



5. IMPLEMENTATION

OVERVIEW

The two main prerequisites to plan implementation are successful cooperation from involved agencies and proper funding, each of which are addressed in the following sections. It is important for early, successful action to take place in order to keep momentum and continued support. A dedicated effort towards implementation on behalf of the WMPO, New Hanover County, and other project stakeholders, will be necessary to create the envisioned corridor.

ACTION STEPS

Adopt this Plan.

This Bicycle Study should be adopted by both the WMPO and New Hanover County. Adoption shows that the WMPO and New Hanover County have a well thought-out and researched plan for bicycle facilities within the corridor, and that its recommendations have emerged from a successful, publicly supported planning process. The MPO and New Hanover County can then use and refer to this Bicycle Study when seeking funding sources and facility dedication.

MPO Leadership.

A staff person should be dedicated to the implementation of the Blue Clay facilities. This person would continue to listen to community needs, maintain and build relationships and partnerships, write grants, promote the corridor, call for bonds and financing, lead the next phase of construction document work, and keep positive momentum going. The staff person should also work with stakeholders and utilize the energy and resources of the Cape Fear Cyclists.

Begin Phased Projects.

Immediate attention to the early phase projects described in Chapter 4 will instantly have a large impact and provide momentum for the project.

Seek Multiple Funding Sources and Acquisition/Construction Approaches.

The WMPO should seek multiple options to support ROW acquisition and facility development. A combination of bonds, grants, acquisition methods (described below) and other types of financing (also described below) should be sought to develop this



corridor. Partnerships should be established and/or maintained with New Hanover County, NCDOT, developers, and other private landowners to create leveraging opportunities for all project funds. Also, with the corridor mapped as part of this adopted Bicycle Study, all future developers should be required to install planned bicycle facilities upon development.

Hire a Design Consultant for Construction Documents.

A design consultant can further refine the trail alignment and amenities, work with a land surveyor to get precise land information, and work with a contractor throughout the construction process. The design consultant can develop preliminary construction documents from the trail alignment shown in this plan. Once the preliminary alignments are approved, the consultant can proceed with 100% construction documents that can be put out to public bid for construction.

Hire a Contractor for Construction.

The contractor's job is to build the project according to the construction documents. The design consultant can act as construction administrator to ensure that the construction documents are adhered to.

FINANCING THE PROJECT

Identifying funding sources, creating funding sources, and sustaining reliable funding over the long term is critical to the overall success and growth of this project. There are three types of funding required to support the development of a bicycle system; project development funding, operations funding, and facility maintenance funding. Funding for operations and facility maintenance is much more challenging to obtain than project development funding. Several types of funding sources have been identified and it is likely that a combination of these will offer the best solution to implementation, operations, and maintenance.

Government Programs and Grants

The majority of funding resources used on the Blue Clay corridor will be in the form of grants or programs from federal, state, and local government agencies. Government funding applies almost exclusively to project development funding, often referred to as "brick and mortar" funding. To aid the Blue Clay implementation efforts, a listing of potential financial resources is located in Appendix B.



The details and specific requirements for funding resources are constantly changing. Therefore research will be required before submitting a proposal for financing. Many grant programs require a match of the fund, up to 50% of the project cost. Some grant programs require a match, but do not require it to be in monetary value. Rather, the match could be in-kind services or donations. Also, some funding sources may only be available to non-profit organizations or a municipality. A partnership between the WMPO, New Hanover County, NCDOT, and other entities will increase the financial aid available to build the corridor.

Community Foundations and Advocacy Groups

Bicycle facilities (multi-use paths in particular) are excellent community-based pursuits and normally match up well with the missions of community foundations. Community foundations can act as a source to provide technical assistance to partners, award financial grants to build projects and establish an endowment for maintenance and operation. The Cape Fear Cyclists can also be strong advocates for this project.

Multi-Objective Partnerships

Most bicycle facilities serve multiple public and private needs including increased connectivity for users, increased quality of life, health and wellness benefits, and environmental benefits. In the case of multi-use paths, access for floodway and ditch upkeep, utility access, and enhancement of adjacent private properties is also served. Such benefits could be seen as incentives for new residential developments that surround the new corridor to share the cost of providing multi-use paths and other neighborhood bicycle facilities. Developers could be required to finance the design and construction of bicycle facilities, buffer zones, and open space to extend and connect the corridor to private developments and other existing and proposed bicycle facilities.

Resident Impact Fee

As new development occurs around the project, a property tax could be used to generate funds. This type of fee could be a one-time tax on properties converted from another use to residential or it could be a fee charged every time the property changes ownership. In the instance of



mixed-use development that contains a high amount of rental properties, particularly on properties that border multi-use paths, the developer could be required to build trails or neighborhood facilities in lieu of an impact fee.

In-Kind Services

Community participation and support will be another financial opportunity for the Blue Clay bicycle corridor. Services from volunteers, youth and student labor, and seniors as well as donations of material and equipment may be provided in-kind to offset implementation, operation, and management costs. By involving local residents in the efforts, design and construction fees or materials may be donated or provided at reduced costs. Local individuals who are able to coordinate smaller projects could easily organize volunteers, get donations, and advertise the effort. Other programs such as adopt-a-trail can aid in reduced maintenance costs and allow service clubs, scouts, school groups, businesses, and others to be involved in the care of the bicycle facilities, particularly in the case of multi-use paths. All volunteer efforts and programs should include credit signage. Maintenance services provided by volunteers should include written agreements between the adopting group and the agency officially responsible for maintenance.

ON-ROAD FACILITY DEVELOPMENT

This section describes types of transportation facility construction and maintenance projects that can be used to create new bicycle facilities. Note that roadway and transit construction and re-construction projects offer excellent opportunities to incorporate facility improvements for non-motorized modes. It is much more cost-effective to provide bicycle facilities along with these projects than to initiate the improvements later as “retrofit” projects.

Roadway Construction and Reconstruction

Bicycles should be accommodated any time a new road is constructed or an existing road is reconstructed within the preferred route of the Blue Clay corridor. Reconstructed roadways with moderate to heavy motor vehicle traffic should have on-road bike facilities (bike lanes or paved shoulders); some may warrant both on-road and off-road facilities (shared-use paths) so that all types of bicyclists can be accommodated comfortably.



Bridge Replacement

All new or replacement bridges should accommodate bicycles with bicycle lanes on both sides of the bridge. If the bridge is in a developed area or an area that may experience development in the future, it should also have wide sidewalks on both sides to accommodate all types of bicyclists. Federal law, as established in the Transportation Equity Act for the 21st Century (TEA-21), makes the following statements with respect to bridges:

“In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted on facilities at or near each end of such bridge, and the safe accommodation of bicyclists 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 U.S.C. Section 217)

On urban and suburban bridge projects, bridge shoulders should be a minimum of 5.5-feet wide and sidewalks should be a minimum of 5.5-feet wide if traffic volumes are projected to be less than 15,000 vehicles per day. If traffic volumes are projected to be 15,000 or more vehicles per day, the shoulders should be at least 6.5-feet wide and sidewalks should be at least 7-feet wide.

Bridge replacement projects on controlled access freeways where pedestrians and bicyclists are prohibited by law will generally not include facilities to accommodate bicyclists and pedestrians. In cases, however, where a bridge replacement project on a controlled access freeway impacts a non-controlled access roadway (i.e., a new overpass over an arterial roadway), the project should include the necessary access for bicyclists on the non-limited access roadway (i.e., paved shoulders, sidewalks, and bicycle crossing improvements).

Retrofit Roadways with New Bicycle Facilities

It may be necessary to simply retrofit sections of the Blue Clay Corridor, especially north of CFCC where the corridor is likely to be on-road. In



some places, it may be relatively easy to add bicycle lanes and/or extra pavement for shoulders, but other locations may be more difficult to improve bicycle facilities because the improvement may require removing trees, moving landscaping or fences, or regrading ditches or hills.

Other Opportunities for Integrating Bicycle Facilities

The WMPO, NCDOT, New Hanover County, and surrounding communities should incorporate bicycle facilities into routine transportation projects. The goal is to ensure that planned bicycle facilities are included on roadway projects listed within the Transportation Improvement Program (TIP), repaving schedules, and local Capital Improvement Programs (CIPs).

Another way to integrate bicycle facilities is through the use of design guidelines. Roadway design guidelines are important policy documents because they describe the types of facilities that should be provided during construction and reconstruction projects. Bicycle facilities should be incorporated into the standard roadway cross-sections of the WMPO and New Hanover County roadway design documents.

ACQUISITION FOR OFF-ROAD FACILITY

Land acquisition is an important component of the off-road sections of the Blue Clay Corridor. It will be necessary to work with landowners and future developments. Land acquisition and resource protection methods should be strategic, efficient, and respectful. The WMPO and New Hanover County should work with non-profit land protection agencies, land trusts, or environmental organizations when attempting to acquire or manage property for the development of multi-use paths. These entities often have a great deal of experience selling the conservation benefits associated with trails and greenways. Because these types of organizations do not have the power to condemn land or the power to tax, they often have excellent personal and professional relations with local landowners. Many options are available to obtain different degrees of control and different ownership relationships to regulate resource use. The following is a list of potential conservation tools, developing partnerships, development regulations, land management techniques, and acquisition/donation.



Land Acquisition / Conservation Tools

Partnerships

Partnerships with land trusts, local developers, County government, airports, and private land managers could assist the WMPO in developing bicycle facilities, particularly multi-use paths.

- Land Trusts (example: The North Carolina Coastal Land Trust, www.coastallandtrust.org)
- Private Land Managers

Regulatory Methods

This type of resource protection is used to shape the use and development of the land without transferring or selling the land. The rules for this type of tool are established and enforced by a governing body.

- Exactions (Development/Impact Fee, Mandatory Dedications, Fee in Lieu)
- Growth Management Measures (Adequate Public Facilities Ordinances/Concurrency)
- Performance Zoning
- Incentive Zoning (Dedication or Density Transfers)
- Conservation Zoning (Buffer or Transition Zones)
- Overlay Zoning
- Negotiated Dedications
- Reservation of Land
- Planned Unit Development
- Cluster Development



Land Management

This type of resource protection refers to developing agreements and/or management plans for public use and greenway easements through private property. This method helps conserve the resources of an open space or greenway parcel or easement.

- Management Plans
- Conservation Easement
- Preservation Easement
- Public Use Easement

Open Space Acquisition

Land acquisition is a method used to acquire property rights to protect resources or to allow access and free movement of users on a property. This type of method is permanent. Acquisition methods can be divided into two categories: 1) landowners retain ownership of the land and preserve a resource through an easement or other mutual agreement, or 2) land ownership and management is transferred or donated from a landowner to a conservation agency (local government, land trust, or other preservation organization.) Open space acquisition can be achieved through the any or a combination of the following:

- Donation (Tax Incentives)
- Fee Simple Purchase
- Easement Purchase
- Lease Back Purchase
- Bargain Sale
- Installment Sale
- Right of First Refusal
- Purchase of Development Rights
- Land Banking
- Condemnation
- Eminent Domain



OPERATIONS AND MAINTENANCE

A sound management plan for the operations and maintenance of bicycle facilities is essential for providing a high quality, safe, transportation or recreational experience.

Operations and maintenance tasks for bicycle facilities are extensive. There is more than one answer on how to distribute operations and maintenance tasks. The most ideal way is to utilize local government departments, groups, and volunteers that already perform similar tasks. Volunteer groups can play a major role in both operations and maintenance tasks. Programs such as Adopt-a-Greenway can foster stewardship and reduce costs in the off-road environment.

The following is an initial list of operations and maintenance tasks for the Blue Clay Corridor. An assessment of how successfully these operations and maintenance tasks are meeting the needs of the facility will need to be made, and if needed, modified on a yearly basis. The popularity of this facility is largely dependent on the quality of the maintenance services provided.

OPERATIONS

Risk Management Assessment

Safety is central to all maintenance operations, and is the single most important maintenance concern. A safety program should be implemented that includes the following preventative measures:

- Schedule and document inspections to determine the amount of use, quality of construction, and condition of bicycle facility surfaces, signage, etc. Follow-up with the appropriate corrective measures in a timely manner.
- Evaluate and remove all obstacles or objects that could impede facility usage such as debris, rumble strips, etc. and provide solutions such as alternative routing, removal of obstacle, etc.



- Review accident and crime reports and take the necessary up-front actions, on a case by case basis, to assure that facilities do not deteriorate due to crime or from fear of criminal activity.

Conflict Reduction

Steps to reduce conflict and make bicycle facilities safer and more pleasurable for all users are important steps in operation.

- Plan, design, and manage to reduce conflicts among users and with adjacent property owners. Potential conflicts include: reckless and unsafe behavior; incompatible uses; trespassing; disturbances and adverse environmental impacts
- Recognize the different goals of different users and minimize conflict where feasible (for example, commuter cyclists who prefer direct, high speed routes could be directed towards on-road connections, whereas recreational cyclists who prefer slower speeds and more meandering routes could be directed to multi-use paths or neighborhood loops)
- Provide user education through signage, patrol, volunteers, brochures, and media
- Solicit input from user groups by providing contact information to report problems and responding promptly and effectively to complaints, concerns, or suggestions
- Monitor, document, and log problem areas and address problems through design and management
- Promote trail-user, cyclist, and motorist etiquette
- Avoid excessive regulatory signage
- Employ temporary closure of facilities when conditions dictate
- Distribute or publish a maintenance schedule
- Respond to illegal or disturbing activity quickly

Oversight and Organization

Good record-keeping techniques are essential to a comprehensive operations and maintenance program, particularly when multiple agencies and organizations are involved. This information can be used to eliminate overlap or gaps in maintenance services provided, identify levels of use, and prioritize management needs.

- Daily activities
- Schedule of routine (and remedial) maintenance tasks
- Hazards, incidents, safety issues observed and action taken
- Inspection reports
- Annual maintenance budget, pursuing various funding sources



Facility Management

- Provide informational signage (rules and regulations) to communicate proper usage of all corridor facility types
- Provide directional signage to integrate other educational, recreational, environmental, or historical attractions and as new destinations are implemented
- Provide contact information and institute an agency response for facility users to report questions, comments, concerns, or complaints and a feedback phone number and Web address
- Continue to provide and establish new public education and citizen participation programs for cyclists

MAINTENANCE

Facility Maintenance

Basic housekeeping of bicycle facilities will ensure that the corridor is clean and functional and will also improve the life of each facility.

- Sweeping
- Trash removal

Vegetation Management

To maintain a high quality facility, regular attention should be given to the surrounding landscape, both natural and simulated. This not only improves the aesthetic quality of the facility but also improves the users' sense of safety, as well.

- Tree and shrub trimming and pruning
- Mowing of vegetation
- Mulching and edging
- Invasive species control



Facility Repair or Replacement

All facilities will require repair or replacement at one time or another. The time between observation and repair/replacement will depend on: 1) whether the needed repair is deemed a hazard; 2) to what degree the needed repair will affect the safety of the user; and 3) whether the needed repair can be performed by an in-house maintenance crew or if it is so extensive that the needed repair must be done by outside entities, or replaced completely. Example types of repairs or replacements include:

- Repaint/restrip/stain
- Repave/seal
- Replace surface material (mulch, asphalt, concrete, etc.)
- Remove encroaching debris along paved multi-use paths and roadway edges
- Regrade to prevent or eliminate low spots and drainage issues
- Add culverts, bridges, boardwalks, retaining walls, etc. to prevent or eliminate drainage/erosion issues
- Reroute trail, if necessary, to avoid environmentally sensitive or overused areas and any safety issues

Seasonal Maintenance

Seasonal tasks should be performed as needed. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to facility users. Designated maintenance crews will remove leaf debris, snow, and ice, etc. from all corridor facilities as soon as possible. Leaf debris is potentially hazardous when wet and special attention should be given to facilities with heavier usage.

- Remove leaf litter from facilities, via raking, blowing, mulching, etc. as needed to sustain the safe usability of all corridor facilities and prevent any storm water drainage and/or erosion issues.



LONGEVITY OF FACILITIES

<i>Table 5.1: Longevity of Facilities.</i>	Asphalt	7-15 years
	Concrete	20+ years
	Boardwalk	20+ years
	Bridge/Underpass/Tunnel	50+ years

Table 5.1 shows the typical life spans of facility types and materials.

ANNUAL MAINTENANCE COSTS

	Description/Activity	Frequency	Costs
<i>Table 5.2: Annual Maintenance costs.</i>	Drainage Maintenance	4x/year	\$750
	Sweeping/Blowing Trails	20x/year	\$1500
	Pick up & Trash Removal	20x/year	\$1500
	Weed Control	10x/year	\$1250
	Mowing-3ft safe zone	20x/year	\$1800
	Minor Repairs	Annual	\$750
	Maintenance and Supplies	Annual	\$500
	Equipment Fuel/Repairs	Annual	\$1000
	Total Maintenance - 1 Mile		\$9050

Table 5.2 shows the frequency and estimated costs for basic maintenance activities along paved multi-use paths and sidepaths.



MAINTENANCE OF BICYCLE FACILITIES WITHIN ROADWAY RIGHT-OF-WAY

Task	Frequency	Comments
Regular inspection	2 times per year	Includes all on-road bikeways, identify needed repairs of pavement signs, markings, etc.
Shoulder and bike lane sweeping	2 times per year	All roadways with bicycle facilities
Shoulder and bike lane repairs	As needed	Repair of road surface, including potholes, cracks, or other problems on bicycle facilities
Shoulder and bike lane resurfacing	During regular roadway repaving	Ensure that pavement width for bicycle facilities is maintained or increased during repaving projects
Debris removal from shoulders	As needed	Remove debris from roadway shoulders and bike lanes such as tree limbs, silt, gravel, and broken glass
Signs and markings	As needed	Repair or replace bicycle warning signs, bicycle route signs, bicycle lane markings, and any other similar facilities identified during inspections
Litter removal	6 times per year	Could be done with volunteers

Table 5.3 above shows a maintenance schedule for on-road bicycle facilities in the Blue Clay Corridor.

Table 5.3: On-road Maintenance schedule.



