The boardwalk is .38 miles long and 12 feet wide. It also has operational foot washing stations at every street entrance during the summer season. The comfort station is located at the beach front on Garfield Parkway. This includes a climate controlled restroom facility open 24 hours a day, 7 days a week (restroom includes baby changing station).
- Other components of the Bethany Beach transportation system –
 - Bicycle rentals and repair shops – several bicycle rental and repair shops are located in or very close to the Town of Bethany Beach.

MAP KEY

PAY TO PARK HOURS

- 10:00 AM – 11:00 PM RED
- 10:00 AM – 8:00 PM BLUE

RESIDENTIAL PERMIT HOURS

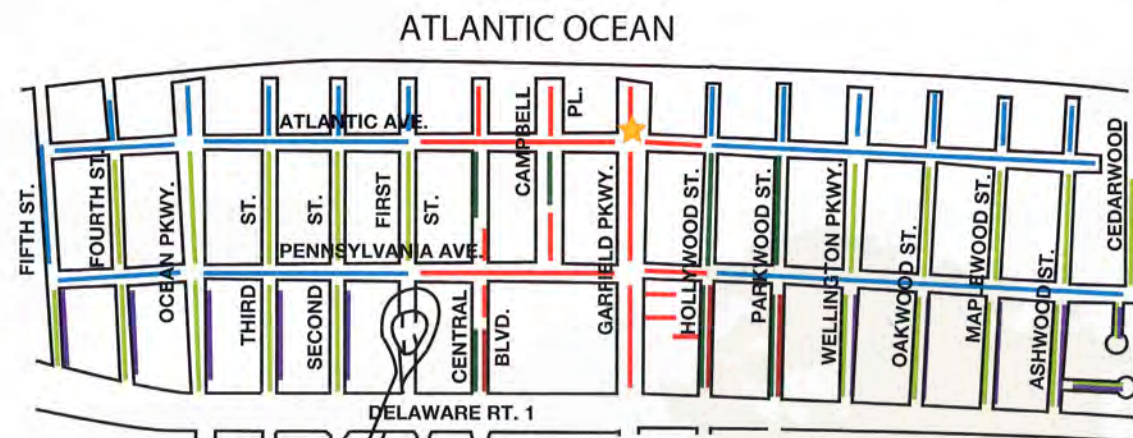
- 10:00 AM – 8:00 PM DARK GREEN
- 10:00 AM – 4:00 PM LIGHT GREEN

BUSINESS EMPLOYEE PERMIT HOURS

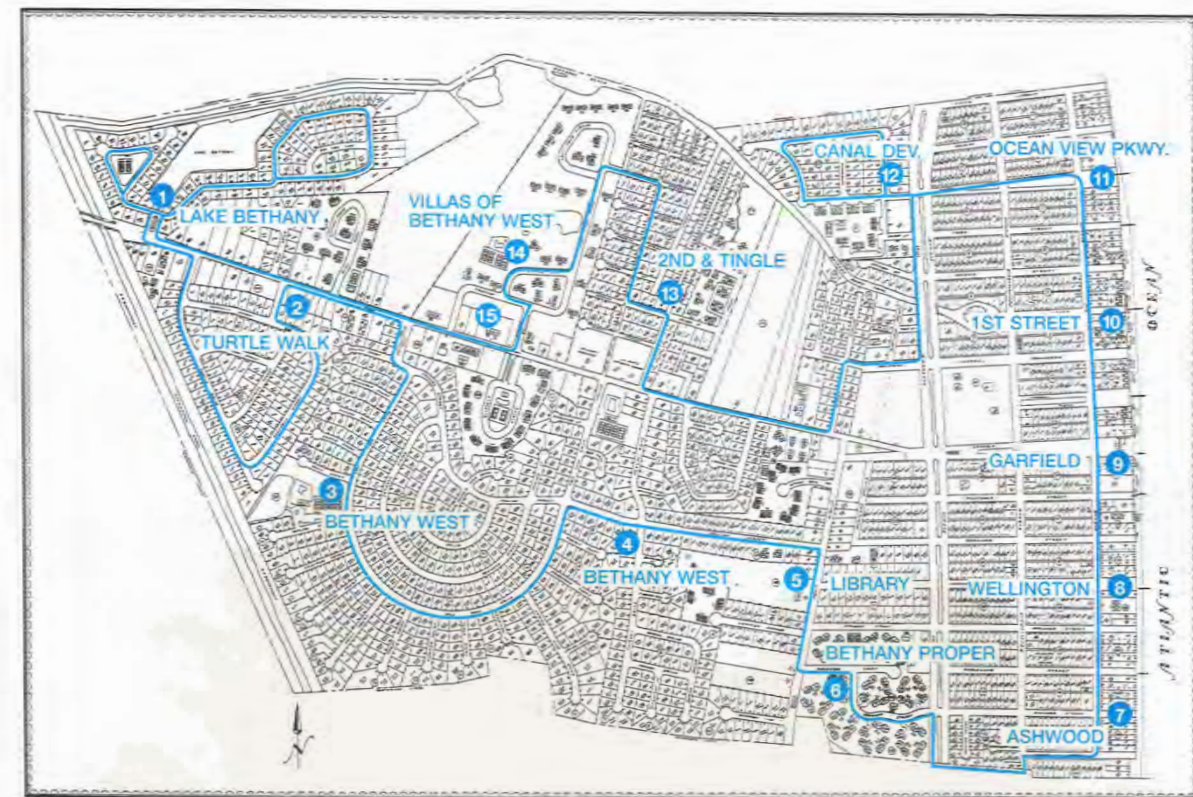
- 10:00 AM – 8:00 PM BROWN
- 10:00 AM – 4:00 PM PURPLE

GARFIELD PARKWAY – 2-HOUR LIMIT
ALL OTHERS – ALL DAY

\$1.50/hr OR \$.25/10 minutes



Bethany Parking Map: Bethany Beach charges a fee to park as indicated on the map above.



Bethany Town Trolley Map: Circulation includes major residential/vacation areas and core activity areas.

- Taxi services – Numerous taxi services are available across Town.
- Enforcement – Bethany Beach Police Department has held periodic Bicycle Safety Checkpoints. Bicycles are checked for proper lighting equipment and riders are checked for helmets. Helmets, lights, and safety literature are also distributed at the bike safety checkpoints and can be acquired at the Bethany Beach Police Department.
- Events
 - Ocean to Bay Bike Tour – This ride is hosted every April by the Bethany-Fenwick Chamber of Commerce.
 - Bethany Beach Boardwalk Arts Festival – This festival is hosted by the Town every June.
- Further recommendations from the Town of Bethany Beach Comprehensive Plan
 - Coordination with DelDOT and Sussex County transportation planning efforts regarding pedestrian, bicycle, and automotive improvements along state-owned roads such as S.R. 1 through Town.
 - Develop an inventory of the bicycle and pedestrian networks within the Town to identify areas of specific need – continue expanding the bicycle and pedestrian network.

BETHANY BEACH TROLLEY CASE STUDY

The Bethany Beach Trolley, started in 2002, is funded by the Town and maintains a scheduled route around Town from Memorial Day to about the 3rd Week of September. The chief goal of the trolley is traffic mitigation. There are three trolleys in the fleet with typically two operating at one given time. It operates from 9:30am-10:00pm but will run later on event nights (such as Monday movies and Thursday bonfires).

Approximately 40,000 people travel on the trolley each summer, mostly tourists. There are seventeen stops along route but riders can also flag the bus down along the route. The trolley charges 25 cents per ride and is subsidized by parking meter revenue. Still, the Town loses about \$40,000 per year on the Trolley.

Operations Notes:

- Because it is on a regular schedule, it is required to have two DelDOT inspections per year.
- The trolleys are equipped with a number of ADA and safety devices including a handicap lift. It also features a GPS so the manager can track the location of the trolley. It has a sign that pops out from side at all stops (similar to school bus “Stop” sign). Each trolley has strobe lights as well for pickup. The trolleys are open-air but have vinyl curtains and AC. There are no bicycle racks on the trolleys.
- The Town’s newest trolley is a 38 passenger, diesel-powered vehicle that cost \$166,900. The first trolley is gas and has an enormous carbon footprint which the Town recommends against.
- The chief costs are for driver wages, gas, and maintenance.
- The Town opted out of marketing and signage on inside and outside of trolley.
- Drivers are required to have a CDL license with Class P endorsement.

Corolla and Bethany Beach (Learning Opportunities)

As a smaller and quieter beach side destination town (known as one of the “quiet resorts”) with a larger influx of people throughout the summer season, Bethany Beach provides a relevant comparison for the Corolla community. Although Bethany Beach is a part of the mainland, it is also similar to Corolla in that significant areas of park/open space are located to the northern and southern ends of Town. Understanding the circulation system of Bethany Beach is an opportunity for the Corolla community to improve its own system tailored to the unique context of Corolla. Several considerations based on this case study that should be noted by the Corolla community include the following:

- The diversification of transportation opportunities linking all sections of the community should be considered including:
 - The expansion of bicycle and pedestrian facilities as resources allow.
 - The development of an inventory of the bicycle and pedestrian networks within the Town to identify areas of specific need.

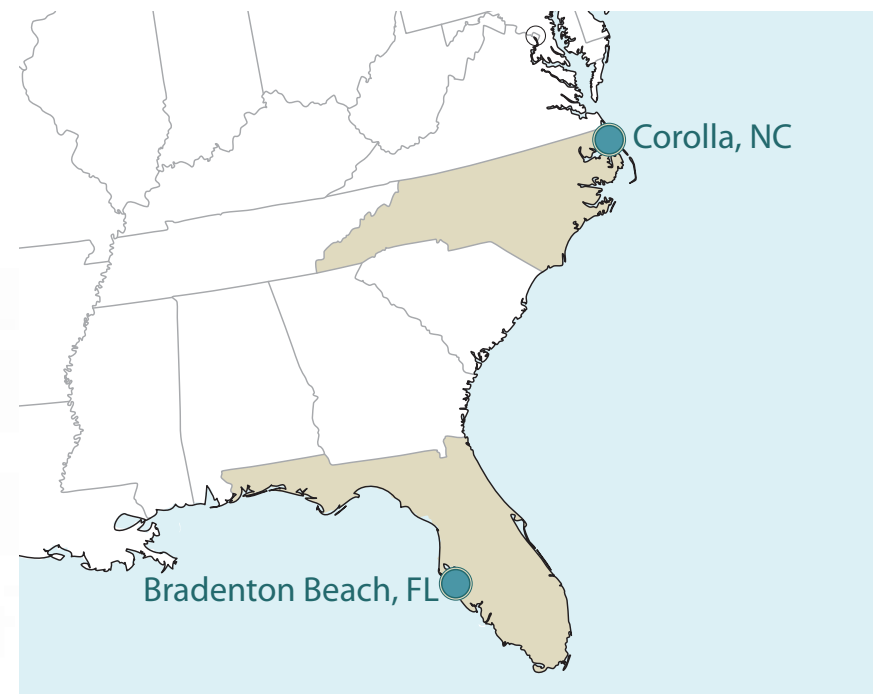
- Public Transportation
 - Trolley/bus transit – Operation can be tailored to peak season demand and shoulder season services can be designed as needed.
 - The flexible pick-up/drop of system allows riders to flag down the Trolley anywhere along the route.
 - Bicycle racks on trolleys/buses are important components of multi-modal systems – Bethany Beach Trolleys currently do not have racks for bicycles.
- Transportation planning coordination between Corolla transportation systems, neighboring jurisdictions, residential areas, regional transportation, and private transportation vendors will add to a more thoroughly connective and efficient system.
- Monitoring of Trolley/bus transit (or other transit system) ridership – This will inform appropriate adjustments to future planning and decision making.
- Ancillary facilities – Beach showers for removing sand and restrooms are important components of comfort stations in appropriate areas.
- Event programming –
 - Events such as the Ocean to Bay Bike Tour and the Bethany Beach Boardwalk Arts Festival are great ways to advertise a locality, incorporating innovative alternative transportation ideas. Similar ideas could be further developed for the Corolla community.
- Maintaining local community character – Due in large part to its strong residential character, Bethany Beach has been known as a quiet resort. This aspect serves as an attraction for many visitors and residents. As a result, the Town has made no large changes when considering future planning, and intends to apply the zoning code as a tool in promoting the current Town character in moving forward. The Corolla community must be cognizant of any aspects of local community character that should be preserved and promoted, ensuring that any circulation and wayfinding planning efforts fit within the fabric of community character and context.



Bradenton Beach, FL

Overview

Bradenton Beach, FL is located in Manatee County along the southern section of Anna Maria Island. It is a narrow barrier island separated from the mainland and the City of Bradenton by Palma Sola Bay to the east. Tampa Bay (water) separates the island from the City of St. Petersburg and Tampa Bay (city) to the northeast; and to the southeast, Sarasota Bay lies between the City of Sarasota and Bradenton Beach. The City of Bradenton Beach is approximately three miles long north/south. At the widest, Bradenton Beach is approximately 0.25 miles. To the north, it shares Anna Maria Island to the similarly sized communities of Holmes Beach and Anna Maria. The Cortez Road bridge connects Bradenton Beach directly to the mainland, and bridge connections to the north (Holmes Beach) and south (to Longboat Key) exist as well. The Gulf of Mexico forms the border along the western beaches/shoreline of the community. Bradenton Beach's narrow north/south-barrier island orientation has similarities to the geography of the Corolla community.



Population and Characteristics

The year-round population of Bradenton Beach is approximately 2,000; Holmes Beach is approximately 5,000 and Anna Maria is over 1,800. Average age on Anna Maria Island is 53 years old, and the population is a mixture of families, children, singles, and retirees. Due to its pleasant winter conditions – high's in the low 70's and low rainfall, visitors enjoy Bradenton Beach and Anna Maria Island year round. Bradenton Beach is composed of different types of accommodations from rustic cottages to million-dollar villas⁵. An average monthly renting rate for a place with two bedrooms is estimated at approximately \$1,100-1,200.⁶

Attractions that draw people to Bradenton Beach include six miles of shoreline including beaches along the Gulf of Mexico side and nature trails, a municipal pier, boat launches, and the Florida Intercoastal Waterway. Beach weddings, wildlife viewing, boating/fishing opportunities, surfing, swimming, and other water sports; in addition to the restaurants, shops, and other amenities related to Island culture and favorable weather contribute to the local character. The very center of Bradenton Beach is where the majority of commercial development exists (other commercial areas are found along Gulf Drive and the beach front area). Residential areas cover much of the City of Bradenton Beach. Coquina Bayside and Gulfside Parks along with Leffis Key Preserve are open spaces managed by Manatee County, comprising the southern end of Bradenton Beach.

Transportation Planning – Existing Systems and Circulation

Interspersed residential areas combined with numerous destinations and consistent tourism result in the need for dynamic transportation options. Gulf Road/S.R. 789 serves as the principal north/south corridor through the narrow area and is highly traveled by motorists, bicyclists, and pedestrians. While bicycle, and pedestrian facilities do exist in certain locations along this corridor, there are other stretches of road in which they are non-existent. The Bradenton Beach Scenic Highway Corridor Management Plan details transportation improvement opportunities along this corridor; as part of the program's mission to preserve and enhance the corridor's existing natural, historical, scenic and social resources that characterize the community.

⁵ Anna Maria Island Chamber of Commerce – <https://www.> Accessed June 2013.

⁶ Rentometer. <https://www.rentometer.com/>. Accessed June 2013.

Public transportation includes Manatee County-led operations such as the highly utilized Anna Maria Island Trolley bus-transit service. This route runs north/south along Gulf Road/S.R. 789. Other planning efforts such as The Bradenton Beach Vision Plan also highlight important components of transportation planning, policy, and program development. Important considerations to note from these plans and programs include:

- Bradenton Beach Scenic Highway Corridor Management Plan (2000) – This Plan was developed to provide guidance from 2000-2010 for the preservation and enhancement of the Gulf Drive/S.R. 789 corridor's existing natural, historical, scenic and social resources characteristic of the Bradenton Beach area. The Action Plan included specific corridor improvements for the short term and long term related to five goals:
 - Goal 1 – Bradenton Beach will be aesthetically enhanced and more pedestrian friendly.
 - Goal 2 – The natural, cultural and historic resources along the Bradenton Beach Scenic Highway will be preserved and enhanced.
 - Goal 3 – Educate visitors and residents regarding the unique resources of the corridor.
 - Goal 4 – The programs and improvements related to the Scenic Highway will be community driven.
 - Goal 5 – A balanced economic development program shall be maintained for the corridor.

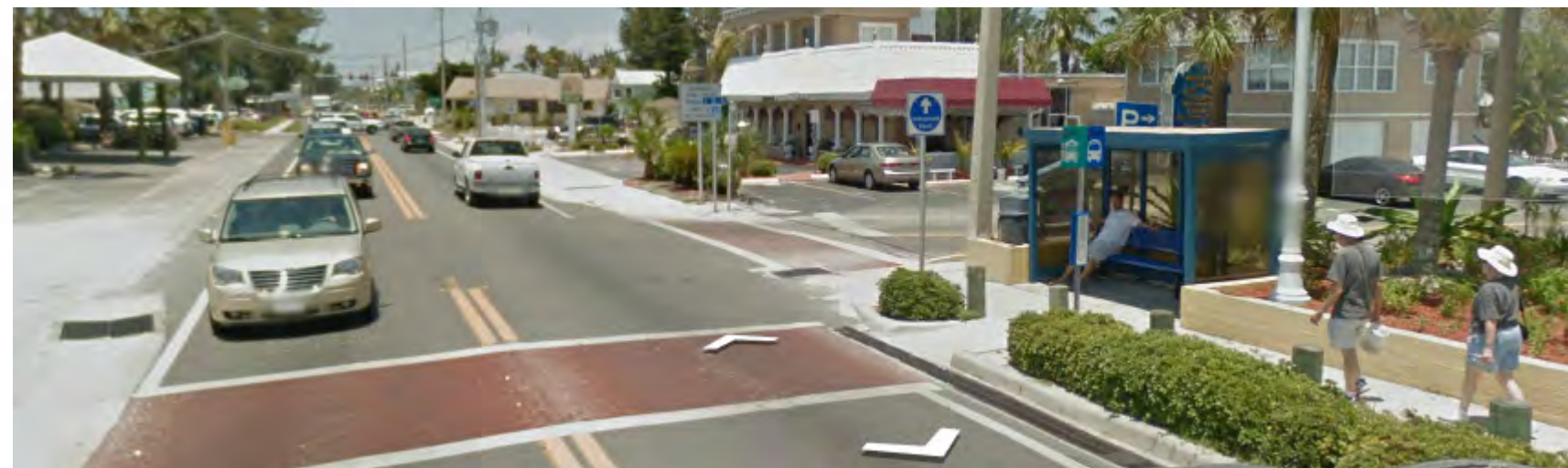
Related to each goal, several objectives were identified and further broken down into strategies and action steps. The City of Bradenton Beach recently provided updates to the effectiveness of these recommendations and implementation efforts. Numerous strategies and objectives had been identified as fulfilled since 2000, while others were highlighted as needing attention. This evaluation was able to provide a clearer picture to what had actually been accomplished, and what still needs addressed.

- Bradenton Beach Vision Plan (2005-2007) – The Vision Plan, by the Waterfronts Florida Partnership, launched by the Florida Coastal Management Program in 1997, helps participating communities revitalize, renew and promote interest in their waterfront district. Waterfront revitalization targets environmental resource protection, public access, retention of viable traditional waterfront economies, and hazard mitigation. The City of Bradenton Beach was designated for the 2005-2007 funding cycle. Many important observations and recommendations were noted including:

- Make Bradenton Beach a walkable, bikeable community with minimal need for cars.
 - Continue to study, develop and promote the principles of successful public spaces; explore funding options.
 - Promote safety studies and prescriptive/corrective methods for pedestrian safety including: sidewalks, lighted crossings, ADA compliant signals, curbing and drainage.
 - Install more bicycle racks throughout the city.
 - Promote walking/biking sightseeing via visitor’s guide, community outreach and events.

- Connect the multi-use trail, trolley, scenic bike route, and walking trail through the downtown area, to the multi-family areas and to the parking areas and waterfronts. Connectivity is key!
- Expand bike paths to include sections along the beach.
- Commercial development/redevelopment along corridor should require sidewalk contribution or “bank” concept; enact in Land Development Codes.

- Encourage the use of the trolleys and other alternative transportation methods.
 - Begin “trolley up” campaign. Encourage use of free island trolley system, especially in our city, by asking businesses to offer savings coupons to riders, and partnering to facilitate safe and attractive trolley shelters.
 - Inquire about extending the trolley’s hours of operation, with these benefits: better for service employees whose businesses run later than the trolley does; decreases the possibility of drunk driving due to tavern hours, etc.
 - Institute a tram to ferry people from public parking at Coquina Beach to businesses/attractions.
 - Encourage/permit a concession for bikes and scooters.
 - Extend trolley service down Bridge Street and connect to other transportation options.
 - Continue to promote free trolley system through visitor’s guide.
- Increase the number of parking spaces available on and off the island with links to alternative transportation.
 - Create new parking structures/areas. Build aesthetically pleasing parking structure in downtown area.
 - Purchase vacant land on Bridge Street for multi-functional recreation/overflow parking area.
 - Consider elevating public buildings to increase parking in city lots.
 - Partner with Manatee County to institute a Park & Ride lot for employees. Said facility feature pervious paving and lighting.
 - Redesign Herb Dolan North Park to facilitate increased parking of cars and bicycles.
 - Promote Park & Ride options on the mainland, as well as facilities for water taxi to island.
 - Encourage development of mainland hub for all types of public transit, including alternative transportation.
 - Identify and advertise parking options through the use of signage, brochures and internet viewing. Partner with Chamber of Commerce to facilitate online information.
 - Strictly enforce parking regulations in the CRA district.



Bradenton integrates vegetation, special materials for crosswalks, and comfortable trolley shelters into their circulation and safety measures.



- Promote and encourage public/private partnerships in solving CRA district parking issues, as well as other areas of the city where necessary.
- Expand the access to the island by water.
 - Establish a water taxi that moves people for work and recreation from the mainland to the island.
 - Develop/Redevelop ramps and parking for motorized and non-motorized boating.
 - Institute day docking and mooring facilities; include a floating dock, especially for waterborne transportation.
 - Partner with willing entities to facilitate waterborne transportation and funding.
- Provide clear designation of attractions, services, access points, and historic and natural resources.
 - Utilize attractive wayfinding and interpretive signage.
 - Institute creative wayfinding measures such as sidewalk etching, banners and public art.
 - Promote designations online, via public kiosks and public transportation shelters.

- Manatee County Transportation Development Plan (2008-2012) – The purpose of this plan is to evaluate and identify an appropriate strategy for the Manatee County Area Transit system (MCAT). This plan took into account local planning efforts including recommendations from Bradenton Beach’s 1989 Comprehensive Plan. One of the most important aspects of the existing transportation system noted in the Plan is the highly successful Anna Maria Trolley. This Trolley-bus route carried several hundred thousand passengers in 2010, 2011, and 2012 respectively. These high ridership numbers infer high amounts of automobiles were taken off the road, ameliorating traffic congestion and volumes to a significant extent. A specific recommendation related to this in the Plan is as follows:

“Continue to monitor the progress/performance of the beach Trolley service (FY 2005-2009). The trolley service on Anna Maria Island, which was initiated in 2002, continues to be an overwhelming success, exceeding original expectations. Working with SCAT and FDOT, this service will be inter-connected with expanded trolley routes serving the Town of Longboat Key and the City of Sarasota (Lido Key).”

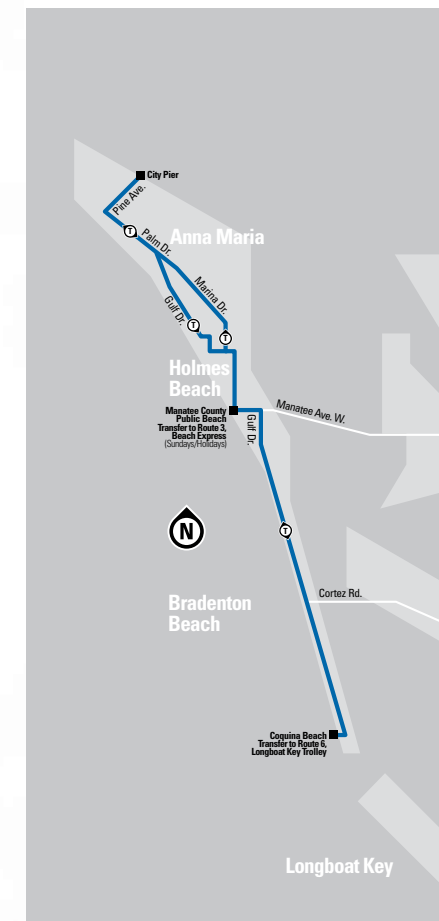
- Sarasota/Manatee Metropolitan Planning Organization Bike/Pedestrian/Trails Master Plan: Phase I Data Collection (2012) – This planning process is currently in the data collection phase which will be an important step as transportation opportunities and constraints are identified and further detailed.

Corolla and Bradenton Beach (Learning Opportunities)

As a small beach community situated on a narrow strip of barrier island, Bradenton Beach provides a relevant comparison for the Corolla community. With a pleasant winter climate, Bradenton Beach attracts steady numbers of visitors and tourists throughout the year. The Corolla community must plan for the ebb and flow of visitors between the peak summer season, shoulder seasons, and winter. In gaining a deeper understanding of the Bradenton Beach community transportation planning efforts and current developments, the Corolla community can utilize such insight in developing recommendations that address their own needs. Several considerations based on this case study that should be noted by the Corolla community include the following:

- Trolley system/bus-transit – A simple Trolley route such as the Anna Maria Island trolley/bus (AMIT) covering several local areas can have large positive impacts and help mitigate automotive traffic problems.
 - These trolleys/buses include bicycle racks.
- Data – Keeping track of counts such as Trolley ridership numbers and traffic volumes will provide further insight to the possibilities of the transportation planning system.
- The diversification of transportation opportunities linking all sections of the community should be considered – this was echoed several times in the plans discussed above.
 - Link and complement different forms of transportation in developing a multi-modal system. Also include marine considerations.
- Bicycle/Pedestrian Plan – The lack of a bicycle and/or pedestrian plan imposes limitations on specific needs throughout Bradenton Beach.
- Monitoring and Evaluation – The City of Bradenton Beach has kept clear records of goals, objectives, and strategies delineated by the Bradenton Beach Scenic Highway Corridor Management Plan and to what extent they had been implemented. This provides

a clearer picture of the effectiveness of past planning efforts, existing conditions, and opportunities and constraints in moving forward. Effectively carrying out a monitoring and evaluation program can lead to more efficient planning systems in the future and is something the Corolla community could build into their processes.

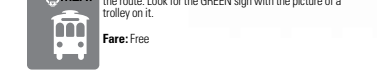


T Anna Maria Island

Service Days	Anna Maria City Pier	Call Dr. at 78th St.	Island Shopping Center	Manatee County Beach	Bradenton Beach City Limit	Bridge St.	Coquina Beach	
M-Su	6:00	6:05	6:10	6:15	6:20	6:25	6:30	
M-Su	6:30	6:35	6:40	6:45	6:50	6:55	7:00	
M-Su	7:00	7:05	7:10	7:15	7:20	7:25	7:30	
M-Su	7:40	7:45	7:50	7:55	8:00	8:05	8:10	
M-Su	8:00	8:05	8:10	8:15	8:20	8:25	8:30	
M-Su	8:40	8:45	8:50	8:55	9:00	9:05	9:10	
M-Su	See Note Below							
M-Su	9:00	9:05	9:10	9:15	9:20	9:25	9:30	
M-Su	9:30	9:35	9:40	9:45	9:50	9:55	10:00	
M-Su	10:00	10:00	10:10	10:15	10:20	10:25	10:30	

Note: Manatee Trolleys on Anna Maria Island run daily at 20 minute intervals until 9 p.m. then run every 30 minutes until 10:30 p.m.

Black time points = A.M. **Bold, blue time points = P.M.**



Stops: Trolley Stops are two to four blocks apart along the route. Look for the GREEN sign with the picture of a trolley on it.
Fare: Free

T Anna Maria Island

Service Days	Coquina Beach	Bridge St.	Bradenton Beach City Limit	Manatee County Beach	Island Shopping Center	Call Dr. at 78th St.	Anna Maria City Pier	
M-Su	6:00	6:05	6:10	6:15	6:20	6:25	6:30	
M-Su	6:30	6:35	6:40	6:45	6:50	6:55	7:00	
M-Su				7:05	7:10	7:15	7:20	
M-Su	7:10	7:15	7:20	7:25	7:30	7:35	7:40	
M-Su	7:30	7:35	7:40	7:45	7:50	7:55	8:00	
M-Su	7:50	7:55	8:00	8:05	8:10	8:15	8:20	
M-Su	8:10	8:15	8:20	8:25	8:30	8:35	8:40	
M-Su	8:30	8:35	8:40	8:45	8:50	8:55	9:00	
M-Su	8:50	8:55	9:00	9:05	9:10	9:15	9:20	
M-Su	See Note Above							
M-Su	9:00	9:05	9:10	9:15	9:20	9:25	9:30	
M-Su	9:30	9:35	9:40	9:45	9:50	9:55	10:00	
M-Su	10:00	10:05	10:10	10:15	10:20	10:25	10:30	

The Anna Maria Island Trolley route runs along a narrow stretch of beaches. It is important to note each trolley car has a bicycle rack attached to the front.

Corolla and the Case Studies (Learning Opportunities)

While examining other localities that present relevant comparisons and learning opportunities for the Corolla community, it should be remembered that a great idea for one community may not be the perfect fit for another. With this in mind, it will be important for the Corolla community to examine the ideas highlighted in this section; to see what may be applicable (or not) to the Corolla context. It is also important to remember that ideas not appropriate for the Corolla context may stimulate other innovative solutions that could fit well in the context of the community.

Aspects of the case study communities that were highlighted across more than one case study or that highlighted a particularly unique or potentially effective idea are listed as follows:

- Multi-modal possibilities – The diversification of transportation opportunities linking all sections of the community should be considered, including:
 - Multi-use pathways/non-motorized transportation
 - Wayfinding and signage are key components of successful circulation systems. This can include information kiosks with maps, safety information, and regulations.
 - Route themes – These can be ways to connect people to certain destinations while displaying Corolla’s unique character.
 - Bicycle parking – Incorporating bicycle parking at all destinations will strengthen the system.
 - Policy – Similar to Hilton Head Island’s Municipal Code Section 16-5-203 (E), building pathway and alternative transportation options for new development into local policy will strengthen the transportation system in addition to minimizing additional motorized traffic demands.
 - Bicycle user safety features – Similar to the Bethany Beach program operated by the police, consider making free helmets and lights available to the public.
 - Public Transportation
 - Trolley/bus transit – Operation can be tailored to peak season demand and other times as necessary.
 - Incorporating bicycle racks on a trolley/bus transit system will enhance multi-modal transportation options.
 - Coordinating trolley/bus stops with multi-use pathway intersections and other modes of transport will also strengthen multi-modal transportation options.
 - Depending on visitation and population fluctuations across different seasons in Corolla, design trolley/bus transit times and frequencies as needed.
 - Public marinas and docks – Landings should be strategically placed and coordinated with private landing places.
- Connectivity – Smooth interfacing between different modes of transportation will encourage consistent use of a flexible and dynamic system. Establish connections to destinations, multi-use trails, and other modes of transport.
- Intersection treatments and traffic calming –
 - Roundabouts are generally safer intersection treatments than traffic signals. Collision frequencies are reduced; when collisions do happen, they typically occur at lower speeds. Successful implementation has been documented on Hilton Head Island.
- High visibility crosswalks and other intersection treatments can be designed to strengthen safety and connectivity as well.
- Parking – Designing parking systems based on time of day/ user needs (ie: daytime employee needs, vs. residential needs, vs. visitor needs, beach access, etc) can lead to a more efficient system. See Bethany Beach parking map.
 - Ancillary facilities – Consider restroom, beach washing stations (to wash off excess sand), seating areas, and other related facilities where high use may occur.
- Cross-jurisdictional Coordination – Transportation planning coordination between Corolla transportation systems, neighboring jurisdictions, residential areas, regional transportation, and private transportation vendors will add to a more thoroughly connective and efficient system. These relationships and connection opportunities can enhance possibilities and efficiency.
- Data Management - Keeping track of traffic demand and data related to existing and future development will help inform future transportation needs and appropriate planning efforts. Hilton Head Island is an example of one strategy for the use of such data; this included localized build-out analyses and accompanying traffic demands.
- Marketing - Promote walking/biking in terms of tourism, economic development, commuting needs, health and other benefits. Ensure attractive and necessary signage placement.
 - Event programming – Consider developing events that encourage and promote alternative forms of transportation and human scaled circulation such as Bethany Beach’s Ocean to Bay Bike Tour and Boardwalk Arts Festival.
 - Maintaining local character – Similar to Bethany Beach’s effort to maintain its unique character as a “quiet resort”, maintaining the unique character of Corolla as part of a wayfinding and circulation system will be an important consideration as well.
- Monitoring and Evaluation – The City of Bradenton Beach has kept clear records of goals, objectives, and strategies delineated by the Bradenton Beach Scenic Highway Corridor Management Plan and to what extent they had been executed in the past decade. This provides a clearer picture of past planning efforts, existing conditions, and opportunities and constraints in moving forward. Effectively carrying out a monitoring and evaluation program can lead to more efficient planning systems in the future.
- Maintaining Village feel - The communities studied have invested efforts in planning and design to maintain the character and aesthetic that makes these places special.



Appendix B: Stakeholder and Public Involvement Notes



Meeting Notes

The following meeting notes were taken during the first and second rounds of public involvement. Before creating final recommendations for this Plan, a review was conducted of each meeting to consider ideas, select types of recommendations based on recorded support, and recall challenges stated by staff, residents, business owners, and visitors.

ROUND ONE

Currituck County Tourism Meeting

JUNE 17TH *Currituck County Courthouse*

- Tourism Dept. maintains database of visitor guide inquiries (email); has 35,000 Facebook followers
- Approximately 150-200,000 Visitors Guides are distributed yearly
- Two visitor centers – one in Corolla and one at NC/VA border (120,000 people stop by per year). People always wanting area maps – main interests are destinations and bicycle routes. Corolla Village map brochure available at Visitor Centers
- HistoricCorolla.com website has been established and is being drafted. Also, an app is being developed for whole County – a Sub-app could be developed for walking the Village. Diane to send app. Developer contact information to Ben/Holly/Matt/Melissa.
- A logo for Historic Corolla Village was developed to use in an advertising campaign
- Advertising is mostly done to NE seaboard (including PA, VA, OH) and to income bracket of \$60,000+ (\$120,000+ in season). Outreach includes travel shows, AARP, Where to Retire, etc.
- Over half of rental visitors are repeat clients and most are multi-generation families
- They have begun a “Starsky” campaign for regulatory signage – cartoon beach rules
- A travel researcher has surveyed visitors and this information can be made available to Ben/Holly/Matt/Melissa
- Approximately 525 people live year-round in Corolla with 50-60,000 visitors per year
- Peak visitation is for the July 4th Festival. The Under the Oaks Festival is the second biggest peak. A parking plan by David Fairbaugh (sp?) was developed to deal with the influx of visitors.

- In 2005-2006, there was substantial discussion of a trolley (discussions between Currituck and Dare). Currituck County came so very close to getting the 95% federal funds (their plan would run from Sanderling to the north end of Corolla).
- Corolla Light and Currituck Club have internal private trolleys which are part of their stays. One idea is to start small with the trolley idea and expand that. Holly to provide circulation chart to Matt/Melissa
- Twice the cross state bike ride (Cycle NC) has ended in region (once at Currituck Courthouse and another time at Corolla lighthouse)
- There is a need to better communicate where pathways are. Businesses, HOAs, and hotels have people asking for trail maps. Bike rental companies have informal maps. There may be a desire for at least an internal knowledge of where to NOT bike
- Audubon wants to work with County to improve 2.5 miles of trail in their land holding near Hampton Inn
- There is discussion about combining visitor fees together for the Lighthouse, Whalehead, etc.

Local Corolla Village Businesses Meeting

JUNE 18TH *Corolla Library*

Attendees: Hadley and Karen (Business owners); Ben and Holly (Currituck County); Matt and Melissa (Alta)

- Don't want Corolla Village to be hard to find, but enjoy the hidden nature of it
- Idea: Changeable signage for different events. Signage should not be hard to be find. More cohesiveness between signs and larger signs are needed.
- Visitors like that Corolla is like Ocracoke – quaint, walkable, able to explore
- Parking is an issue – Wild Horse Fund/Tours are the biggest issue. When there are cars everywhere, you cannot see the picket fences and enjoy the scenery.
- Idea: Do more horse stuff at Whalehead and have more parking there
- Make it a seamless experience between Heritage Park and Village
- Idea: Make Corolla Village Rd. one-way seasonally

- Need some sort of pedestrian way around village. Issue: Wax myrtle grows very quickly. Goal is for the trail not to be paved
- State has maintenance on Corolla Village Rd. in front of Karen's business but she owns it and doesn't want it paved.
- There may be more room on east side of Corolla Village Rd. for sidepath
- Hadley likes boardwalk as option for trail as consistent theme. Trail would be idea from Whalehead to her pier along waterfront as long as she can close off and lock at certain points
- Karen – Concern for birds and flyway (used to be more waterfowl and doesn't want to disturb them)
- Invasive grass (phragmites) a big problem – consider program for removal
- Gateway signage would be nice
- Idea: Art Walk. Business owners can help lead with County Tourism dept.
- Need boat access to sound. Based on winds and water depth, it can be tough. Edenton has nice example. Idea of floating wetlands brought up by Melissa

Corolla Civic Association Meeting

JUNE 18TH *Corolla Library*

Flip Chart Notes

- What makes Corolla special?
 - Corolla has laid-back feel with a strong sense of place
 - Corolla is isolated which also makes it unique
 - Return visitors keep coming
 - Corolla is artisan (hands-on) in terms of food and art
 - Corolla is walkable
 - Corolla is more than a beach (although beach is one of nicest in OBX)
 - Ocean and Sound so close together
 - Corolla is a working village
 - Images of Corolla: lighthouse, Hunt Club, horses, beach, diversity of scenery, Village, live oaks



- Concerns
 - Safety issue for people without cars
 - Safety is issue for people walking/biking from Whalehead to Village
 - Alternative ways to move people are needed
 - Many visitors unaware of the Village
 - Parking is an issue – Whalehead should be considered
- Goals/Ideas
 - Trail materials should be natural and boardwalk
 - Commercial development should match Village feel (approval and encouragement of Village aesthetic)
 - Whalehead open space could be made nicer and more inviting (benches, tables, pet-friendly, water fountains)
 - Need more bike racks – reduce bike theft
 - Need more access to Sound
 - County maintenance needed (hopefully ROI can support this)
 - Williamsburg, VA is good example of maintained, clean, walkable, aesthetic, historic village
 - Consider making Corolla Village Rd. one-way (seasonally)
 - Need raised boardwalk trail with interpretive signage, sitting areas
 - Trolley or golf carts (connected together) needed and works well in Corolla Light community
 - Could be a RT 12 Trolley connecting Tim Buck II, Village, Lighthouse, and Whalehead
 - Smaller circulator trolley in Corolla Village
 - Public transportation should be cute, local, non-polluting, and have bike racks
 - Consider pedestrian-only areas
 - Compatibility is needed between cars, bikes, pedestrians, and businesses
 - Interpretive and wayfinding signage needed
 - Boardwalk trail needed (along Corolla Village Rd. and to Sound) – Duck has great example
 - Connectivity of trails needed – educational signage should be component of this

- Complete, connected trail along NC 12 would help alleviate traffic
- Preserve historic and rural character in design
- Should be family-oriented and open to all ages
- “Tacky” commercial not wanted for Village (No Myrtle Beach!)
- Ocean and Sound are so close – create a more cohesive, connected link
- During typical week’s stay for tourist, they are ready to new exploration by end of week (after a few days of beach)

Whalehead Meeting JUNE 18TH *Whalehead*

Attendees: Sharon Twiddy, Rey Biggs, Program coordinator; Ben and Holly; Matt and Melissa

- Directions and interpretation needed – people always asking for this.
- One big problem for Heritage Park is that it exists on land that was built for SF residential
- Bathrooms are a big need
- Parking – Twiddy interested in adding parking and agrees it can take away from Village feel. They are considering other long-term parking locations. Ben: Long-term parking at County-owned spot could be touchy but it should be on table and argument can be made for economic impact. County could put in fee structure (Twiddy charges \$50/wk currently).
- County 10-acre site is an opportunity for short-term and long-term parking
- Trolley an idea worth considering
- Only two occasions when Whalehead parking is maxed out – Art Festival and 4th of July
- Sharon Twiddy likes bike share concept (saw it firsthand in Munich); Ray was interested in cardboard bike idea.
- Sharon Twiddy said that there are also 100 cars who go up the four-wheel area (those are second cars).
- Need to identify how to pull people off NC12

- Ray: Working with Coastal Studies Institute (Field Office Manteo) – working on grant for water access – floating wetlands
- Design needs to reflect coastal environment (materials) and also imply history
- 150 parking spaces currently at Whalehead/Heritage Park – Plan is for 400
- Summer concert series at Whalehead could spread out to Village – wine-tasting, block parties, programming, family-friendly
- Next to lighthouse, they are doing shipwreck excavation education
- Need to look at park County-funded \$1million list – want to make sure we tie into this work and not compete if possible
- #1 project for Ray right now is entrance improvement

Corolla Public Input Booth JUNE 19TH *Under the Oaks Festival*

Approximately 100 people stopped by the public input booth. 80% of the people were tourists, most of whom return to Corolla for vacation regularly. 20% were permanent residents. In general, all agreed with the notion of improving bicycle and pedestrian connectivity and the need to improve congestion and parking issues. Many visitors to the Under the Oaks Festival were uncertain where they were, where the Village was, and the best way to get around.

Specific comments recorded on the input map were:

- Path lighting needed in places (good where it does exist)
- Bike paths need to be wide enough for bicyclists and pedestrians
- Should try to get separated facilities for bicyclists/pedestrians (keep them off road)
- Extend sidepath to Duck
- Need bathroom in Village
- Need dog-poop stations
- Bike path needed in Ocean Sands through area and along road (Ocean Sands dangerous)
- Need to get people safely to beach
- All roads should be gravel pave
- Educational program needed for bicyclists

- Crosswalks are currently random; need more of them and should be more clear to motorists
- Crosswalks should be flashing
- Need more crosswalks like Southern Shores
- Need bike lanes and bike parking
- Need more beach signs that discourage littering
- Make Corolla Village Road one-way in season
- County should own available parcel and use for parking
- Crossings at Club entrance and Corolla Village Road need further improvements for pedestrians and bicyclists

ROUND TWO

Corolla Residents Meeting

AUGUST 20TH *Corolla Library*

Attendees: concession, summer residents (5), business owner

- Way-finding: positive comment about theme and aesthetics
- Love the logo (better than the geese)
- Parking comment
- How many bike, ped and vehicular accidents in last year? Response from local EMT about incident in front of building.
- Scared by conditions on existing road.
- Plenty of parking at Whalesclub/Heritage Park
- Suggested emblem on paths
- Golf carts blocking the entrances/beach
- 20-30 bikes strewn everywhere – explained that’s to be part of Connect Corolla plan
- Water: sound & ocean, walking distance between the two
- Avoiding SAV’s area because of permitting– boat basin question
- Corolla Village Road – different names for places (Co., PO, residents)
- School is in problem/parking area
- Questions about ROW width undetermined

- Discussed-styleof speed bumps
- Gateway lower design speeds
- Heritage Park: positive response to Heritage/shopping median redo
- Boardwalk: positive response, issues with permitting, currently looks terrible, improvement,
- Check out behind the Corolla (?)– bad smell, etc. this time of year.
- Beach access: walking back and forth, public bath house - County seeking to buy
- Beware of Cotton Mouths – bike riding over dunes
- Need ramps & stair system
- Pavement (one-way, 2-way bikes) – all back roads,
- Lot of vehicular traffics in back roads area: concern, why not close off completely and car-free – business community was very opposed to car-free
- Crushed shell paths & more time gone by? Village-y look?
- County needs very low-maintenance colors, plantings – this the reality
- Delineation on paths (split bike & peds)
- Pet waste stations – along paths & beach (fermenting plastic bags)
- Prefer to see trolley back & forth than cars on streets
-

Whalehead Meeting

AUGUST 20TH *Whalehead*

- Whalehead – new color taken from room in house, similar blue, picked iconic images to represent Corolla
- Corolla ‘village’ – is it just historic area, need to flesh out the limits and the areas that’s covered. Do set of logos in same family – Dan may be willing to fund. Let know how this conversation goes. Question about font – can it be read easily? Like the font
- Ideas: Show the layers and interactions. Not much access to sound (two locations) –
- Visitors don’t know what way is the ocean/bay – need to orient them
- Chickens

- Much agreement regarding – path on opposite side of 12
- Crosswalks/speed tables
- Safety benefits of the Whalehead/entrance
- Loop boardwalk around bay:
- Potential day tripper marina (circulate in and out)
- Village: invite public in
- ADA access to beach, nice trash cans, wood retaining wall
- Traffic pattern: Persimmon—two-way or one?
- Where is the Village? Signage package
- How far are people willing to walk from their car
- Pet friendly communicate to toursits – per the marketing consultants, very important to communicate to potential visitors
- 5 k races – 400 people come out to race on Wednesdays mornings—organized by bootcamp – closing streets, causing heartburn, suggest using the park, as part of the
- Do not use term ‘marina’ – use term ‘boat slip’ (maybe not even that term as it implies rental), ‘boat docking’
- Environmentally sensitive so not likely possibly to get permissions for tanks
- Proposal dovetails really well with what is proposed for park
- Audoban view it as complementary to what they have planned
- World class and year round improvements
- Discussed of funding/planning mechanisms (CIP, 10-year plan)
- Couple that was killed? Plan proposed to board last night? May make action, pressure to spend money
- Bike paths \$8 million (Connecting Corolla)
- Sign and entrance number 1 in priorities for park plan
- Hadley Pier: relationship with County, sign agreement
- If Audoban gets the property where the boardwalk goes – depending ing how closely they are connected the – the issue of the sign name – ‘village’
- Change signs from green to brown in the historic area only
- Protecting the existing boat



Corolla Public Input Booth

AUGUST 20TH *Heritage Park Concert Series*

- Man with bike: Very interested in design suggestions. Has been coming since mid-eighties and agrees these changes needed. Asked what he could do to move this project forward. Suggested that design would encourage public to park vehicles in Heritage Park
- Man with kid: Lives in town. No problem with one-way streets, rarely use those streets and no problem, slow traffic anyway. Difficult to grow stuff
- Others: Easement to add sidewalk, planted trees but they all died
- Maintenance is key to all construction projects & proposals
- Timing. Implementation?
- Business owner: concerned about one-way (used access to book shop as example)
- Improve the emergency access to the beach
- Photos to back up the ideas
- Questions about beach access
- Safety of peds crossing to shopping center

Local Corolla Village Businesses Meeting

AUGUST 21ST *Corolla Library*

Audience: Husband/wife: Bob & Karen

- Confirmed Corolla Village Boulevard name
- Karen: may take a real gateway
- Please do not make 25mph speed limit – drive 70 miles to work
- 25 mph in Duck – goes to 40 mph . Should not be all about the tourists. Some people drive 25 mph all the time
- Possible plan recommendation: do a study of traffic speed
- Right of maintenance not right of way in front of their property
- Bob: Boardwalk disturbs wildlife, need to leave them alone, seen change over time. The existing boardwalk is barely maintained. Private property and it's a private hunting club – will meet major opposition. Wildlife Center is supposed to be doing the educational component. Go connect to Hadley. Birds don't stage

for migrating, no longer coming in the numbers that they used to

- Holly: Look at better maintenance of the existing boardwalk/ lighthouse as a recommendation
- Bob: need a boat ramp for the west side of the sound, Southwest wind would beat you to pieces during the summer. Need to have a device to dissipate the energy during the summer. Good idea – deep enough to come and go.
- Street – possible to make one-way seasonal? Possible confusion
- Karen: Definitely need restrooms
- Bob: Good spot for restroom on Twitty property (between Hadleys and us, near foodtruck)
- Bob: Many of the grasses in the sound area are non-native
- Bob: Need to stabilize the road and grade. Will consider the boardwalk – hard to pay taxes on something that we pay taxes on. Don't want to have county in pocket any more than they are already
- Holly: Possible tax relief if boardwalk across
- Bob: Look at Brevard County – provides boat ramp access from all it's park. Has to be vehicle accessible with a truck. Skiffs, flat-bottomed boats. Get state involved in getting that ramp open. Illegal dredging and past dispute – Hot spot because of history. Dredging for school kids. Now use that ramp during winter for duck hunting
- Melissa: Explore historic restoration of the ramp in the basin at Heritage?
- Holly: Protected spots much easier to load boats on trailers
- Megan (arrived early for next meeting): Ramp would be shining star in the park
- Holly: Is it okay to show the boardwalk connection while it's just line on a plan? Obviously, it would have to be discussed before any real plans.
- John: Have to move power poles, cedar trees
- DOT list – maintenance, need approval for the sign package
- Bob & Karen write Coastal Angler magazine
- Need to work with property owners on side

Lighthouse Keeper Meeting

AUGUST 21ST *COROLLA LIBRARY*

- Like signs – questions about approval
- Historic Albemarle needed legislation for signs
- Holly: DOT may need to approve sign packages
- Signs with audible warning etiquette instructions
- Paint on sidewalk to instruct users
- Pets –increase, dog homes – this is a change that needs to be catered to – Twitty track Google analytics on dog houses
- Suggest sit up bench/pull up bar – install at pedestrian plaza/ at median crossing
- Looked at doing playground on Heritage Park and other locations
- Marine skeletons + work-out stations along boardwalk
- Audoban – very interested in partnerships, ask whether it's true that birds are impacted
- Dog stations: who maintains?
- Recommendations about maintenance and public works staff regarding staff – want to be able to pull truck up and pull trash can right over

Corolla Civic Association Meeting

AUGUST 21ST *Corolla Library*

Large turnout: 27+ public attendees

- Would the County consider crushed granite instead of concrete on bike paths?
- Recommendations for alternative materials for path surfaces
- Question asking what is 'Historic Corolla', 'Corolla Village'? Define what are the limits of the location? This study only looks at the Small Area Plan region
- Large discussion broke out about the wider discussion about biking/walking safety along Rt 12
- Support this approach, need a template for wider use
- Such a plan has never been done for Corolla Village – identify the need, get into the budget
- Reason many people have turned out: safety

- DOT: Cannot use stop signs, speed bumps
- Not proposing speed bumps – speed tables instead
- Are we going to make recommendations to reduce speeds? Going to do study before making
- How big is DOT ROW for Rt12? 100 feet
- Will there be physical room to pull off for emergency vehicles within design width? (Pull off law in NC)
- Will traffic be backed up by left turners spill-over into through lane
- What about the impact of the speed table on the through roadway capacity
- What are the numbers of bikes, peds, vehicles being planned for/moved?
- DOT: request counts for vehicles movements/travel
- Public response to boat access idea: 'excellent' (one person)
- Concern about inducing pedestrians to cross Rt12 to access beach: not sure why Corolla Village wants to encourage people to come and use beach & cross street. Boardwalk will cause more people who come and walk to beach. No one is parking on Heritage and crossing to beach.
- Is this Currituck Counties preparation for a bridge? (Melissa stated didn't know about bridge prior to project)
- Impossible to find places to park at beach access – got to plan on a lot of people coming (It's a mess at other location – Turtle watching)
- Day-trippers: if nothing else, going to have to provide parking for them to access the beach
- Listen: safety, flow on a bike, peds – there are assumptions in plans that do not seem to be included in plan
- Underlying assumption for economics -- Bicycle tourism: economic data

- Directional signing concepts seems like it's ok. DOT will review the wayfinding concept.
- Historic signs – pay into existing program. Historic Albemarle Tour Inc. --- specific legislation for DOT to install signs.
- Sign supports – breakaway posts – options are limited by budget. Breakaway, clear zone signs will all be requirements
- Signs: Tasked as being transferrable. Will have the sign logo for rest of Corolla.
- Add vehicular mile markers to package – start point, what is zero. Rather not use mile-markers – County will get back to Alta about mile markers
- Don't forget to sign the beach – users need to know where they are on beach.
- County: Main issues are maintenance & theft
- ROW along the sidestreets: DOT has survey of ROW's – will send
- Turn-lane into Heritage Park – planning to move their entrance
- Vegetation in buffer areas
- Speed tables: hazard, traffic calming policy, may allow brick
- Stamped color asphalt – paint every few years, better putting brick??
- Rather look at median – spot safety funds – may need to document crashes
- What does County need to install facilities in ROW? Need to do agreement specific to project – encroachment agreement for the parking?
- CAMA access grant – would like to build something this winter?
- Add geogrip? Need something to stabilize ground
- Extending boardwalk+ over to the beach – if it's a major project will take months
- Parking commission will react negatively to the idea of move parking from street to the
- Process: ordinance by state traffic engineer
- One-way: Document the agreement from the homeowners
- DOT: need paved, marking & signing plan
- DOT: Need to research why street goes from 18' to 16' – will send back history

- Currituck manager: Benches & bathrooms: how far is local government to go in providing these facilities? Ditto for bike racks,
- By the end need conceptual plans that we have permission to do
- Pedestrian Planning grant
- Put together list of funds
- Scenic By-way funds?
- New project – pursue through RPO process

NCDOT Meeting

AUGUST 22ND *Currituck County Courthouse*

Attendees: Currituck Co. officials, District DOT officials

- DOT sign questions? DOT wayfinding policy document



Appendix C: Technical Considerations



Overview

To craft recommendations that are as realistic as possible, exploration and research was conducted to explore site boundaries, right of way limits, roadway placement, and compliance with federal and state guidelines. This discovery is the first step in implementation. For each built project, additional surveys and data collection may be required to define legal property boundaries.

NCDOT Right Of Way

Many of the recommendations within this Plan require permission from NCDOT to build within the right of way. Sidepaths and boardwalks along state owned roads will require additional survey data before construction begins.

Preliminary research revealed there are some questions about the right of way along Corolla Village Road. While the right of way may be noted as 60', adjacent property owners and the DOT need to document the terms of historic agreements that detail maintenance and access rights.

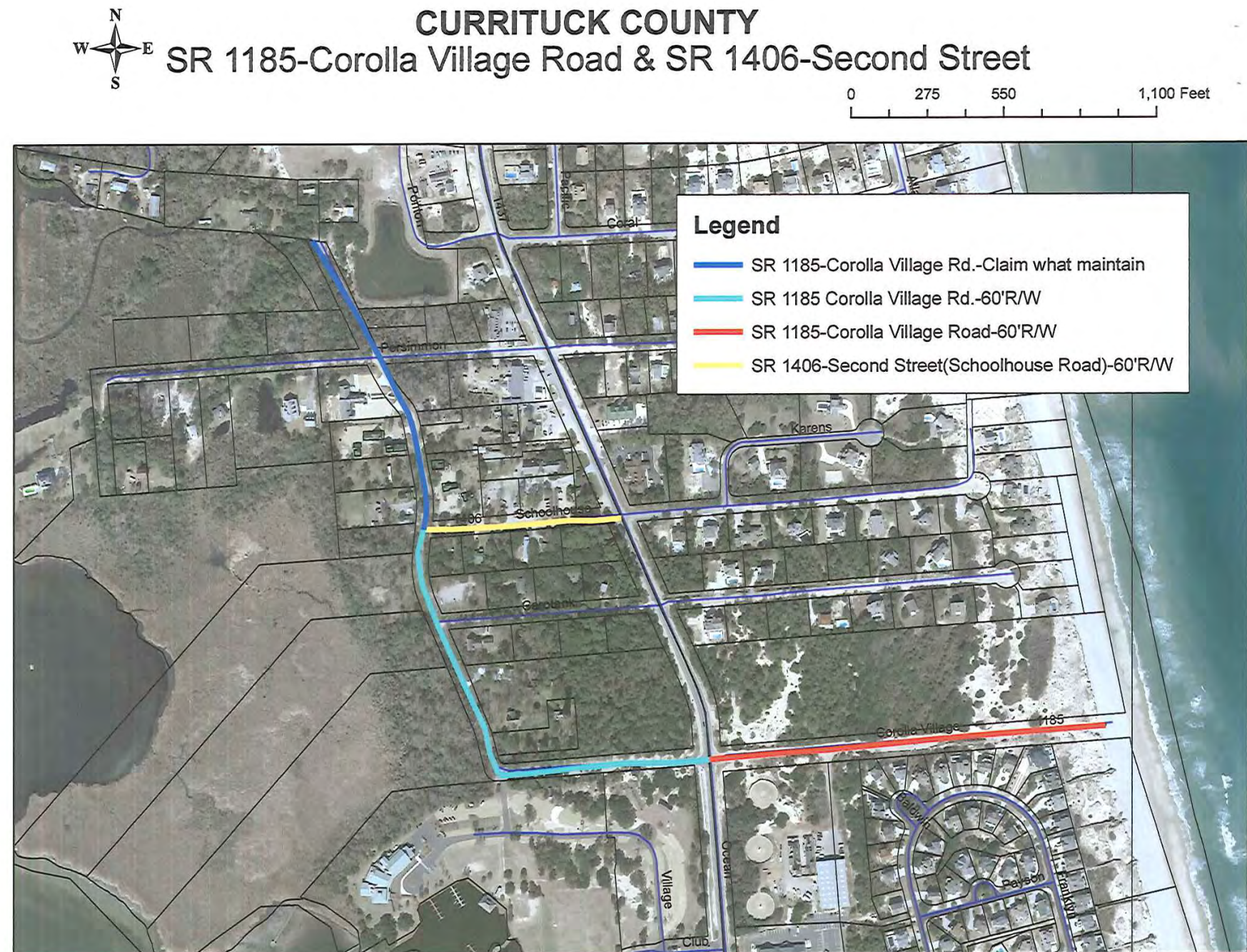
The County may need to work with both the DOT and property owners to review the recommendations in this plan to facilitate an agreement among all parties. This agreement should be made in light of the future vision of the County to create a safe and comfortable space for residents and visitors, while addressing the interests of land owners.

The adjacent map illustrates NCDOT rights of way within the study area.

Page C-4 displays a survey of Heritage Park. Notes detail where survey data (while not complete) indicate the location of the roadway within the right of way. This information guided recommendations, including where sidepaths and boardwalks can be located.

Compliance with National and State Guidelines

The chart beginning on C-5 illustrates a toolkit of potential bicycle and pedestrian treatments with indications of which guidelines include support and specifications for each. Treatments not included as recommendations in this plan have been included for the County's reference. (Adopted from *WalkBikeNC*)





Existing Survey Data



AC1A

The design vocabulary of “places to walk” already exists in the boardwalks of Heritage Park. By continuing this material in other areas, the built environment communicates where people are permitted to circulate. Install a boardwalk to emphasize the uniqueness of the Sound to Ocean access. The first phase will be a boardwalk from Heritage Park along Corolla Village Road to NC 12.

Note: Space appears to be available on the south side of the roadway alignment within the right of way to construct this boardwalk.

GP3

Add a sidepath to the east side of NC12 through the Village area. This will reduce unnecessary crossings, therefore decreasing potential conflicts between pedestrians, bicyclists, and vehicles.

Note: Space appears to be available on the east side of NC 12 within the right of way to construct a sidepath.

PS4/PS5

Add a vegetated median across from the gateways to Historic Corolla Village. This median will be narrow and contain grasses at the southern entrance and will widen as space allows. Installing turn pockets will help organize vehicles as they queue to enter Heritage Park and Corolla Light.

Install native vegetation within the median islands. During the feasibility and design stage, consider the possibility of using the median along NC 12 to serve as a bioswale.

Note: The 100' right of way will allow room to make these pedestrian safety modifications.

Survey by Bissell Professional Group

FHWA Traffic Control Device/Marking Compliance Categories

The FHWA MUTCD is not a facilities manual, but rather identifies describes federally approved traffic control devices (markings, signs and signals). These devices may be in various stages of the FHWA approval process, these are identified below.

SYMBOL	CATEGORY	DESCRIPTION
★★★★	Approved	The traffic control device is included or featured in the MUTCD and can be implemented at this time.
★★★	Compliant	The treatment may be implemented at this time, if MUTCD compliant signs and pavement markings are used.
★★	Interim Approval	Interim approval permits local application of new traffic control devices in accordance with prescribed guidance.
★	Included	The guidelines/standards discuss this topic and provide at least some guidance for application considerations.
☆	Experimental	The treatment may be installed with FHWA approval of a Request To Experiment (RTE), and has been done so by other jurisdictions.
○	N/A	This treatment is not considered a traffic control device and the MUTCD does not apply to this topic. Lack of inclusion should not be considered non compliance.

Facility Design Guidelines Compliance Categories

Facility design guidelines describe the application of various facilities to roadways.

SYMBOL	CATEGORY	DESCRIPTION
◆	Included	The guidelines/standards discuss this topic and provide at least some guidance for application considerations.
◇	Experimental	The guidelines/standards discuss this treatment, and generally discourage their use outside of very specific contexts.
○	N/A	The guidelines/standards are silent to this topic. Lack of discussion is not a statement of non-compliance.

	FHWA MARKING COMPLIANCE		FACILITY DESIGN GUIDELINES COMPLIANCE				
	FHWA MUTCD (2009)		AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (2012)	NACTO URBAN BIKEWAY DESIGN GUIDE (2012)	ITE DESIGNING WALKABLE URBAN THOROUGHFARES: A CONTEXT SENSITIVE APPROACH (2010)	NORTH CAROLINA BICYCLE FACILITIES PLANNING AND DESIGN GUIDELINES (1994)	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION COMPLETE STREETS PLANNING AND DESIGN GUIDELINES (2012)
Bicycle Focused Treatments							
Shared Roadway Facilities							
Unmarked Wide Outside Lane	★★★★		◆	○	○	◆	○
Signed Bike Route	★★★★		◆	○	○	◆	◆
Shared Lane Markings	★★★★		◆	◆	○	○	◆
Bicycle Boulevard	★★★★*		◆	◆	○	○	○
"Home Zone"	★★★*		○	○	○	○	○
On-Street Facilities							
Shoulder Bikeway	★★★★		◆	○	○	◆	◆
Conventional Bike Lanes	★★★★		◆	◆	◆	◆	◆
Buffered Bike Lanes	★★★★		◆	◆	○	○	○
Contra-Flow Bike Lanes	★★★★		○	◆	○	○	○
Left-Side Bike Lanes	★★★★		◆	◆	○	○	○
Advisory Bike Lane	☆		○	○	○	○	○
Uphill Bicycle Climbing Lane	★★★★		◆	◆	○	◆	○
Cycle Track Bikeways							
One-Way Protected Cycle Tracks	○		◆*	◆	○	○	○
Raised Cycle Tracks (aka Raised Bike Lanes)	○		○	◆	○	○	○
Two-Way Cycle Tracks	○		◇*	◆	○	○	○
Cycle Track Mixing Zone	★★★★		○	◆	○	○	○



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* The 2012 AASHTO Guide to the Design of Bicycle Facilities does not mention "cycle tracks" by name. The provided guidance discourages two-way operation of bicycles on one side of the street, such as on a two-way cycle track, but does acknowledge that "it may be better to place one-way sidepaths on both sides of the street.." p5-11						
Off-Street Bikeways						
Multi-Use Path	★★★★	◆	○	○	◆	◆
"Sidepath"	★★★	◇	○	○	◇	◆
Bikeway Intersection Treatments						
Advance Stop Line for adjacent motor vehicle lane	★★★★	○	○	○	○	○
Bike Boxes	☆	○	◆	◆	○	◆
Two-Stage Turn Queue Boxes	★★★	○	◆	○	○	○
Median Refuge Island for Bicycle Use	★★★	◆	◆	◆	○	○
Through Bike Lanes at Auxiliary Right Turn Only Lanes (aka "add lanes")	★★★★	◆	◆	◆	◆	◆
Combined Bike Lane/Turn Lane	★★★★*	○	◆	○	○	○
Intersection Crossing Markings						
Intersection Crossing Markings (Dotted line extensions at a minimum)	★★★★*	◆	◆	◆	◆	○
Crossing Markings: Color, bicycle symbols	★★					
Crossing Markings: Elephants Feet	○					

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On-Street Bikeway Intersection Crossings						
Bicycle Signal Heads	☆	○**	◆	○	○	○
Signal Detection and Actuation	★★★★	◆	◆	◆	◆	◆
Active Warning Beacon for Bike Route crossing at Unsignalized Intersection	☆	○	◆	○	○	○
Rectangular Rapid Flash Beacon	★★*	○	◆	○	○	○
Hybrid Beacon for Bike Route Crossing of Major Street	★★★★***	○	◆	○	○	○
*Use of W11-15 (bike/ped) sign is not addressed in the IA for RRFBs						
** The 2012 AASHTO Guide to the Design of Bicycle Facilities refers to the application of conventional traffic signals for bicycle-only use.						
*** when used with bicycle signal head, experimentation required						
Off-Street Bikeway Midblock Crossings						
Hybrid Beacon for Off-Street Path Crossing	★★★★	◆	◆	○	○	○
Active Warning Beacon	★★★★	◆	◆	○	○	○
Rectangular Rapid Flash Beacon	★★	○	◆	○	○	○
Bicycle Signal Head	☆	○**	○	○	○	○
Additional Marking and Signing						
Bike Route Wayfinding Signage	★★★★*	◆	◆	○	◆	◆
Colored Bike Facilities	★★	◆	◆	◆	○	○



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	FHWA MUTCD (2009)		AASHTO GUIDE FOR THE PLANNING, DESIGN, AND OPERATION OF PEDESTRIAN FACILITIES (2004)	ITE DESIGNING WALKABLE URBAN THOROUGHFARES: A CONTEXT SENSITIVE APPROACH (2010)	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION COMPLETE STREETS PLANNING AND DESIGN GUIDELINES (2012)
Pedestrian Focused Treatments					
Pedestrian Ways					
Buffered sidewalks	○		◆	◆	◆
Pedestrian Scale Lighting	○		◆	◆	◆
Street trees	○		◆	◆	◆
ADA Curb Ramps	★★★★		◆	◆	◆
Shoulders for Pedestrian Travel	★★★★		◆	○	◆
Multi-Use Paths	★★★★		◆	○	◆
"Sidepaths"	★★★		◆	○	◆
Un-signalized Crossings					
Midblock Crossings	★★★★		◆	◆	◆
Marked crosswalks	★★★★		◆	◆	◆
Pedestrian Crossing Advanced Warning Signs	★★★★		◆	◆	◆
Pedestrian bridges: overpasses and underpasses	○		◆	○	◆
In-street pedestrian crossing sign	★★★★		◆	○	○
Advance yield/stop lines at crossings	★★★★		◆	◆	○
Raised Crosswalk	★★★★		◆	◆	◆
Refuge Island	★★★★		◆	◆	◆
Two-stage Pedestrian Crossing	★★★★		◆	◆	◆
High visibility crosswalks	★★★★		◆	◆	◆
Crossing Beacons for use at midblock or unsignalized crosswalks					
Pedestrian hybrid beacon	★★★★		○	○	◆
Conventional Continuous Flashing Warning Beacon	★★★★		◆	◆	○
Active Warning Beacons	★★★★		○	◆	◆
Rectangular Rapid Flash Beacon	★★		○	○	◆
Signalized Intersections					
Pedestrian Countdown Signal Head	★★★★		◆	◆	◆
Pedestrian pushbutton actuators	★★★★		◆	◆	○
"No turn on red" sign	★★★★		◆	◆	○
Leading pedestrian interval	★★★*		◆	○	○

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General Roadway Design				
Median island	★★★★	◆	◆	◆
Curb Extension	○	◆	◆	◆
Curb radius reductions	○	◆	◆	◆
Sight distance considerations	○	◆	◆	◆
Narrow (10') Travel Lanes	○	○	◆	◆
Road Diet Conversions	○	○	◆	◆
Single-Lane Roundabouts	★★★★	◆	◆	◆
Multi-lane roundabouts	★★★★	◆	◆	◆
Access Management				
Pedestrian-Friendly Driveways	○	◆	◆	○
Consolidate driveways	○	◆	◆	○
Right-in, right-out Channelization	○	◆	○	○
Transit Stop Considerations				
Best practice for transit stop placement	○	○	◆	◆
Concrete pads	○	◆	◆	◆
Benches and shelters	○	◆	◆	◆
Lighting	○	○	◆	◆
Other				
Low Impact Development/Green Infrastructure	○	○	◆	◆
Pedestrian Wayfinding Signage	○	○	○	○
Block Length	○	○	◆	◆
Traffic Calming				
Mini traffic circles	★★★★	◆	○	○
Chicanes	○	◆	○	○
Speed humps/tables	★★★★	◆	◆	○
Queueing Streets	○	◆	○	○
Woonerf	★★★*	◆	○	○