

Town of North Topsail Beach, NC

Comprehensive Bicycle Plan 2006

Executive Summary

North Topsail Beach has taken a step towards making the town a bike friendly community. With grant funds awarded by the North Carolina Department of Transportation Bicycle Program, the Town hired *Ferris Planners and Consultants* to complete a plan linking all the ends of the Town by bicycle facility. The plan lays the groundwork for completing a multi-use path running from Surf City to the New River Inlet. The plan addresses the State Bicycle Highway network which connects Virginia to South Carolina and passes through North Topsail Beach. An offshoot from the main route system will utilize Shrimp Lady Drive to provide an opportunity for cyclists to pedal to the banks of the Intracoastal Waterway and experience the pristine estuarine environment.

Education of both bicyclists and motorized vehicle users was identified as a shortfall in North Topsail Beach. This plan describes strategies to address this issue. Maintenance of existing and planned facilities will continue to be important to insure the safety of users.

Finally the plan provides a prioritization of each proposal. This final feature also includes an estimate of the cost of construction and an evaluation of possible impediments to completing the project.

The Bicycle Planning committee and the consultant team feel that implementation of this plan will create an environment that is safe and friendly for bicycle use, but will reduce the reliance on the Automobile for residents and visitors to North Topsail Beach.

Table of Contents

I.	Introduction	4
II.	Public Participation Program	5
III.	Planning Vision and Goals.....	8
A.	Vision Statement.....	8
B.	Planning Goals	9
C.	North Topsail Beach Bicycle Policies	10
1.0	Bicycle Friendly Roads and Bikeways.....	10
2.0	Comprehensive Support Facilities.	11
3.0	Bicycle Safety Awareness.	11
IV.	Local Bicycle Conditions	13
A.	Bicycle Safety	13
B.	Current bicycle users – profile	14
C.	Inventory, evaluation, and mapping of existing facilities.....	15
V.	Bike System Plan.....	21
VI.	Existing Federal, State, Regional, and Local Plans and Programs	30
Available Funding Sources	30	
Funding Categories for Bicycle and Pedestrian Projects.....	30	
VII.	Monitoring and Evaluation:.....	33
VIII.	Proposed Ordinance Amendments	34
Appendix 1	Overview of bike facilities	37
Appendix 2.	Recommendations of the Transportation Committee	40

Appendix 3. Specific problems and suggestions 42
Appendix 4. Survey Responses 45
APPENDIX 5. Bike Plan Priority and Cost Estimator 46

I. Introduction

Incorporated in 1990, North Topsail Beach is a rapidly growing beach community with a strong desire to make the community more bicycle friendly. The area was formerly known as West Onslow Beach and North Topsail Shores. The town has a Council-Manager government with a mayor and five aldermen, elected for staggered four-year terms. The 2000 population of the Town was 849. However, the Town is experiencing significant growth like other cities and towns in Southeastern North Carolina. The current population is estimated to be over 1000. In the summer months the town's population swells to 15,000 with daytime populations as high as 50,000 in peak tourist season.

The Town relies solely on automobile transportation to move around. There are no public transit services and bike and pedestrian facilities are limited. New River Inlet Drive and Island Drive (Hwy 210) are the major thoroughfares connecting the north end of North Topsail beach with Surf City to the South. A bridge on Highway 210 carries Pedestrians, Bikes and Automobiles from the mainland to North Topsail Beach. Hwy 210 is part of the NC Bicycling Highway System and has been equipped with 4' wide bike lanes, except for a stretch of approximately 1-mile from Beach Access # 2 to the Surf City line.

Due to this growth, Town officials recognize that the time to preserve corridors for bike, pedestrian and multi-use transportation is now. The Town has received funding and is constructing a Multi Use Trail between Town Hall and a new park facility, Town Park. The Town has a land area of 6.4 sq. miles and is over 10 miles in length. The Bike Route Plan for North Topsail Beach recommends bike facilities that serve residents and visitors while connecting to facilities in Surf City and Topsail Beach. The plan considers riders of all age groups and skill levels. On-road routes together with paved multi use paths will span the entire length of the Town.

II. Public Participation Program

The Town's Transportation Committee, appointed by the Town Council serves as the Steering Committee for development of the bicycle plan and is a key component of the public participation program. The Steering Committee performs several important functions in the planning process. These include:

- Assisting with education of residents, property owners, and visitors about the benefits of bicycling, the facilities and the bike systems in the town and region, and the basics of bicycle safety.
- Encouraging the community to provide information, facts, and opinions on bicycle needs and opportunities in North Topsail Beach.
- Providing local perspective on technical information developed for the plan and to provide the technical team with feedback on policies and implementation steps.
- Recommending a bike plan to the Town Council that is consistent with the values and aspirations of the community and that reflects sound planning principles.
- Advocating for implementation of the short range and long range policies, programs, and projects recommended in the plan.

The Transportation Committee took two initial steps to involve the North Topsail community in the planning process. First, the committee included the bike plan as a regular part of its monthly meetings. As part of their preparation for

their April 2005 meeting, committee members toured the town and noted needs and opportunities. The Transportation Committee provided written recommendations to the Planning team.

In June 2005, the Town and the Committee sponsored a community bike ride and bike workshop to highlight the town's bicycle facilities and to gather interested people together to discuss bicycle facilities. Nearly 50 people participated in the ride and 30 of the participants filled out questionnaires about bike riding in NTB. The bike ride began at Town Hall and covered 8.4 miles round trip with a turn around at Beach Access #2 near the NTB-Surf City Town limits (please see Map _). Participants in the workshop ranged in age from under 9 years to over 70 years.



Figure 1: Nearly 50 cyclists attended the first annual "Pedaling the Shoreline" ride.

Generally the questionnaire identified that NTB cyclists enjoy riding bikes on the island but feel that a variety of improvements are necessary to make bike riding safer and more fun. The survey also indicated that although most bike riders practiced safe cycling, some did not and most cyclists agree that automobile operators generally do not treat people on bicycles the same as they do another automobile. The complete

survey results are included in the appendix to this plan.

The Plan builds on the recommendations of the Transportation Committee and the participants in the workshop to the maximum extent feasible.

The Transportation Committee scheduled an informal open house near the end of the planning process to get public reaction and input on the specific recommendations included in the plan. In addition, the public will be able to comment on the plan at Online Public Forum at www.onlinepublicforum.com.

Figure 2: Forum participants share ideas about bicycling in North Topsail Beach.



III. Planning Vision and Goals

A. Vision Statement

The planning vision for North Topsail Beach bicycle plan is based on the values and concerns expressed by the Steering Committee and the people who participated in the community bike workshop. The vision provides an illustration of what the Town wants to create for biking in the future. It does not necessarily describe what exists. The vision also provides some basic guidance for setting goals and developing policies, programs, and projects to achieve these goals.

"...North Topsail Beach is recognized as a premiere bicycling community on the North Carolina coast. The Town's bicycle facilities provide safe, enjoyable, and convenient linkages between its business and commercial areas and the most important destinations. Because the facilities extend from the Surf City town limit northeast to the New River Inlet, they provide a viable transportation alternative to the community.

The Town's bike facilities are designed to accommodate users with a range of skill and knowledge levels, including younger and older riders, causal riders and serious riders, and residents and visitors. Consistent and clear signage directed to both bike users and drivers help ensure that biking in North Topsail Beach is safe. The town encourages biking by providing support facilities, such as bike parking, showers, and restrooms, at strategic locations.

The Town's bike system is linked to the regional system to extend the opportunities for recreational biking and to encourage the use of bikes for commuting.

North Topsail Beach promotes bike safety through on-going education programs for town staff and the community. It also provides periodic safety updates through its newsletter and web site."

B. Planning Goals

- Goal 1: Citizen leadership.** Create a citizen-lead organization that assists the Town of North Topsail Beach with an ongoing bicycle planning process, design and development of facilities, promotion of bicycling as a transportation choice, public education, and advocacy of plan implementation.
- Goal 2: North Topsail linkages.** Create a system of linked bike facilities that facilitate safe and convenient bike travel from the Surf City town limit to the New River Inlet.
- Goal 3: Hazard elimination.** Identify bicycling hazards on all residential streets and main roads in NTB, to set priorities, and to establish a work plan for their elimination.
- Goal 4: Barrier elimination.** Identify barriers to bicycling on all streets in NTB and establish a work plan for their elimination.
- Goal 5: Safety awareness.** Identify the most important bicycling and motoring safety issues and take steps to ameliorate them.
- Goal 6: Regional connections.** Identify opportunities to connect the NTB system to systems of surrounding communities and the southeast Onslow system.
- Goal 7. Public information.** Provide information to the public about the NTB bike system to encourage use by residents and visitors.

Goal 8. Cost effectiveness and leverage of NTB funds. Develop bicycle facilities and implement programs that are cost effective and that take advantage of public funding and private partnerships where possible.

C. North Topsail Beach Bicycle Policies

The following policies provide guidance for development of the NTB bicycle plan and for ongoing implementation of the plan. The policies will be used by the Town's staff and its elected board in setting priorities and making decisions regarding bicycle facilities.

1.0 Bicycle Friendly Roads and Bikeways.

The Town recognizes that development of bicycle friendly roads and bikeways is essential to achieve its goals of enhancing bicycle safety and encouraging additional use of bicycles for recreation and transportation.

- 1.1 The Town will treat every public street as a street that bicyclists use.
- 1.2 The Town will ensure maintenance of bicycle facilities, streets, and roads that is consistent with safety and convenience either through its own programs or in cooperation with others.
- 1.3 The Town will develop a network of bicycle friendly streets, bikeways, and other facilities that serve the full spectrum of bicyclists. These streets will have appropriate signage, bike paths and/or bike lanes where appropriate, and safe intersections. The Town's adopted bicycle plan will guide all network improvements.
- 1.4 The Town will seek connections to surrounding bicycle friendly roads and bikeways either through its own actions or in support of actions by other agencies and organizations.

1.5 Regional connections will encourage and support bicycle use by residents and visitors in conjunction with other modes of transportation for local and regional travel.

2.0 Comprehensive Support Facilities.

The Town will undertake enhancement projects in public areas and implement development policies for private areas that ensure appropriate bicycle support facilities are available throughout the town. These facilities may include bike parking, restrooms and showers, and information kiosks.

3.0 Bicycle Safety Awareness.

Safety is a major concern. The Town will take steps to design and implement a comprehensive safety awareness program for both cyclists and motorists.

4.0 Bicycle Promotion.

North Topsail Beach will actively encourage Town staff, employees, residents and visitors to use bicycles as often as possible for both recreation and transportation.

4.1 The Town will sponsor regular bicycle events like “Pedal The Shoreline” bike workshop to promote bicycle use.

4.2 The Town will develop and distribute bicycle information materials that encourage bicycle use.

4.3 The Town will encourage cooperative efforts with other local governments and organizations in the area to promote safe and convenient bike use.

5.0 Funding Sources.

Adequate and consistent funding is necessary to achieve the Town’s bicycle goals.

- 5.1 The Town will actively pursue appropriate non-local funding sources to support its bicycle goals. The Town will use the bicycle plan as a basis for advocating for inclusion of planned bicycle facilities in NCDOT improvement projects.
- 5.2 The Town will consider bicycle facility and program needs and opportunities in its annual budget process.
- 5.3 The Town will prioritize its bicycle projects to ensure highest cost effectiveness.

6.0 Bicycle Planning.

The Town recognizes that planning for bicycles is an ongoing process and is committed to monitoring, adjusting, and regularly updating its bicycle plan.

- 6.1 The Town will consider forming a Bicycle Advisory Committee comprised of local bicyclists, staff members and other interested parties. Among other duties, this committee will oversee implementation of the bicycle plan.
- 6.2 The Town Council review progress in implementing the bicycle plan during its annual budget preparation.

IV. Local Bicycle Conditions

A. Bicycle Safety

1. Accident data

Age Group	Totals	Percent
0-19	49	41%
20-49	54	45%
50-59	6	5%
60-69	2	2%
70+	2	2%
Helmet Use		
No helmet/not used	105	88%
Helmet used	7	6%
Unknown	8	7%
Roadway types		
US route	18	17%
NC route	12	11%
NC secondary road	31	29%
Local street	47	44%
Road Feature		
Driveway	22	39%
4-way intersection	24	43%
T-intersection	10	18%

Available databases do not list bicycle accident statistics for North Topsail Beach. Therefore, stats for Onslow County are provided in Table 1. to illustrate the types of safety issues that the plan should address.

Table 1: Onslow County Bicycle Accident Profile 1997-2003

Source: NC DOT

Overall, the largest proportion of crashes involved bike users in the 20 to 49 years age group. This age group has large representation among bike users in NTB. However, the younger age groups are a close second at 41% of the crashes. The needs of this younger age group are an important consideration for the plan.

According to the profile, the vast majority of bike users involved in crashes do not use helmets. The education component of the plan can address helmet use.

Most bike crashes occur on local streets. Forty-four percent of the crashes reported over the 6-year period in Onslow County were on local streets.

Driveways and 4-way intersections account for the lions share of accidents. The conflicts between driveways and the share-the-road facility are a concern.

The NTB Police Department will review available accident reports and attempt to further localize this profile.

Figure 3: Bicyclists utilize bike lanes along Island Drive

B. Current bicycle users – profile

The bike survey provides a basis for the following profile of current NTB bike users:

- ... Of those surveyed, the frequency of bike usage is high. Nearly 67% indicated that they rode their bike either weekly or daily.
- ... Exercise is the major reason that current bike users ride – nearly 90% of those completing the survey indicated that they rode for exercise.



- ... Most bike riders surveyed appear to know the basic “rules of the road.” However, only half of the respondents indicated that they “always wear a helmet.”
- ... The top four barriers to biking in NTB are (1) lack of on-road bike lanes; (2) lack of off-road paths; (3) dangerous road shoulders; and (4) road conditions.
- ... Using the bike survey as a guide, most bike users are in the 30 to 59 years age group, but riders aged 60 and above – at 37.5% - are a close second. The younger age group had 16.8% of the total, which is significant for system planning.
- ... Most of the current users are men – 60%.

C. Inventory, evaluation, and mapping of existing facilities

1. Existing facilities

(a) Island Drive (NC 210) Bike Lane

The NCDOT has installed a 4-foot wide bike lane on both sides of Island Drive from the Bridge at Town Hall to Beach Access # 2, which is located approximately 1 mile north of the Surf City-NTB town limits, which is a distance of approximately 4 miles. This facility is well-used by both residents and visitors.

The condition of this facility is generally good. However, there are some issues that need to be addressed through the planning process. The primary concern with the facility is the numerous driveway conflicts that exist along most of the route. Accident data indicate that driveways are a factor in a large share of bicycle crashes. In addition, there are numerous grade conflicts and incompatible paving materials along the route.

Rock and sand on the lane are a problem in several locations. During the community bike ride there were 2 minor accidents, which were caused by gravel and sand on the facility.



Figure 4: gravel and other debris from driveways has accumulated in several areas along Island Drive.

In some locations, the pavement edge is deteriorated due to erosion of sand. These “ragged” edges can cause accidents.

Finally, there are sharp drop-offs in some locations.

(b) Bike Lane Extension

The Town acquired state funding to extend the existing bike lanes from Beach Access #2 south to the Surf City town limits where it will connect to another similar facility. Final preparations are underway to begin construction of this extension. The new facility will address the potential driveway conflicts.

(c) Town Park Multi-use Path

NTB has completed a 10-foot wide multi-use path linking Town Hall and the “share-the-road” facility with the Town Park located approximately 2.0 miles north along New River Inlet Drive. The Town received funding from the NCDOT for this facility. This facility is the foundation for future multi use paths on the island.

(d) NC Bicycle Highway – Ports of Call route

The ports of call route runs between Virginia and South Carolina skirting the Albemarle and Pamlico Sounds and visiting numerous barrier islands. The 300-mile bike route crosses onto North Topsail Beach via highway 210 and goes south on Island Drive to Surf City where it crosses back to the mainland. This route takes advantage of the 4-foot wide bike lanes on Island Drive; however, bike lanes are not present on the segment from the NC 172 intersection and Island Dr. Heavy, fast moving vehicle traffic is a problem on the route during tourist season.

(e) Existing Road Network

North Topsail Beach is a narrow barrier island that stretches from the northeastern limit of Surf City north to the New River Inlet. New River Inlet Drive and Island Drive are the traffic corridor on the island. Island Drive extends from Surf City to the Town Hall, approximately 5.75 miles; New River Inlet Drive extends from Town Hall northeast to the Inlet, approximately 5.25 miles. On-street parking is not permitted on Island Drive and New River Inlet Drive. Very short streets, generally less than ¼ mile, connect the town's residential areas to the main corridor along Hwy 210 and the Town Park Multi Use Path. At the present time, the main corridor is the only viable route for bicycles in the community.

(f) Support facilities

The Town provides many bicycle parking opportunities on publicly owned access areas. Beach access sites and town hall have excellent bicycle parking facilities. 34 public access sites dot the North Topsail Beach shoreline. Onslow County Access 2 and 3 and the town park have shower and restroom facilities.

2. Facility constraints

(a) New River Inlet to Hwy 210

This stretch of highway covers more than 7 miles before it reaches the northern most extent of NTB. The road has 11-foot vehicle lanes with no bike lanes or shoulder and the speed limit is 45-MPH. The road passes through tidal marsh that winds its way along the backside of the Island from Town Hall to New River Inlet. Eight (8) of the ten (10) existing bridges on this stretch of road have not been provided with adequate width for bike lanes.

None of the bridges have enough space for a multi use path. The 11-foot vehicle lane width is the minimum for automobile traffic and allows no room for any type of bicycle facility on the existing pavement.

(b) Ports of Call route from “Four Corners” to Town Hall

The “Ports of Call” route is a touring route along coastal North Carolina between Virginia and South Carolina. It links North Topsail Beach to the NC 172/NC 210 intersection, known locally as the Four Corners area.

There are no bike lanes on the “Ports of Call” route between Four Corners to Island Drive at North Topsail Beach. The shoulders on the NC 210 Bridge are very narrow and frequently littered with debris. Pavement width does not exceed 22 feet for two way traffic. In addition, there is no signage to indicate bicycle use along this segment.

Continuing commercial, retail, and recreational development along this corridor make it an important bike destination for North Topsail Beach bikers. However, high automobile traffic volumes and the absence of facilities and signage create a significant obstacle for use of this segment by all but the most experienced riders. Population growth and increased demand for transportation and touring alternatives will increase popularity of this route whether improvements are provided or not.

(c) Island Drive route

There is no formal street cleaning strategy for any of the bike lane sections of the Ports of Call route. Cyclists crossing the Hwy 210 Bridge and wishing to continue on the route towards Surf City have a few potential conflicts with automobiles. Heading North from Surf City however, there are numerous turning movements where

no facilities have been provided for cyclists. The most dangerous of these is the intersection with New River Inlet Drive. Both sides of Island Drive are experiencing new construction. Construction entrances are generally covered with gravel and the gravel often is on the bike lanes. Many driveways for existing households are gravel and this too presents a problem as the gravel gets pushed onto the Bike Lanes.

(d) Town Park Multi-Use Path

The 1.75 mile Bike Path meets DOT standards for width. It is properly signed and its crossing treatments meet AASHTO standards. This facility provides a starting point for additional facility development. There is no cleaning or maintenance strategy for the path, which is subject to wash-overs during major storm events.

(e) Signage

Signage for the "Ports of Call" route is sporadic and provides only the basic identification of the route by number. Share the road signs provide a reminder for automobiles that they should be aware of cyclists. Share the road signs also notify cyclists and automobile operators on New River Inlet Road to be considerate. Too few share the road signs and detailed route signs exist on the Island. The addition of informative signage at regular, indicated intervals would remedy this problem.

3. Existing Bicycle-related Policies

North Topsail Beach does not address bicycle transportation or safety in any of their existing planning or regulatory documents. Adoption of the bike plan would be a move towards incorporation of the bicycle in the Town's official regulatory process.

V. Bike System Plan

A. Problem Statement

Other than the wide paved shoulders locally known as the “Share-the-Road” bike lane on Island Drive and the Town Park multi-use path, NTB has few options for cyclists. New River Inlet Drive is narrow and has a high vehicle speed limit. There are numerous bridge crossings over the tidal marsh along the way to the Inlet. Residential development continues to take place at a rapid pace and with this development comes more traffic, construction debris and unfinished ingress and egress points.

High property values on the island make the purchase of additional right-of-way (ROW) very expensive when it is required. The bike lane facilities along Island Drive are excellent for experienced cyclists but do not serve the needs for many recreational riders and less experienced riders including children. According to a survey of residents, both automobile drivers and bike riders need to be educated about how to safely share the roads.

B. Improvement Options – Constructability of Alternatives

A number of alternative approaches are available to the Town to address its existing bicycle constraints and to achieve its goals. These approaches are generally categorized as roadway improvements, special bicycle facilities, bicycle support facilities, and non-physical improvements. Table 2 provides a matrix that is used to compare the effectiveness of these approaches for North Topsail Beach.

The constructability analysis is qualitative with “√+” denoting very effective; “√” effective; “O” neutral; and “O-” not as effective. Some potential options that do not apply to NTB were eliminated.

Table 2: Constructability Analysis

Alternatives	Bike Plan Goals							
	Safe linkages	Hazard elimination	Barrier elimination	Safety awareness	Regional connections	Public information	Cost effectiveness and leverage	Encourage biking
Roadway improvements								
Sweep debris	√	√+	O	O	O	O	√+	O
Improve rough pavement	√	√	O	O	O	O	√	O
Shoulder maintenance	√	√+	O	O	O	O	√+	O
Remove sight obstructions	√	√+	O	O	O	O	√+	O
Special facilities								
Marked bicycle routes	O	O	O	O	√	√+	O	√
Bike lanes	O	√-	O	O	O	O	√+	√+
Multi-use paths	√+	√+	√+	O	√-	√	√	√+
Bike bridges	√+	√	√+	O	O-	O	√	√+
Support facilities								
Bike parking	O	O	√	O	O	O	√+	√+
Showers and restrooms	O	O	√	O	O	O	√+	√+
Programs								
System information	O	O	O	√	O	√+	√	√+
Training	O	O	O	√+	O	√+	√+	√
Enforcement	O	O	O	√++	O	√+	√	√
Community organization	O	O	O	√	√+	√+	√+	√+

The following are the rank order priorities for the alternatives in each group:

Roadway improvements

1. Sweep debris
2. Shoulder maintenance
3. Remove sight obstructions
4. Repair rough pavement

Special facilities

1. Multi-use paths
2. Bike bridges
3. Bike lanes
4. Marked bike routes

Support Facilities

1. Bike Parking
2. Showers and restrooms

Programs

1. Enforcement
2. Training
3. Community and regional organization
4. System information

C. Bicycle Plan Elements

The planned NTB bikeway system focuses on connecting existing segments of bike lanes, addressing routes used by bicyclists, and analyzing specific opportunities and constraints. The street pattern offers a distinct *through corridor* that connects residential areas with activity centers such as beaches, Town Hall, shopping, and parks. The bicycle network is based on establishing a primary north-south route along Island Drive and New River Inlet Drive. The network uses a combination of bike paths, lanes and routes and connections from the primary routes to serve destinations such as beach access sites.

1. NTB Shoreline Bike Corridor

The Bike Corridor provides a safe and convenient link from the southwestern area of NTB to the New River Inlet in the northeast. The corridor builds on the recently completed multi-purpose path linking Town Hall to the Town Park. The first priority is to extend the multi-use path to the northeast to connect to the Inlet area. This extension could be broken into at least 3 phases that are consistent with the Town's financial capability and with the environmental characteristics of the route. Bike bridges will cross wetlands where necessary. The facility will include connections to the principal beach access and passive recreation areas along the route.

Detailed planning will address environmental issues, wetland crossings, and corridor location. In addition, the design will incorporate safety enhancements to address conflicts at street and driveway intersections. The optimum width is 10 feet, but width may vary slightly depending on site conditions. The current multi-use path project provides the Town with experience in these areas.

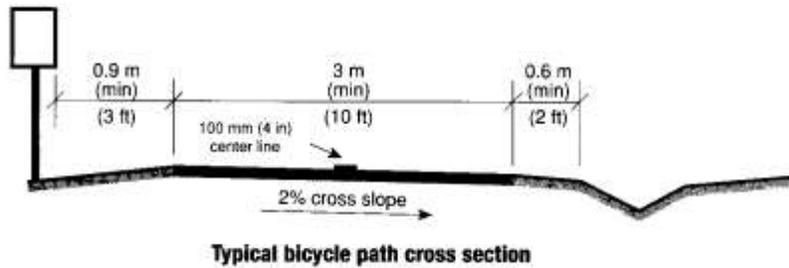


Figure 5: Typical bike path cross section with suggested signage

The second priority is to extend the multi-use path southwest from Town Hall to the Surf City line. The completion of this facility will remove significant hazards and conflicts and will enhance safety.

The preliminary cost estimates for these improvements are shown below:

Multi-purpose Path <u>Existing R-O-W</u>	<u>Cost Estimate</u>
Phase 1	
Park to Marina Dr. (including 10 Bridges)	\$2,200,000
Marine Dr. to NR Inlet	\$1,100,000
Phase 2	
Access No. 2 to Townhall	\$2,800,000
Access No. 2 to Surf City	\$ 450,000

2. Bike Lane Extension

The Town will proceed with the "Share-the-Road" bike lane project to extend the current bike lanes from Beach Access # 2 to the Surf City line. While this facility does not address all of the long term needs of cyclists, it will provide safety enhancements and it will encourage additional bike use. Bike lanes are the preferred facility type of many experienced cyclists.

The design of this facility will address driveway conflicts and will employ appropriate markings and signs. Construction should be complete in by early 2007.

3. Residential Connections

There are numerous street intersections along the planned Bike Corridor. These intersections will be designed to incorporate appropriate physical safety elements. In addition, marking and signing configuration at intersections will encourage safe movements.

4. Shrimp Lady Lane Bike Route

Shrimp Lady Drive is a short, narrow road leading from the Town Hall area to a boat ramp and boat trailer parking area at the Intracoastal Waterway. The street offers spectacular views of the Sound and the marshes of NTB. The road is designated a bike route connection to the NTB Bike Corridor. The Town will provide route markings and share the road signs. The Town will coordinate with the NC Wildlife Resources Commission, which developed the boat ramp, to install interpretative signage along the route and to provide an appropriate bike parking area at the terminus of the road.

5. Bike Lane Maintenance

The existing bike lane on Island Drive (NC 210) requires ongoing maintenance to address and/or remove hazards. Rocks, sand, and other debris accumulate on the surface; the pavement edges tend to break up; and erosion has produced significant drop-offs from the pavement in some locations.

NCDOT has overall maintenance responsibility for this facility. However, the Town removes debris from time-to-time.

The Town will establish a simple and convenient notification system that will allow bike users to report problems with the bike lanes. The Town will coordinate with the NCDOT to address these problems.

6. Bicycle Education and Enforcement

These are cost effective approaches to enhancing bike safety in NTB. The Town will address education and enforcement in the following ways:

- Place bike safety awareness and bike safety tips in its quarterly newsletter to NTB property owners.
- Place information on the local and regional bike system on the Town's web site. This posting will include information on bike safety.
- Provide annual update on bike "rules of the road" for the Town's public safety personnel.
- Sponsor an annual "bike event" that includes session on bike safety.

7. Regional Bike Organization

The Town will take a lead role in creating a regional bike organization that includes the 3 Topsail Island communities and Onslow County. This organization will have four major functions:

- Advocate for bicycle facilities in the region.
- Identify and work to eliminate hazards and barriers in the regional bike network.
- Promote bicycling for health and recreation and as a transportation option.
- Identify opportunities to create safe and convenient linkages to the regional bike network.

8. Bicycle Support Facilities

North Topsail Beach already provides bicycle parking at its beach access location. The Town will monitor these locations to ensure that the number of spaces is adequate and that the parking devices are in good repair.

The Town will expand this parking program to other popular destinations. Additional parking will encourage additional bicycle trips to shops, town hall, restaurants, beach access sites and other community facilities.

The Town will consider providing showers and restrooms at any new beach access and recreation facilities. It will also consider retrofitting existing locations with these amenities where demand and feasibility warrant.

9. NTB Development Management Policies

The Town will consider adding provisions to its zoning ordinance and subdivision regulations that encourage developers of higher density residential and commercial properties to provide bicycle support facilities, which may include parking, signage, and other amenities for bike users.

Proposed drafts of these ordinance amendments are included in Chapter VIII.

VI. Existing Federal, State, Regional, and Local Plans and Programs

Available Funding Sources

Funding Categories for Bicycle and Pedestrian Projects

The North Carolina Department of Transportation divides bicycle facility projects into two categories, which determine the types of funds that may be available. Independent projects are those that are not related to a scheduled highway project. Incidental projects are those related to a scheduled highway project.

Independent Projects – \$6 million is annually set aside for the construction of bicycle improvements that are independent of scheduled highway projects in communities throughout the state. Eighty percent of these funds are from STP-Enhancement funds, while state funds provide the remaining 20 percent. Currently, \$200,000 is allocated to the Division of Bicycle and Pedestrian Transportation for projects such as training workshops, pedestrian safety and research projects, and other pedestrian needs statewide. Projects must be listed in the local Transportation Improvement Plan to be eligible.

Incidental Projects – Bicycle accommodations such as bike lanes, widened paved shoulders and bicycle-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. 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. Projects must be listed in the local Transportation Improvement Plan to be eligible.

Federal Aid Construction Funds – Several categories of federal aid construction funds — National Highway System (NHS) and Surface Transportation Program (STP) — or Congestion Mitigation and Air Quality (CMAQ) funds provide for the construction of pedestrian and bicycle transportation facilities. The primary source of funding for bicycle and pedestrian projects is STP Enhancement Funding.

State Construction Funds – State roadway construction funds (not including the Highway Trust Fund for Urban Loops and Interchanges) may be used for the construction of sidewalks and bicycle accommodations that are a part of roadway improvement projects.

Governor's Highway Safety Program (GHSP) – GHSP funding is provided through an annual program, upon approval of specific project requests, to undertake a variety of pedestrian and bicycle safety initiatives. Amounts of GHSP funds vary from year to year, according to the specific amounts requested.ⁱ

Hazard Elimination Program - Another 10% of each State's STP funds is set-aside for the Hazard Elimination and Railway-Highway crossing programs. Traffic calming improvements and other improvements that correct problems that are a danger to motorists, bicyclists and pedestrians are eligible for these funds. Some of the proposed improvements could be eligible for not only Hazard Elimination Funds, but general STP funds as well. Hazard Elimination projects are 90% federally funded and are not required to be in the TIP.

Recreational Trails Program

The Recreational Trails Program is a \$1.1 million grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. This program's intent is to meet the trail and trail-related recreational needs identified by the Statewide Comprehensive Outdoor Recreation Plan. Grant applicants must be able contribute 20% of the project cost with cash or in-kind contributions. The NTB bike path could

qualify for the Recreational Trails Program. Applications for funding may be obtained by contacting the regional trails specialist or the State Trails Program at (919) 846-9991.

Local Funding

Grant funding assistance is essential for development of new and upgraded bicycle facilities in North Topsail Beach. The Town will aggressively pursue grant assistance for planned facilities. In conjunction with the grants, the Town will allocate funds in its capital budget for the local share.

The Town Council will consider funding for bicycle facilities in its annual budget deliberation process. The Council will give major consideration to the recommendations of the transportation committee.

Public/Private Partnerships

The Town of North Topsail Beach is fortunate to have a strong sense of local commitment from area businesses. Local businesses are known for their contributions to help improve the quality of life for area residents. The bicycle program represents an opportunity to tap into these resources and obtain financial support from local businesses. The Bicycle Coordinator should regularly talk to representatives of area businesses, informing them about the merits of bicycle transportation and encouraging them to “buy in” to the program. Financial support for facilities and programs should be solicited, as well as encouraging them to be “bicycle-friendly” employers (i.e. provide bicycle parking and showers, financial incentives for commuting by bicycle, etc.) It is especially important to obtain support from area businesses at the outset of Town’s Bicycle Program. If support is gained from the beginning of the process, it will lead to additional support as the program progresses and the community embraces bicycle transportation.

VII. Monitoring and Evaluation:

In order to insure compliance with the plan and the policies included in the plan the implementation section will be evaluated every other year to determine progress. In order to be a meaningful tool, any plan has to be implemented and to be implemented effectively and efficiently requires adherence to the implementation strategy. The following actions will be part of the evaluation process:

- Distribute plan and communicate plan elements to parties responsible for implementation.
- Assess resource needs and timeline for implementation.
- Develop tracking database and distribute to responsible parties.
- Develop a review and update process for the implementation action schedule.
- Review and update the implementation action schedule.
- Secure support for code amendments.
- Identify the barriers to implementation.
- Establish a process for updating the plan.
- A report on this evaluation will be sent to the NCDOT bicycle program

The bi-annual report will identify the following:

- Actions that have been undertaken to implement the certified plan
- Actions that have been delayed and the reasons for delay
- Unforeseen issues that have arisen since certification of the plan
- Recommended changes or additions to the plan.

VIII. Proposed Ordinance Amendments

Proposed Amendment to Subdivision Regulations

Subsection 1. Driveway connections.

Prior to the construction of any driveway or other connection within the public right-of-way, a permit must be secured from the North Carolina Department of Transportation or the Town of North Topsail Beach for a state or a local road respectively. However, in a residential subdivision, access to individual lots from streets constructed as part of the subdivision shall be reviewed and approved at the time each building permit is issued and individual driveway permits will not be required on a lot by lot basis.

Where driveways intersect a bike lane, bike path, or multipurpose path, it shall be constructed of asphalt or other similar material from the pavement edge to the right-of-way line to prevent accumulation of hazardous materials on the bicycle facility.

Subsection 2. Intersection Signage.

When subdivision streets intersect a street with a bike lane, or a bike path, or a multipurpose path, the subdivident shall install an appropriate bicycle crossing sign. The type and placement of required signs shall conform to MUTCD and NCDOT standards.

Proposed Amendment to Zoning Ordinance

Subsection 1. Bike Parking Requirements – Multifamily, Office, and Commercial Uses

Bicycle parking facilities shall be provided for any new building, addition or enlargement of an existing building, or for any change in the occupancy of any new building that results in the need for additional auto parking facilities.

Subsection 2. Bike Spaces Required

Bicycle parking facilities shall be provided in accordance with the following schedule, with fractional requirements for bike parking over .5 to be rounded up:

- a. Commercial, Office, Retail, Service --20% of number of auto spaces required
- b. Multi-Family Residential -- 3 or more units, 1 space per 4 units
- c. Public, or Commercial Recreation -- 20% of auto parking requirement
- d. Lodging -- 1 space per 5 units

Subsection 3. Type of bicycle parking required

Each bicycle parking space shall be no less than six feet long by two feet wide (6'X2') and shall have a bicycle rack system, which means a stand or other device constructed so as to enable the user to secure by locking the frame and one wheel of each bicycle parked therein. Racks must be easily usable with both U-locks and cable locks. Racks should support the bikes in a stable upright position so that a bike, if bumped, will not fall or roll down.

Subsection 4. Location and Design of Facilities

- a. Bicycle parking should be located in close proximity to the building's entrance and clustered in lots not to exceed 16 spaces each
- b. Bicycle parking facilities should be located in highly visible, well lighted areas to minimize theft and vandalism.
- c. Bicycle parking facilities shall be securely anchored to the lot surface so they cannot be easily removed and shall be of sufficient strength to resist vandalism and theft.
- d. Bicycle parking facilities shall not impede pedestrian or vehicular circulation, and should be harmonious with their environment both in color and design. Parking facilities should be incorporated whenever possible into building design or street furniture.
- e. Racks must not be placed close enough to a wall or other obstruction so as to make use difficult.
- f. Paving is not required, but the outside ground surface shall be finished or planted in a way that avoids mud and dust.
- g. Bike parking facilities within auto parking areas shall be separated by a physical barrier to protect bicycles from damage by cars, such as curbs, wheel stops, poles or other similar features.

Subsection 5. Waiver

Where the provision of bike parking is physically not feasible the requirements may be waived or reduced to a feasible level by the town's zoning administrator.

Appendix 1 Overview of bike facilities

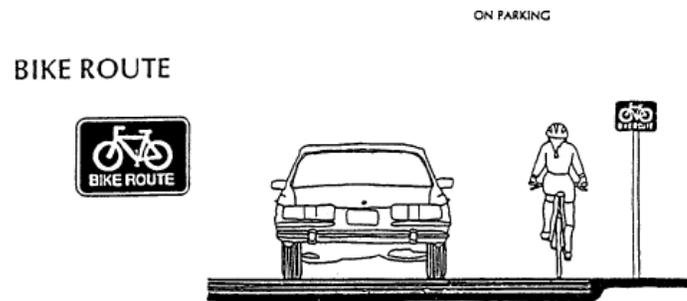
Multi-Use Paths. A multi-use pathway is physically separated from motor vehicle traffic, and can be either within the highway right-of-way or within an independent right-of-way. Multi-use pathways include bicycle paths, rail-trails or other facilities built for bicycle and pedestrian traffic. When properly located and designed according to NCDOT guidelines, multi-use pathways can be a safer type of facility for novice and child bicyclists because they do not have to share the path with motor vehicles. Multi-use pathways should not be located immediately adjacent to a roadway because of safety considerations. Sidewalks should never be designated as multi-use pathways.

Wide Paved Shoulders. A paved shoulder refers to the part of the highway that is adjacent to the regularly traveled portion of the highway and is on the same level as the highway. Ideally, wide paved shoulders should be included in the construction of new highways and the upgrade of existing highways where there is a significant level of current/potential bicycle travel. A wide paved shoulder refers to additional pavement width of at least 4' that has been added to an existing roadway in order to more safely accommodate bicycles. The wide paved shoulder may create conflicts with residential and commercial driveways.

Bike Lanes. A bicycle lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes may be considered when it is desirable to delineate road space for preferential use by cyclists. Streets striped with bicycle lanes should be part of a connected bikeway system rather than being an isolated feature. Bicycle lanes function most effectively in mid-block situations by separating bicyclists from overtaking motor vehicles. Integrating bicyclists into complicated intersection traffic patterns can sometimes be problematic. Strip development areas, or roadways with a high number of commercial driveways, tend to be less suitable for bicycle lanes due to frequent and unpredictable motorist turning movements across the path of straight-through cyclists.

Striped bike lanes can be effective as a safety treatment, especially for less-experienced bicyclists, on two-lane residential/collector streets with lower traffic volume, low-posted speed limit, adequate roadway width for both bike lanes and motor vehicle travel lanes, and an absence of complicated intersections. Most bicyclists will choose a route that combines direct access with lower traffic volumes. An origin and destination of less than 4 miles is desirable to generate usage on this type of facility.

Signed Bicycle Routes. A signed bicycle route is typically designated along more lightly traveled roads and is indicated by signs with or without a specific route number. This type of facility should have appropriate directional and informational markers. Adding pavement width to the existing roads signed as bicycle routes is not normally required; however, choosing routes with minimal traffic hazards is typically part of the process to create a good route. Bicycle routes are often utilized to direct bicyclists to less-congested streets that may follow the same general corridor as facilities with higher traffic volumes.



A bicycle route is a suggested route to get to a specific destination. It may include stretches of other designated bicycle facilities, but in general, a bicycle route does not require that the road include any special bicycle facilities.

Appendix 2. Recommendations of the Transportation Committee

New River Inlet Town Hall North

Modify 10-foot bike and walking path to stay on north side of road from Town Hall to Town Park

Expand road to Share the Road

Method to widen bridges or all on sides for bike and walking paths

Continue 10 foot paved bike and walking path north from Town Park to end of road

Signs with rules posted along the path

Put benches along the path

Town Hall to High Bridge

10 foot paved bike and walking path from Town Hall to Shrimp Lady drive to look around the Intercostal Waterway. Trail Marked in distance with signs describing plants and trees. Fishing pier on Waterway.

Highway 210 Surf City to Town Hall

10 foot paved bike path on ocean side of road with markings at each connecting road. Landscaping and benches between path and road.

Continue bike lanes with Share the Road signs to Surf City. Repair existing bike lanes.

Repave Highway 210 and bike lanes from Surf City to Town Hall.

Implement a method to keep bike lanes clear of gravel, sand and debris.

Pedestrian crossing marked along the road to alert traffic. Possible crosswalks.

Signs with path rules posted at intervals along the path.

Appendix 3. Specific problems and suggestions

Written comments from the Survey

- There is no bike path on the North End
- Roads are not kept clean
- Too much wind
- Vehicle speed limits in areas where there is a lot of traffic
- No path at the south end connecting to Surf City
- Need wider bike lane
- Loose gravel and potholes in bike lanes
- Speeding drivers
- Careless drivers
- Lack of bike paths – need paved paths along the hwy right of ways, preferably with a buffer between the road and the path.
- Potholes
- Not enough room for bikes
- 55 mph speed limit
- bike path is too narrow
- north end
- 55 mph speed limit
- Route #3 needs patching and restriping
- Roads not good for bikes and cars
- Need bike path

- Debris on shoulders and bike lanes

General Comments

Beautiful place to ride

We had fun today

Safest place to ride with family is the N. Shore Golf Community

Suggestions

- Share the road signs
- Add bike lane to hwy 210 bridge
- Connect bike path to Surf City
- Encourage DOT to get moving on the 2.5 to 3 mile section connecting to Surf City
- Widen existing and create new bike lanes
- Remove sand and gravel and fix potholes
- Reduce speed limit from 55 to 45 on all of island drive
- Need paved paths along the hwy right of ways, preferably with a buffer between the road and the path.
- Please reduce the speed limit on the 55 mph section of NC 210 to 45 mph, especially in the summer
- Maintain shoulder so that sand and gravel do not build up
- Widen shoulders
- Fill in potholes
- Lower speed limit
- Add share the road (bike lanes) on south end of NTB to Surf City
- Repair existing bike lanes on 4 miles of Hwy 210

- Add bike lanes going North from Town park to the end of the island
- Multi use path from Town Hall to Park should stay on same side of road
- Should be routes for bikers but also paths appropriate for families and young riders
- Build a 5' smooth path on each side of the highway
- Speed limit should be lowered at least during tourist season
- Separate bike paths with a buffer between path and road
- Most of hwy 210 has additional ROW which would be appropriate for path
- New River Inlet Road – consider building a separate path over the road
- Build a bike path from Town Park to the North End of the Island
- Add a bike path and mark it “bikes only”
- Add signs “watch for bike riders”
- Repaint existing white lines for bike lanes
- Patch potholes in bike lanes and roads
- Post “bike lane” signs and paint on bike lanes
- For a wide bike path use yellow line down the middle of the trail for two way traffic – this keeps bikers, walkers, runners moving safely around each other (recrais@excite.com)
- Build path on the sound side of New River Inlet Road – use wooden bridges to get over inlets etc
- Clear shoulders and bike lanes of debris – Nails etc.

Appendix 4. Survey Responses

Question	Possible Answers	Response	Percent of Total Surveys
Do you own a bicycle?	yes	21	87.5%
	no	3	12.5%
How often do you bike ride?	monthly	4	16.7%
	Weekly	6	25.0%
	Daily	10	41.7%
	almost never	3	12.5%
Why do you ride a bike?	Exercise	20	83.3%
	run errands	1	4.2%
	get to the beach	0	0.0%
	get to work	1	4.2%
	fun	12	50.0%
Where do you live?	North Topsail year round	11	45.8%
	summer resident	8	33.3%
	visitor from area	4	16.7%
	visitor from outside area	1	4.2%
Are cyclists required to obey traffic controls?	yes	24	100.0%
	no	0	0.0%
Where should adults ride bikes?	road, with traffic	21	87.5%
	road, against traffic	1	4.2%
	sidewalk, if there is one	1	4.2%
	either	2	8.3%
Do you give cyclists room?	yes	24	100.0%
	no	0	0.0%
Are drivers required to give cyclists room?	yes	22	91.7%
	no	2	8.3%
Do you wear a helmet?	Never	8	33.3%
	sometimes	2	8.3%
	usually	1	4.2%
	always	12	50.0%
Which direction of traffic do you ride with?	with traffic	22	91.7%
	against traffic	0	0.0%
	either	1	4.2%
What are the barriers to biking at North Topsail Beach?	road conditions	13	54.2%
	lack of on road bike lanes	19	79.2%
	lack of off-road paths	17	70.8%
	dangerous drivers	10	41.7%
	discourteous drivers	9	37.5%
	dangerous road shoulders	16	66.7%
	lack of secure parking	1	4.2%
Are you male or female?	male	13	54.2%
	female	6	25.0%
What is your age group?	9 or younger	1	4.2%
	10 to 14	1	4.2%

Appendix 5. Bike Plan Priority and Cost Estimator

Rank	Location	from	to	Distance (feet)	Existing Improvements	Condition	Sign Needs	right of way	state or local	Recommended Improvements and maintenance	cost	Traffic	priority	Comments
Surf City to Deer Island														
	Island Drive	Surf City	Access #2	1.5 miles	none	poor	share the road, route signs	existing	State	routine road maintenance, cleaning	Funded	Heavy auto - bike year round	High	Route would connect existing bike lane facility from Town Hall to Surf City.
	Island Drive	Surf City	Access #2	1.5 miles	none	n/a	Route signs, safety	existing	State	construct NCDOT standard multi use path, routine trail, cleaning	?	Heavy ped/bike in season	med	Route would connect planned multi use path facility from Town Hall to Surf City.
	Island Drive	Access #2	Town Hall	4 miles	Bike lanes	fair	share the road	existing	state	routine road maintenance, cleaning, shoulder repair	#VALUE!	Heavy ped/bike in season	med	Bike lanes run from Access #3 to town hall. Part of Ports of Call Route. Frequent maintenance issues. Separate Trail recommended.
	Island Drive	Access #2	Town Hall	4 miles	none	N/A	Route, Safety,	existing	state	construct NCDOT standard multi use path, routine trail, cleaning	#VALUE!	Heavy ped/bike in season	med	10' Multi Use path to connect to existing path. Meet needs of less experienced riders.
	Island Drive/210/New River Inlet	intersection		.25 miles	bike lanes on island drive/210. Multi Use on Island Drive	fair/good	bike crossing,	existing	state	bike lane markings across intersection, routine road maintenance, cleaning	#VALUE!	Heavy auto - bike year round	high	bike path ends at town hall. Southbound riders must cross 210 to continue on Island Drive. North bound riders must cross New River to get to Trail head.
	Shrimp Lady Road	Town Hall	ICWW	.5 miles	none	good	share the road, interpretive	existing	state?	routine road and trail maintenance, cleaning		light	low	Path from town hall to beginning of Shrimp Lady Drive. ICWW is an excellent destination.
	New River Drive	Town Hall	Town Park	1 mile	Multi Use Path	excellent	Caution sand on path	existing	state?	routine trail maintenance, cleaning	#VALUE!	heavy bike/ped in season	low	Existing multi use path in excellent condition. Sand washes on path in storm tide.
	New River Drive	Town Park	Marine Drive.	3.5 miles	none	poor	share the road, bike route	?	state	Bike lanes, routine maintenance, cleaning, shoulder repair		Heavy	high	10 bridges on this section. 2 have pavement for bike lane. Bike lane
	New River Drive	Town Park	Marine Drive.	3.5 miles	none	N/A	Route signs, safety	?	state	Bike lanes, routine maintenance, cleaning, shoulder repair		Heavy	high	10 bridges on this section. 2 have pavement for bike lane. Multi Use path.
	New River Drive	Marine Drive	Deer Island	1.5 miles	none	poor	share the road, bike route	?	state	Bike lanes, routine maintenance, cleaning, shoulder repair		moderate	med	narrow ROW, State maintenance ends, frequent dune washer

ⁱ North Carolina Department of Transportation, http://www.ncdot.org/transit/bicycle/funding/funding_intro.html