



Chapter 6

Engineering & Facilities

- Education
- Encouragement
- Enforcement
- **Engineering & Facilities**
- Evaluation & Planning

Engineering & Facilities

Chapter 6

SCORECARD

IS YOUR COMMUNITY BICYCLE-FRIENDLY?

Does your community have a comprehensive, connected and well-maintained bicycling network? **NO**

Is bike parking readily available throughout the community?
NO

Is there a Complete Streets ordinance or another policy that mandates the accommodation of cyclists on all road projects? **YES & NO**

This chapter is about what is built, how it is built and where it is built. The word “engineering” can connote a particular professional discipline rather than the broad topic of “facilities” or “hardscape”, so to conform to the mnemonic device and communicate what the chapter is about, for this Plan the chapter is named “Engineering & Facilities”.

Regardless, the central question of this chapter is, “What is on the ground?” The LAB breaks it down into several main issues:

- the accommodation of cyclists on public roads,
- the existence of both well-designed bike lanes and multi-use paths
- the condition and connectivity of both the off-road and on-road network
- the availability of secure bike parking
- the existence and content of a bike master plan

While discussing the Plan update, most citizens focused on Engineering & Facilities as the only “E” as if they expected it to be the whole focus of the Plan. In fact, about 2/3 of the comments from the public input process, including open houses and online surveys, were about Engineering & Facilities issues, and some of the questions did point people in this direction.

Existing Facilities

During the late 1970's, local jurisdictions tried to increase their coordination of bikeway planning, both internally and regionally, and many began to integrate their bikeways with the regional transportation system. Until then, bikeways had been considered on an individual basis rather than as part of a comprehensive system. In those early years up to the first Virginia Beach Bikeway Plan in 1981, 22 miles of bikeways and trails were constructed.

In the 30 years since then, much has changed in common practices, visions for the future, and construction standards. As a consequence, the existing Virginia Beach bikeways and trails system consists of a variety of types of facilities including shared-use paths, paved shoulders, shared lanes, and bike routes.

The 2004 Plan envisioned:

- a **Primary Network** along major roadways
- a **Secondary Network** connecting neighborhoods
- **Specialized Facilities** such as a 5k criterium and a 25/50-mile loop system

In recent years, the City has claimed to have 9.5 miles of on-road lanes and 77 miles of multi-use paths, plus many more miles of sidewalks; however, many of those miles of multi-use paths are, in fact, wide sidewalks. As will be discussed later, wide sidewalks are not truly bikeways. Also, nearly all of the bike lanes are not properly marked as such and should be considered paved shoulders. For these reasons, and because additional miles of each have been built since the totals were last compiled, the total counts must be adjusted thus:

- 2.6 miles of bike lanes
- 18.8 miles of paved shoulders
- 74.7 miles of shared-use paths
- 45.7 miles of wide sidewalks

A complete inventory is provided in the Appendices.

Popular Bikeways and Trails

Oceanfront Boardwalk

The Oceanfront Boardwalk is the quintessential Virginia Beach walkway, with 28 feet of concrete sidewalk along three miles of the beach in the resort area, and an adjacent 8-foot-wide asphalt bike path.

Norfolk Avenue Trail & South Beach Trail

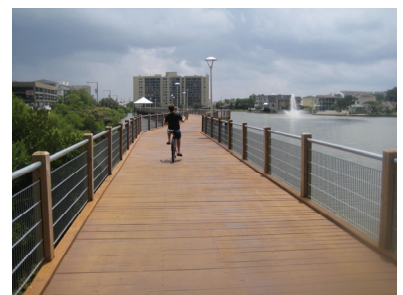
Norfolk Avenue Trail is a heavily used rail-trail conversion that almost connects to the Oceanfront Boardwalk. It is a 10-foot-wide asphalt shared-use path running about a mile from Pacific Avenue west to Birdneck Road.



Oceanfront Boardwalk

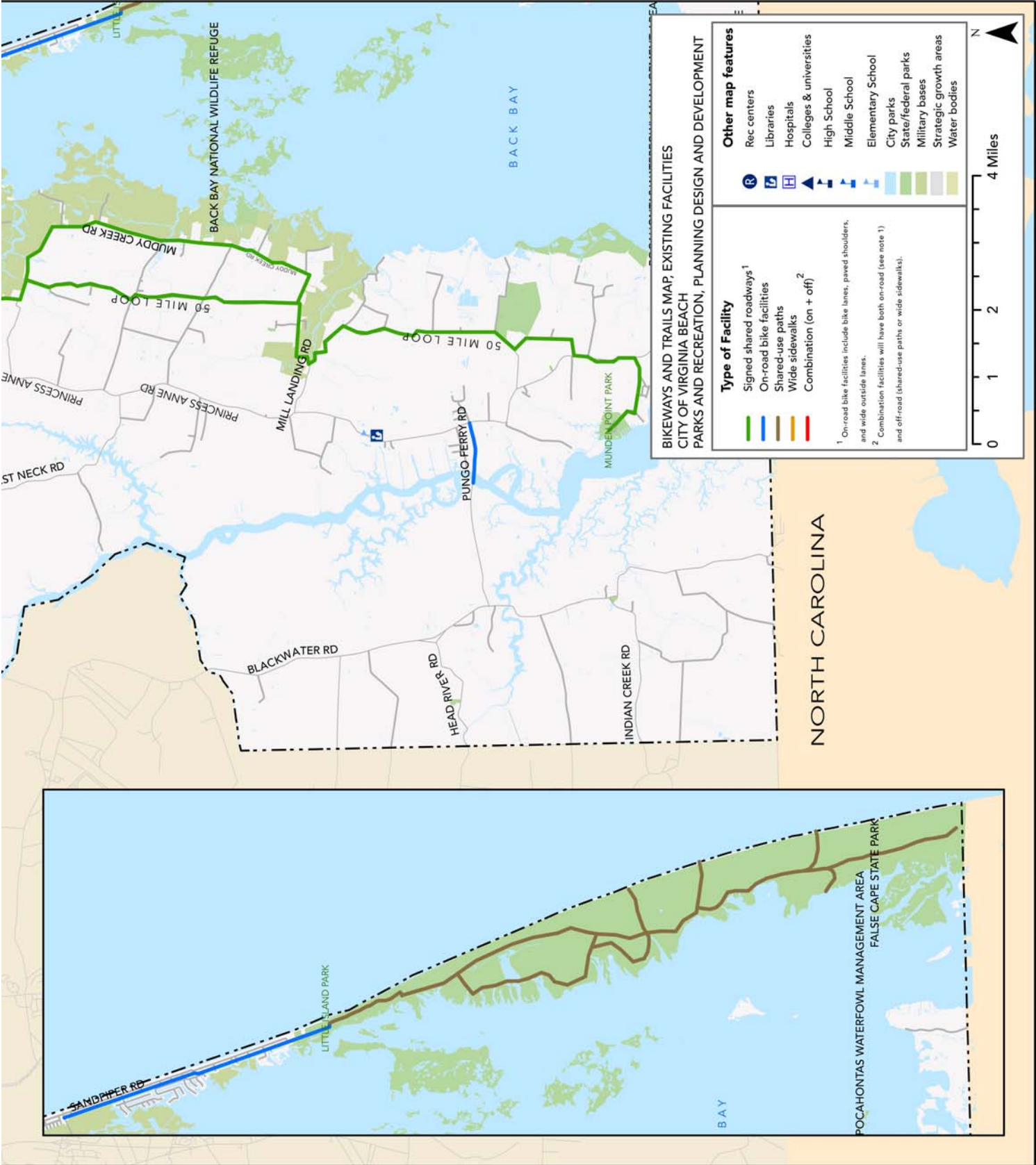


Oceanfront Boardwalk



Pacific Boardwalk Trail, part of the South Beach Trail





Engineering & Facilities

Chapter 6



Cape Henry Trail

It is part of the larger South Beach Trail, which is a mixed shared-use path and wide sidewalk following Birdneck Road south to General Booth Boulevard, where it joins the General Booth Trail back to the newly built 12-foot-wide boardwalk over Holly Lake along Pacific Avenue.

Cape Henry Trail

Cape Henry Trail is a rail-trail conversion with a 10-foot asphalt shared-use path through neighborhoods. It runs mostly parallel to Shore Drive, from near Lesner Bridge to a connection to an unpaved path that runs through First Landing State Park.

Little Neck Trail

This 8-foot-wide asphalt shared-use path winds among the trees along Little Neck road through attractive neighborhoods. Spur trails connect out into the neighborhoods.



Little Neck Trail

General Booth Trail

This 10-foot-wide asphalt shared-use path runs about three miles from near Red Wing Park, past the Owl Creek Tennis Center and the Virginia Aquarium, to Rudee Inlet Bridge. The northeastern end of the path changes to wide sidewalks.

Dam Neck Trail

By far the City's longest continuous bikeway/trail, the Dam Neck Trail parallels Dam Neck Road for about 9.5 miles from Dam Neck Naval Station to Salem Road. It is mostly a 10-foot-wide asphalt shared-use path but has a 1.8-mile section of 8-foot wide sidewalk in the middle, from Holland Road to Cellar Door Way.

Independence/Rosemont Trail

This 10-foot-wide asphalt shared-use path follows what was once a railroad corridor and is now a power line right-of-way. South Independence Boulevard runs along one portion of it, and Rosemont Road runs along another portion.



Oceanwalk Trail

Oceanwalk Trail

Oceanwalk Trail runs from the Contemporary Arts Center near 22nd Street to Beach Garden Park near Laskin Road. It is an amalgam of pieces, beginning with a boardwalk bridge over wetlands, a 10-foot asphalt shared-use path, sidewalks of varying widths, and then 10-foot asphalt paths through the park.

Types of Facilities

The American Association of State and Highway Transportation Officials (AASHTO) and Virginia Department of Transportation (VDOT) recognize four types of on-road bike facilities: bike lane, paved shoulder, wide outside lane, and shared roadways (signed and unsigned), and one type of off-road facility: shared-use path. Virginia Beach's current bikeways and trails network includes these designated facilities.

This Plan considers not just the needs of cyclists but pedestrians as well, so it also includes sidewalks. By ordinance, Virginia Beach allows bikes on all sidewalks, except in Town Center and the Resort Area. In the past, the City has designated wide sidewalks as shared-use paths. Neither AASHTO nor VDOT recommends wide sidewalks for bikeways, but due to constraints, wide sidewalks are often the only connections between other more desired bikeway types in Virginia Beach.

On-Road includes

- Shared roadways,
- Signed shared roadways,
- Wide outside lanes,
- Paved shoulders, and
- Bike lanes.

Off-Road includes

- Shared-use paths
- Soft paths (unpaved shared-use paths)
- Sidewalks and
- Wide sidewalks.

The following summary descriptions are based on AASHTO and VDOT guidelines. These are only summaries, so please refer to AASHTO and VDOT documents for more detailed information.

Shared Roadways (No Bikeway Designation)

Shared Roadways are existing roads that cyclists use but are not signed or designated as bike facilities. In some instances, the existing street system might be fully adequate for efficient bike travel, and signing and striping for bike use might be unnecessary. Other streets and highways might not be designated for bike use because road conditions make them poorly suited for bike travel or because there has been no history or demand for cyclists to use them. In Virginia Beach, all roads except for I-264 and I-64 are open to bike use.

Materials and Maintenance:

- Bike-safe drainage inlets should be used on and near all shared roadways and any streets where cyclists are not prohibited.
- Road surface should be smooth and consistent.

Signed Shared Roadways

Signed Shared Roadways are suggested routes designated by bike route signs. They can provide continuity to other bike facilities (usually bike lanes) or indicate preferred routes through high-demand corridors. Signs alert motorists that bicyclists might be present, and signs alert cyclists that the



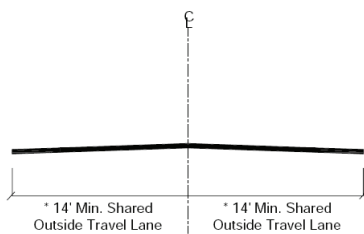
Shared Roadway. Photo courtesy of www.pedbikeimages.org / Libby Thomas.



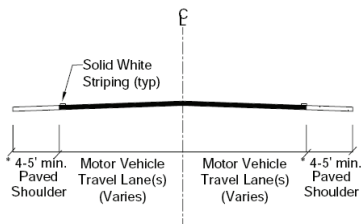
Signed Shared Roadway (with share arrow symbol). Photo courtesy of www.pedbikeimages.org / Heather Bowden



Example of a bike route sign



Section for Wide Outside Lane



Section for Paved Shoulder



Paved Shoulder

routes were deemed suitable by a local, state, or federal agency, and thus will be maintained in a manner consistent with the needs of bicyclists.

Materials and Maintenance:

- Bike-safe drainage inlets should be used on and near all signed shared roadways and any streets where cyclists are not prohibited.
- Road surface should be smooth and consistent.
- Place appropriate signs and "sharrows" periodically and strategically.

Wide Outside Lanes (or Wide Curb Lanes)

Wide Outside Lanes are shared roadways that have outside travel lanes with a width of at least 14 feet.

Materials and Maintenance:

- Bike-safe drainage inlets should be used on all wide outside lanes and any streets where cyclists are not prohibited.
- Road surface should be smooth and consistent.
- Signs and sharrows remind motorists to be alert for cyclists.
- Signs aid cyclists with orientation.

Paved Shoulders

Paved shoulders are unmarked, striped road edges that are at least four feet wide. In many cases, paved shoulders are an efficient way to incorporate bike facilities. Paved shoulders benefit all roadway users, because they provide space for motorist emergencies, and for emergency vehicles; improve sight lines; and help to maintain the edge of the roadway. In rural areas, pedestrians commonly use paved shoulders as a place to walk.

Materials and Maintenance:

- Bike-safe drainage inlets should be used on all wide outside lanes and any streets where cyclists are not prohibited.
- Road surface should be smooth and consistent.
- Use signs to remind motorists to be alert for cyclists.
- Use signs to aid cyclists with orientation.

Width:

- 4 feet minimum (AASHTO)
- 5-6 feet on roads with high traffic volumes, steep grades, or on-street parking

Pavement Markings:

- Paved shoulders should be marked by a solid white stripe on the side adjacent to traffic (usually the left).

Bike Lanes (or Bicycle Lanes)

A Bike Lane is a designated portion of the roadway striped and signed for exclusive use by bicyclists. Bike lanes should be one-way facilities located on both sides of the roadway and flowing in the same direction as motor vehicle traffic. The purpose should be to improve conditions for bicyclists in the street. Bike lanes are most useful on high-volume, higher-speed roads. On such roadways, bike lanes benefit both motorists and cyclists by segregating users and increasing overall capacity. Bike lanes differ from paved shoulders, because bike lanes are signed for cyclists' *exclusive* use. Bike lanes and parallel parking are increasingly viewed as incompatible due to the high risk of "dooring": when a motorist inattentively opens a motor vehicle door directly in front of a cyclist, causing either a crash or a risky avoidance maneuver.

Width:

- Four feet minimum (AASHTO)
- 5-6 feet on roads with high traffic volumes, steep grades, or on-street parking

Materials and Maintenance:

- Bike-safe drainage inlets should be used on and near all bike lanes.
- Road surface should be smooth and consistent.
- Regular maintenance and cleaning must be scheduled for all bike lanes, because debris, potholes, and general disrepair can render lanes unusable to cyclists.

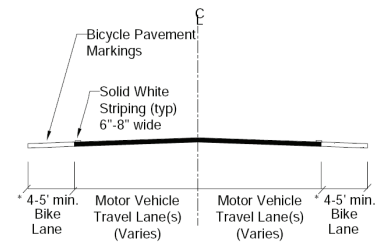
Pavement Markings:

- Bike lanes are marked by a solid white stripe on the side adjacent to traffic (usually the left) and by a "helmeted cyclist" and arrow at regular intervals.
- If a bike lane is next to on-street parking, a 4-inch wide solid white stripe is recommended to encourage vehicles to park close to the curb and not park in the bike lane.
- Best practice: Chicago

Shared-Use Paths and Soft Paths

Shared-use paths are facilities on exclusive right-of-way with minimal cross flow by motor vehicles. These facilities are usually designed for two-way travel and developed as a complementary system of off-road transportation routes for bicyclists and pedestrians. Shared use paths should not be used in place of on-road facilities, but to complement them. Many bicyclists will find it more convenient to ride on the street, particularly for utility trips.

Users of shared-use paths might include bicyclists, pedestrians, in-line skaters, roller skaters, skateboarders, wheelchair users, people with strollers, runners, people walking dogs, and a variety of others.



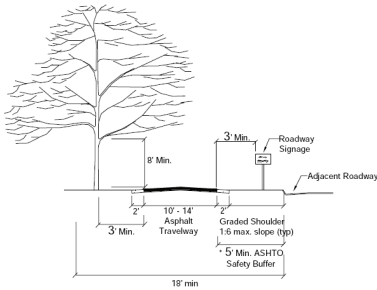
Section for Bike Lane.



Bike Lane. Photo courtesy of www.pedbikeimages.org / Carl Sundstrom



Example of a shared-use path sign



Section for Shared-Use Path



Shared-Use Path, Cape Henry Trail



Sidewalk, Military Hwy

When shared use paths are located adjacent to an existing roadway, the following operational problems are likely to occur:

- They require one direction of bike traffic to ride against motor vehicle traffic, contrary to rules of the road.
- When the path ends, bicyclists going against traffic will tend to continue to ride on the wrong side of the street. Likewise, cyclists approaching a shared-use path often travel on the wrong side of the street that leads to the path. Wrong-way travel by cyclists is a major cause of bike/automobile crashes and should always be discouraged.
- At intersections, motorists entering or crossing the roadway often will not notice bicyclists on paths, especially approaching from their right, as they are not expecting contra-flow vehicles. Motorists turning to exit the roadway might fail to notice bicyclists. Even bicyclists coming from the left often go unnoticed, especially when sight distances are limited.
- Signs posted for roadway users are backwards for contra-flow bike traffic.
- Stopped cross-street motor vehicle traffic or vehicles exiting side streets or driveways might block the path crossing.

Design Guidelines

- When two-way shared-used paths are located adjacent to a roadway, AASHTO recommends at least 5 feet between the edge of roadway and edge of path, while VDOT recommends an 8-foot buffer to accommodate signs and setbacks. When a 5 foot buffer is not possible, a barrier that is a minimum of 42" high should be installed between the roadway and path.
- Refer to AASHTO 1999, pages 38-49 for design details.
- Shared-use paths along roadways are usually paved with asphalt.
- Shared-use paths not along roadways are often unpaved.
- Regular maintenance and cleaning must be scheduled for shared-use paths, because debris, potholes, and general disrepair are hazardous to cyclists.
- Positive drainage off of the path is important, especially during wintry conditions.

Sidewalks

These have been the most common type of pedestrian facility. In Virginia Beach, sidewalks were often built as narrow as 3 feet. The current minimum width is 5 feet, following the Americans with Disabilities Act Accessibility Guidelines (ADAAG), although wider is often valuable. Sidewalks often are much wider in urbanized settings and to accommodate larger numbers of pedestrians.

Also, Virginia Beach's ordinances allow bikes on sidewalks, except in the resort area and Town Center. This is unusual in Virginia and in Hampton Roads. Allowing bikes on sidewalks can help people get around, especially across gaps in the bikeways and trails system, but many in the bike-ped

planning community consider that it can encourage a false sense of safety as they do so.

Wide Sidewalks

AASHTO and VDOT both discourage the designated use of sidewalks for bike travel because of the design characteristics and the conflicts with other types of users. Widening sidewalks does not necessarily add to the safety of sidewalk bike travel, because wide sidewalks do not include the planning and design characteristics that are used in shared-use paths.

Wide Sidewalks v Shared-Use Paths

Virginia Beach’s existing paths and sidewalks were built at various times and under various circumstances, including changing guidelines about proper design. Today, designating a particular stretch as a “shared-use path” or as a “wide sidewalk” can be an exercise in balancing several factors, especially path width, buffer width, clear zone, and path material.

	Shared-Use Paths	Wide Sidewalks
Path width	8’-10’ minimum width, in part to conform to VDOT and AASHTO guidelines.	tend to be 6’-8’ wide except in urbanized areas like Town Center and the oceanfront resort area
Buffer width	AASHTO suggests 5’ minimum; VDOT suggests 8’; they often meander closer and farther from the roadway	tend to run parallel to roadway, with a buffer of 2’-3’ or none at all
Clear zone	minimum 3’	no clear zone: mailboxes, light poles, fences and trees can be very close to a sidewalk but are inappropriate close to a path designated for bike use
Path material	usually asphalt	usually concrete

Any sidepath might have any combination of these factors, and the factors might vary along that stretch. The planner’s task is to weigh the factors together to decide which designation to use, perhaps even taking into account other variables such as the history or trend in use of the sidepath.

Support Facilities: Bike Parking

Just as a road system is incomplete without places to park motor vehicles at destinations, so it is true with a bikeway system and bikes.

The Master Transportation Plan (Chapter 6 of the 2009 Comprehensive Plan, at www.ourfuturevb.com) focuses on the relationship between land use development and transportation needs. As a component of the transportation matrix, bikes change land development patterns by requiring less space on streets and less room for parking than motor vehicles. A multi-modal transportation network must include secure bike parking just as much as bikeways, trails, and public transit. Leaving a bike unattended even for short periods can result in damage or theft. Finding a bike rack that does not work or is inconveniently located makes for a frustrating experience. The lack of a secure parking space keeps many people from using their bikes for transportation.



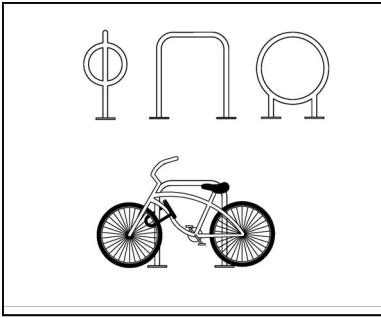
Wide Sidewalk, General Booth Trail (part of the Maritime Trail)



Short-Term Bicycle Parking at the Oceanfront, an inverted U-rack



Covered, Long-Term Bicycle Parking. Photo courtesy of Steven Vance



Acceptable 2-point support bike racks



Bike parking. Photo courtesy of www.pedbikeimages.org / Dan Burden.



Bike rack as public art. Photo courtesy of Steven Vance.

Long-Term Versus Short-Term Bike Parking

Bike parking can be divided into two categories: long-term and short-term. Long-term parking is intended for use over several hours or overnight. It includes bike racks in an enclosed, covered, controlled access area. Short-term parking is intended for use from a few minutes to several hours. It includes bike racks in a public, easily accessible location that may or may not be covered.

Accessibility, convenience, safety and security are necessary for a successful bike parking system.

Accessibility

Bike parking will only be used if cyclists and their bikes can access it. Bike parking should be located at ground level or accessible from ground level (ramps, elevators) without obstacles like stairs or steep slopes. When bike parking is not in a highly visible location, way-finding signage is recommended. Bike parking near sidewalks should allow sufficient passage for pedestrians (6 feet) and comply with all ADA standards. Bike racks should not impede pedestrian traffic flow to board and egress mass transit vehicles. Bike parking and bikes should not obstruct the visibility triangle. To ensure adequate space for bikes and maneuverability in and out of the parking area, racks should be placed at least 3 feet away from a wall or other vertical surface.

Convenience

Cyclists are most likely to use bike parking when it is close to their destination. Installing racks far from an entrance may encourage cyclists to lock their bike to a tree or piece of street furniture that is closer. Bike parking should be placed within 50 feet of the building entrance that cyclists use. Where there is more than one building on a site, or where a building has more than one main entrance, the parking should be distributed to serve all buildings or main entrances. Wherever possible, situate bike racks close to bikeways and trails.

Safety and Security

Safety and security measures must be considered to encourage use of bike parking facilities. Racks and lockers should be made from high quality materials and firmly secured to the ground, floor, or wall of a well-lit area. Racks should be adequately anchored to discourage displacement or removal. Concrete is the preferred surface for maximum security, though other surfaces may also be appropriate. Short-term parking should be located in a busy, public area to increase informal surveillance, and long-term parking should be located in a separate access-controlled area. Adequate lighting must be installed for visibility at the bike parking site and any pathways to and from this area.

Acceptable Types of Racks

Secure bike parking allows the frame and one wheel to be locked to the rack when both wheels are left on the bike. A simple inverted U-rack is attractive, easy to use, and highly secure. The rack should provide two-point support of the bike and have no sharp edges. The rack should be

usable by bikes with no kickstand and by a wide variety of sizes and types of bikes. Racks that only secure the front wheel are not acceptable. Galvanized steel with powder coating requires little maintenance and provides a smooth surface that will not scratch or damage bike frames.

Materials to avoid:

Wood, soft metals, untreated metals, cast components that are brittle and may crack on impact. For rack designs that have welded sections, avoid materials like stainless steel that have weak welds.

Bike Parking Dimensions

Adequate space is necessary to accommodate bikes and maneuvering in and out of the bike parking area. At least 30" is required and 36" is recommended between bike racks placed side-by-side. 60" is recommended between racks placed end to end. One inverted U-Rack counts as two parking spaces. Three feet is the suggested distance between a planted area and the outermost edge of a bike rack.

Covered Bike Parking

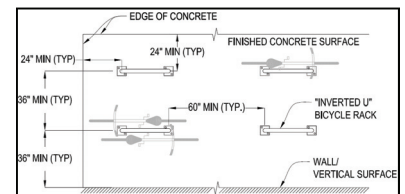
Prolonged exposure to precipitation can rust a bike's frame and components; Ultraviolet rays from the sun deteriorate a bike's soft seat and tires, as well as making the bike uncomfortable to ride on hot days. Covered bike parking will encourage use by cyclists who value their bike. Covered spaces can be stand-alone structures, roof overhangs, awnings, lockers, or bike storage spaces within buildings and parking garages. The cover must be permanent and secure. Overhead clearance should be at least 7 feet to allow for maneuverability. Covers that are too high do not protect from rain, sun, and snow. The covered structure must use similar construction materials as the main building and be aesthetically complimentary to surrounding architecture and design elements. If freestanding, the structure should be at least 150 square feet and comply with all local building codes including drainage regulations. Several companies sell prefabricated bike shelter structures that fulfill these suggestions.

Bike Lockers

Bike lockers are individual storage units that are weather protected, enclosed, and operated by a controlled access system that may use keys, swipe card, or an electronic key pad located on the door. Virginia Beach has bike lockers at the Silverleaf Park & Ride station. Cyclists can securely store their bike, helmet, and gear. Many models hold two bikes, and have access doors at opposite ends of the locker. On average, one standard motor vehicle parking space can accommodate five bike lockers, depending on the locker design. Stackable models can double bike parking capacity; however, the top lockers provide limited access to cyclists who cannot or choose not to lift their bike into the top locker unit. Bike lockers require a level, clean, surface and clearance for the door to easily open and close. Bike lockers are best placed away from sidewalks and areas with high pedestrian traffic. Like all bike parking, bike lockers should be placed close to building entrances, in a well-lit area with regular security surveillance.



Bicycle lockers. Photo courtesy of www.pedbikeimages.org / Rob Rae.



Plan view of spacing for typical inverted "U" bike racks.

Standards and Guidelines

Standards versus Guidelines

Both AASHTO and VDOT have guidelines, not standards, for the planning and design of bicycle facilities. The general interpretation within the design professions is that standards must be met, but guidelines are more flexible. Sometimes, guidelines are seen as establishing a standard of care.

AASHTO 1999

Virginia Beach will plan, design and build bikeways and trails according to the AASHTO 1999 "Guideline for the Development of Bicycle Facilities", also known as the Green Book. As a guide, not a standard, it influences and guides the planning and design work, but following it is not mandatory. AASHTO has spent several years revising the Green Book and expects to release the new version in Summer 2011.

No agency outside Virginia Beach requires the City to use any particular guidelines for locally or privately funded projects that do not involve state or federal monies; however, for the sake of continuity and diligent care in the planning and design processes, Virginia Beach will use the AASHTO guidelines to the extent feasible for bikeways and trails that will be publicly owned or managed.

This document will outline those guidelines, but not reiterate them.

VDOT Road Design Manual

Section A-5 of the Road Design Manual is "Bicycle Facility Guidelines". These guidelines largely mirror, clarify and interpret the guidelines in the AASHTO Green Book, using mostly the same terminology. On page A-87 it admits to using the AASHTO Green Book as minimum criteria to which it adds more detail. Virginia Beach will use the VDOT guidelines where needed to clarify the AASHTO guidelines.

Urban Construction Initiative

The City of Virginia Beach participates in VDOT's Urban Construction Initiative, which allows municipalities to "assume the responsibility for their construction program". Section I.F. of the Program Administration Guide reads thus [emphasis added]:

"F. Plan Review

"Federally Funded Projects

"The municipality must design a project so that it meets minimum American Association of State Highway and Transportation Officials (AASHTO) standards. A municipality may have different standards and specifications that meet or exceed AASHTO standards, but these need to be reviewed and approved by VDOT and FHWA before they are authorized for usage. The municipality must ensure that design flexibility does not jeopardize safety and mobility.



A drainage grate becomes a hazard for bike tires. Photo courtesy of www.pedbikeimages.org / Reed Huegerich.



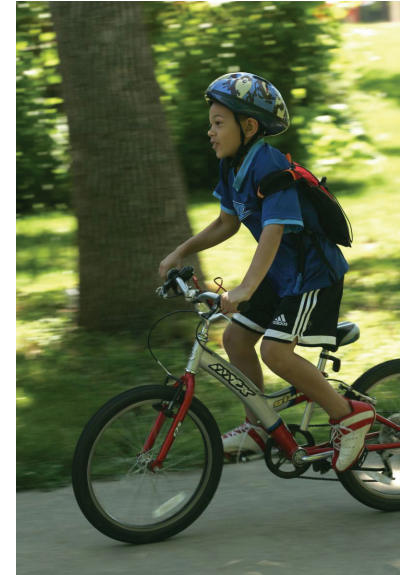
An experimental midblock pedestrian crossing. Photo courtesy of www.pedbikeimages.org / Mike Cynecki.

"VDOT is committed to accommodating bicyclists and pedestrians, including pedestrians with disabilities, along with motorized transportation modes in the planning, funding, design, construction, operation, and maintenance of Virginia's transportation network to achieve a safe, effective, and balanced multimodal transportation system. The CTB policy on pedestrian and bicycle accommodations states that all highway projects will be initiated with the presumption that the projects shall accommodate bicycling and walking. The locality should consider bicycle/pedestrian accommodations at the scoping meeting in accordance with CTB policy and shall document such consideration as a part of the project file. Resources and guidance documents regarding bicycling and pedestrian facilities can be found on VDOT's external web site at <http://www.virginiadot.org/programs/bk-default.asp>."

Other reference documents

Several other documents are useful for the planning and design of bikeways and trails. Most of the VDOT resources are linked from the "Bicycling and Walking in Virginia" page at <http://www.virginiadot.org/programs/bk-default.asp>.

- VDOT: Road Design Manual
<http://www.virginiadot.org/business/locdes/rdmanual-index.asp>
- VDOT: Bicycle and Pedestrian Accommodation Decision Process For Construction Projects
<http://www.virginiadot.org/programs/resources/BikePedDecisionProcess.pdf>
- VDOT: Traffic Calming Guide for Local Residential Streets
<http://www.virginiadot.org/programs/resources/TrafficCalmingGuideOct2002.pdf>
- VDOT: Bike & Pedestrian Implementation Guide For Locality Involvement
<http://www.virginiadot.org/programs/resources/Bicycle and Pedestrian Implementation Guide for Locality Involvement.pdf>
- VDOT: Policy for Integrating Bicycle and Pedestrian Accommodations
http://www.virginiadot.org/programs/resources/bike_ped_policy.pdf
- VDOT: The Virginia Bicycle Facility Resource Guide
<http://www.virginiadot.org/travel/resources/bk-facresguide.pdf>
- VDOT: Implementation of Bicycle and Pedestrian Accommodations Policy Exception Standard Report
- VDOT: Maintenance Best Practices Manual
- VDOT: Departmental Policy Memoranda Manual Number 2-12: Implementation of the CTB Policy for Integrating Bicycle and Pedestrian Accommodations
- VTrans 2025 Statewide Multi-modal Long-Range Transportation Plan
http://www.vtrans.org/vtrans_2025.asp
- VDCR: 2007 Virginia Outdoors Plan
http://www.dcr.virginia.gov/recreational_planning/vop.shtml
- Virginia Beach Public Works Specifications and Standards Manual (on VBgov.com, go to "Public Works," then to "Consultants, Contractors



A child enjoys his bike. Photo courtesy of Bikes Belong.

Engineering & Facilities

Chapter 6

and Engineers,” and then to “Specifications and Standards Manual”) This document includes typical sections and templates for roadways, including sidewalks, bike lanes, shared-use paths, etc.

Public Comments about Engineering & Facilities Issues

The public input process provided over 1,500 comments from a diverse group of citizens, and about 2/3 of the comments were about engineering & facilities-related issues, such as:

- What physical facilities exist (or don't) for cyclists, pedestrians and others, including bike lanes and multi-use paths
- How those facilities are designed and constructed
- The condition and connectivity of those facilities
- The availability of secure bike parking.

By far, the dominant theme in the comments received (as well as in the statistically valid surveys from the past several years) is that the City does not have enough facilities for cyclists and pedestrians, often called "bike-ped" facilities, and needs more.

Following is a summary of the comments about engineering & facilities issues.

Connections

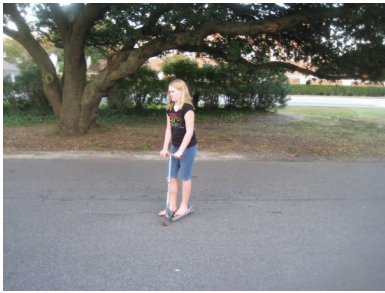
- Need connectivity between paths, destinations, and neighborhoods
- Make every part of the City accessible by walking or biking
- Need bike/pedestrian connectivity to future light rail
- Paths, lanes, etc. are fragmented and discontinuous: some go nowhere
- Designated paths end unexpectedly and/or in unsafe ways
- People often must walk across dangerous roads or drive to get to bikeways and trails
- Connect bikeways and paths to all City facilities
- Connect bikeways and paths to other cities
- Connect paths to each other and to neighborhoods.
- Historic-themed paths
- Use power line rights-of-way for paths

Cyclists

- Main roads are dangerous: heavy traffic, speed, overpasses and underpasses
- Need more on-road lanes (54% of comments) and more off-road paths (46% of comments)
- Need a complete network that includes bikeways, secure bike parking, and showers
- Cyclists on narrow roads create hazardous situations for themselves and for motorists
- Bikes don't trip the detectors for traffic lights at intersections.



Citizens discuss the Plan with staff at Kempsville Recreation Center



A girl rides her scooter on the Atlantic Avenue feeder road

- Sidewalks aren't bikeways
- Driveways cross paths, causing problems.

Pedestrians

- There are not enough crosswalks. Need more crosswalks, more curb ramps, and better attention to road crossings.
- It's difficult to walk across some roads, even with crosswalks, because traffic is heavy and roads are extremely wide.
- Lights need to be timed to allow enough time to cross
- Curb ramps often do not allow safe passage of a wheelchair or bike
- In many areas, sidewalks are missing or in poor repair

Equestrians

- Equestrians don't need much more than parking and long loops.
- West Neck Creek & Buffington House could be very good for equestrians but there is no parking.

Maintenance

- Keep vegetation trimmed along paths
- Clean up debris in bikeways and trails
- Road shoulders are often not maintained well (debris, potholes)

General

- Need more signs and pavement markings indicating bikeways and trails.
- Want historic-themed paths
- Want more scenic paths
- Existing paths need better lighting
- Plan for bikes and pedestrians in construction circulation planning
- There are no facilities in the southern part of the city.
- Include bike-pedestrian facilities in new roads, developments and retrofits
- Heavy traffic makes on-road riding dangerous
- Hard to walk across some roads, even with crosswalks
- Sidewalks missing or in poor repair
- Trashcans and driveways intrude in paths.
- Equestrians don't need much more than parking and long loops.

Overview of Facilities Goals

The public comments lead directly to four broad goals (6A-6D) and specific goals under them. The goals are summarized here and dealt with in more detail on the following pages after a general approach is described for meeting the goals.

For the most part, these goals and the tasks which follow later are framed in “unconstrained” terms, as if funding and field conditions did not constrain the work; however, funding and field conditions DO constrain the work in significant and sometimes very challenging ways. Some individual tasks and projects will be found to be impracticably expensive or costly out of proportion to the benefits they might bring. Many have no funding source at present. Many tasks and projects will have political, regulatory, design, or other practical limitations.

As the City moves forward with implementing this Plan, each of the planners, designers, reviewers, managers and leaders involved must weigh these practical considerations and collaborate to find the optimal solutions and balance the competing needs and issues. This Plan:

- states the vision expressed by BTAC and the citizens;
- frames the goals that are part of that vision; and
- outlines tasks that can help achieve those goals; but
- does not, and should not be construed to, require the City to undertake impractical activities and projects.

Goal 6A: Virginia Beach will have a comprehensive bikeways and trails system that serves all residents and visitors throughout the City.

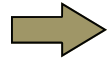
This goal responds directly to the themes about the city not being bike-friendly.

- Goal 6A.1: Virginia Beach will build and improve new bikeways and trails as needed.
- Goal 6A.2: Virginia Beach will be increasingly accessible to people with disabilities.
- Goal 6A.3: Virginia Beach will use the process of repaving and restriping roads to provide some new on-road bike facilities.
- Goal 6A.4: Virginia Beach will take advantage of opportunities in the 6-year Capital Improvements Plan to enhance the bikeways and trails system.
- Goal 6A.5: Bikeways and trails will follow linear corridors developed for other purposes, such as rail and utility corridors and unbuilt road rights-of-way.
- Goal 6A.6: Virginia Beach will have trails devoted to particular themes.
- Goal 6A.7: Virginia Beach will have suitable facilities for equestrian use.
- Goal 6A.8: Support facilities will be available throughout the City, including convenient and secure bike parking.

Goals describe desirable end results or conditions towards which the City will strive, and **Tasks** describe the actions that will help the City achieve those goals.

Top-Priority Goals as selected by BTAC are highlighted here by underlining and brown arrows.

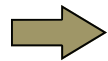
- Goal 6A.9 Greenways will follow logical corridors and provide green infrastructure benefits.



Goal 6B: Virginia Beach's comprehensive bikeways and trails system will connect neighborhoods and destinations to each other.

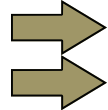
Goal 6B responds directly to the themes about connectivity issues. One of the big problems that citizens reiterated frequently was that bikeways and trails don't connect to each other or to neighborhoods or predictable destinations.

- Goal 6B.1: Gaps in the existing system will be found and filled.
- Goal 6B.2: Bikeways and trails will connect to public facilities, especially schools, libraries, parks, recreation centers, and transit facilities.
- Goal 6B.3: The oceanfront will connect to the rest of the City.
- Goal 6B.4: Bikeways and trails will connect the military bases to each other.



Goal 6C: Virginia Beach will treat bike-ped facilities both as valued recreational amenities and as integral components of the City's transportation matrix.

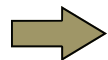
For the sake of citizens and visitors who walk, bike or use other active modes for transportation, the City's transportation facilities must accommodate those modes. Roads must be designed with sidewalks and the appropriate choices of bike facilities.



- Goal 6C.1: Virginia Beach should have a Complete Streets policy.
- Goal 6C.2: The City's land development regulations will foster the construction of new bike-ped facilities.
- Goal 6C.3: Safety and maintenance issues will be systematized and properly managed.

Goal 6D: Virginia Beach will be responsive to citizen suggestions for the bikeways and trails system and will work towards consensus.

This goal addresses the wealth of citizen comments about specific sites, routes and corridors.



- Goal 6D.1: Staff from Parks & Recreation will continue to engage citizens, civic groups, City boards and commissions, and other stakeholders to receive their input into issues related to bikeways and trails and to learn about specific needs and ideas.
- Goal 6D.2: Staff will work towards consensus on the diverse suggestions of citizens about issues in their neighborhoods.

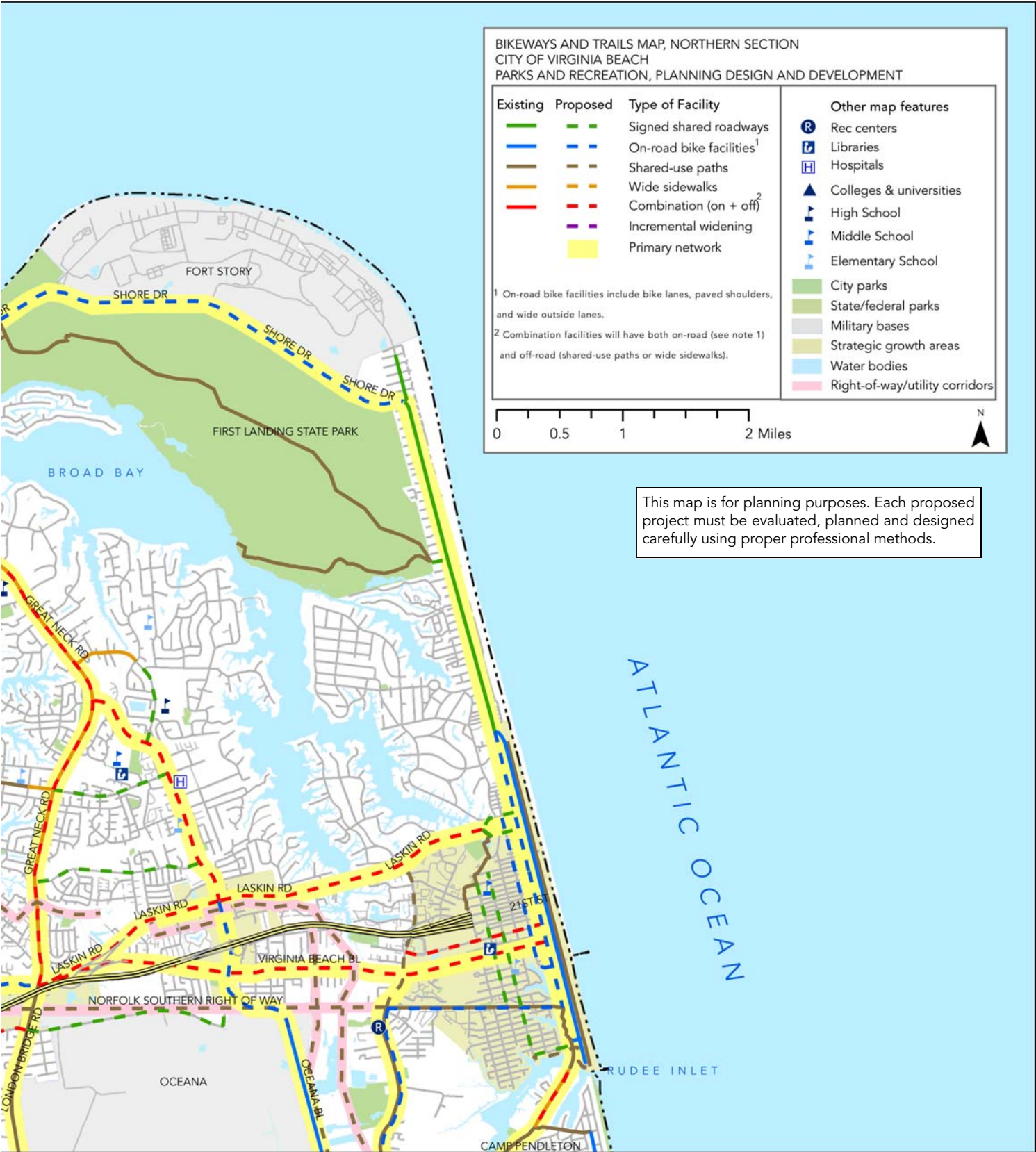
Proposed Bikeways and Trails Maps

The maps on the following pages show the long-term vision for the proposed system. New features shown on the map are neither prioritized nor fiscally constrained. Solid lines indicate existing bikeways and trails, and dashed lines indicate proposed bikeways and trails, as the legend indicates.

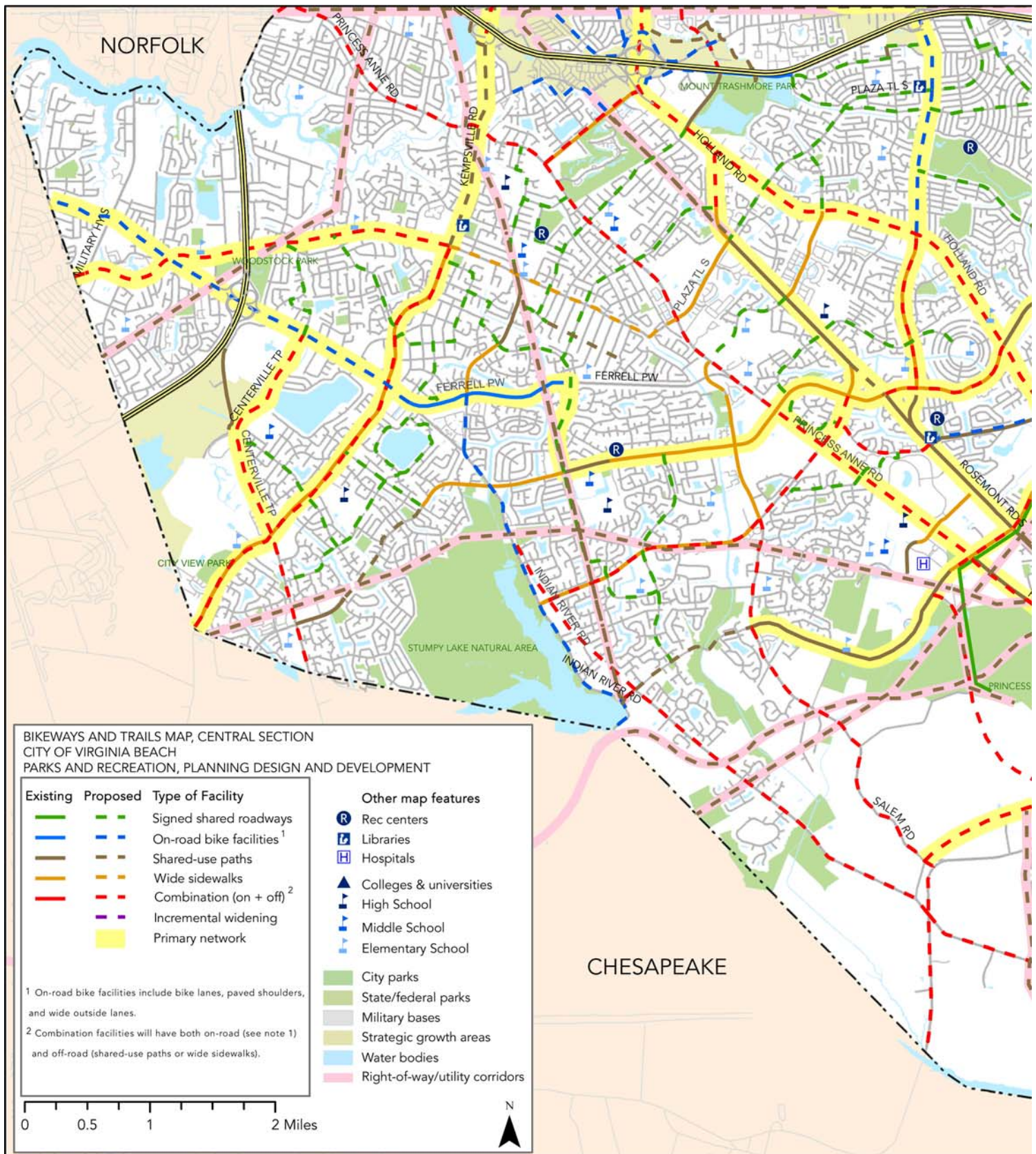
Top-Priority Goals as selected by BTAC are highlighted here by underlining and brown arrows.

The maps intentionally omit bikeways and trails within City parks.

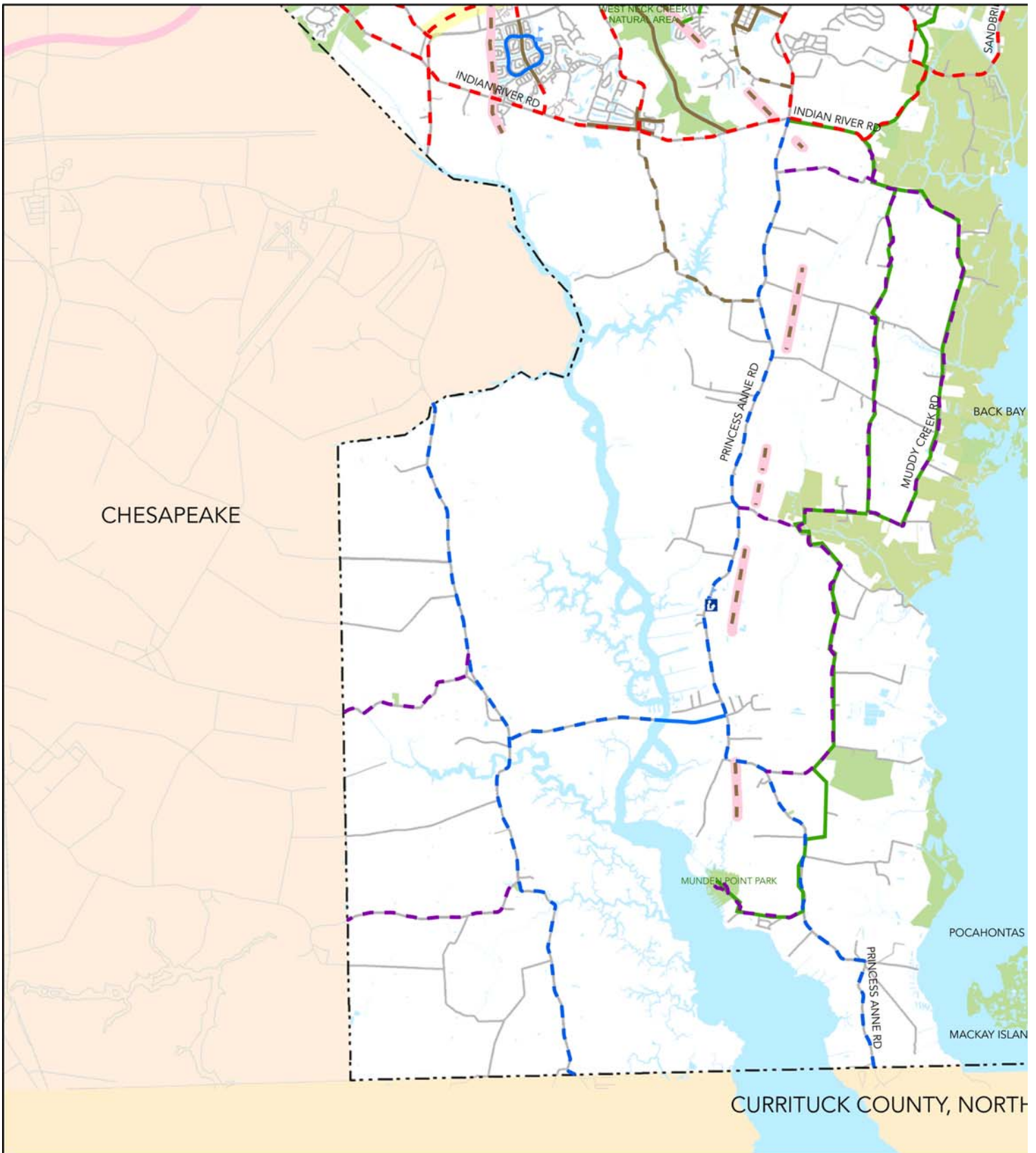


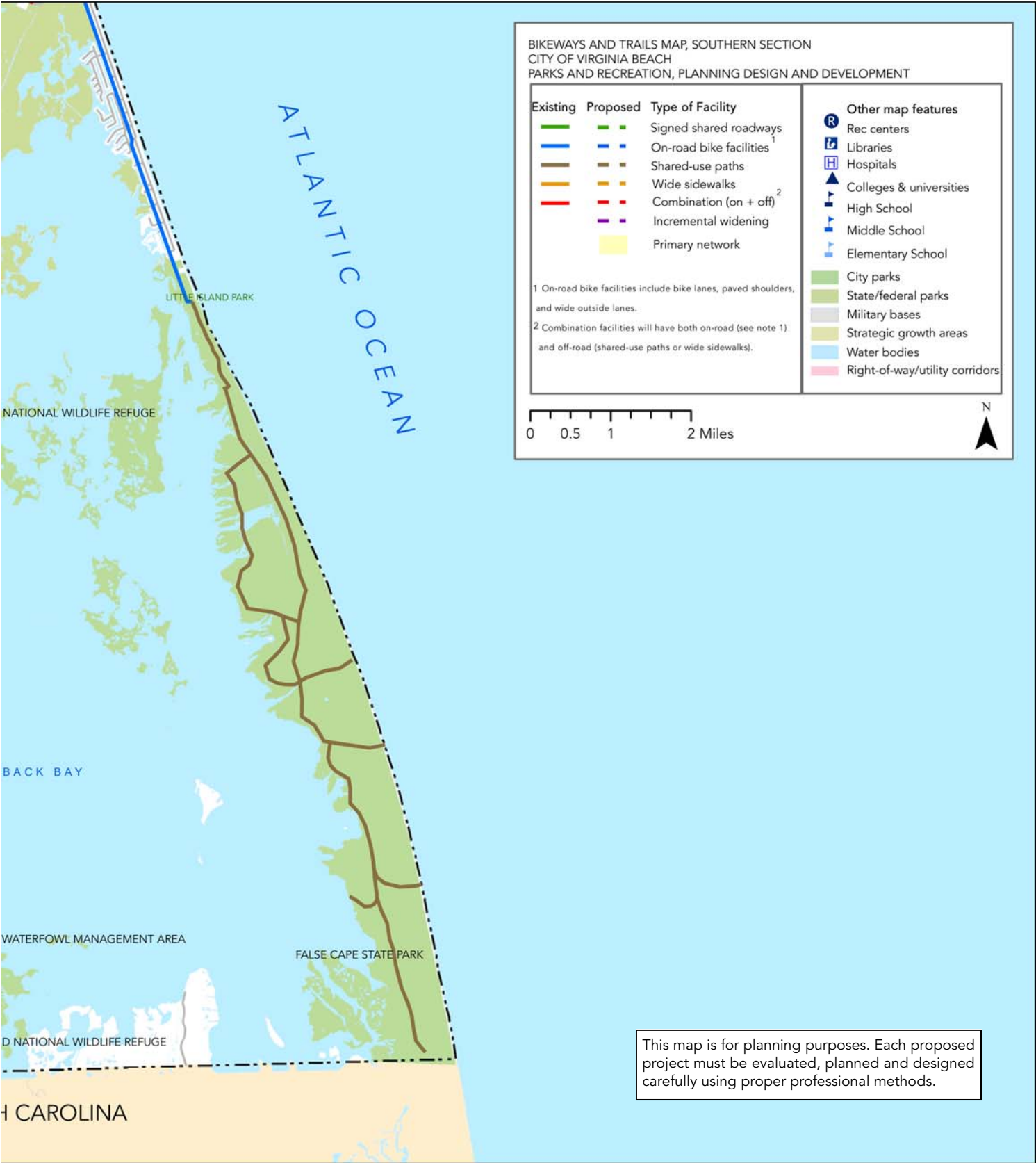


This map is for planning purposes. Each proposed project must be evaluated, planned and designed carefully using proper professional methods.











A sidewalk ends abruptly.

Approach

Accomplishing these goals will be challenging, so it is important to outline an approach to achieving the individual goals and the total end goal.

Fix problems and fill gaps in the existing system

Too many bikeways and trails in the existing system have discontinuities. Often, one segment of a trail almost connects to another but doesn't quite get there. Some roadway crossings don't accommodate bikes and pedestrians, forcing people to improvise to get where they're going. Sidewalks have open gaps or have settled unevenly, creating hazardous bumps and lips. Some of these problems could be fixed quickly and without excessive cost.

Accept constant, incremental improvement rather than expecting immediate completion of the system

The current economic conditions do not give anybody a magic wand to make all of these improvements quickly. The City must be patient and accept a modest pace, but this does not mean to continue doing everything else as before; rather, it means committing to approach new projects differently:

- To work towards making every new building project and renovation as bike-friendly and pedestrian-friendly as possible.
- To work towards building new roadways with the bike-ped accommodations shown in this Plan, even if the connections at each end are less than ideal. If properly planned, those connections can be improved as part of a future project.

Initially pursue projects with lesser challenges and obstacles

Not all projects are large: some might be completed without excessive costs or difficulties. For example, when Aragona Boulevard was repaved in 2010, new edge stripes were placed several feet in from the edge of pavement, with the remainder of the pavement becoming a *de facto* paved shoulder suitable for bike use. Also, some roadways will need only "bike route" signs to become Signed Shared Roadways.

Seek grants and partnerships to accomplish larger projects

Virginia Beach has limited funding for the planning and construction of bikeways and trails. Some projects can be completed most effectively with outside help. State and federal grant programs have been designed to advance particular goals that parallel the goals of this Plan. Corporate citizens often want to do good things for their home localities. Each of these approaches can require an investment by the City: for example, many grant programs require a cash or in-kind match from the locality which could require a special appropriation. A listing of grant programs is provided in the Appendices.

"Never underestimate the cumulative impacts of numerous small incremental changes."

- Unknown

Goals & Implementation Tasks

Goal 6A: A Comprehensive System

Virginia Beach will have a comprehensive bikeways and trails system that serves all residents and visitors throughout the City.

A TOP-PRIORITY GOAL

Diverse needs

The City must serve diverse active transportation needs. There are different types of cyclists and different types of pedestrians, plus other modes.

The types of facilities utilized by bicyclists and pedestrians are as varied as the people who use them. Pedestrians run, jog, stroll, walk with pets, and often do these things on their way or as the means to get somewhere. Cyclists vary in their abilities, physical fitness, skill levels, comfort around motor vehicles, goals, purposes, needs and desires.

Participants in the public input process have spoken loudly and clearly about their preferences for where they ride their bikes, and the message is that there are two distinct camps. Some people speak passionately about being on the road and the problems of off-road facilities; others speak equally passionately about being off the road and the problems of being on-road.

Bike lanes and bike paths accommodate different types of users. Both are important for a complete network. Among the public comments, the split was an even split, more or less: about 54% favoring on-road lanes and 46% favoring off-road paths. The good news is that nobody must pick one side over the other: the City can do both types of facilities, although perhaps not both in every corridor: some corridors will have just one or the other. Each type needs to be part of a complete network so that users who prefer one over the other can get around most of the City that way.

This duality points to a need for a system with both on-road lanes and off-road paths in overlapping networks. Each network should be essentially complete in and of itself, and when the two networks are joined together, the larger system should be more thoroughly complete. The total system should be like a swatch of plaid fabric: everywhere on the fabric is close to each color of the plaid, and one can follow each color to anywhere else on the fabric.

THE ON-ROAD NETWORK

Primary Commuter Network

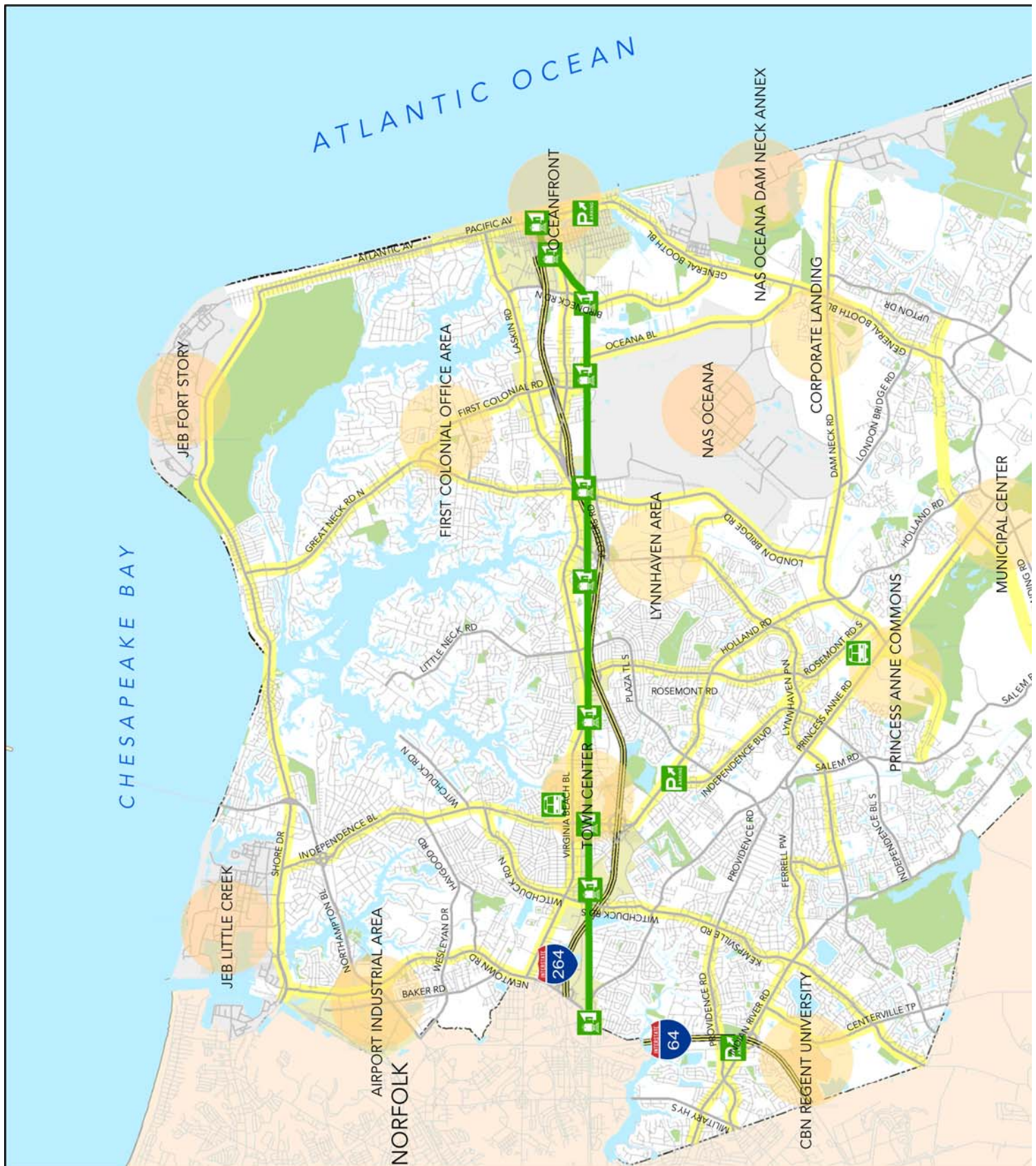
The City's Master Transportation Plan (Chapter 6 of the 2009 Comprehensive Plan, at www.ourfuturevb.com) includes a "Primary Bike Network Commuter Route Map" which identifies "key roadway corridors that link the City's major employment destinations, transit routes and

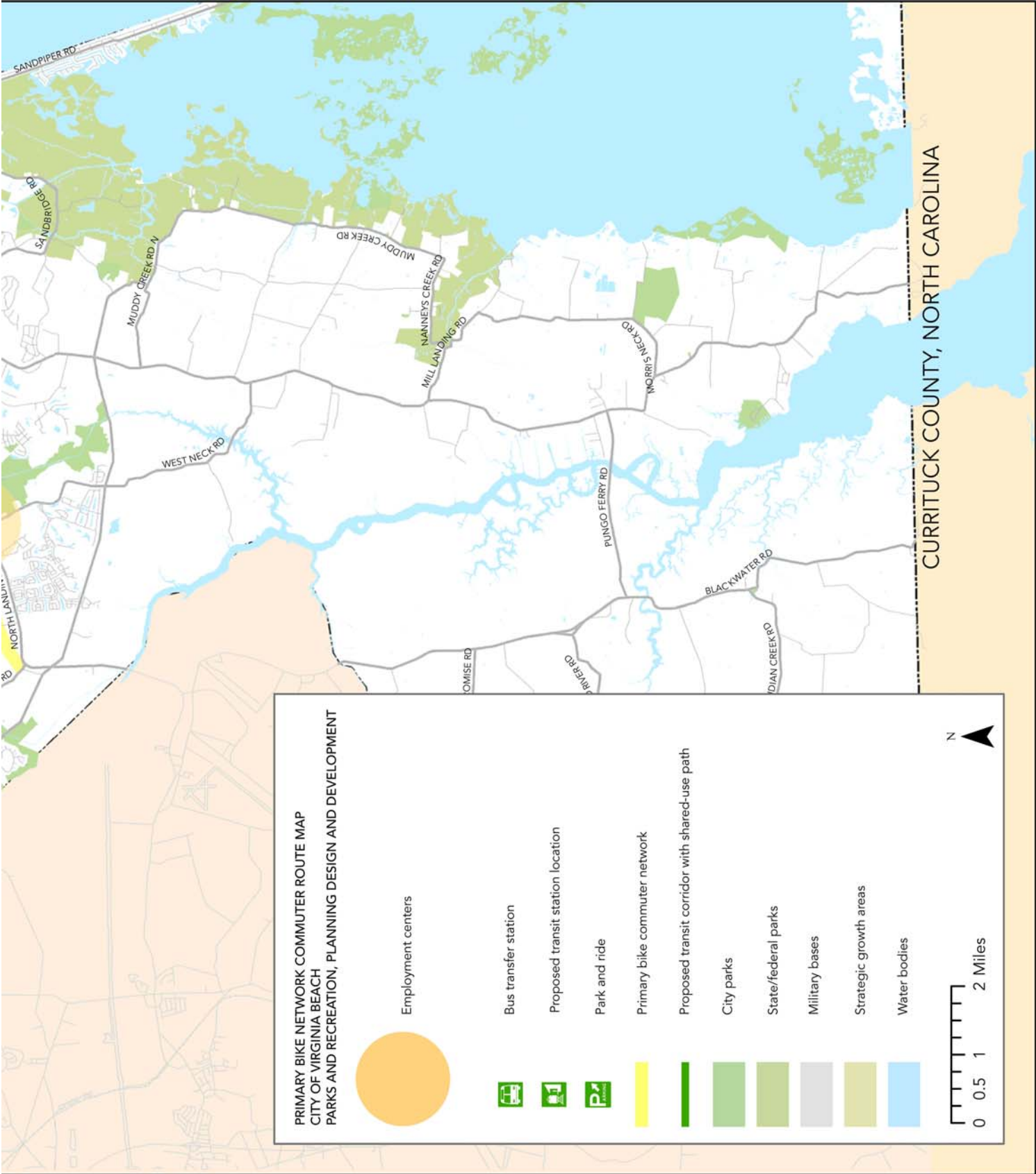


A cargo bike in use. Photo courtesy of Steven Vance.



Plaid fabric serves as a metaphor for the overlapping networks of on-road lanes and off-road paths.





Engineering & Facilities

Chapter 6



A girl rides her bike on the Atlantic Avenue feeder road, an on-road segment of the Maritime Trail Route.



A bike commuter. Photo courtesy of www.pedbikeimages.org / Elly Blue.

neighborhoods for non-recreation based bike and pedestrian trips.” The map is reflected in this Plan’s map of proposed corridors.

Inclusion of a road in this network does not imply that the road is ready for most bike commuters to use. The network is forward thinking, not a reflection of the current situation. The existing roads in the Primary Bike Network Commuter Route Map are difficult, intimidating places for most cyclists, due to the combinations of large traffic volumes, high speeds, and lack of accommodations.

Chapter 6 of the Comprehensive Plan (at ourfuturevb.com) indicates that each of these roads should be improved with bike lanes or wide outside lanes, but careful study will be needed for safety issues before beginning any improvements. If or when each road is improved as suggested, that road will become a valuable corridor within the larger network for commuting and other bike use.

Secondary Commuter Network

The 2004 Bikeways and Trails Plan showed a “Secondary Network” of routes connecting neighborhoods. This network is enhanced here as a collection of long continuous roadways that will allow cyclists of varying abilities and varying confidence with traffic to travel across the City, having minimal contact with motor vehicles. Most legs of this network will be on low speed roads through neighborhoods, so this secondary network also could be called “neighborhood bike routes.” Examples include Silina Drive, South Boulevard and Edinburgh Road. Most of this network will be marked using the standard green “BIKE ROUTE” sign, enhanced with a destination and a distance to promote wayfinding and to encourage people about where they can go on their bikes.

Southern Roads: Rural Collectors

The southern half of the City is almost completely rural and agricultural, and it is a very popular place for recreational cycling, due to the peaceful surroundings and pastoral scenery. Unfortunately, that popularity has led to tension between cyclists and motorists as they attempt to share the narrow roads.

The City’s Primary Roadway Network Plan Map in the Master Transportation Plan (Chapter 6 of the 2009 Comprehensive Plan, at www.ourfuturevb.com) shows City roadway classifications and typical design features for each classification. In the rural area of the City, south of Indian River Road, four roads are designated as “rural collectors”: Princess Anne Road, Blackwater Road, Pungo Ferry Road, and part of Sandbridge Road. This Bikeways and Trails Plan proposes nothing new for these roads and only reiterates the Comprehensive Plan.

Using the typical design features for rural collectors as a guideline, the City can improve the geometry and drainage of these roads as well as provide paved shoulders to improve travel conditions for all users. Doing this also will provide an appropriate accommodation for cyclists. The City currently

has no specific plans to renovate these roads; rather, the roads will be improved incrementally as necessary and as funding can be provided.

Southern Roads: Non-Collectors

Other southern roads are frequented by cyclists as well, but these roads often have several problematic features: narrow pavement, tight curves, limited sight distance, constricted shoulders, deep drainage ditches, and agricultural operations right up to the edges of the ditches. Sharing these roads can be difficult and hazardous. Both cyclists and residents report frequent near misses, although, fortunately, few crashes are documented.

The costs and impacts of needed improvements have made it difficult to begin. City staff and elected officials have been concerned about the costs of acquiring enough right-of-way to improve the roads fully to modern standards, on top of the costs of the improvements themselves. It is hard to justify large expenses when the traffic safety record on these rural roads has not been troubling.

Satisfying these competing interests requires a focus on making modest, incremental, interim improvements as opportunities arise, such as when a bridge is replaced, a swale is renovated, or an intersection is improved. Important goals of the improvements would include:

- Widening the pavement to make sharing easier
- Improving road geometry, especially horizontal radii of curves
- Improving sight distance through curves
- Minimizing impacts on adjacent properties

Central to this approach is working within the existing rights-of-way and avoiding any improvements that require the purchase of additional right-of-way. Each project should be evaluated carefully on a case-by-case basis for interim improvements that would optimize the results within the existing conditions. For example, adding to the pavement width might be enough to satisfy the competing issues without triggering adjacent upgrades, right-of-way acquisition, and additional costs. Design details like signing and edge striping could be critical to the success of these incremental improvements.

THE OFF-ROAD NETWORK

Shared-Use Paths and Off-Road Trails

Many users need or prefer not to be on the road, including pedestrians, skateboarders, and equestrians. Many people prefer to ride their bikes off-road rather than on-road, for a variety of reasons. For these users, a variety of off-road facilities are most appropriate. Some will follow roadways and others will not. One of the greatest challenges in building paths and trails is getting the rights-of-way: AASHTO and VDOT guidelines for a shared-use path can require over 20 feet from the back of curb to the edge of the right-of-way: an 8-foot setback, a 10-foot path, and a 3-foot path shoulder.



A family takes a break while riding.
Photo courtesy of Bikes Belong.

Greenways

A greenway is a linear vegetated or open space which provides for a continuous natural corridor. Greenways can be designed for recreational use and non-motorized transportation, while providing opportunities for biodiversity, scenic beauty, floodwater storage, and habitat for wildlife.

Numerous opportunities seem feasible for developing greenways that contribute to the City's quality of life and enhance the bikeways and trails system. Three greenways are mentioned in Chapter 7 of the 2009 Comprehensive Plan (at www.ourfuturevb.com):

- Thalia Creek Greenway, wrapping around the south and east sides of Town Center in Pembroke
- Stumpy Lake/North Landing Greenway, following Indian River Road from Stumpy Lake to North Landing River and Back Bay
- West Neck Creek Greenway and West Neck Creek Natural Area Park, along public lands from Indian River Road to near the courthouse area and farther north to touch neighborhoods along Holland Road

In addition to their value for access to waterways and recreational use, these greenways and others can be valuable links in the network of bikeways and trails for transportation. Trails in greenway corridors can have natural surfaces, hard pavement (due to traffic volume), or raised surfaces such as boardwalks (due to their proximity to wetlands and waterways). Each case should be reviewed individually to determine the appropriate treatments.

Sidewalks

Sidewalks are the most common place for pedestrians. They are located sporadically in the residential areas but more commonly around commercial areas. Even so, the City's sidewalks don't comprise a complete, continuous network.

Virginia Beach allows bikes on sidewalks except in Town Center and Resort Area. These can be valuable places for kids to learn how to bike, build their skills, and learn the ropes, including how to share the space with other users.

For now, many sidewalks also must serve as connectors between bike facilities that don't connect otherwise. For example, the 10-foot-wide Dam Neck Trail ends at a sidewalk near the intersection with General Booth Boulevard. A 4' sidewalk continues around a shopping center to the 10-foot-wide General Booth Trail towards Croatan.

STRATEGIC GROWTH AREAS

The 2009 Comprehensive Plan (at www.ourfuturevb.com) identifies 8 Strategic Growth Areas (SGA) which are intended to absorb the City's continuing growth as an urbanizing redevelopment form, rather than furthering suburban-form greenfield development of the City's dwindling stock of undeveloped lands. Six of the SGAs lie along the central east-west corridor of I-264, Virginia Beach Boulevard, and the future transit corridor.

Two of the 5 guiding principles outlined for SGAs touch heavily on bike-ped issues:

- “Compatible mix of uses” aims for “an attractive, pedestrian-oriented, urban environment”, which brings with it a “[r]eduction in automobile dependency” and “development of a transit-oriented and multi-modal transportation system.”
- “Range of transportation options” focuses on light rail transit service, less automobile use, and “[i]ncreased opportunities to commute by walking and biking.”

The portion of the 2009 Comprehensive Plan which describes the individual SGAs is replete both with broad references to the need for bike-ped facilities and with specific facilities to be included, such as “Creekwalk” along Thalia Creek, near Princess Anne High School, and Cleveland Street becoming a “complete street.”

Since 2008, master plans have been developed for four of the SGAs, and each new plan has emphasized bike-ped facilities more than the previous plan. These plans can be found at www.ourfuturevb.com under “Document Library”. This Bikeways and Trails Plan is intended to fit the SGA plans into a larger system and provide policies and guidelines to implement those SGA plans. Planning and design for any project in the SGAs should begin by consulting both the SGA plans and this Bikeways and Trails Plan.

Clearly, bike-ped facilities will be important in SGAs, and as part of the larger whole, these bike-ped facilities must link to those in the rest of the City. If or when a shared-use path is completed along the transit corridor, it will link the SGAs and become a central east-west spine for the City-wide system.

Goal 6A.1: Virginia Beach will build and improve new bikeways and trails as needed.

The maps on pages 6-20 to 6-25 show dashed lines where new bikeways and trails are proposed. The list is long and runs the gamut, from bike lanes and paved shoulders to shared-use paths and greenways. Many of the individual projects are mentioned among the other goals and tasks, and many other projects should arise as the Plan is implemented and studies are completed. Of all the projects outlined, BTAC selected the following as its Top Priority Infrastructure Projects (in no particular order):

- Bike lanes on Shore Drive, from Kendall Drive to Atlantic Ave
- A shared-use path along the transit corridor
- Nimmo Trail from Albuquerque Drive to Sandfiddler Road
- Thalia Creek Greenway
- Bike-pedestrian connection over I-264, from Mt. Trashmore to Thalia Creek Greenway
- Bike route signs on new “signed shared roadways”

- A shared-use path along Buckner Boulevard from Rosemont Road to near Independence Boulevard

Task 6A.1.1: Continue refining information about each infrastructure project described in this Plan, in preparation for more detailed design.

For projects already in the CIP, the parameters of the project and its budget have been defined and generally cannot change much.

For new projects and stand-alone projects, Parks & Recreation staff should outline the basics of the project, working with other departments as needed:

- a map at the appropriate scale
- locations and types of the proposed bikeway and trail improvements
- estimated costs for both development and ongoing management
- partners and likely funding sources
- priority and timeline

Task 6A.1.2: Develop an annual calendar of grants and projects.

- Each year, BTAC should review and revise the project priorities and outline a work plan for the coming year.
- Each year, staff should outline the application cycles for the various funding sources, match projects to those sources, and prepare applications as needed.

Goal 6A.2: Virginia Beach will be increasingly accessible to people with disabilities.



Crossing a multi-lane road can be challenging.

Task 6A.2.1: Repair or replace curb ramps to current standards.

Many sidewalks and curb ramps were built before the 1991 Americans with Disabilities Act (ADA). Many that were built since the ADA was passed were designed properly following the practices of the time, but current standards have changed. For instance, some curb ramps were built using exposed aggregate surfaces, which were considered proper at the time but are not now.

- Work with advocates and with the Mayor's Committee for People with Disabilities to identify and prioritize curb ramps and sidewalks that need attention.
- Repair or replace curb ramps, as prioritized.
- During repaving projects, repair or replace curb ramps along accessible routes within the project corridor.

Task 6A.2.2: Infill gaps in sidewalks.

Some sidewalks have short gaps where the sidewalk is missing or in poor repair.

- Work with the Mayor's Committee for People with Disabilities to identify problem sites
- Build or rebuild the portion of sidewalks to fill those gaps.

Task 6A.2.3: Identify and remedy intersections that need crosswalks and/or Accessible Pedestrian Signals (APS).

- Work with the Mayor’s Committee for People with Disabilities to identify problem intersections
- Work with PW-Highway Operations and PW-Traffic Engineering to improve the timing of pedestrian cycles at existing intersections
- Where intersections have three crosswalks but should have four, provide the crosswalks and adjust the signal timings

Task 6A.2.4: Review City road design standards for bike-ped issues.

Across the nation, road design standards have evolved over time to foster safe, efficient travel for motor vehicles, but some of the current standards can make travel more difficult for non-motorized road users. The Federal Highway Administration (FHWA), thru its Pedestrian and Bicycle Information Center (PBIC), is suggesting new approaches to road design standards which can improve conditions for non-motorized road users.

Goal 6A.3: Virginia Beach will use the process of repaving and restriping roads to provide some new on-road bike facilities.

Most of the City’s road network is already built. For most people, wayfinding around the City is based on the major road network.

When practicable and feasible, and upon availability of funding, the development of limited on-road bikeway related improvements may be evaluated and given due consideration as part of the City’s roadway maintenance repaving operations.

On-road bike facilities include bike lanes, paved shoulders, and wide outside lanes.

Task 6A.3.1: Restripe existing roads for bike facilities.

Repaving of existing roads happens periodically based on need. PW-Highway Operations evaluates all roads in the City biennially using the Pavement Condition Index (PCI). The pavement for each segment of roadway is rated along objective measures, and those segments with the greatest needs are prioritized for repaving. PW-Highway Operations reviews the list and prioritizes repaving for each calendar year.

- P&R staff will work each year with PW-Highway Operations to review the upcoming year’s schedule for opportunities to restripe differently to accommodate cyclists & pedestrians.
- When an existing road is repaved, evaluate its potential to be restriped to include 4-foot to 5-foot bike lanes or 14-foot wide outside lanes.
- Beginning around Oct/Nov, search for opportunities in the preliminary repaving list with PW- Highway Operations. Review the opportunities with PW-Traffic Engineering, which might need to conduct careful studies to avoid compromising traffic flow and safety. By June, outline with PW-Highway Operations how each repaved road should be restriped.

A TOP-PRIORITY GOAL



Dam Neck Road in the process of being restriped with bike lanes.



The new edge stripes along Aragona Boulevard left a paved shoulder suitable for cycling and walking.

Over time, roadway by roadway, this can help achieve a complete system.

Task 6A.3.2: Perform “road diets”

“Road diets” involve reducing the number of travel lanes in a roadway and converting the remaining pavement for other uses. Road diets can be useful where a road was overbuilt, or when the design has become obsolete or improper to the current conditions. In such cases, some localities have found it beneficial to replace one or more motor vehicle lanes with bike lanes and/or on-street parking. Repaving a road could be an opportunity to consider a road diet.

- Review the opportunities with PW-Traffic Engineering, which might need to conduct careful studies to avoid compromising traffic flow.

Goal 6A.4: Virginia Beach will take advantage of opportunities in the 6-year Capital Improvements Plan to enhance the bikeways and trails system.

Many of the bikeways and trails proposed in this Plan may be implemented as parts of current or planned projects in the Capital Improvement Program (CIP). Ideally, coordination should begin as early as possible in the planning and design phases to ensure that the goals of this Plan are addressed adequately.

Unfortunately, many of the CIP projects began before the bikeway and trail facilities were planned, making it difficult to weave them together; however, the City can still gain benefit by evaluating the projects and determining how best to accomplish the goals of this Plan.

A summary review of roadway CIP projects in the approved FY 2010/2011 Resource Management Plan reveals the following projects which either include a component of, or should coordinate with, the proposed bikeways and trails system. This list is preliminary: each project needs careful review to determine the feasibility of weaving the bikeway or trail component into it, and then exactly how to make the new project work well. This list also is not comprehensive: bike-ped issues will be relevant in the planning and design of many other CIP projects, especially intersection and signalization improvements. The City might need to pursue additional funding from other sources to implement some of the specific recommended facilities.

Both on-road and off-road facilities

- 2.116.000 Shore Drive Corridor Improvements - Phase II (Partial)
- 2.118.000 Shore Drive Corridor Improvements - Phase IV
- 2.156.000 Laskin Road - Phase I (VDOT) (Partial)
- 2.158.000 Holland Road - Phase VI (VDOT) (Partial)
- 2.165.000 Laskin Road - Ph. II (First Cities Project) (Partial)
- 2.256.000 Indian River Road - Ph. VII (1st Cities Project)(Partial)
- 2.404.000 Holland Road

Shared-Use Paths

- 2.089.000 Southeastern Parkway & Greenbelt (Partial)
- 2.107.000 Seaboard Road
- 2.149.000 Birdneck Road - Phase II (VDOT)
- 2.152.000 Elbow Road Extended - Ph. II(First Cities Project)
- 2.167.000 Lynnhaven Parkway - Phase XI (VDOT) (Partial)
- 2.195.000 Princess Anne Road Phase VII
- 2.402.000 Centerville Parkway Phase II
- 2.403.000 Centerville Parkway Phase III
- 2.406.000 Lynnhaven Parkway

Sidewalks

- 2.300.015 Cypress Avenue Sidewalk
- 2.300.020 Old Princess Anne (Bellamy to Timberlake)
- 2.300.021 Old Princess Anne (Dunhill to Timberlake)
- 2.300.022 Regent University Sidewalk
- 2.300.024 Mediterranean Avenue Sidewalk
- 2.300.026 Old Providence Road Sidewalk (5424 to 5460)
- 2.300.028 N. Lynnhaven Sidewalk (Johnson to Congress)
- 2.300.035 West Great Neck Road Phase II Sidewalk

Task 6A.4.1: Work across departments to compare the CIP to this Plan for opportunities.

Both current and proposed projects should be reviewed at the earliest stage possible so that they can be planned and designed with the least disruption to the work flow.

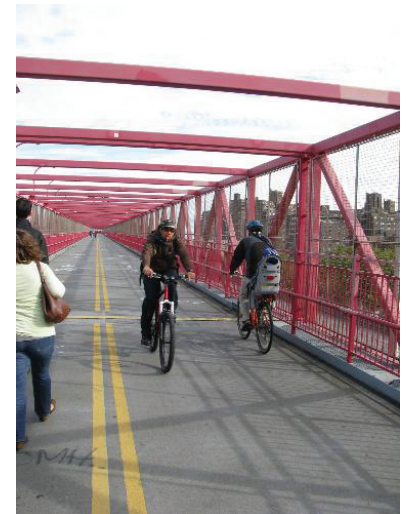
Task 6A.4.2: Plan and design new CIP projects so that they include bike-ped facilities that are appropriate, practicable and feasible.

Roads and bridges especially should include the bike-ped facilities shown in this Plan, but other projects can provide opportunities, such as utility construction and storm water management.

Federal law is explicit on this issue when it comes to bridges:

(e) BRIDGES.—In any case where a highway bridge deck being replaced or rehabilitated with Federal financial participation is located on a highway on which bicycles are permitted to operate at each end of such bridge, and the Secretary determines that the safe accommodation of bicycles can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations.
- 23 USC §217

VDOT uses two thresholds for “reasonable cost”:



A bridge for bikes and pedestrians.
Photo courtesy of
www.pedbikeimages.org / Laura Sandt.



The Norfolk-Southern corridor, also known as the "transit corridor".

- 10% of the total project cost when not a designated bike-ped facility
- 20% of the total project cost when a designated bike-ped facility

(VDOT, "Bicycle and Pedestrian Accommodation Decision Process For Construction Projects", January 2008, <http://www.virginiadot.org/programs/resources/BikePedDecisionProcess.pdf>)

Goal 6A.5: Bikeways and trails will follow linear corridors developed for other purposes, such as rail and utility corridors and unbuilt road rights-of-way.

Three rails to trails corridors exist in the City: the Cape Henry Trail, the Norfolk Avenue Trail, and the multi-use trail along South Independence Boulevard. One rails with trails opportunity has been discussed along the former Norfolk-Southern rail corridor, which traverses a highly urbanized portion of the City, and several other opportunities exist, such as along a portion of Northampton Boulevard. The rights-of-way for some other rail corridors have reverted or been sold to adjacent landowners, which compromises the opportunity to use those corridors for bikeway and trail projects.

Task 6A.5.1: Develop a shared-use path along the former Norfolk-Southern rail corridor (the transit corridor).

Rail service along the former Norfolk-Southern rail line has been discontinued and City Council voted in October 2010 to acquire this land as a transportation corridor. A feasibility study for installing light rail or bus rapid transit in this corridor is currently underway. City Council is scheduled to decide in late 2011 on whether and how to move forward with transit in this corridor.

Two regional trails are planned to connect to this corridor: the South Hampton Roads Trail and the Beaches to Bluegrass Trail. More information is provided about them under "Regional Connections".

The City of Virginia Beach is conducting its own feasibility study for a shared-use path which would share the abandoned rail right-of-way with the transit facility where possible and use adjacent lands where necessary. This corridor will provide a direct link from the Norfolk City line to the Oceanfront, passing through Town Center and five other Strategic Growth Areas in Virginia Beach. A shared-use path along this corridor would allow non-motorized traffic to traverse the entire city with few vehicular conflicts.

The transit line will create other needs related to bikeways and trails:

- The transit vehicles should have proper accommodations for bikes.
- Pedestrians must be able to travel to the transit stations. This could require significant improvements to sidewalks and bikeways radiating out from the transit stations. As the plans for the transit project are refined, planning for those improvements must be included.

In 2010, state law was changed to "[ensure] that railroad rights-of-way may be used for recreational purposes and for access to lands being used for



A bike rack on an HRT bus.

recreational purposes without the [owner or] easement holder owing a duty of care to the user." (Virginia Code §29.1-509) This softens the problem of liability when railroads allow recreational use along their rights-of-way.

Task 6A.5.2: Develop a shared-use path in the unbuilt right-of-way purchased for the Nimmo Parkway, from Albuquerque Road to Sandbridge.

Task 6A.5.3: Review other corridors for opportunities.

Several corridors are shown on the Bikeways and Trails System Map but need more careful examination, including abandoned rail corridors, power line corridors, and corridors for water and sanitary sewer lines.

- Work with PW-Public Utilities, Dominion Virginia Power, Hampton Roads Sanitary District (HRSD), gas companies, other utility providers, and PW-Real Estate to identify candidate corridors, scope out their potential value for bikeway and trail use, and negotiate how to develop whatever new facilities are deemed feasible and valuable.
- Each project will need special attention on several issues, including:
 - Legal constraints of the easements, such as whether they have expressed purposes that allow or disallow bikeways and trails,
 - Liability issues for the utility providers and landowners,
 - Proper access for utility maintenance vehicles, including how they share the space with bikeway/trail users,
 - Routine maintenance like mowing along the bikeways and trails,
 - Building the bikeways and trails to handle the weight and other factors of the maintenance vehicles and operations, and
 - Managing the repair or reconstruction of items damaged during the maintenance of other items. This usually might mean repairing a bikeway or trail after repairing a utility item, but it could go either way.

Task 6A.5.4: Develop shared-use paths (or other facilities, as appropriate) on unbuilt road rights-of-way.

Work with citizens, neighborhood groups and stakeholder groups to identify these opportunities and to develop consensus on the proper bikeway and trail facilities for each situation.

Goal 6A.6: Virginia Beach will have trails devoted to particular themes.

Task 6A.6.1: Develop trails with historic themes.

Example: The Bayside History Trail links seven prominent historic sites along the western branch of the Lynnhaven River. Examine the opportunities to create other similar trails, including one idea to link the City's 50 most historic sites.

- Work with the Historic Preservation Commission to study the opportunities and develop the trails.



Aerial view of the proposed Nimmo Trail corridor. Photo by Pictometry International Corp.



Aerial view of a possible utility joint-use corridor. Photo by Pictometry International Corp.



Bikes parked during the 2009 Bayside History Tour.

Task 6A.6.2: Develop trails with art themes.

Sculpture gardens are well-liked means for displaying outdoor sculptures in attractive settings. Linear paths likewise could be lined with public art displays.

Work with the Arts and Humanities Commission to study the opportunities and develop the trails.

Goal 6A.7: Virginia Beach will have suitable facilities for equestrian use.

Task 6A.7.1: Develop appropriate facilities at Buffington House and West Neck Creek Park.

Any potential adaptive reuse of the Buffington House will lead to site improvements, including formalized parking areas.

- The site design should accommodate parking horse trailers and riding horses, with at least one site leading to the loops of trails in West Neck Creek Park.
- Enhance the existing trail system in West Neck Creek Park, regardless of the improvements at the Buffington House.

Task 6A.7.2: Clarify regulations for riding horses in City parks

Local equestrians are confused about where horses may be ridden now. City Code and park regulations are silent on the issue.

Task 6A.7.3: Provide a loop trail around the Princess Anne Athletic Complex (PAAC) and/or within the Inter-Facility Traffic Area (ITA)

Evaluate the viability of an equestrian-oriented trail at PAAC, with sufficient parking and appropriate amenities. Evaluate the ITA study for opportunities for equestrian trails.

Task 6A.7.4: Work with Pungo Village Landowners' Association to develop a network of soft trails

A schematic plan has been suggested and should be explored in depth. This probably would lead to public recreation easements on private property.



"Wave" bike racks at Great Neck Recreation Center.

A TOP-PRIORITY GOAL

Goal 6A.8: Support facilities will be available throughout the City, including convenient and secure bike parking.

Support facilities include features such as bike parking, showers for commuters, and bike repair/maintenance services. As discussed previously, bike parking is a necessary component of the multi-modal matrix. Without it, people will not feel free to ride their bikes.

Task 6A.8.1: Publish guidelines for proper bike parking and other support facilities.

Task 6A.8.2: Provide bike parking at all City facilities.

- Complete the system with bike parking at all city buildings and sites (parks)



Bikes locked to the railing along the Oceanfront Boardwalk.

- Replace existing non-standard racks with standard racks

Task 6A.8.3: Provide showers at City buildings.

The City can set a positive example by making it feasible for its own employees to bike to work; however, biking to work across a distance of a few miles can cause perspiration, and many City employees cannot go properly through the work day in that condition. Showers will be needed for them to be able to bike to work.

- Identify and publicize where showers exist now. Many staff members are unaware of the opportunities available to them.
- Not every City building needs a shower, and it probably would be impractical to expect to install showers now at all City buildings. When buildings are renovated for other purposes, work with Public Works – Building Maintenance to evaluate the feasibility and strategic value of new shower facilities in those renovations.

Task 6A.8.4: Work with Hampton Roads Transit (HRT) to put bike parking at major transit hubs.

Major hubs in Virginia Beach include Silverleaf, Indian River, 19th and Atlantic, Pembroke, and Tidewater Community College (TCC).

Task 6A.8.5: Work with private businesses to make bike commuting feasible for their employees.

- Encourage employers to provide bike parking at their facilities.
- Encourage employers to provide showers, which is also a credit in the Leadership in Environmental and Energy Design (LEED) certification system.
- Amend the parking ordinance to require or incentivize the placement of bike racks in new and renovated developments.

Task 6A.8.6: Develop requirements for bike parking on land improvement projects.

Establish guidelines for preferable bike racks and publicize to developers and businesses

Task 6A.8.7: Work with local bike-related businesses to have appropriate services available (bike maintenance, parts, accessories, etc.) at strategic locations.

Goal 6A.9 Greenways will follow logical corridors and provide green infrastructure benefits.

Task 6A.9.1: Identify greenway corridors

Identify logical corridors of green space and conduct feasibility studies to determine their functional value as green infrastructure and their potential to provide a scenic setting for passive or low-impact recreation.



A greenway and trail in Austin, Texas.
Photo courtesy of
www.pedbikeimages.org / Dan Burden.

Task 6A.9.2: Develop master plans for greenway corridors

Create stakeholder-endorsed, detailed master plans for greenways that have been positively recommended from the corridor feasibility studies.

Task 6A.9.3: Implement the greenway master plans

- Acquire and preserve corridors of contiguous, undeveloped land
- Provide low-impact development of environmentally-sensitive improvements for public use and physical access to greenways (i.e. trail improvements)

Goal 6B: Connectivity

Goal 6B: Virginia Beach's comprehensive bikeways and trails system will connect neighborhoods and destinations to each other.

This is one of the big themes from the public comments: bikeways and trails aren't connected to each other and don't connect parts of the City to each other.

Goal 6B.1: Gaps in the existing system will be found and filled.

Task 6B.1.1: Improve bike-ped connections over and under I-264 and I-64.

I-264 blocks north-south travel, and I-64 blocks east-west travel, except at a few underpasses, most of which have interchanges. These underpasses present dangerous conditions for skilled, trained riders; conditions are worse for people who don't know how to follow the rules of the road, but people are seen every day biking, walking and skateboarding through them anyway.

Overpasses of I-64 are located at these roads, from south to north:

- Indian River Road (interchange)
- Providence Road

Underpasses along I-264 are located at these roads, from west to east:

- Newtown Road (interchange)
- Norfolk-Southern corridor
- Witchduck Road (interchange)
- Independence Boulevard (interchange)
- Rosemont Road (interchange)
- South Plaza Trail
- Lynnhaven Parkway (interchange)
- London Bridge Road (future partial interchange)
- Norfolk-Southern corridor (again)
- Virginia Beach Boulevard
- Oceana Boulevard & First Court Road (interchange)
- Birdneck Road (interchange)

A new crossing with a wide sidewalk is planned to connect Greenwich Road and Cleveland Road between Witchduck and Newtown Roads.

A TOP-PRIORITY GOAL



A cyclist struggles to navigate the underpass at Newtown Road.

Non-motorized users travel through these difficult settings and need better accommodations, but modifications can be made only under the authority of and with concurrence from FHWA. Studies for improvements to I-264 have stayed at the preliminary stage. If or when the studies advance to design, each bridge project should include the proper bike-ped accommodations. This is a very long-term process.

Some other components of a solution include:

- Educate people how to share the road. (See the Education chapter.)
- Enhance the lighting under the bridges.
- Review current literature on how to retrofit interchanges and underpasses for non-motorized users.
- Identify preliminary solutions for each of the interchanges and underpasses in the City.
- Prioritize the work at different interchanges and underpasses.
- Pursue funding for implementing the evaluation, study and solutions.
- Implement the solutions as opportunities arise.

Task 6B.1.2: Connect from Town Center to Mt. Trashmore Park.

Another project to accomplish part of this goal is to build a pedestrian bridge over I-264 between Town Center and Mt. Trashmore Park. This has been discussed before and is recommended in the master plan for the Thalia Creek Greenway. An alternate approach is to extend a road over I-264 from Town Center to near Mt. Trashmore Park, and put the bike-ped accommodations on that bridge. While it would cost considerably more, it could solve other roadway problems and provide an opportunity to take advantage of other funding streams.

- Coordinate this project with the “Pembroke Area Comprehensive Transportation Plan” adopted by Council in 2008.
- Pursue funding.
- Implement the plan.

Task 6B.1.3: Continue the City-wide inventory of system needs.

During the development of this Plan, citizens have pointed to gaps, problems and needs in the existing system of bikeways and trails, leading to the start of a City-wide inventory. Continue this process and conduct a gap analysis.

- Query citizens, neighborhood groups and civic leagues to identify specific connections to make.
- Inventory the existing gaps and hazards in the system, especially where paths end abruptly. This effort will be ongoing.
- Identify lopsided segments: one-sided bikeways and trails sections and road crossings needed to reach bikeways and trails. Improve crossings. Improve the other side.
- Connect trails that almost connect. Extend/infill/complete.

- Identify where people have worn paths in the grass. These demonstrate the need and/or desire of people to walk from one place to another; but wherever there's a worn path, some people opt to stay on the roadway, creating a hazard for themselves and for others. PBIC has shown that providing sidewalks reduces car-pedestrian crashes by about 80%.
- Identify existing concrete sidewalks that are not wide enough for their current or anticipated use.
- Prioritize the improvements needed to respond to the gaps, needs and problems identified, and pursue the funding needed to conduct the improvements.

Task 6B.1.4: Connect neighborhoods using paper streets.

Paper streets are dedicated rights-of-way in which the road has not been built. They can be found throughout the City and can present great opportunities for the development of bikeways and trails. In many cases, the City should work with the adjacent neighborhoods to review and refine possible projects.

Example: Bellamy Woods Civic League brought attention to the unbuilt portion of Violet Banks Drive from Kittery Drive to Selwood Drive. Improving this 3,300-foot long corridor would provide a valuable connection to their schools and libraries, while the current road network directs people onto a 2-lane section of Providence Road with narrow shoulders, deep drainage ditches, and no sidewalks.

Task 6B.1.5: As signalized intersections are improved or renovated, include the proper bike-ped accommodations.

Replacing the current video detectors with those that can detect bikes is cost-prohibitive; however, the City's traffic signals include a "maximum cycle length" of about 2.5 minutes. If a cyclist approaches a signalized intersection and cannot trip the detector, the wait for a green signal should be less than 2.5 minutes.

Work with PW-Traffic Engineering and PW-Highway Operations during the planning and review of improvements to signalized intersections.

Goal 6B.2: Bikeways and trails will connect to public facilities, especially schools, libraries, parks, recreation centers, and transit facilities.

Example: South Shore Estates Civic League requested a sidewalk along Tennyson Road from Bierce Drive to Upton Drive and a crosswalk across Upton Drive to Ocean Lakes East Park.

- Connect schools to their neighborhoods and service areas, sometimes using the Safe Routes to School program
- Connect bikeways and trails to colleges and universities
- Connect bikeways and trails to adjoining municipalities.
- Establish bikeways and trails to transit stops.

- Identify new bikeway and trail crossings over existing and proposed roadway bridges.
- Connect bikeways and trails to each other and to parks and greenways
- Connect bikeways and trails to neighborhoods.

Task 6B.2.1: Work with Virginia Beach City Public Schools to select and prioritize additional schools for the Safe Routes to School program.

Task 6B.2.2: Use the gap analysis to identify gaps between the bikeway and trail system and each of the City and public facilities.

Assure that Task 6B.1.3 includes these special destinations in the analysis.

Task 6B.2.3: Connect bikeways and trails to transit facilities.

Goal 6B.3: The oceanfront will connect to the rest of the City.

Water bodies and development patterns have constricted travel between the oceanfront and the rest of the City to only six usable east-west corridors. They are listed here from the north end to the south end.

Task 6B.3.1: Widen Shore Drive from Atlantic Avenue to Kendall Avenue.

Additional pavement outside the rumble strips will create a safer on-road location for cyclists, whether it is bike lanes or paved shoulders.

Task 6B.3.2: Improve Laskin Road.

Between I-264 and the southern reaches of Broad Bay, traffic is bottlenecked onto the bridge on Laskin Road. Moving west, many motorists and cyclists alike have complained that the feeder roads create confusing conflicts. Two projects exist to rebuild Laskin Road.

- Phase I, from Oriole Drive west to Republic Road, is a VDOT project. Design is 100% complete, and right-of-way acquisition is 98% complete, but the project is currently on hold.
- Phase II, from Oriole Drive east to the Laskin Gateway project, is a City CIP project. Design is about 30% complete but the project is currently on hold.
- When Laskin Road is improved farther west, provide both on-road and off-road bike-ped facilities.

Task 6B.3.3: Improve Virginia Beach Boulevard.

This will be very challenging: Virginia Beach Boulevard is a high traffic roadway that mostly fills its right-of-way within a highly built-out corridor. Improving it will be expensive, and farther west it becomes more difficult. There is no CIP project in the works to do so.

- As projects arise to make other improvements along Virginia Beach Boulevard, review and evaluate the proper bike-ped accommodations.

Task 6B.3.4: Develop a shared-use path in the former Norfolk-Southern rail corridor. (Repeats Task 6A.5.1)

The former Norfolk-Southern rail line holds great promise for a transit corridor with a shared-use path, but it is a long-term project. A feasibility study for installing a transit line in this corridor is currently underway, and a trail project could be developed as an adjunct to the transit facility.

Task 6B.3.5: Enhance General Booth Boulevard

While General Booth Boulevard runs more north-south than east-west, it is a valuable link in making the east-west connections from the oceanfront to the rest of the City. The General Booth Trail is in service, but the first leg from the Rudee Inlet Bridge to near Croatan Road is a wide sidewalk.

- Where there is no curb, work with PW-Traffic Engineering and PW-Highway Operations to evaluate the addition of pavement to provide paved shoulders — from near Headquarters Road to near Dam Neck Station Road.
- Where there is a curb, consider restriping at the next repaving project to make bike lanes or wide outside lanes.
- As projects arise to make other improvements, include proper bike-ped accommodations.

Task 6B.3.6: Improve connections to Sandbridge

Sandbridge Road is a narrow roadway with wetlands close by on both sides. It will be difficult to plan and implement any roadway improvements. The Nimmo Trail seems like the best answer, but it will traverse wetlands, too. A planning study is in process for this project.

- Build the Nimmo Trail. (Repeats Task 6A.5.2)
- When Sandbridge Road is improved, include proper bike-ped accommodations.

Goal 6B.4: Bikeways and trails will connect the military bases to each other.**Task 6B.4.1: Connect Joint Expeditionary Base (JEB) Little Creek to JEB Fort Story**

Assure that the improvements slated for Shore Drive and the replacement of Lesner Bridge provide accommodations for cyclists and pedestrians.

Task 6B.4.2: Connect JEB Fort Story to Naval Air Station (NAS) Oceana

These connections mostly exist already: Atlantic Avenue to Maritime Trail to General Booth Trail to Oceana Boulevard.

- Provide bike-ped connections (probably paved shoulders) along Oceana Boulevard from General Booth Trail to the existing paved shoulders along Oceana Boulevard north of Tomcat Drive.

Task 6B.4.3: Connect NAS Oceana to the Dam Neck Annex

Completion of Task 6B.4.2 will complete this connection as well: Oceana Boulevard. to General Booth Trail to Dam Neck Road.

Task 6B.4.4: Connect NAS Oceana to JEB Little Creek

This connection would run north along Oceana Boulevard, or London Bridge Road to the transit corridor. From the transit corridor, it would connect to signed shared roadways through the neighborhoods: Aragona Boulevard, Crossborough Road, Five Forks Road, Bromfield Ct, Bromfield Avenue, Cullen Road, Shell Road, Jack Frost Road and Lake Shores Road to the gates at Helicopter Road.

Goal 6C: Integration and Coordination

Virginia Beach will treat bike-ped facilities both as valued recreational amenities and as integral components of the City's transportation matrix.

Bikeways and trails are used for recreation, transportation, and other uses. They should be developed and managed with that recognition, for both types of user purposes.

A TOP-PRIORITY GOAL

Goal 6C.1: Virginia Beach should have a Complete Streets policy.

Virginia Beach should work towards adopting by ordinance a viable Complete Streets policy, following the item on page 6-19 of the 2009 Comprehensive Plan: "Create a definition and applicability for a citywide 'Complete Streets' policy." The policy can recognize different purposes and different balances of uses for different roads.

A TOP-PRIORITY GOAL

The web site for the Complete Streets Coalition (completestreets.org) describes complete streets thus:

"What are Complete Streets?"

"Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities are able to safely move along and across a complete street."

"What do Complete Streets policies do?"

"Complete Streets policies direct transportation planners and engineers to consistently design with all users in mind including drivers, public transportation riders, pedestrians, and bicyclists as well as older people, children, and people with disabilities."

"The Many Types of Complete Streets"

"There is no one design prescription for complete streets. Ingredients that may be found on a complete street include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more. A complete street in a rural area will look quite different from a complete street in a highly urban area. But both are designed to balance safety and convenience for everyone using the road. Below, we showcase the variety of options in creating roads that are safe for all users, regardless of age, ability, or mode of transportation."



An example of a "Complete Street".
Photo courtesy of Bikes Belong.

The concept of "complete streets" is based on a recognition that roadways are public facilities that non-motorists will use, whether or not the roadway has the proper accommodations.

Task 6C.1.1: Coordinate with the recommendations of the Comprehensive Plan.

A working group with representatives from multiple departments should collaborate on this, including Planning, Public Works, Parks & Recreation, and the Strategic Growth Areas office, among others.



A TOP-PRIORITY GOAL

Goal 6C.2: The City's land development regulations will foster the construction of new bike-ped facilities.

Zoning laws, subdivision ordinances, land development regulations, codes, ordinances and policies can help or hinder the development of bike and trail facilities through a variety of requirements and policies. The City should review its codes, regulations and policies so that they help rather than hinder the implementation of this Plan.

Virginia Beach currently has limited regulations that require builders or developers (either public or private) to build bikeways, trails, or related facilities during land development or redevelopment, even where those facilities are shown in the approved Bikeways and Trails Plan. The few extant policies include but are not limited to:

- Developers must build sidewalks where a subdivision has more than 25 lots
- Developers must build sidewalks on both sides of roadways with rights-of-way wider than 60 feet
- Sidewalks must be connected to sidewalks at the edges of the subdivision

Even so, the proffer system has been reasonably effective at encouraging inclusion of bikeways and trails in land development plans because of the favorable review that the plans tend to receive. Mandating the construction of bikeways and trails as shown in this Plan and by reference in the Comprehensive Plan would require a new ordinance.

Where this Plan shows a bikeway or trail but the adjacent facilities do not yet exist, an alternative can be to dedicate the right-of-way without building the physical facilities.

As of this writing, City Council is reviewing a revision to the parking requirements, which would require some bike parking but reduce the number of parking spaces required for motor vehicles.

City Council likewise should consider passing an ordinance that requires the construction of bikeways, trails and related facilities where they are shown in this Plan.

Task 6C.2.1: Review land development regulations

Work with Planning Department to craft regulations for the development of new bike-ped facilities.

Goal 6C.3: Safety and maintenance issues will be systematized and properly managed.

Task 6C.3.1: Finalize a policy for lighting bikeways and trails

A working group from Parks & Recreation, Police Department, Public Works and Risk Management has begun working to develop a process and a policy for determining when and how to place lighting along bikeways and trails.

- Finalize the policy and create the appropriate working group to implement it.
- Identify funding.
- Install lights where appropriate according to the policy.
- Install “closed dusk to dawn” signs where necessary.

Task 6C.3.2: Coordinate with Law Enforcement

- Review crime reports periodically for trends and dangerous sites/areas
- Apply Crime Prevention Through Environmental Design (CPTED) principles and make improvements to reduce likelihood of crime

Task 6C.3.3: Systematize and properly fund the ongoing maintenance and periodic renovation of the bikeways and trails system.

A working group from Parks & Recreation and Public Works has begun working to outline and assign maintenance responsibilities.

- Finalize the responsibilities and request sufficient funding in the appropriate operating budgets to cover the work assigned to it.
- Develop an annual system to review and evaluate the condition of each bikeway and trail in the City and to outline and prioritize the improvements needed.
- Develop a regular maintenance and cleaning schedule for both on-road and off-road facilities.

Task 6C.3.4: Enhance the “adopt-a-path” program (not for on-road facilities)

Recruit civic groups, citizens, families, businesses, churches and others to care for individual trails.

Task 6C.3.5: Finalize a policy describing the signing system

A working group from Parks & Recreation, Police Department, Public Works and the Police Department has begun working to interpret the FHWA Manual of Uniform Traffic Control Devices (MUTCD) for Virginia Beach.

- Finalize the policy and begin implementing it.
 - Remove “bike route” signs from sidewalks.
 - Remove improper signs and obscure improper markings
 - Install new signs and repaint new markings

Engineering & Facilities

Chapter 6

- Provide signs to points of interest near bikeways and trails, as allowed by City Code.
 - Historic sites
 - Cultural attractions
 - Directions and wayfinding

Goal 6D: Responsiveness and Consensus

Virginia Beach will be responsive to citizen suggestions for the bikeways and trails system and will work towards consensus.

Of the 1,500+ comments received from citizens during the public input process, about 400 were suggestions about specific sites, routes and corridors. This kind of boots-on-the-ground intelligence is invaluable: people know the needs and opportunities in their neighborhoods, and these suggestions can help fill the gaps and make connections that otherwise would not be done.

Goal 6D.1: Staff from Parks & Recreation will continue to engage citizens, civic groups, City boards and commissions, and other stakeholders to receive their input into issues related to bikeways and trails and to learn about specific needs and ideas.

Neighborhood organizations know their areas, and special interest groups know their issues, and through a constant dialogue they can help to keep the City moving forward in new directions. Ideas or projects that are not covered in this Plan might merit closer examination. For example, BMX and “pump tracks” found limited public support during this input process, but as time passes, that can change. Citizens need the City to be responsive to changing conditions.

Task 6D.1.1: Attend meetings of civic groups, City boards and commissions, and other stakeholders to discuss the Plan and continue to receive their input.

Task 6D.1.2: Publicize a system for citizens to make suggestions.

The system can have several components.

- BTAC was appointed by Council as the primary conduit for citizen input about bikeways and trails. Members serve both to bring their own insights and observations and because of their connections and sensitivity to stakeholder groups.
- Develop an online suggestion box at www.vbgov.com/bikewalk.
- Citizens can contact the bikeway and trail planning staff within Parks & Recreation to report problems, suggest improvements, and highlight needs.
- Citizens can call 311 or 385.3111 for a first point of contact about City government services.



A TOP-PRIORITY GOAL

Task 6D.1.3: Keep citizens informed about the funding and status of projects.

The City maintains a database of infrastructure projects and their current status. The public can track active projects through the "CIP PROJECT STATUS" page at <http://198.252.244.2/cipstatus/Search.aspx>, which is linked from the Public Works pages.

For the remainder of projects in this Plan, especially non-infrastructure projects, www.vbgov.com/bikewalk should include a project tracking tool.

Goal 6D.2: Staff will work towards consensus on the diverse suggestions of citizens about issues in their neighborhoods.

Staff is responsible to listen to the variety of suggestions about each issue and respond with a realistic, proper course of action that balances the competing needs. This often is accomplished best by engaging the stakeholders to develop a consensus.

Each suggestion must be prioritized by BTAC and analyzed by staff in each of the departments that it touches.

Regional Connections

The City of Virginia Beach is working with Norfolk and Chesapeake in Virginia, and Currituck County, North Carolina to coordinate the bike and pedestrian connections at the City's borders.

City of Norfolk

Several connections are proposed, of which three are central:

- On-road facilities along Shore Drive to connect to Ocean View Drive
- The former rail corridor that diverts from Northampton Boulevard in Virginia Beach to align with Miller Store Road in Norfolk
- Shared-use path along the transit corridor that is becoming a light rail line in Norfolk

City of Chesapeake

Five main connections are proposed:

- Combination of on-road and off-road facilities along Providence Road
- Shared-use path along Centerville Turnpike
- At Elbow Road, the future of the Southeastern Parkway and Greenbelt is uncertain.
- Combination on- and off-road facilities along North Landing Road
- Combination on- and off-road facilities along Blackwater Road

In addition, incremental widening for on-road facilities is proposed in Virginia Beach for two roads where paved shoulders are proposed in Chesapeake:

- Head River Road (in Virginia Beach; Head of River Road in Chesapeake)
- Indian River Road

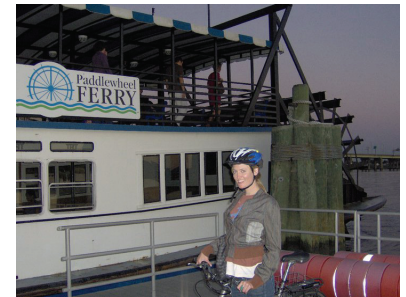
Currituck County, North Carolina

Two connections are proposed:

- Princess Anne Road, leading to Knotts Island
- Blackwater Road, which becomes E Gibbs Road and ends about three miles south of the state line

South Hampton Roads Trail

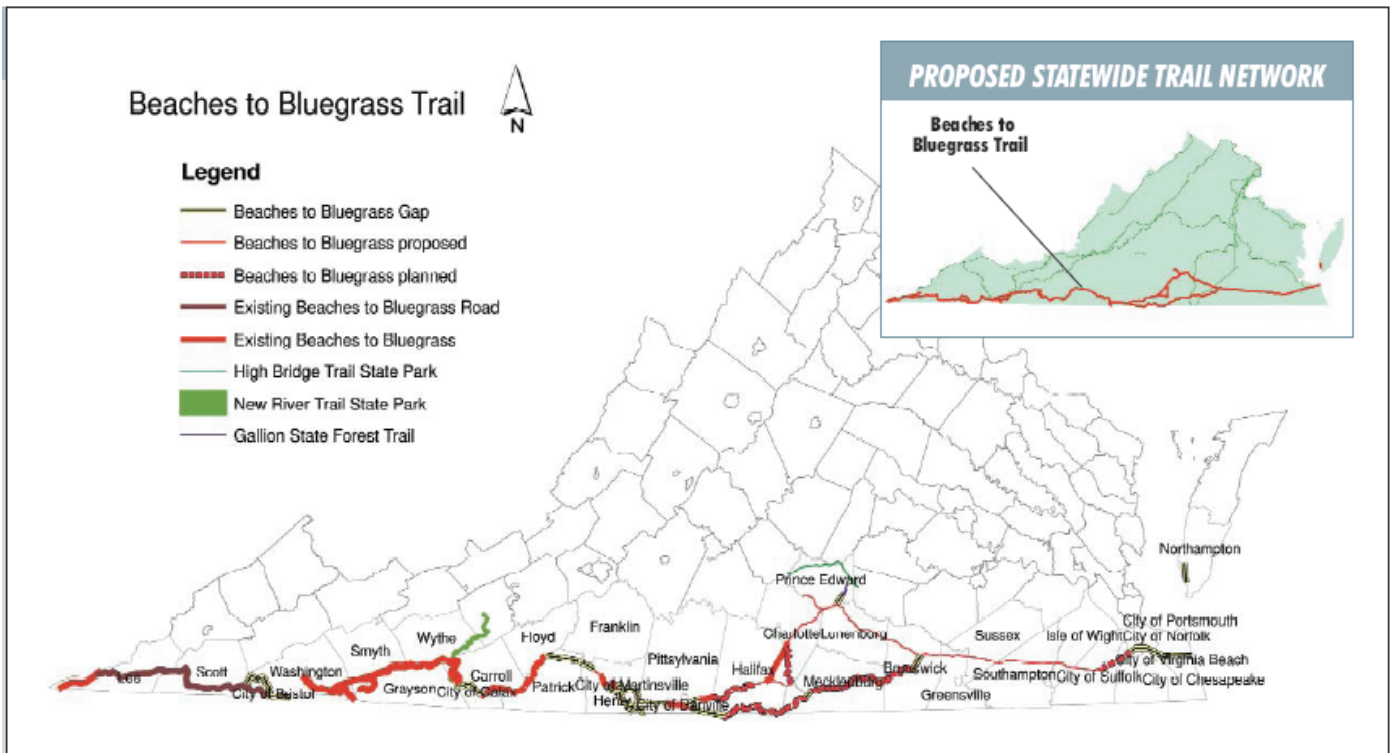
Hampton Roads Transportation Planning Organization (HRTPO) is facilitating a collaboration between the cities of Suffolk, Chesapeake, Portsmouth, Norfolk, and Virginia Beach on a regional trail from Virginia Beach's oceanfront to downtown Suffolk, a total of about 41 miles. Each city is working on the planning of its individual part, with hope to connect to the East Coast Greenway. This effort will bring tourism to our community and create a vast network on which locals and visitors alike can explore all of south Hampton Roads.



A valuable regional connection: the Paddlewheel Ferry from Waterside to Portsmouth.

Beaches to Bluegrass Trail

Virginia Department of Conservation and Recreation (DCR) has an initiative to develop a statewide trail system along the southside, from Cumberland Gap to Virginia Beach and the Eastern Shore. The system will connect a series of trails, some existing and others in various stages of development. The Virginia Beach leg is currently envisioned to follow the shared-use path that is proposed for the former Norfolk-Southern corridor. The sidebar map is excerpted from an online brochure at http://www.dcr.virginia.gov/recreational_planning/documents/tr_b2b.pdf.



Policies and Priorities

This section summarizes the Policies & Priorities that flow from the Goals and Tasks described in this chapter. The Top Priorities are listed together in the Executive Summary.

Policies

Several goals and tasks specifically call for new City-wide policies.

- “Goal 6C.1: Virginia Beach will have a Complete Streets policy.” This policy will be central for how many other issues are managed, especially the determination of whether and how to include bike-ped accommodations. This policy should be thoroughly drafted and vetted by staff and City leadership, and should be adopted by Council.
- “Goal 6C.2: The City’s land development regulations will foster the construction of new bike-ped facilities.” Require the construction of bikeways, trails and related facilities where shown in this Plan.
- “Task 6C.3.1: Finalize a policy for lighting bikeways and trails”
- “Task 6C.3.3: Systematize and properly fund the ongoing maintenance and periodic renovation of the bikeways and trails system.” In other words, finalize a policy about departmental responsibilities for maintenance and renovation of bikeways and trails.
- Task 6C.3.5: Finalize a policy describing the signing system

In addition, several specific new City-wide policies are needed or recommended to implement the Goals and Tasks of this chapter.

- Treat the AASHTO 1999 “Guide for the Development of Bicycle Facilities” as the model for planning, design, construction and management of bicycle facilities.
- Develop bike parking guidelines.
- Require bike parking in site plan regulations.
- City facilities should be bike-friendly and pedestrian-friendly, including accessibility and connectivity to appropriate routes for non-motorized travelers, plus proper bike parking.
- Unbuilt road rights-of-way, plus utility and railroad corridors, should be preserved for future bike-ped connections.
- Amend the parking ordinance to require or incentivize the placement of bike racks in new and renovated developments.
- Detectors for traffic signals should be able to detect bikes.
- Intersections should have crosswalks on each crossing leg.
- Update the Park regulations to allow horseback riding at West Neck Creek Natural Area.
- Include BTAC and the City staff responsible for bike-ped planning in the preliminary planning and design phases for City roadway, utility, and land development projects, and in the Development Service Center (DSC) review of other roadway, utility, and development projects. While this seems obvious where such projects touch on

bikeways and trails in this Plan, it is at least as important where the projects might create opportunities unanticipated in this Plan.

- Rumble strips should be used sparingly and only where needed. Where a road has an on-road bike facility, use VDOT RS-5 intermittent rumble strips.

Standards

All bikeways and trails should be planned, designed, constructed and maintained according to the following documents, as applicable.

- AASHTO: Guide for the Development of Bicycle Facilities, 1999. Commonly referred to as the "green book".
- VDOT: Road Design Manual, rev. July 2009. See especially Section A-5 Bicycle Facility Guidelines.
- Federal Highway Administration: Manual on Uniform Traffic Control Devices (MUTCD), 2009.
- USDA Forest Service: Wetland Trail Design and Construction, 1996. (out of print)
- USDA Forest Service: Equestrian Design Guidebook for Trails, Trailheads and Campgrounds, Dec. 2007.

Priorities

This chapter contains eight Top-Priority Goals:

- Goal 6A: Virginia Beach will have a comprehensive bikeways and trails system that serves all residents and visitors throughout the City.
- Goal 6A.3: Virginia Beach will use the process of repaving and restriping roads to make new on-road bike facilities.
- Goal 6A.8: Support facilities will be available throughout the City, including convenient and secure bike parking.
- Goal 6B: Virginia Beach's comprehensive bikeways and trails system will connect neighborhoods and destinations to each other.
- Goal 6C: Virginia Beach will treat bike-ped facilities both as valued recreational amenities and as integral components of the City's transportation matrix.
- Goal 6C.1: Virginia Beach should have a Complete Streets policy.
- Goal 6C.2: The City's land development regulations will foster the construction of new bike-ped facilities.
- Goal 6D.1: Staff will actively continue to engage citizens, civic groups, City boards and commissions, and other stakeholders to get their input into issues related to bikeways and trails and to learn about specific needs and ideas.

Goals 6A, 6B and 6D are over-arching goals which encompass several of the other goals within the chapter.

Top Priority Infrastructure Projects

In addition, BTAC selected the following infrastructure projects as its top priorities. Preliminary, order-of-magnitude cost estimates are shown for each project, but more careful study should be given to each project before establishing any budget figures.

- Bike lanes on Shore Drive, from Kendall Drive to Atlantic Avenue (est. \$2,000,000)
- A shared-use path along the transit corridor (est. \$10,000,000)
- Nimmo Trail from Albuquerque Drive to Sandfiddler Road (est. \$2,000,000)
- Thalia Creek Greenway (est. \$2,000,000)
- Bike-pedestrian connection over I-264, from Mt. Trashmore to Thalia Creek Greenway (est. \$3,000,000 - \$5,000,000)
- Bike route signs on new “signed shared roadways” (est. \$60,000)
- A shared-use path along Buckner Boulevard from Rosemont Road to near Independence Boulevard (est. \$600,000)

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