



CHAPTER THREE: RECOMMENDATIONS

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Overview

This chapter features recommendations for bicycle facilities in the City of Marion, followed by recommendations for related programs and policies. The recommended bicycle network consists of existing and proposed facilities such as shared use paths, sidepaths, bicycle lanes, and shared lanes/routes. Conceptually, these bicycle facilities and the destinations they connect form a network of ‘hubs and spokes’. Downtown Marion, shopping centers, parks, neighborhoods, schools, and other places where people bicycle to and from are the ‘hubs’, whereas bicycle lanes, trails, and other bicycle facilities are the ‘spokes’ that connect them (see diagram to the right).



Methodology for Bicycle Network Design

The recommended bicycle network was developed by assembling and analyzing information from several sources: input from the staff and steering committee, public input from comment forms and public events, previous plans and studies, locations of existing facilities and destinations, and the consultant’s field analysis. Field work examined the potential and need for bicycle facilities along key corridors in Marion, with a focus on potential connections between key destinations.



McDowell Community College is a key destination

Chapter Organization

An overview of recommended bicycle facility descriptions is followed by a series of recommendations maps. Maps 3.1 and 3.2 outline the overall recommendations, representing the comprehensive network of all recommended facilities.

Priority recommendations are featured in the pages following the overall recommendations maps, including three high-impact priority projects that can be implemented at relatively low-cost, followed by three priority investments, that will have the greatest positive impact on bicycling, but that are more complex and expensive to implement.

Program recommendations are at the end of this chapter, beginning at page 3-15.

Types of Bicyclists

Bicyclists can be categorized into four distinct groups based on comfort level and riding skills. Bicyclists' skill levels greatly influence expected speeds and behavior, both in separated bikeways and on shared roadways. Each of these groups has different bicycle facility needs, so it is important to consider how a bicycle network will accommodate each type of cyclist when creating a non-motorized plan or project. The bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people. In the US population, people are generally categorized into one of four cyclist types. The characteristics, attitudes, and infrastructure preferences of each type are described below.

Source: Four Types of Cyclists. (2009). Roger Geller, City of Portland Bureau of Transportation. Supported by data collected nationally since 2005.



HIGHLY EXPERIENCED (~1% OF POPULATION)

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



ENTHUSED AND CONFIDENT (~ 5-10% OF POPULATION)

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



INTERESTED BUT CONCERNED (~ 60% OF POPULATION)

This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or multi-use trails under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become "Enthusied & Confident" with encouragement, education and experience.



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

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

Bicycle Facility Types

The descriptions on this page offer a brief overview of the primary facility types recommended in this plan. For more information on facility design, please see Appendix A: Design Guidelines.

Greenway Trail (Independent Right-of-Way)

A greenway trail is a facility that is separated from the roadway and designed for a variety of users, including bicyclists, walkers, hikers, joggers, wheelchair users, and skaters.

- » Greenway trails may be paved or unpaved and are the preferred facility for novice and average bicyclists.

- » These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors, away from roadway ROW where there are few conflicts with motorized vehicles. Trails in Marion should be a minimum of 10' in width.
- » Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

Proposed greenway trails are symbolized in the recommendation maps as shown below. Further details on shared use paths are found in the Design Guidelines in Appendix A.

Map Key:

- Existing Trails
- Proposed Trails



Shared use path (independent ROW) example, paved shared use path.



Shared use path (independent ROW) example, unpaved path - Browns Creek trail in Marion (photo from Cape Fear SORBA).



Sidepaths

A sidepath is a type of shared use path that follows a road corridor but is separated from on-road traffic. Sidepaths are more transportation-oriented in character and used by bicyclists and pedestrians. Because of operational concerns, it is generally preferable to place paths within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available.

- » Sidepaths are most appropriate in corridors with few driveways and intersections.
- » Signage should be included along sidepaths to direct users to access points with high-visibility crosswalks.

- » Families and novice bicyclists are most comfortable on shared use paths. Therefore, a comprehensive network of shared use paths, that includes trails built in open space as well as sidepaths is an integral part of the overall bicycle facility network, and its development should be a priority of Marion.
- » The key difference between a sidepath and a typical sidewalk is the extra width. A 10' wide path, for example, allows for safer shared use by bicyclists, pedestrians, and other users, whereas the typical 5'-wide sidewalk does not allow for safe passing.

Proposed sidepaths are symbolized in the recommendation maps as shown below. Further details on sidepaths are found in the Design Guidelines in Appendix A.

Map Key:

- ■ Sidepath



Sidepath example with curb and gutter in Wilmington, NC, along Museum Dr.



Sidepath example without curb and gutter in Conover, NC.

Bike Lanes




Bike lanes are described as a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists.

- » Bike lanes always carry bicyclists in the same direction as adjacent motor vehicle traffic.
- » While bike lanes on both sides of the roadway are preferred. However, when space is limited, uphill bike lanes and downhill shared lane markings are an option.
- » The minimum width for a bike lane is four feet; five- and six-foot bike lanes are typical for collector and arterial roads.
- » Road diets are one method of implementing bike lane recommendations. A road diet removes excess travel lanes or narrows existing lanes to install bicycle facilities.

- » **Buffered bike lanes** are conventional bicycle lanes paired with a designated buffer space, separating the bike lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).
- » **Buffered bike lanes** are designed to increase the space between the bike lane and the travel lane or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

Proposed bike lanes, bike lane/sharrow combo, and road diets are symbolized in the recommendations maps as shown below. Further details on bike lanes are found in the Design Guidelines in Appendix A.

Map Key:

-  Bike Lanes
-  Bike Lanes/Sharrow Combo
-  Road Diet



Bike lanes on Salisbury Street in Raleigh, NC were installed during a resurfacing project.



Buffered bike lane example.

Marked Shared Roadways (Sharrows)/Bike Routes

Marked shared roadways (also known as “sharrows”) have become more popular as a pavement marking treatment to help align bicyclists properly in both urban and rural landscapes that may feature on-street parking, a variety of lane widths, and other factors.

- » On shared roadways, bicyclists and motor vehicles use the same roadway space.
- » These facilities are typically used on roads with low speeds and/or traffic volumes, However, they can be used on higher volume roads with wide outside lanes.

- » A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist.
- » Shared roadways employ a large variety of treatments from simple signage and shared lane markings to more complex treatments including directional signage, traffic diverters, chicanes, chokers, and/or other traffic calming devices to reduce vehicle speeds or volumes.

Proposed shared roadways/routes are symbolized in the recommendation maps as shown below. Further details on shared roadways/routes are found in the Design Guidelines in Appendix A.

Map Key:

■ ■ ■ Sharrows



Marked shared roadway (sharrow) example in Downtown Wilmington, NC, on Front Street.



Bike route signage example, with distances

Bike Routes

Typically found in less-dense areas, bike routes highlight a particular route that connects people to key destinations. In Marion, several local roadways provide direct access to schools, parks, community centers, and shopping. Similarly, the Rural Bike Routes create a network that connects cyclists to the many regional destinations in and around Marion and provide opportunities for group rides and long, recreational rides.



While the cost of improving these roads with dedicated bicycle facilities may be prohibitive, labeling the network as Neighborhood or Rural Bike Routes can be a great short-term improvement. The addition of signage will help cyclists find their way as well as alert motorists to expect bicycle traffic.

Facility types along the bike route network will vary based on road conditions, traffic volumes, and project opportunities. Ideally, bike routes are paved roadways with striped shoulders (4'+) wide enough for bicycle travel.

- » Bike routes should include signage alerting motorists to expect bicycle travel along the roadway.
- » As roadways are widened to accommodate increasing traffic volumes, upgrades to dedicated bicycle facilities, such as a shoulder, a bike lane or a road-separated sidepaths should be considered.

Proposed neighborhood and rural bike routes are symbolized in the recommendations maps as shown below.

Map Key:

-  Neighborhood Bike Routes
-  Rural Bike Routes



Paved shoulder examples

*Insert 11x17 Overall
Recommendations Map*



*Insert 11x17
Downtown Map*

***Placeholder for Priority Project and
Priority Investment Cut Sheets
(Detailed recommendations, implementation
tips, and preliminary cost estimates)***

***Projects will be selected based on staff and
steering committee feedback during August
steering committee meeting.***



Bike Parking

Bike parking can range from a simple bicycle rack to storage in a bicycle locker or cage that protects against weather, vandalism and theft. Marion bicyclists visiting downtown and other popular destinations do not have available bicycle parking and instead may lock their bikes to street fixtures such as parking meters, trees, utility poles and sign poles.

Short-term Bike Parking

Bicycle racks are the preferred device for short-term parking (less than two-hours). These racks serve people who leave their bicycles for relatively short periods of time, typically for shopping or errands, eating or recreation. Bicycle racks provide a high level of convenience and moderate level of security. Short-term parking should support the bicycle at two points and have a design that is intuitive to use. A “U-rack” is an example of a standard and accepted bicycle rack and is the recommended standard for many cities across North Carolina.

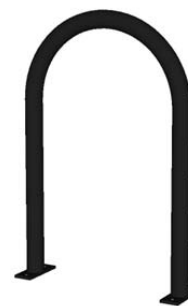
Recommended locations for short-term bike parking are displayed on map 3.3. Below are examples of the standard bike rack design in Marion.



*Bike Shaped Rack
(Schools)*



*Penny Farthing Hitch
(Downtown)*



*Hoop Rack
(New Development)*

Long-term Bike Parking

Long-term bike parking includes bike lockers and bike stations and serve people who intend to leave their bicycles for longer periods of time and are typically found at transit stations, multi-family residential buildings and commercial buildings. These facilities provide a high level of security but are less convenient than bicycle racks. Below are examples of long-term bicycle parking. Although this plan does not recommend long-term bike parking locations, they should be considered as part of future transit projects or large scale developments.

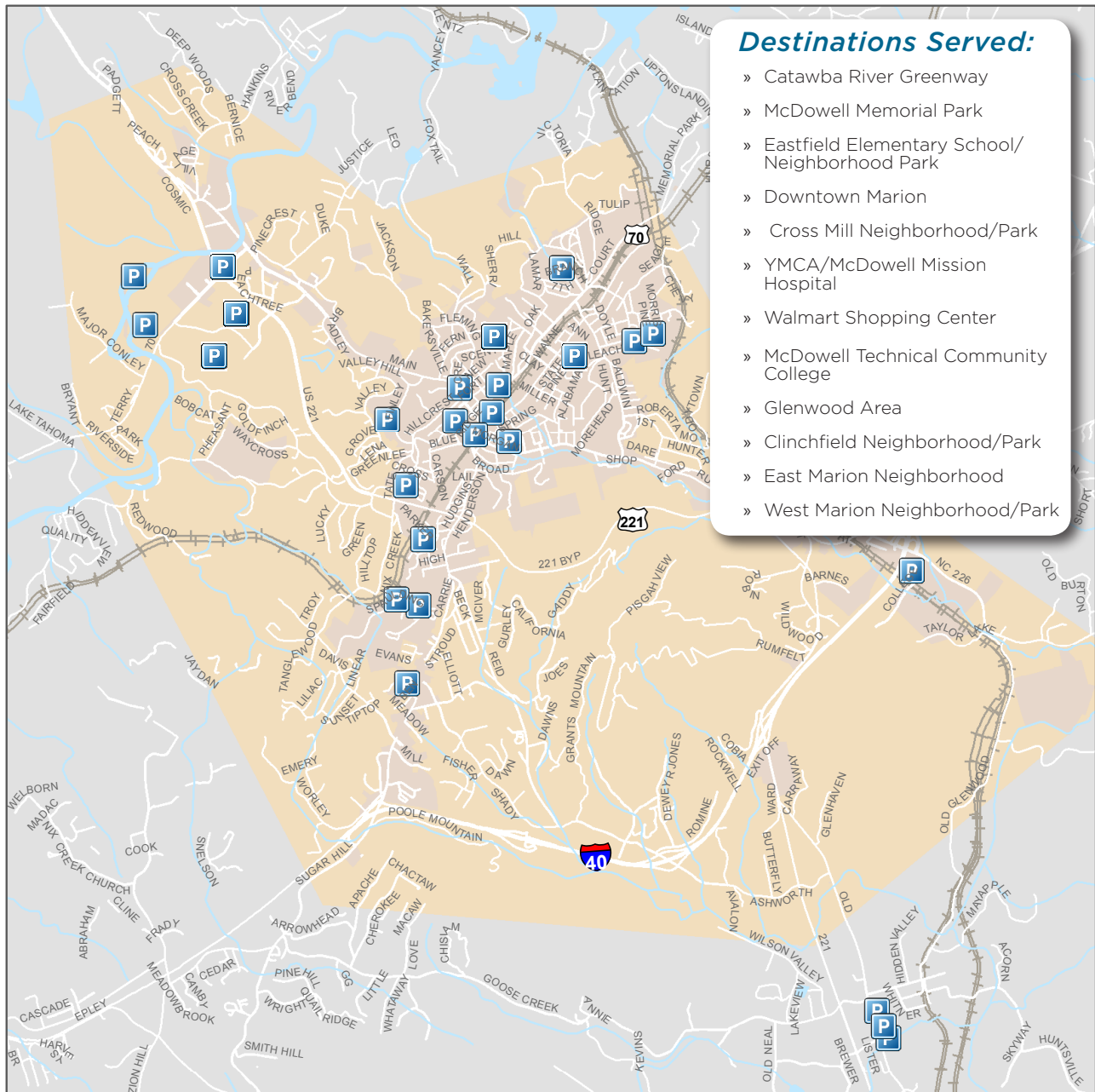


The City of Asheville, NC installed bike lockers in the parking deck on Rankin Avenue.



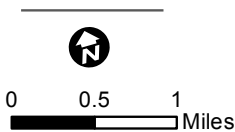
Covered bike parking at Virginia Tech in Blacksburg, VA.

Map 3.3 - Proposed Bike Parking



**Marion
Comprehensive
Bicycle Plan
2015**

Proposed Bike Parking Map



LEGEND

- Bike Parking
- Rail Line
- Planning Boundary
- City Limits
- Body of Water



Data obtained from City of Marion.
Map created July, 2015.



MACA
BICYCLE
DECORATING
STATION

Wayfinding Signage Program

Wayfinding signage, as part of a signage program that also includes warning and regulatory signage, enhances resident and visitor orientation. A clear wayfinding system should contribute to economic development by pointing visitors to key destinations around City. The City of Marion should develop a customized wayfinding program that includes directional signage to local destinations. The proposed neighborhood bike routes would be the perfect place to begin implementing a bicycle wayfinding program.

Materials for signage should reflect the character of Marion and be selected for longevity and ease of maintenance. A wayfinding program could include directional signage, on-road markings, and kiosks with City maps. If funding is not immediately available to develop a complete wayfinding program, a good first step is temporary wayfinding signage that is colorful and informative. The Marion Chamber of Commerce may be an ideal partner based on the nexus with tourism and economic development.

Sample wayfinding signage programs:

- » Oakland, CA: <http://www2.oaklandnet.com/oakca/groups/pwa/documents/report/oak025118.pdf>
- » 2014 Croatan Regional Bicycle + Trails Plan; Signage Appendix (NCDOT)

Purpose: To enhance resident and visitor orientation by directing bicyclists, pedestrians, and motorists to popular destinations around City.

Partners: City of Marion, Marion Chamber of Commerce

NCDOT and the Eastern Carolina Council completed the Croatan Regional Bicycle + Trails Plan in 2014. This plan included guidance for bicycle route and trail signage. Marion could take a similar approach along the proposed neighborhood and rural bike routes, using a local logo or symbol in conjunction with the required standards for signage on NCDOT roadways.



Program Recommendations

Below are key program recommendations that are essential and complementary to improvements in infrastructure. See Chapter 4: Implementation for more information on program actions related to plan implementation.

Media Campaign to Educate Motorists, Bicyclists, and Pedestrians

Watch for Me NC is a comprehensive campaign aimed at reducing the number of bicyclists and pedestrians hit and injured in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police in several Triangle communities.

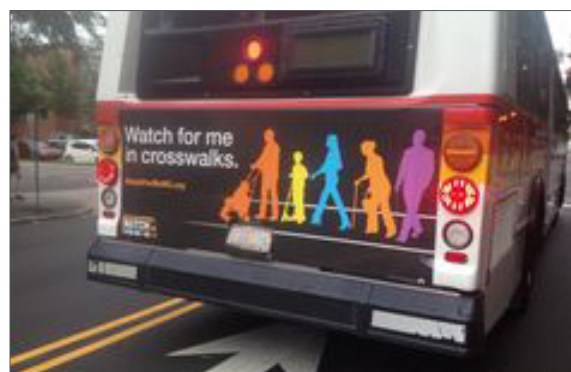
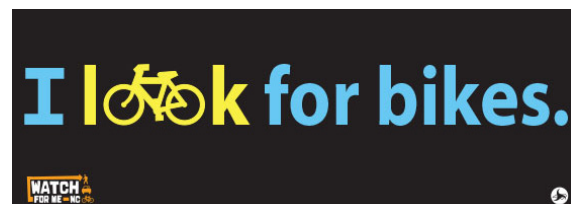
The pilot campaign has been expanded statewide and Marion has been selected to participate in the 2015 campaign. As a part of this program, the City could:

- » Distribute the educational materials made available by NCDOT at local festivals and other events, at local bike shops and other businesses, and in renters' information packets and property owners' guest information books.
- » Work with police officers to hand out bicycle lights along with bicycle and pedestrian safety cards.
- » Broadcast program promotions and educational videos on the local government access channel.

Watch for Me NC website: <http://www.watchformenc.org/>

Purpose: To educate all road users about their rights and responsibilities, to increase awareness and improve traffic safety

Partners: City of Marion Police Department, Bicycle and Pedestrian Advisory Committee, City staff



One-Stop Website

Many current and potential bicyclists and pedestrians do not know where to find information on traffic laws, events, maps, tips, and recreation groups. The City of Marion could develop a “one-stop” website that houses all bicycle- and pedestrian-related information and promotions. A website is not difficult to set up, but it will only be successful if the site is easy to use, easy to find, and updated frequently. The site should be reviewed and updated regularly with the most current information.

The Bicycle and Pedestrian Advisory Committee (see Chapter 4: Implementation) can assist in keeping the site up to date. Other recommended programs in this chapter could be housed on the website, such as a hike and bike map, Watch for Me NC materials and links, and a calendar of upcoming events.

Sample bicycle and pedestrian information websites:

- » Portland, OR: <http://www.portlandoregon.gov/transportation/60164>
- » Austin, TX: <http://austintexas.gov/bicycle>
- » Duck, NC: <http://www.Cityofduck.com/ducktrail/>

Purpose: To provide a single, accessible source of all bicycle- and pedestrian-relevant information for Marion residents and visitors.

Partners: Bicycle and Pedestrian Advisory Committee, Marion Public Works Department, Marion Planning & Zoning Department

The City of Duck has a great example website for City trail information. The Duck Trail page presents safety information, route information, and other tips for residents and tourists to enjoy walking and bicycling on the trails in Duck. www.Cityofduck.com/ducktrail/



Bike Rodeo

A Bike Rodeo is an event where children can learn and practice bicycling skills in a controlled, supervised environment. Depending on the age of the children involved, a bike rodeo event can include educational components, such as teaching hand signals, proper helmet fitting, and even basic maintenance skills such as changing and inflating a tire. The highlight of any bike rodeo event is a skills course, where children ride through a designed obstacle course to practice turns, braking, and coasting. Some bike rodeo leaders hand out awards to positively reinforce good bicycling habits. This could be an excellent edition to the events of Kids Appreciation Day.

Bike Rodeo resources:

- » National Center for Safe Routes to School: <http://www.saferoutesinfo.org/program-tools/organizers-guide-bicycle-rodeos>
- » Safe Kids Worldwide: <http://www.safekids.org/sites/default/files/documents/Bike-Rodeo-Station-Guide.pdf>

Purpose: To celebrate bicycling, teach children and their parents traffic laws and safe riding skills, and improve bicycling confidence and awareness

Partners: City of Marion Police Department, Bicycle and Pedestrian Advisory Committee, McDowell County Health & Human Services Department



Photos from the Holly Springs Bike Rodeo, Holly Springs, NC. Volunteers conducted helmet fittings, bicycle education, and a parking lot obstacle course to provide a safe place for children to practice safe riding skills.

Hike & Bike Map

One of the most effective ways of encouraging people to ride a bicycle is through the use of maps and guides to show where you can bike (and hike), and to guide people to enjoyable routes and destinations. The City should create a Marion Hike and Bike Map to reflect the most current public bicycle and pedestrian infrastructure in City, with a list of bicycle rental locations, suggestions for self-guided bike rides and walks around City, and recommended routes.

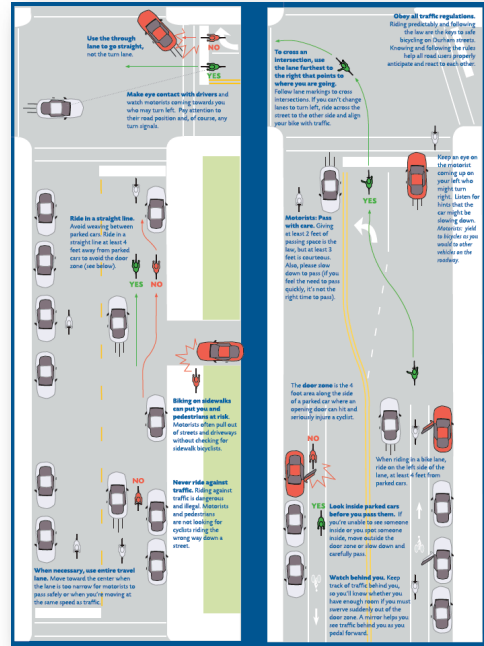
A portion of the map could be devoted to bicycle and pedestrian safety education, such as informational graphics that demonstrate bicycle hand signals and how to share the road and the trail safely. The map should be made available online and printed as needed to be actively distributed to residents and visitors. It should also be updated on a regular basis as new facilities are implemented.

Durham Hike & Bike Map:

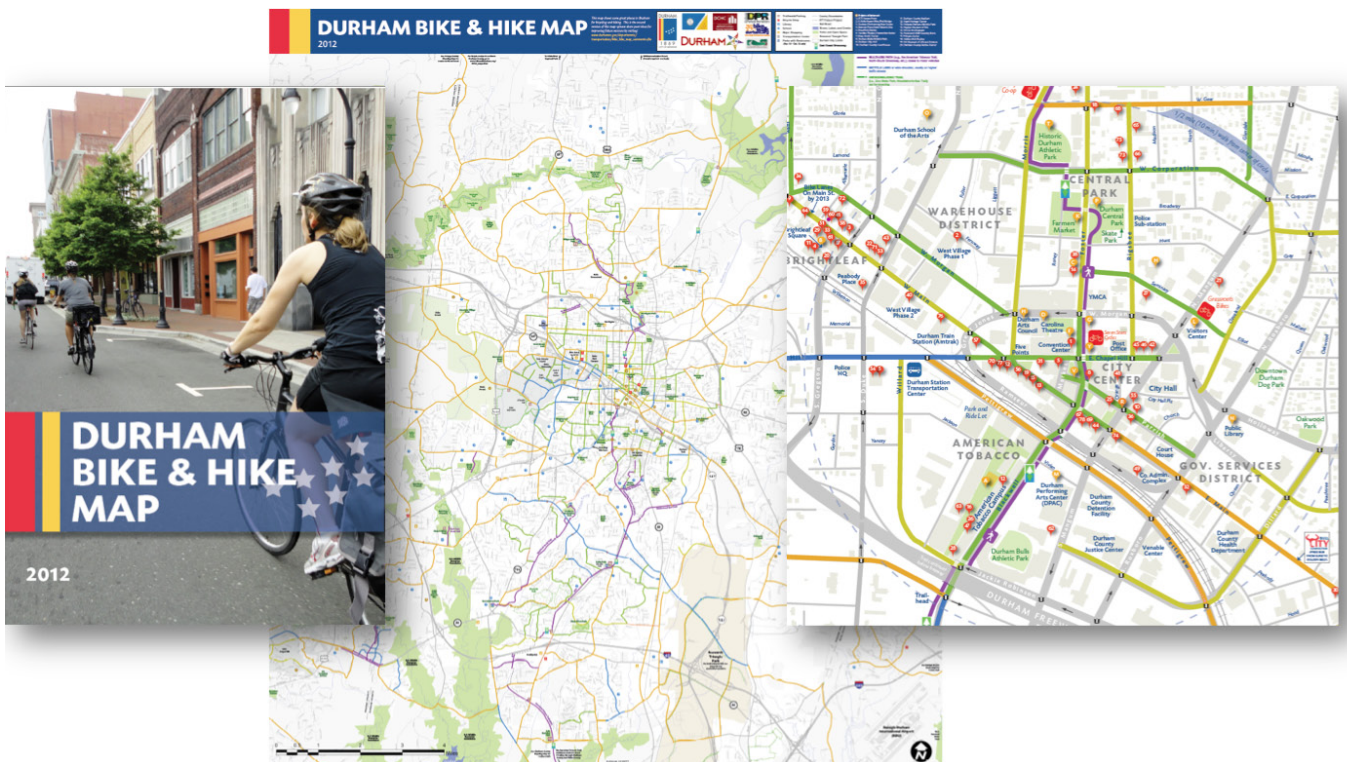
- » <http://durhamnc.gov/ich/op/dot/Pages/Durham-Bike--Hike-Map.aspx>

Purpose: To encourage bicycling and walking by providing route and facility information and highlighting bicycling and walking destinations.

Partners: City of Marion, Marion Chamber of Commerce, Marion GIS staff



More than 19,000 Durham Hike & Bike Maps have been distributed since it was first published in 2010. The map also features safety information and tips for safe riding (at left). Produced by Alta Planning & Design.



Public Bicycle Maintenance Stand

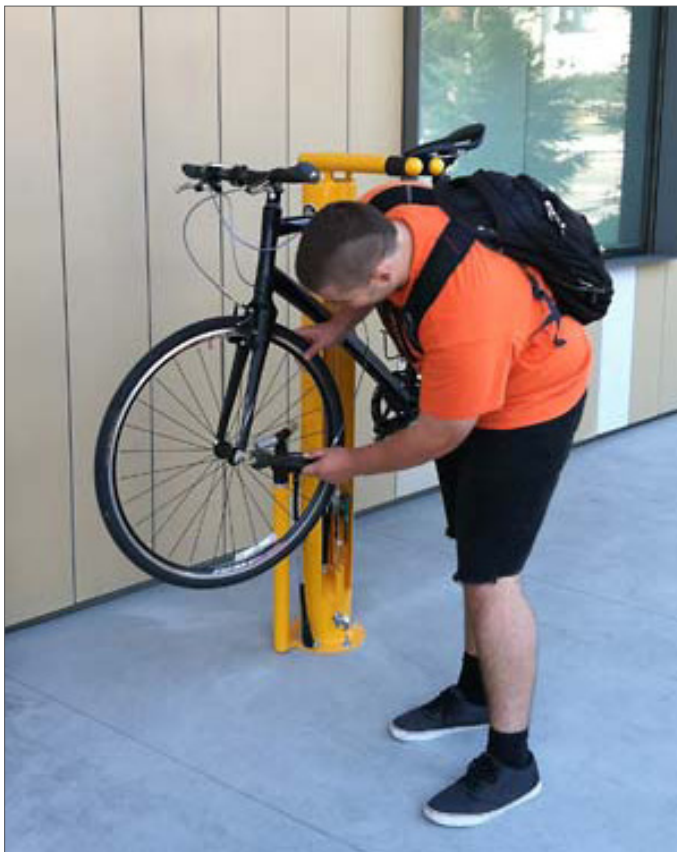
Public maintenance stands have become a popular amenity in bicycle friendly communities because they provide bicyclists with access to tools on-the-go and encourage people to teach and learn bicycle maintenance in an informal setting. They can also help to reduce the number of abandoned or trashed bikes in a community; bikes are often abandoned by their owners when they have a minor mechanical issue that they do not have the tools or knowledge to fix. Public maintenance stands encourage people to learn bicycling skills from one another and send a message to residents and visitors that bicycling is supported in the community. These fixtures can be placed in a park or in another public place and require little upkeep or oversight, since the tools and stand are designed to be self-contained and theft-resistant.

Purpose: To provide an easy to use bicycle stand and tool kit that encourages people, particularly youth, to learn bicycle maintenance and fix minor bicycle issues on-the-go, and to make bicycling a visible part of the community.

Partners: Local businesses, City of Marion



Public bicycle maintenance and tool stand examples.



Bike Share/Lending Library Program

Bike sharing typically refers to a system in which individuals can enjoy the benefits of access to a bicycle on an as-needed basis without the burden of private bike ownership, such as purchase and maintenance costs, storage, and parking. A “lending library” is a bike share model under which a staff member helps the user borrow a fleet of bikes, typically stored in a single location. Users sign up for a membership online or in person, and are then eligible to borrow bikes from the library. Bicycles are typically checked out from and returned to a single location.

There are several examples of successful bike lending libraries across North Carolina and across the country. Chapel Hill, NC is home to ReCYCLERY, who manage several bike lending programs, such as Earn-a-Bike and Balance Bike Lending Library. North Carolina State University has a student-initiated program called Quad Bikes. Fort Collins, CO launched a bike lending program in 2008 and operates with funds from private fundraising efforts.

To implement a bike lending program in Marion, the City will need to collaborate with potential partners such as Corpening YMCA, Marion Chamber of Commerce, McDowell County Public Schools, and non-profit organizations.

Purpose: To encourage bicycling by providing access to bicycles to residents or visitors who don't have own one.

Partners: City of Marion, the Marion Chamber of Commerce, Corpening YMCA, private businesses and local non-profits.



ReCYCLERY, in Chapel Hill, NC operates a private Lending Library and Earn-a-Bike program.



Students at North Carolina State University organized a student initiated bike library in 2013.



Fort Collins, CO has a public bike library.