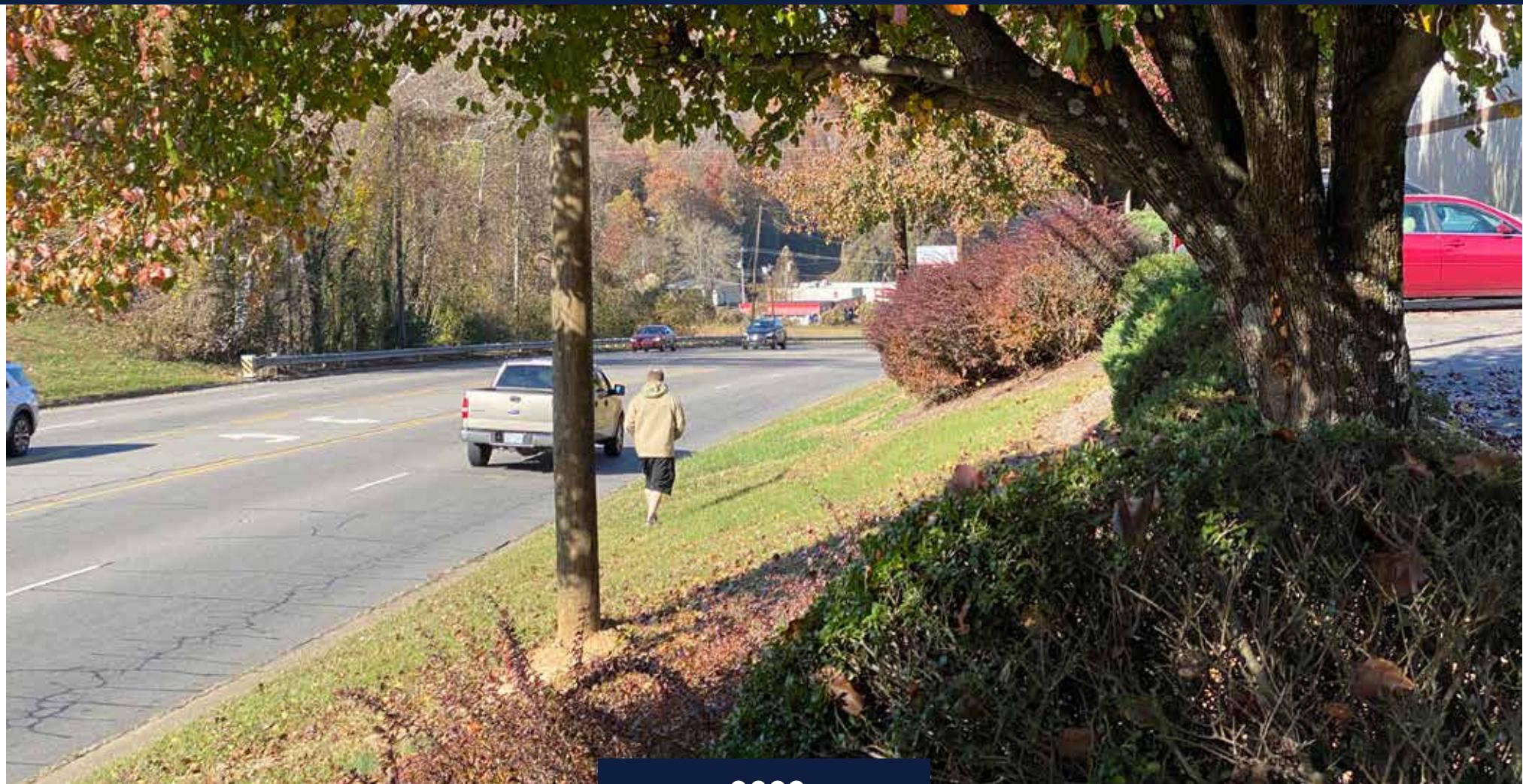




CITY OF MARION

NORTH MAIN STREET SIDEPATH

FEASIBILITY STUDY



2022

ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

The proposed North Main Street Sidepath is a 2-mile corridor connecting Downtown Marion with the Joseph McDowell Historical Catawba Greenway along US 70. The proposed sidepath is a critical missing link in the City of Marion's active transportation network and is an identified corridor of the Fonta Flora State Trail.

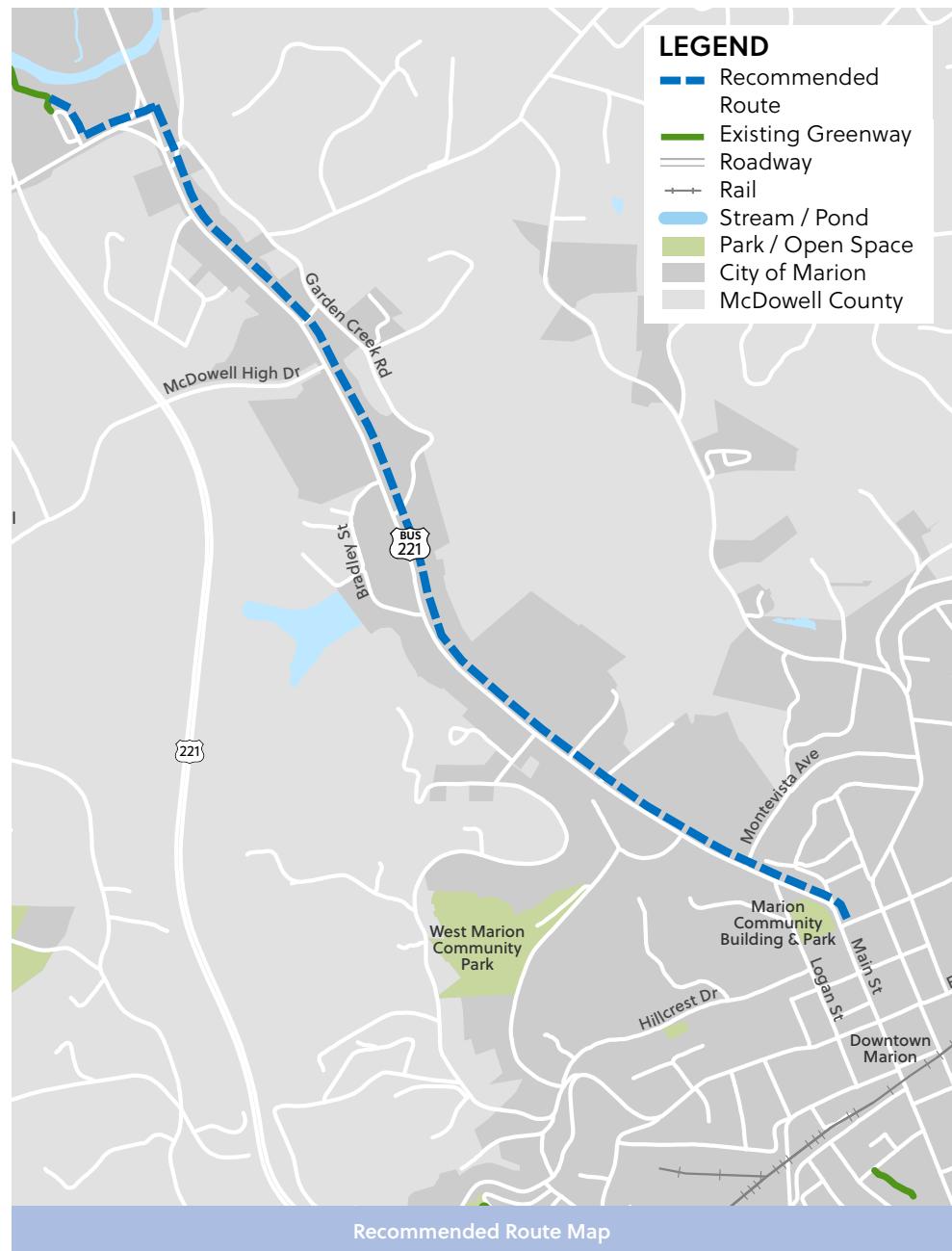
The *North Main Street Sidepath Feasibility Study* is led by the North Carolina Department of Transportation's Integrated Mobility Division and the City of Marion. The study evaluates potential route scenarios along North Main Street, US 70, and the Catawba River to determine a preferred route for the sidepath. The study also includes cost estimates and an implementation plan to construct the sidepath. The purpose of this feasibility study is to bridge the gap between conceptual planning, prioritization, and programming of projects.

RECOMMENDED ROUTE

The preferred alignment for the North Main Street Sidepath was informed by the project steering committee and public input. Alternative B was selected as the preferred route. The route begins at the Joseph McDowell Historical Catawba Greenway at the trailhead behind the McDowell House and continues south alongside the entrance driveway to US 70. The route then turns east and continues along the north side of US 70 to the BUS 221 intersection. After crossing over the north leg of the BUS 221 intersection, the route continues along the east side of North Main Street to Viewpoint Drive. After crossing Viewpoint Drive the route turns south utilizing the existing sidewalk in front of City Hall before terminating at the existing sidewalk on New Street.

Additional at-grade crossings of North Main Street are proposed at the existing signalized intersections of McDowell High Drive, Lady Marian Plaza, Machine Shop Road and Logan Street for multimodal connectivity along the corridor.

A map of the recommended route is shown to the right.



SIDEPATH DESIGN

The preferred typical section is a 10-foot wide paved sidepath adjacent to the curb and gutter roadway section with five 11-foot-wide lanes as shown below. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary. A planting strip of six feet is recommended to enhance safety and user experience and to accommodate street trees for long-term future corridor streetscape. The strip may be reduced to two feet in limited areas to accommodate existing infrastructure that cannot be relocated or that would be cost prohibitive to relocate. Shoulders or shy zones of two feet or greater should be kept clear of any obstacles to ensure the full path width remains usable.



COMMUNITY + STAKEHOLDER ENGAGEMENT

A steering committee supported the study and was composed of representatives from the City of Marion, McDowell County, Foothills RPO, NCDOT, NC State Parks, McDowell County Trails Association, Friends of Fonta Flora State Trail, and local business leaders. Steering committee members met three times throughout the duration of the project and provided guidance for the study by reviewing and sharing feedback on relevant data, community engagement efforts, alignment recommendations, and implementation strategies. Members also supported the study by disseminating information and communication materials to the public.



The project team launched a public survey on May 23, 2022, and it was open for public comment until June 17, 2022. The survey was distributed in both hard copy form and linked on the City of Marion's website as an ArcGIS Survey 123 survey. Hard copies were distributed by City of Marion staff and Steering Committee members. In addition, survey information was distributed through other means of communication such as flyers, QR codes, social media posts, emails, newsletters, and a press release. The survey received 224 survey responses.

Individual in-person meetings for landowners took place on July 14, 2022. During this time, the project team reviewed the project overview, opportunities and constraints associated with the study area, and typical cross sections. The project team also answered property-specific design concept questions and document concerns from landowners.

A public meeting took place on August 29, 2022, at the Marion Community Building. The purpose of the meeting was to discuss the project, route alternatives, evaluation criteria, and typical cross sections with members of the public.

IMPLEMENTATION HIGHLIGHTS

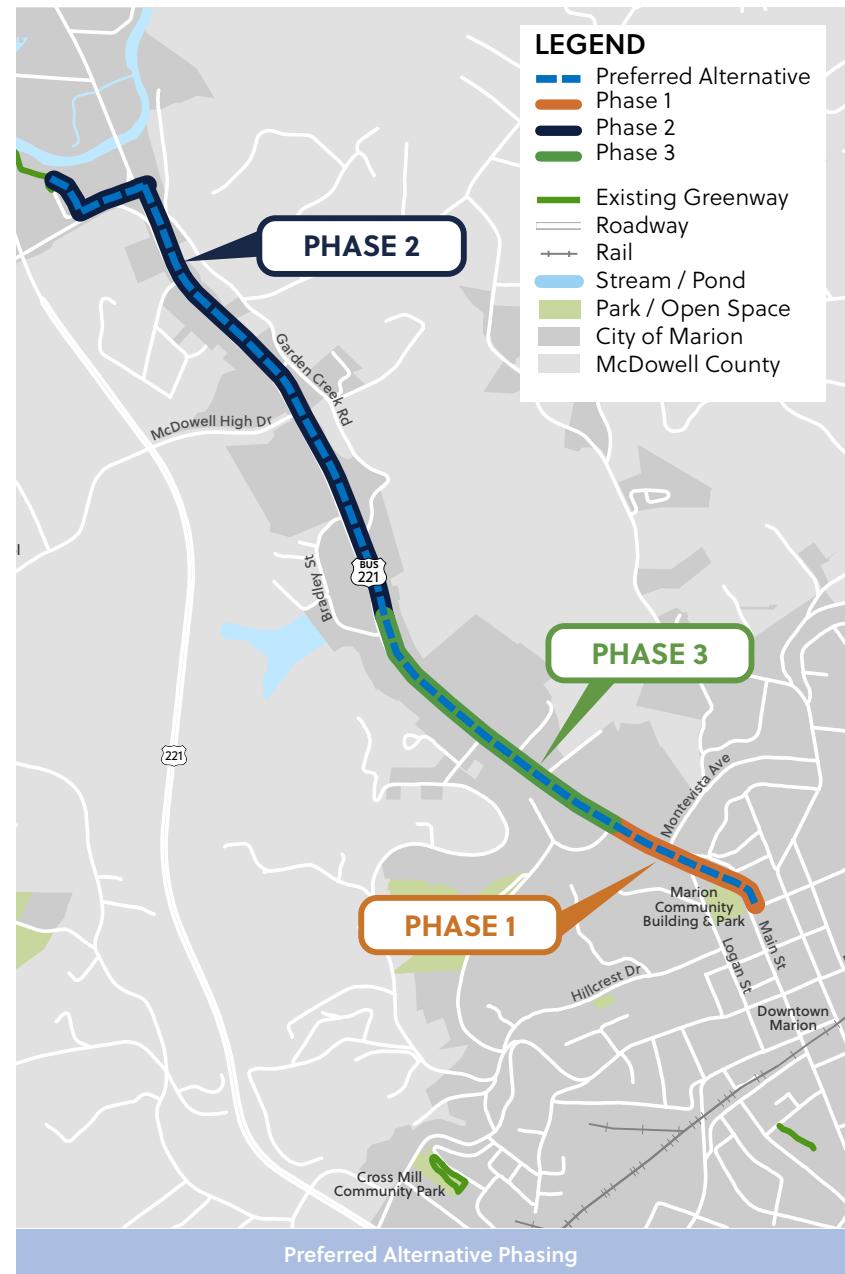
Achieving success in the development of the North Main Street Sidepath in the City of Marion will depend on collaboration with community partners and stakeholders at the state, regional, and local levels. Successful implementation of the sidepath will depend on maintaining and developing partnerships with all project stakeholders.



Based on technical analysis, input from the steering committee and coordination with City of Marion, the preferred route was broken into three phases and prioritized for implementation as shown in the map to the right.

Additional implementation considerations outlined in Chapter 5 include the following:

- Identification of key partners and their associated roles to support project implementation including county and municipal partners, regional and state partners, NCDOT, private sector partners, and community partners / advocacy organizations.
- Plan detailing prioritized implementation of the project including defined actions, lead responsible for completing the action, partners to assist with completing the action, timeframe for completing the action, and defined performance measures for the action.
- Cut sheets for each implementation phase present the following:
 - » Route description;
 - » Location / limits;
 - » Facility type(s);
 - » Total length;
 - » Structures required;
 - » Road crossings (grade-separated and at-grade);
 - » Trail connections;
 - » Destinations served;
 - » Potential real estate acquisition needs;
 - » Potential permitting needs; and
 - » Estimated project costs including current year baseline construction cost, construction cost escalated to anticipated build year, design services, construction engineering and inspection services, project contingency and overall recommended project budget.
- Funding resources including a summary of funding sources including NCDOT funding opportunities, federal grant funding opportunities, public / private partnerships to leverage grant funding and volunteer support that may be used to complete the sidepath.
- Considerations for developing a trail system maintenance plan including example maintenance tasks, task type and recommended frequency.





INTRODUCTION

01



OVERVIEW + STUDY GOALS

The proposed North Main Street Sidepath is a 3-mile corridor connecting Downtown Marion with the Joseph McDowell Catawba Greenway along US 70. The proposed sidepath is a critical missing link in the City of Marion's bicycle and pedestrian network and is an identified corridor of the Fonta Flora State Trail. The *North Main Street Sidepath Feasibility Study* will evaluate potential route scenarios along North Main Street, US 70, and the Catawba River to determine the preferred route. This study also provides cost estimates and an implementation plan to construct the sidepath.

The project is led by the North Carolina Department of Transportation's Integrated Mobility Division (NCDOT IMD) and the City of Marion. Supporting agencies involved in the study are McDowell County, NC State Trails, and Friends of the Fonta Flora State Trail.



1

EVALUATE SIDEPATH ALIGNMENTS

Examine existing site conditions to identify opportunities and constraints and develop sidepath alignment alternatives along North Main Street for both the mainline and identify any desirable connections to existing trails.

2

IMPROVE SAFETY

Address safety needs of users of all ages and abilities in the development of Marion's sidepath and propose safety improvements at critical intersections and access points.

3

GATHER STAKEHOLDER INPUT

Present alignment alternatives to the community/project stakeholders and gather input to help inform study recommendations.

4

ESTIMATE COSTS

Estimate costs associated with the design and construction of the North Main Street Sidepath for budget planning and project programming purposes.

5

PROVIDE RECOMMENDATIONS

Provide recommendations for the preferred sidepath alignment, design criteria, typical sections, and associated property acquisition needs. Outline the range of possible implementation scenarios and potential funding sources.



CITY OF MARION

North Carolina

"Where Main Street Meets the Mountains"



BACKGROUND + SITE HISTORY

The proposed North Main Street Sidepath spans from Downtown Marion to the existing Joseph McDowell Catawba Greenway along US 70. The proposed sidepath is 3 miles in length and will support the City of Marion's active transportation network as it travels through the City's main corridor. The sidepath study area is also an identified corridor of the Fonta Flora State Trail which will make future connections to the trail segments in both Buncombe County and Burke County in North Carolina.

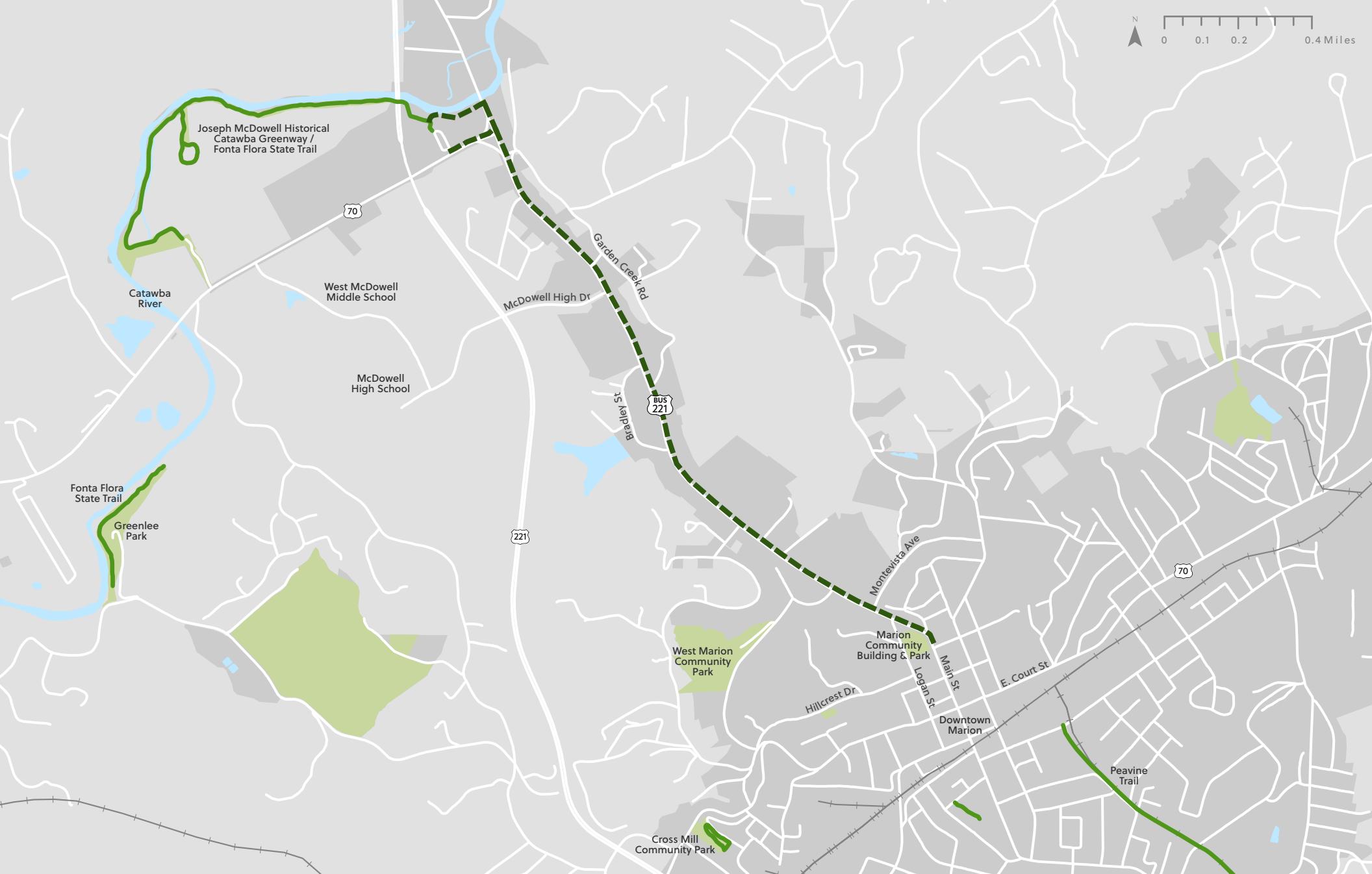
Most of North Main Street is five lanes wide, making it dangerous for pedestrians to cross along the corridor. The City of Marion's *Comprehensive Bicycle Plan* identified the North Main Street Sidepath project as a priority investment in 2016. To integrate bicycle and pedestrian traffic safely within the corridor, the *North Main Street Sidepath Feasibility Study* will evaluate constraints along the corridor that may make construction challenging, such as limited right-of-way (ROW), driveway crossings, and steep slopes.

FONTA FLORA STATE TRAIL

The Joseph McDowell Catawba Greenway serves as the western terminus of the Fonta Flora State Trail. Authorized in 2015, the Fonta Flora State Trail will connect Morganton to Asheville with a hiking and biking trail. The trail will traverse Lake James State Park, part of Pisgah National Forest, and Fonta Flora County Park in Burke County. It will also connect to the Overmountain Victory National Historic Trail and the Mountains-to-Sea State Trail (MST). When completed, the Fonta Flora State Trail will be approximately 100 miles long.

The mission of Friends of the Fonta Flora State Trail (F3ST) is to bring together communities and volunteers to build, maintain, and promote the Fonta Flora State Trail. Their goal is to complete the trail in 10 years.





CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY STUDY CORRIDOR

LEGEND

- Study Corridor
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



WHAT IS A FEASIBILITY STUDY?

Feasibility studies bridge the gap between conceptual planning, prioritization, and programming of projects. They build upon higher-level planning efforts and take a comprehensive look to identify possible alignment alternatives. The purpose of this type of study is to evaluate technical feasibility from a design, permitting, and constructability perspective. Input solicited from the local community and stakeholders help guide the recommended alignments.

Quantity-based preliminary cost estimates are generated for the alignments to help inform further decision making, identify funding needs, and identify next steps for project implementation. It is important to note that a feasibility study does not present a final design for construction. Willing property owners and available funding will help determine the final alignment for a project.

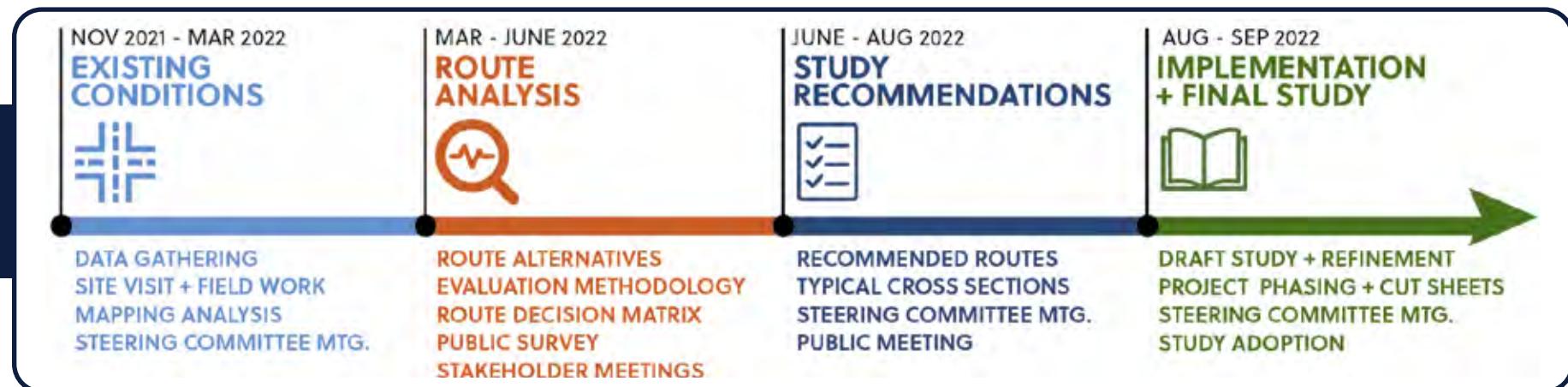




PROCESS + SCHEDULE

Potential routes for the *Marion North Main Street Sidepath Feasibility Study* were developed and evaluated using an approach with considerations of the built, natural, social, and economic environments. These environments are explored further in Chapter 2: Study Considerations + Alternatives Development.

The *Marion North Main Street Sidepath Feasibility Study* started in November 2021 and concluded in September 2022. The study process was divided into the following four phases: Study Considerations, Route Analysis, Study Recommendations, and Implementation & Final Study. Key components for each phase are listed within the study process graphic below. Engagement efforts were integrated throughout the study process and included meetings with either a steering committee, stakeholders, landowners, or the general public.





PREVIOUS PLANNING EFFORTS

The City of Marion, McDowell County, and agencies in the Foothills Region have prioritized bicycle and pedestrian connectivity in planning efforts over the years. The table on the following page provides a summary of key bicycle and pedestrian, transportation, land use, and parks and recreation recommendations from previous plans and studies that are relevant to the *City of Marion North Main Street Sidepath Feasibility Study*.

The following plans were reviewed as part of this exercise:

- Marion, NC North Main Street Corridor Strategy Report, 2020
- Marion Comprehensive Bicycle Plan, 2016
- City of Marion Parks and Recreation Master Plan, 2016
- Safe Routes to School Strategic Action Plan: Marion, NC, 2012
- City of Marion Comprehensive Land Use Plan, 2012
- McDowell County Comprehensive Transportation Plan, 2015 and 2021 Draft
- Isothermal Regional Bicycle Plan, 2018
- NCDOT Great Trails State Plan, 2022



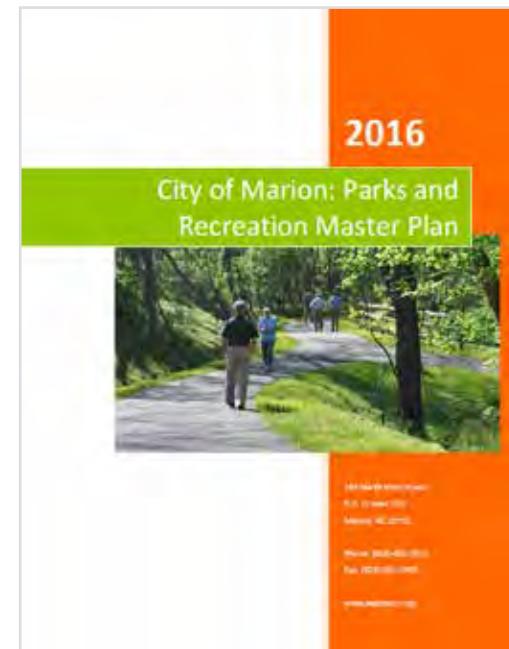
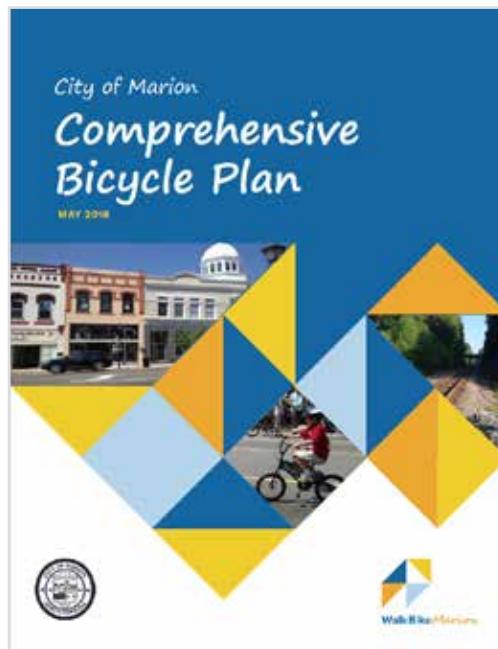


EXISTING PLAN / STUDY	KEY RECOMMENDATIONS RELATED TO THE MARION NORTH MAIN STREET SIDEPATH FEASIBILITY STUDY
Marion, NC North Main Street Corridor Strategy Report, 2020	This report outlines recommendations for the 2-mile segment of North Main St in Marion from Viewpoint Dr to the Joseph McDowell Catawba Greenway. The corridor serves as the northern gateway into Marion and provides a direct connection between Downtown and the existing greenway. The study was centered around a three-day charette process to gather input from community members on corridor enhancements for North Main Street. Guiding principles established by charette participants include providing a multimodal, Complete Street corridor that gives residents and visitors active transportation choices; making a shared-use path connection from Downtown to the greenway; carrying elements of the Downtown streetscape throughout the North Main Street corridor; and creating a vibrant corridor that attracts economic development and fosters a sense of place. Proposed cross section recommendations for North Main Street include a 12-foot buffered shared-use path on the west and an 8-foot buffered sidewalk on the east with travel lanes and an 18 foot grass median with trees and plantings. The proposed speed limit is reduced from 45mph to 35mph. Corridor recommendations also include gateway features, plaza space, crossing improvements at intersections, brick-stamped crosswalks along driveways, landscaping, retaining walls in constrained areas, and median turn pockets. The report also includes project phasing recommendations, funding resources, and conceptual estimates for the sidepath, sidewalk, and medians.
Marion Comprehensive Bicycle Plan, 2016	Marion's Comprehensive Bicycle Plan aims to promote biking as a viable and safe mode of transportation, encourage youth to bike through education and encouragement programs, develop a bike network that connects key destinations such as the Joseph McDowell Catawba Greenway and Peavine Rail corridor, and designate neighborhood bike routes that connect local destinations and rural bike routes that connect to regional destinations. Project recommendations include a sidepath along North Main St, bike lanes along US 70 and Court St, neighborhood bike routes in residential areas to provide connections to Downtown, parks, schools, and proposed trails; and bike routes to provide connections to Lake James State Park and Pisgah National Forest. Trail recommendations include the Peavine Rail-Trail, Mt. Ida Trail, and extensions of the Joseph McDowell Catawba Greenway and YMCA Greenway. The plan also provides design considerations for priority projects, which includes the North Main Street Sidepath. Proposed design guidance outlines bicycle facility design standards, typical cross sections, wayfinding, and maintenance considerations. Implementation and funding strategies provide a structure for managing the development of plan recommendations.
City of Marion Parks and Recreation Master Plan, 2016	The Parks and Recreation Master Plan guides the City of Marion in providing urban parks, open spaces, and recreational programs. The plan's vision is to strengthen its sense of place and improve public health by providing parks and natural areas throughout the community, while also working to preserve and maintain the distinctive characteristics of the city and its neighborhoods. The development of pedestrian and bicycle facilities are recommended to create safe access to parks and recreational centers. Greenway and sidepath recommendations in the City of Marion Bicycle Plan are incorporated in this planning effort, which include the North Main Street Sidepath and Joseph McDowell Catawba Greenway, among others. The plan also outlines implementation recommendations wherein park land, facilities, and maintenance are the responsibility of the City of Marion, but recreational programs are offered as a joint venture between the City and McDowell County.

EXISTING PLAN / STUDY	KEY RECOMMENDATIONS RELATED TO THE MARION NORTH MAIN STREET SIDEPATH FEASIBILITY STUDY
Safe Routes to School Strategic Action Plan: Marion, NC, 2012	The City of Marion Safe Routes to School Action Plan establishes goals and objectives for enhancing opportunities for active travel to school. The goals of the Safe Routes to School Program are to enable and encourage children, including those with disabilities, to walk and bike to school, make bicycling and walking to school a safe and convenient transportation option, and to facilitate planning and development of projects and programs that will improve roadway safety and reduce traffic within the vicinity of local schools. The action plan provides network, program, and policy recommendations for five schools: East McDowell Junior High School, Marion Elementary, West McDowell Junior High School, Phoenix Academy, and Eastfield Elementary. Recommendations for West McDowell Junior High include sidewalks along both sides of US 70 from McDowell High School Rd to BUS 70, along the northside of US 70 from McDowell High School Rd to the Joseph McDowell Catawba River Greenway, along one side of McDowell High School Rd, and along both sides of North Main St to Downtown Marion. Crossing and traffic calming improvements include high-visibility marked crosswalks along intersections of US 70 and North Main St and traffic calming measures within the school zone area of US 70. A trail extension of the Joseph McDowell Catawba River Greenway is also proposed between the existing trail segment and US 70.
City of Marion Comprehensive Land Use Plan, 2012	Marion's Comprehensive Plan focuses on four core community values: preservation, civic involvement, economic prosperity, and government resolve. Building on those values, Marion's vision for the comprehensive plan is to preserve, enhance, and sustain the best qualities of the built, social, and natural environment, and efficiently address community needs, giving positive direction and solutions to the changes and growth anticipated. Key transportation goals include developing a citywide multi-use trail system, prioritizing sidewalk construction in areas that lack adequate pedestrian facilities, incorporating complete street principles in roadway projects and developing a complete street policy and design standards, prioritizing infrastructure that improves transportation options for all users, and discouraging development that impedes bicycle and pedestrian safety. Recommendations sited from previous planning efforts to achieve these goals include improving sidewalk connectivity throughout the city, especially along North Main Street and US 70 and the proposed extension of the Joseph McDowell Catawba River Greenway. Land use recommendations proposed for North Main Street are commercial and mixed-use neighborhood, and regional commercial land use is proposed along US 70. Future land uses support the need for bicycle and pedestrian facilities along North Main St and US 70 due to the mix of activities proposed along the study corridor.
McDowell County Comprehensive Transportation Plan, 2015 and 2021 Draft	The McDowell County CTP outlines long range multimodal transportation needs through 2040. Bicycle and pedestrian recommendations include sidewalks along North Main Street and US 70 as well as multi-use path recommendations along US 70 from the existing Catawba River Greenway to West McDowell High School Rd. The CTP also proposes an extension of the existing greenway along the river to McDowell County limits. Public Transit recommendations include fixed routes along North Main St from Downtown Marion to US 70 and along US 70 to West McDowell High School Rd. As of this writing, the CTP is undergoing an update, and draft network recommendations include a multi-use path along North Main St from Downtown to Hankins Rd and along US 70 from North Main St to McDowell County limits. Bicycle facilities are also recommended along North Main St from Viewpoint Dr to US 70 and along US 70 from North Main St to the existing Catawba River Greenway.



EXISTING PLAN / STUDY	KEY RECOMMENDATIONS RELATED TO THE MARION N. MAIN STREET SIDEPATH FEASIBILITY STUDY
Isothermal Regional Bicycle Plan, 2018	The Isothermal Regional Bicycle Plan provides bicycle network, program, and policy recommendations for Cleveland, McDowell, Polk, and Rutherford Counties. Priority bicycle recommendations include separated bicycle lanes along North Main Street from Viewpoint Dr to US 70 and a greenway connection along North Main St and the Catawba River to the existing greenway. Regional network recommendations include extension of the Catawba River Greenway west to Old Fort and east to Lake James State Park.
NCDOT Great Trails State Plan, 2022	The NCDOT statewide trail plan proposes a comprehensive network of greenways and sidepaths to connect all 100 counties via non-motorized transportation. Trail recommendations include the extension of the Joseph McDowell Catawba Greenway and the North Main Street Sidepath as priorities of the Fonta Flora State Trail network in the region.



POLICY REVIEW

The following table provides a summary of key state, and local policies from NCDOT, McDowell County, and the City of Marion that may guide or influence the development of the North Main Street Sidepath.

EXISTING POLICY	KEY ORDINANCES RELATED TO THE MARION NORTH MAIN STREET SIDEPATH FEASIBILITY STUDY
City of Marion, NC Unified Development Ordinance	<p>The UDO promotes development patterns that support and facilitate the adequate provision of multimodal transportation. The UDO specifies that greenways and trails used primarily for recreational purposes may be conveyed either in fee simple or as a dedicated easement. Sidewalks are required in subdivisions, new buildings or uses, and existing buildings or developments undergoing expansion.</p> <p>A minimum 100-foot vegetative buffer is required for all new development activities that exceed the low-density development option; otherwise, a minimum 30-foot vegetative buffer for development activities is required along all perennial waters. No new development is allowed in the buffer except for water dependent structures and other structures such as public projects such as road crossings and greenways where no practical alternative exists. These activities should minimize built-upon surface area, direct runoff away from the surface waters and maximize the utilization of stormwater Best Management Practices.</p> <p>Mixed-Use Residential Districts require increased access to pedestrian and bicycle facilities.</p> <p>General Business Districts, which includes Community Commercial and Regional Commercial land uses, require connectivity to pedestrian and bicycle facilities to provide access to goods, services, and employment.</p> <p>A 20-foot street buffer yard shall be provided along property abutting roadways with ROW of 51 feet or greater. Provided the required buffer yard width and landscaping is maintained, a buffer yard may contain pedestrian and bicycle paths, or other similar design elements.</p>
McDowell County Zoning Ordinance	McDowell County Zoning Ordinance ensures orderly, healthy, safe, attractive, and economically sound development and protection of existing property values in the County. There are no specified ordinances that require or encourage the development of bicycle and pedestrian facilities to improve multimodal or recreational access in the County.



EXISTING POLICY	KEY ORDINANCES RELATED TO THE MARION N. MAIN STREET SIDEWALK FEASIBILITY STUDY
NCDOT Complete Streets Policy, 2019	<p>The NCDOT Complete Streets Policy Update was adopted by the Board of Transportation in August 2019. This policy requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of all transportation projects in North Carolina. The adopted Comprehensive Transportation Plan (CTP) is considered the controlling plan for the identification of nonmotorized facilities to be evaluated as part of a roadway project. The CTP may include and/or reference locally adopted plans for public transportation, bicycle and pedestrian facilities, and greenways. Bicycle, pedestrian, and public transportation facilities that appear in the CTP directly or by reference will be included as part of the proposed roadway project, and NCDOT is responsible for the full cost of the project. Bicycle, pedestrian, and transit facilities incidental to a roadway project where a need has been identified through the project scoping process but not identified in an adopted plan may be included in the project. Inclusion of these incidental facilities requires the local jurisdiction to share the incremental cost of constructing the improvements based on population thresholds. The policy also establishes maintenance responsibility for active transportation facilities. Bicycle, pedestrian, and transit improvements inside a municipal boundary are subject to local maintenance. Projects that have not completed environmental review prior to August 2019 are subject to the Complete Streets Policy.</p>

EXISTING POLICY	KEY ORDINANCES RELATED TO THE MARION N. MAIN STREET SIDEPATH FEASIBILITY STUDY
NCDOT Roadway Design Manual, 2021	<p>The Roadway Design manual provides general design information, design criteria, and plan preparation guidance for NCDOT roadways. Guidance on multimodal design elements can be referenced in Part 1, Chapter 4 Sections 4.14, 4.15, and 4.16. Guidance states that shared-use paths, often referred to as greenways, are paths physically separated from motor vehicle traffic and used by pedestrians, bicyclists, skaters, wheelchair users, and other non-motorized users. Most shared-use paths are designed for two-way travel. Sidepaths are shared-use paths located immediately adjacent to and parallel to the roadway, or within the ROW. Sidepaths and other shared-use paths are wider than sidewalks, accommodating both bicyclists and pedestrians, and are used for both transportation and recreational uses. The width of a shared-use path may vary, based on expected user volumes and context. Minimum widths do not include graded areas or buffers on either side of the pathway.</p> <ul style="list-style-type: none">• Desirable width – 12 to 14 feet• Minimum width – 10 feet; 8 feet in exceptionally constrained areas• Vertical clearance, minimum – 8 feet
NCDOT Bridge Policy, 2000	<p>Shared-use paths follow federal requirements for accessibility per the U.S. Access Board and the U.S. Department of Justice. Refer to PROWAG Chapter 3 Section R302.5 and R302.6. Minimum requirements follow the 2010 ADA Standards for Accessible Design.</p> <p>Refer to NCDOT Minimum Design Recommendations for Greenways for pavement design, when applicable. Refer to the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities, and AASHTO Guide for the Development of Bicycle Facilities 2012 Fourth Edition, Chapter 5 for more detailed information.</p> <p>For Pedestrian Roadway Crossing, refer to NCDOT Roadway Standard Drawings Std. Nos. 848.05 and 848.06 for detailed dimensions for pedestrian refuge islands, crossing islands at channelized right turn lane intersections, curb extensions, and raised crossings.</p> <p>This policy establishes design elements of new and reconstructed bridges on the North Carolina Highway System. Vertical clearances for new structures shall be designed above all sections of pavement including the useable shoulder. Future widening and pavement cross slope will be considered in design clearance. Vertical clearances for facilities are as follows: over interstates, freeways, and arterials: 16'-6" to 17'-0"; over local and collector roads and streets: 15'-0" to 15'-6"; over all railroads: 23'-0" to 23'-6" or less if approved by Railroads; pedestrian overpasses and sign structures vertical clearance: 17'-0" to 17'-6". When a bikeway is required on a bridge, the structure shall be designed in accordance with AASHTO standard design accommodations to give safe access to bicycles. A minimum handrail height of 54" is required where bicyclist will be riding next to the handrail. Sidewalks shall be included on new bridges with curb and gutter approach roadways that are without control of access. A minimum handrail height of 42" is required.</p>



Downtown Marion - Marion, NC

PROJECT BENEFITS

Once constructed, the City of Marion's North Main Street Sidepath will provide numerous benefits to its users. Benefits achievable from this sidepath connection to the existing Joseph McDowell Catawba Greenway include but are not limited to the following: mobility and connectivity, increased safety, improved health and well-being, positive environmental and economic impacts, and promotion of equity and accessibility.

MOBILITY + CONNECTIVITY

More than 45% of all driving trips in the United States are under 3 miles, and 60% of trips are less than 5 miles. These trips, which could be taken by bike or on foot in 20 to 30 minutes, represent opportunities for mode shifts to biking and walking in communities across the United States.

Communities that are increasing their active transportation mode shares invest in well connected, multimodal networks that allow people of all ages and abilities to bike and walk to their desired destinations. Connectivity investments that focus on active transportation make better use of existing facilities and enable more users to connect to their destinations.

The proposed sidepath provides residents and visitors with an alternative to driving their cars by providing bike and pedestrian access to local businesses, recreational centers, and homes along N. Main Street in Marion. The sidepath will also provide connectivity between the existing Joseph McDowell County Greenway and Downtown Marion.



Trips under 3 miles could be taken by bike or on foot in 20 to 30 minutes.

SAFETY

According to WalkBikeNC, North Carolina's state bicycle and pedestrian plan, almost 200 bicyclists and pedestrians are killed each year by cars in the state.

As part of this feasibility study, several crossing treatments are proposed to safely move active transportation users across streets and intersections along the N. Main Street corridor.

In its 2014 Benchmarking Report, the Alliance for Biking and Walking ranked NC 42nd and 46th worst for pedestrian and bicyclist fatality rates per capita, respectively.



PROPOSED CROSSING TREATMENTS:

- Cross at existing signalized intersections
- Install marked crosswalks + ADA accessible ramps
- Install push-button activated pedestrian signals with countdown timers



HEALTH + WELL-BEING

Pressures associated with urban development often result in increased stress levels (i.e., noise and safety concerns linked to traffic). Improving access to nature through the construction of active transportation facilities (i.e., sidepaths) helps to reduce these stressors and improve well-being for its users. Benefits range from short to long-term effects in both physical and mental health. Trails and parks provide a safe environment for activity and with long-term usage can improve cardiovascular health and reduce the chance of being diagnosed with cardiovascular, skeletal, and other potentially life-threatening ailments.

According to the 2021 McDowell County Community Health Assessment, most of the County's population lives in the City of Marion. This report also states that since the COVID-19 pandemic, the percent of the population defined as obese in the county has risen by 8.1% in the last 4 years. The proposed sidepath could improve health behaviors and serve as an exercise opportunity for residents who live in the City. Local students could also use the sidepath to walk to and from McDowell High School and West McDowell Middle School.





ENVIRONMENT



Vegetation can help provide shade, filter pollution from runoff, & provide a source of food for local wildlife.

Trees and landscaping can maintain community character and add value to the experience of using a sidepath. They provide shade for users during hot weather and help to absorb stormwater runoff (Small Town + Rural Multimodal Networks).

Population and land use sprawl lead to an increased dependency on automobiles. Increasing walking and bicycling trips can have significant impacts on the environment. According to FHWA, replacing two miles of driving each day with walking and bicycling will prevent 730 pounds of carbon dioxide from entering the atmosphere within a one-year timeframe.

Linking communities to key destinations through active transportation facilities will help preserve and protect natural resources, while improving local ecosystems.



ECONOMY

Comprehensive active transportation networks like greenways attract new businesses and bring economic life to communities around the world. As an example, the East Coast Greenway, a proposed trail connecting the eastern seaboard from Maine to Florida, positively impacts the Triangle by generating over \$90 million in related revenue and taxes per year and 800 temporary and permanent jobs through tourism and trail development.

Local businesses have seen recent boosts following the construction of active transportation facilities in their communities. For example, the storefront occupancy rate in downtown Dunedin, Florida increased from 30 percent to 95 percent following the establishment of the nearby Fred Marquis Pinellas Trail (Rails to Trails Conservancy).

As a direct connection to the Joseph McDowell Catawba Greenway and as a segment of the Fonta Flora State Trail, the N. Main Street Sidepath may help promote tourism and low-cost economic development for the City of Marion.



Attract talent, tourism, and business through public investment.



EQUITY + ACCESSIBILITY



Ensuring residents have access to recreational and active transportation opportunities that are affordable and convenient is fundamental to efforts reducing income inequality.

Bicycle and pedestrian facilities are often designed to meet code and are not designed to eliminate inconveniences to persons with disabilities. A focus on equity can promote the accessible design of active transportation facilities. Supporting the design of facilities for users of all ages and abilities results in more safe and inclusive environments where community members can gather and connect with one another.

Expand access to recreational and active transportation opportunities for all residents.







STUDY CONSIDERATIONS + ALTERNATIVES DEVELOPMENT

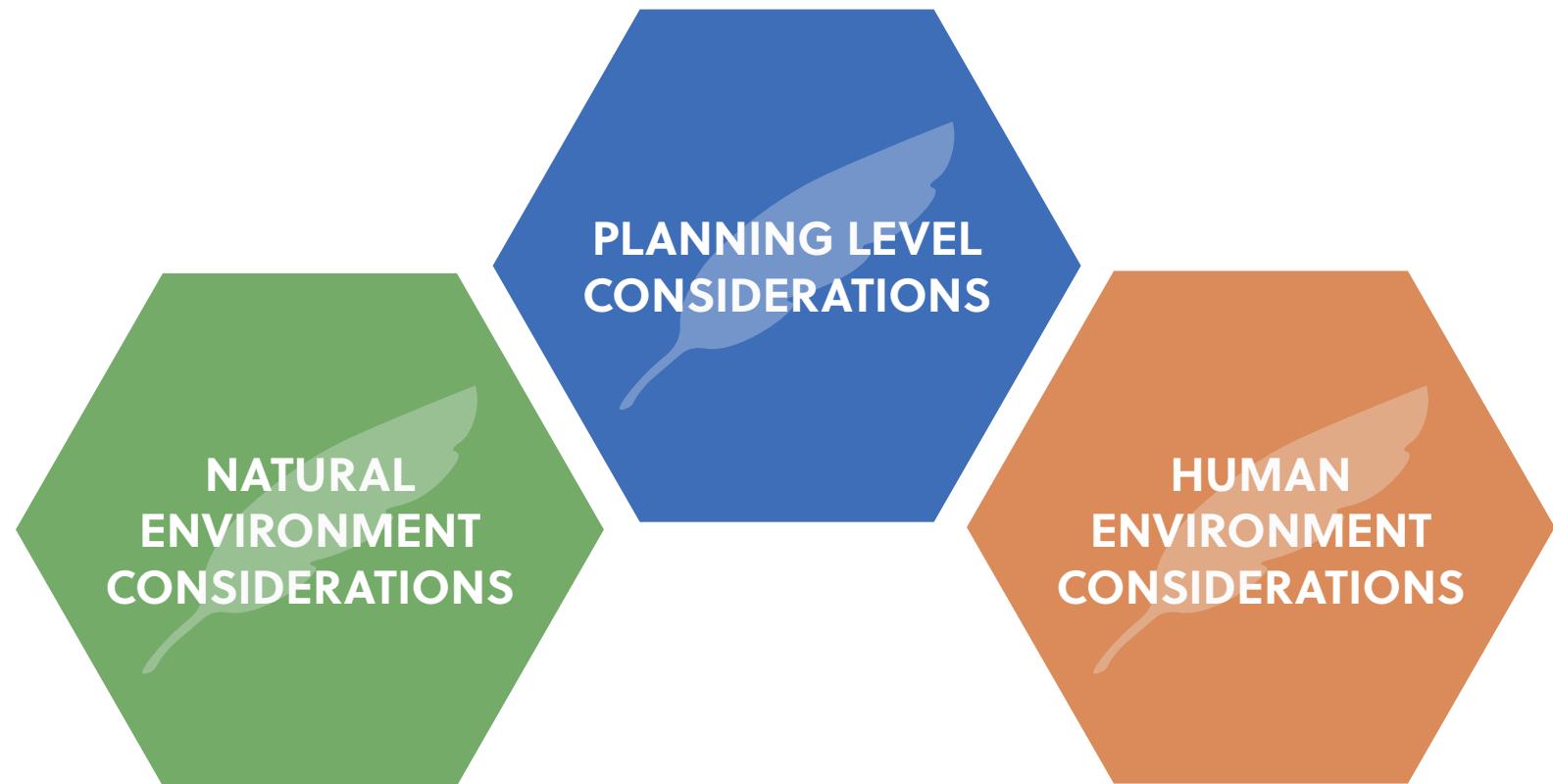




STUDY CONSIDERATIONS

OVERVIEW

This study considers both natural and human environmental constraints, as well as planning level considerations. All recommendations detailed later in this report were informed by a thorough analysis of existing conditions, including, but not limited to, a review of existing plans and policies, an inventory of considerations for the human and natural environments, planning level considerations, and stakeholder input. All recommendations, approximated costs, and data presented in this study are based on publicly available Geographic Information Systems (GIS) data, aerial imagery, and LiDAR topography data. A review of GIS data and documented planning efforts were supplemented with site visits to the study area to gain a better understanding of local community needs, environmental resources.



PLANNING LEVEL CONSIDERATIONS

The following planning level considerations were reviewed as part of this study:

- Demographics
- Employment Density

For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.

COMMUNITY DEMOGRAPHICS

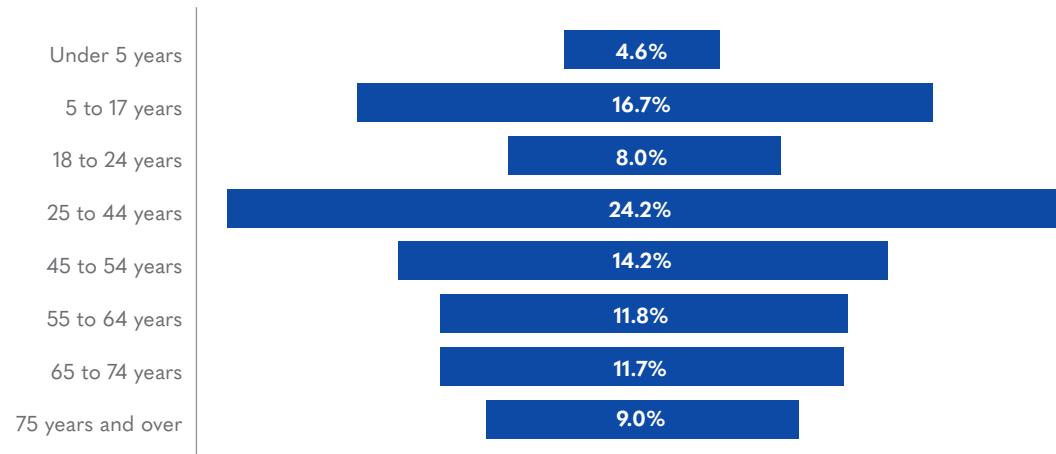
Analyzing demographic trends are essential to planning the study area's active transportation network. This analysis helps to inform the public engagement approach and to ensure proposed recommendations meet the diverse needs of people residing in the study area. Demographic data was pulled from the 2020 American Community Survey (ACS) 5-year estimates (2016-2020) and was accessed through the United States Census Bureau. Census tracts 9706, 9704, 9705, and 9706 were included in the study area for the Marion North Main Street Sidepath. According to recent ACS data, the study area includes an estimated total population of 13,220.

This section includes an analysis of the following:

- Age
- Poverty
- Race
- Education
- Income
- Language
- Commute modes
- Vehicle availability
- Employment density



AGE

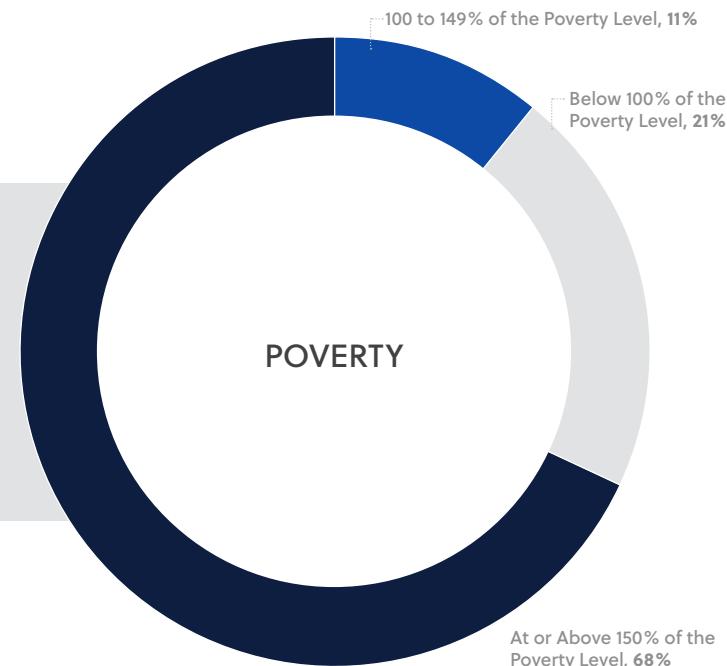


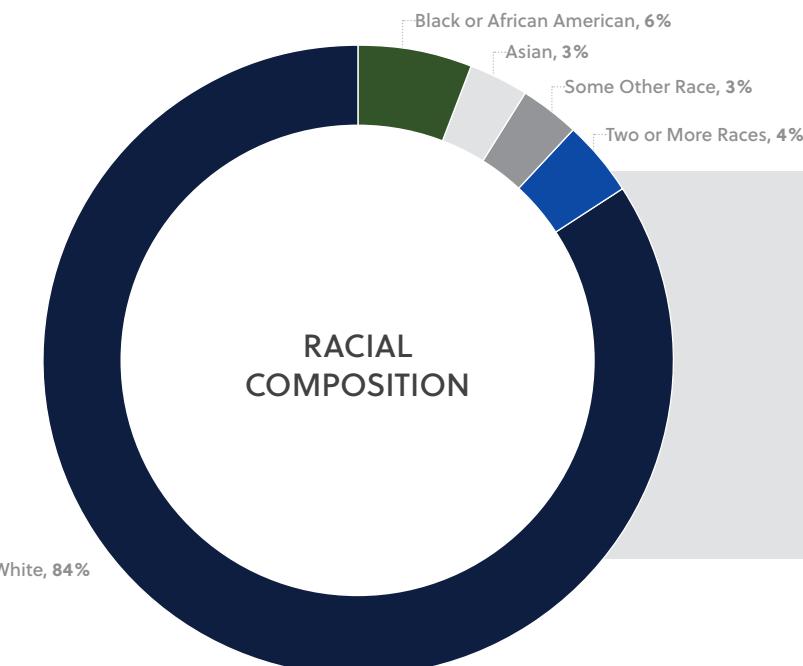
AGE

A little over 24 percent (24.2%) of the population within the study area falls between 25 to 44 years of age. This is consistent with the median age in North Carolina which is 38.9. The second largest age range is the 5- to 17-year-old category at 16.7 percent. More than half (53.5%) of the population within the study area is 44 years or younger.

POVERTY STATUS

The majority of the population (68%) within the study area is at or above 150% of the poverty level. Twenty-one percent (21%) fall below the poverty level, while 11 percent fall between 100 to 149% of the poverty level. Recent ACS data revealed that 13.4 percent of North Carolina residents earned incomes below the federal poverty line.





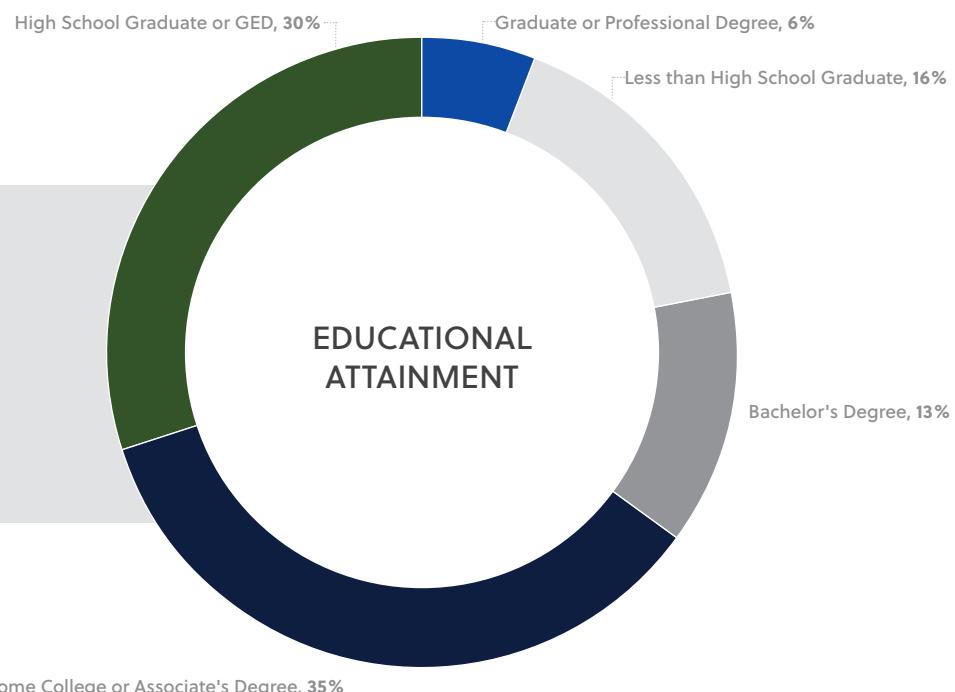
EDUCATION

Less than twenty percent (16%) of residents in the Marion Sidepath study area did not complete high school. Thirty-five percent (35%) of residents within the study area have completed some college or obtained an associate degree. Thirteen percent (13%) of residents obtained a four-year college degree, while 32 percent of people in the state obtained a bachelor's degree or higher.

RACE + ETHNICITY

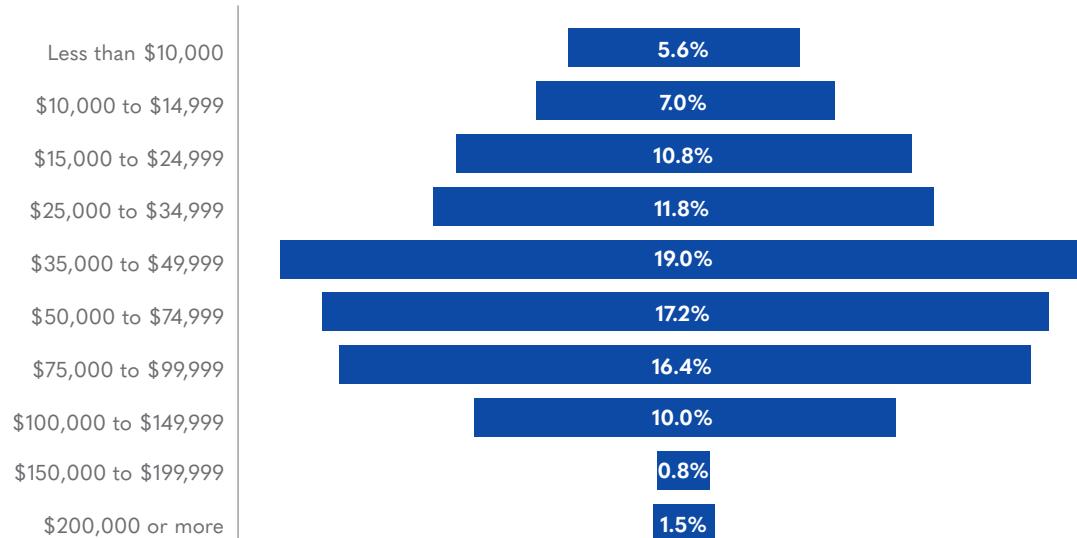
In North Carolina, approximately 66 percent of residents identify as "White alone", and 22 percent of residents identify as "Black alone". The Marion North Main Street study area shows a slightly different distribution, with 84 percent of the study area identifying as "White alone" and approximately 6 percent of the population identifying as Black or African American. Residents in the study area identify as having some other race (3%) or having two or more races (4%). Approximately 3 percent (3%) of the state's population identifies as "Asian alone", and this is consistent with that of residents within the study area of interest.

In the study area, 14 percent of residents identify as Hispanic or Latino origin which is higher than North Carolina, in which 10 percent (9.5%) of the statewide population identifies as "Hispanic or Latino".





HOUSEHOLD INCOME

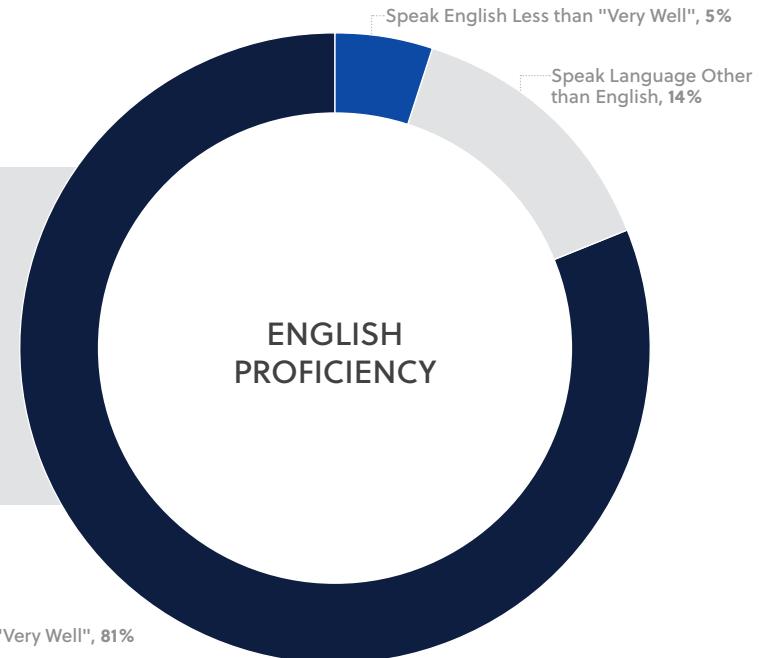


INCOME

Nineteen percent (19.0%) of the study area's residents have an annual household income between \$35,000 and \$49,999. This is lower than the median income of North Carolina households which is \$56,642. Almost 30 percent (28.7%) of residents within the study area have an annual household income greater than \$75,000.

LANGUAGE

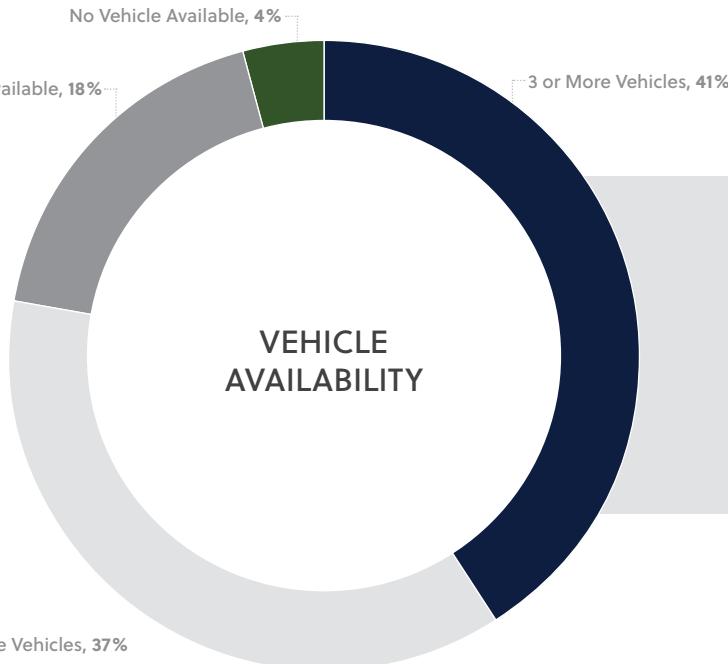
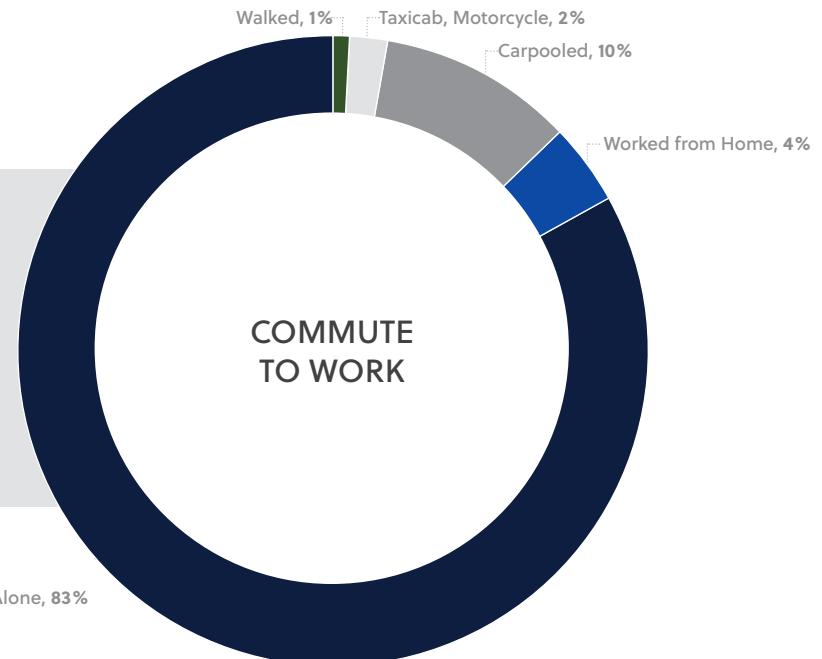
While most residents in the study area speak English "very well" (81%), it is still important to include those who speak a different language in the planning process. Interpretive services should be offered for those who do not speak English, or have a limited ability to read, speak, or understand English so that they may participate and contribute to discussions about the project. Almost 15 percent (14%) of residents in the Marion Sidepath study area speak a language other than English and 5 percent of residents speak English less than "very well".



COMMUTE

Residents in the study area predominantly commute by single-occupancy vehicle, with 83 percent of workers driving alone to work, and of those workers, the average commute time is 23.1 minutes.

Thirteen percent (13%) of workers commute by walking, taking a taxicab or motorcycle, or by carpooling. Residents working from home in the study area make up 4 percent of the study area's population.



ACCESS TO VEHICLES

Forty-one percent (41%) of households within the study area have access to three or more vehicles. North Main Street is lined with several businesses so households in the study area with limited commuting options (4% are vehicleless and 18% have access to one vehicle) may benefit from using the Marion North Main Street Sidepath to travel to and from work or to run errands.

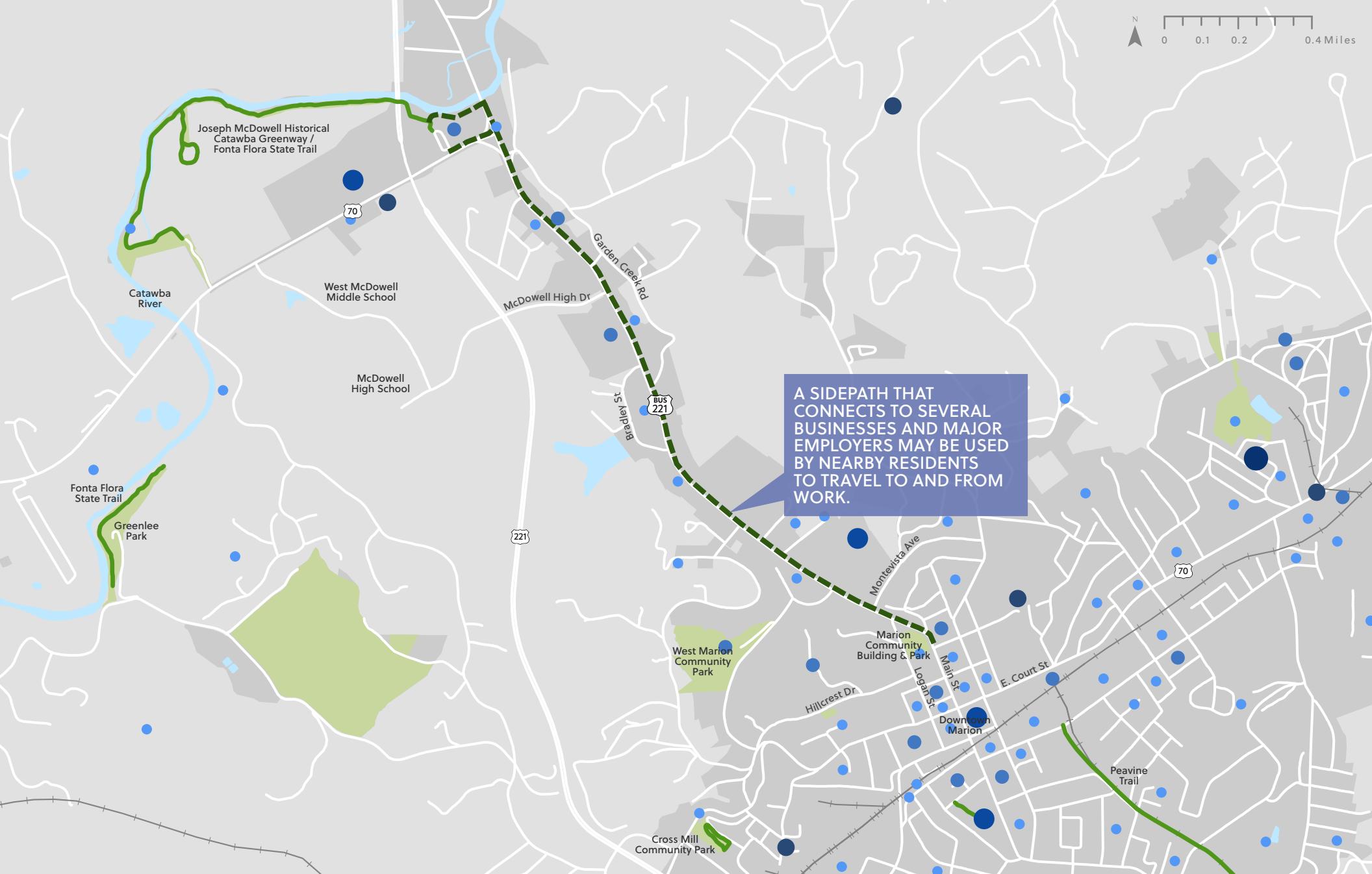


EMPLOYMENT DENSITY

The map to the right displays the employment density for the City of Marion. Several points along North Main Street indicate that the study corridor acts a major travel corridor for businesses in Marion. For example, the point located northwest of Montevista Avenue represents Marion City Square. This shopping mall hosts a gym, furniture store, auto parts store, and several restaurants. Several other points along the corridor represent car dealerships, car repair and maintenance stores, and fast-food restaurants.

The addition of an active transportation facility on North Main Street would help connect residents and visitors from the Joseph McDowell Catawba Greenway just south of the Catawba River to Downtown Marion. As indicated on the previous page, 83 percent of residents in the study area drive alone in a car and 4 percent of residents do not have access to a vehicle. A new active transportation facility on the corridor may serve as a viable transportation option for those who need to access businesses on North Main Street.







NATURAL ENVIRONMENT CONSIDERATIONS

Nature plays a large role in the way humans connect with and/or shape the environment. For example, the existing Joseph McDowell Historical Catawba Greenway runs along the Catawba River, providing a unique experience to greenway users. While the extension of the greenway studied in this plan would benefit from traversing through natural landscapes and next to water, other natural constraints may be identified that will affect the final alignment proposed in this study.

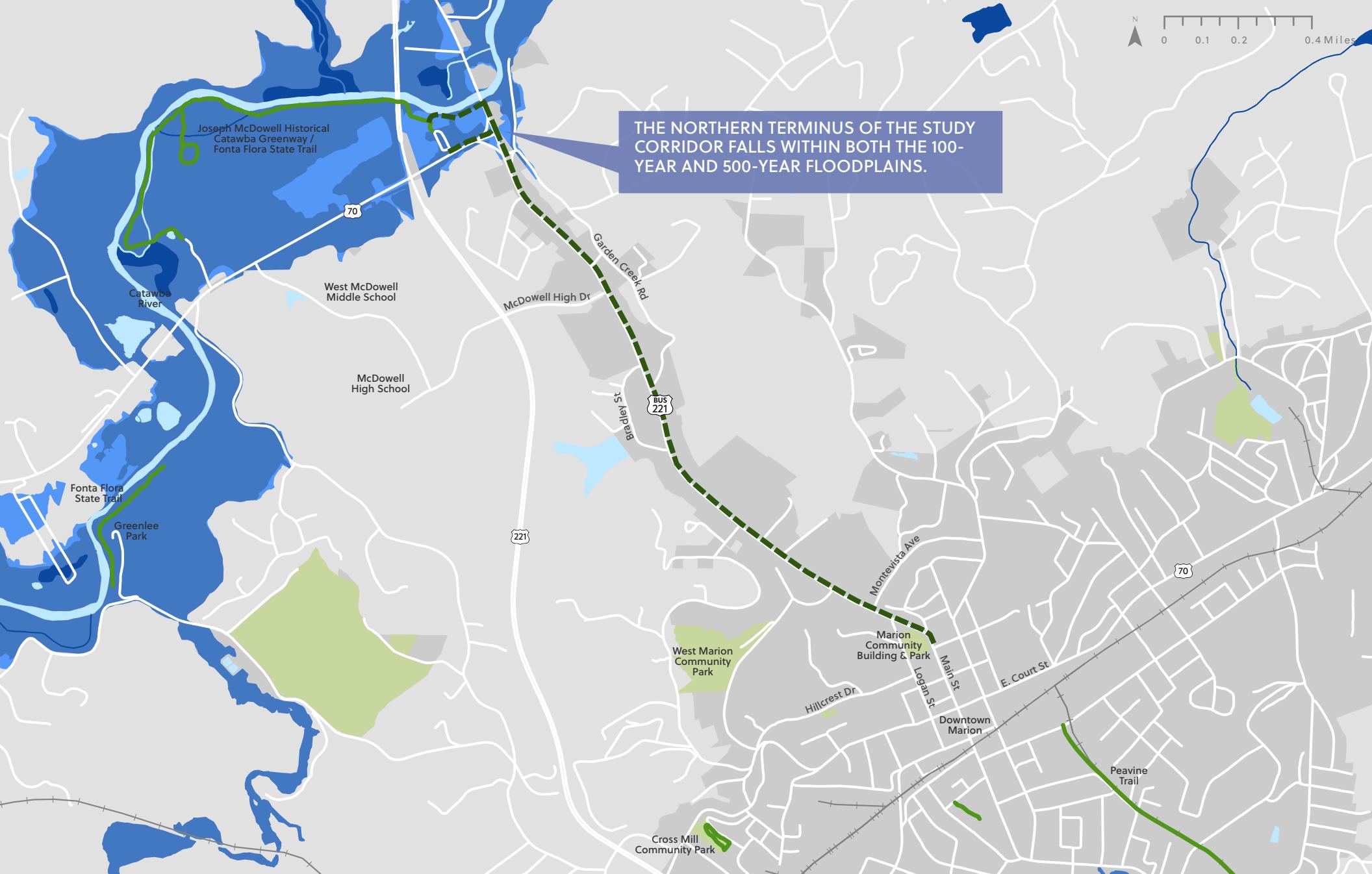
The following natural environment considerations were assessed as part of this study:

- Wetlands + floodplains
- Topography

For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.



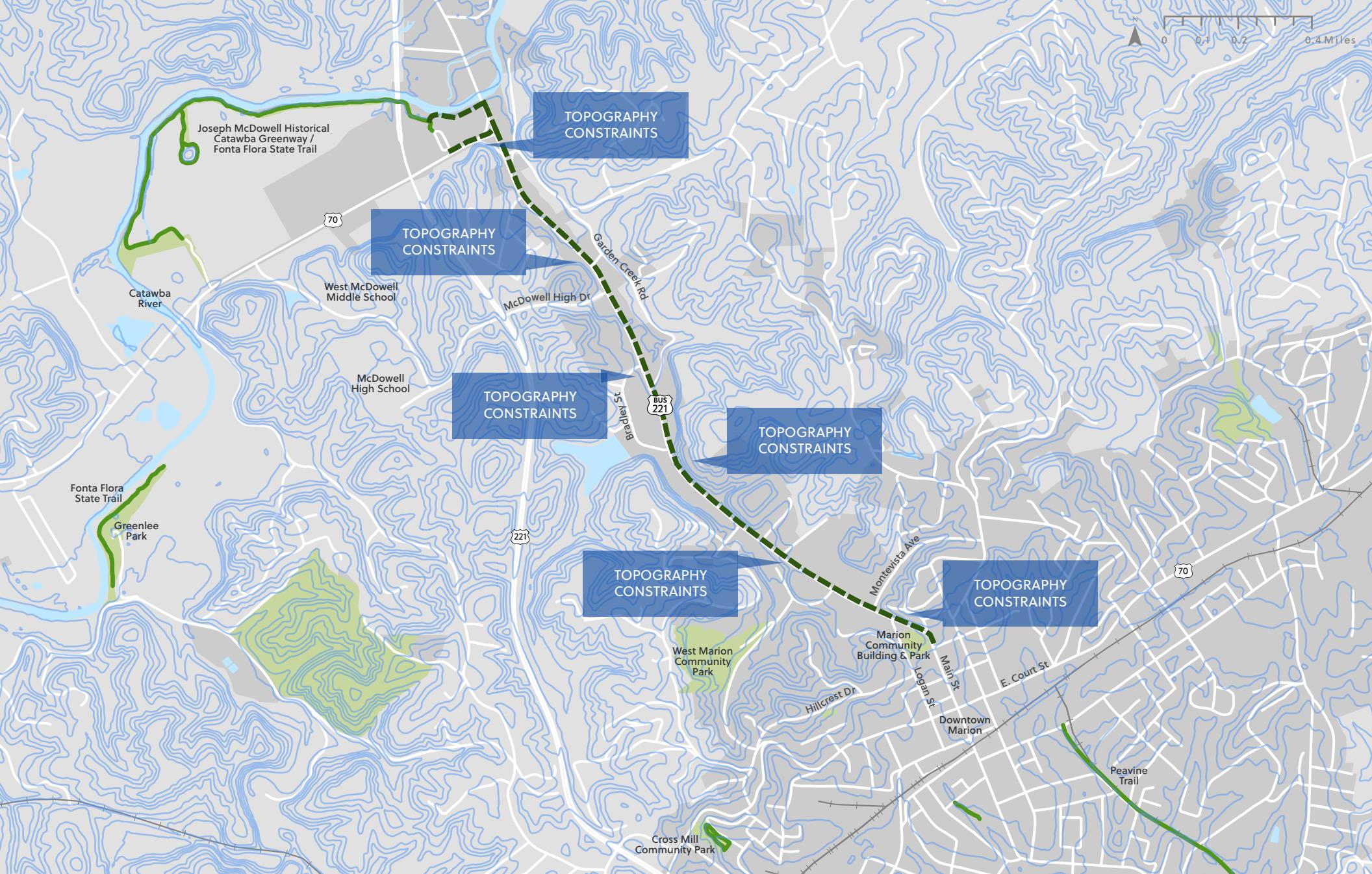
Bicyclists on Joseph McDowell Historical Catawba Greenway - Marion, NC



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY WETLANDS & FLOODPLAINS

LEGEND

- Study Corridor
- Existing Greenway
- Wetlands
- Roadway
- 500-Year Floodplain
- Stream / Pond
- 100-Year Floodplain
- Park / Open Space
- City of Marion
- McDowell County



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY TOPOGRAPHY (20FT CONTOURS)

LEGEND

- Study Corridor
- Topographic Contours
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



Pedestrian Walking on Cut Slope along North Main Street



HUMAN ENVIRONMENT CONSIDERATIONS

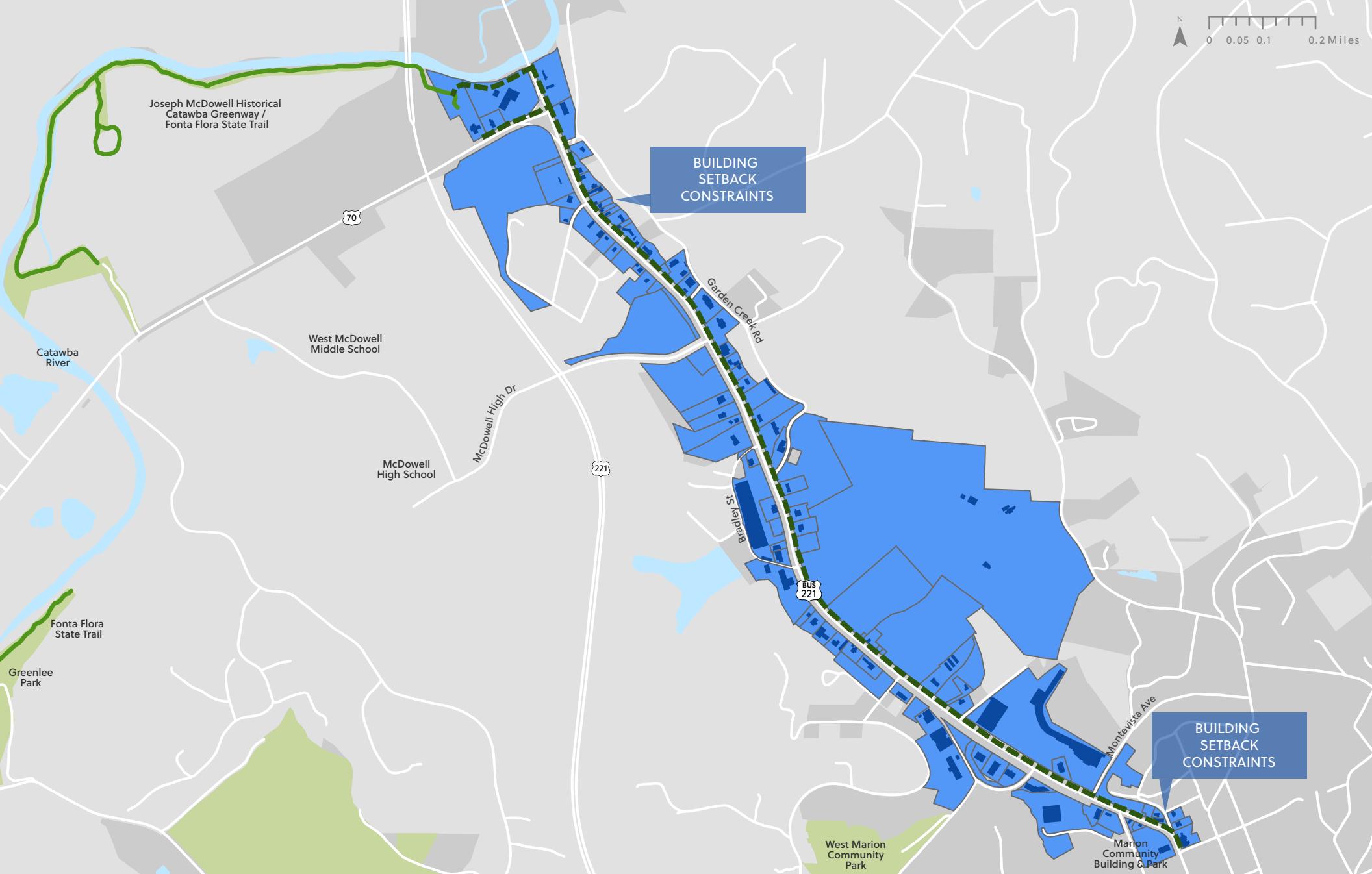
The following human environment considerations were assessed as part of this study:

- Adjacent parcels and buildings
- Annual Average Daily Traffic (AADT)
- Speed limit
- Existing bicycle and pedestrian facilities
- Planned bicycle and pedestrian facilities
- Bicycle and pedestrian crashes
- ROW

For specific findings related to this feasibility study, please refer to the annotated maps on the following pages.



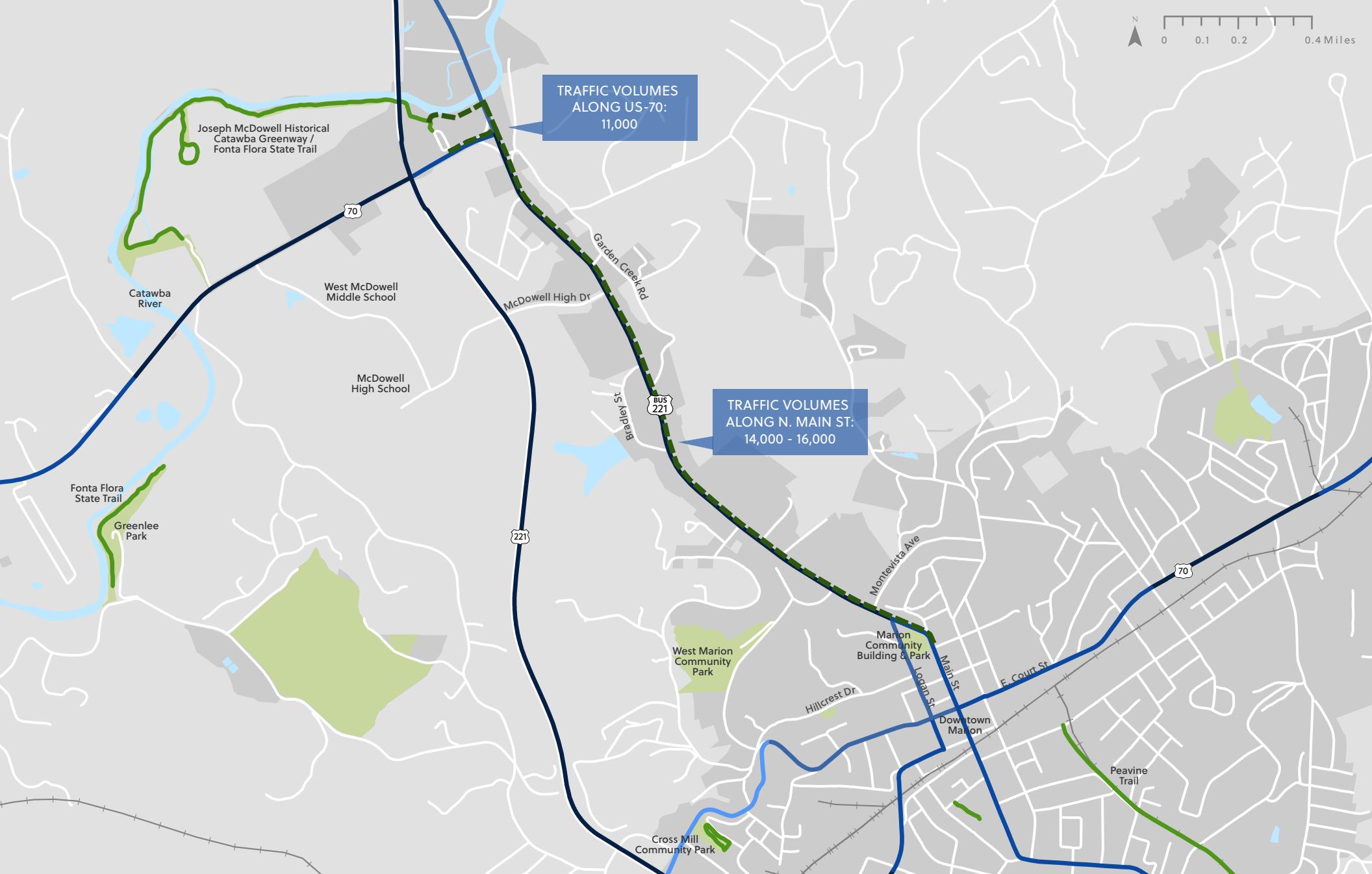
North Main Street Corridor (Facing North from Downtown Marion)



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ADJACENT PARCELS & BUILDINGS

LEGEND

- Study Corridor
- Building
- Parcel
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY

ROADWAY TRAFFIC VOLUME (AADT)

LEGEND

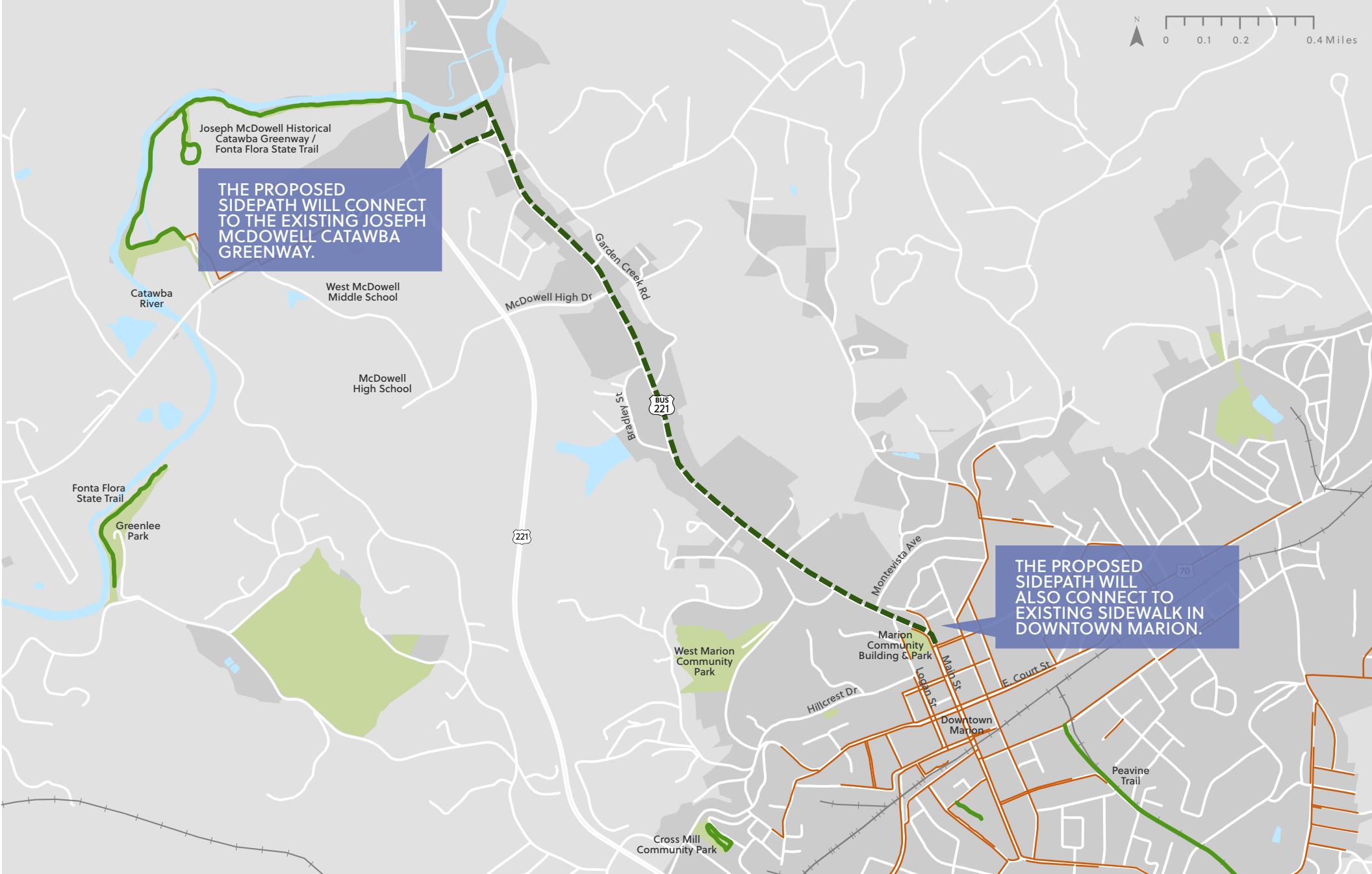
- Study Corridor
- 100 - 3,000 AADT
- 3,001 - 6,000 AADT
- 6,001 - 12,000 AADT
- 12,000 - 24,000 AADT
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROADWAY SPEED LIMIT

LEGEND

- Study Corridor
- 20-25 mph
- 30 - 35 mph
- 40 - 50 mph
- 55 - 70 mph
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

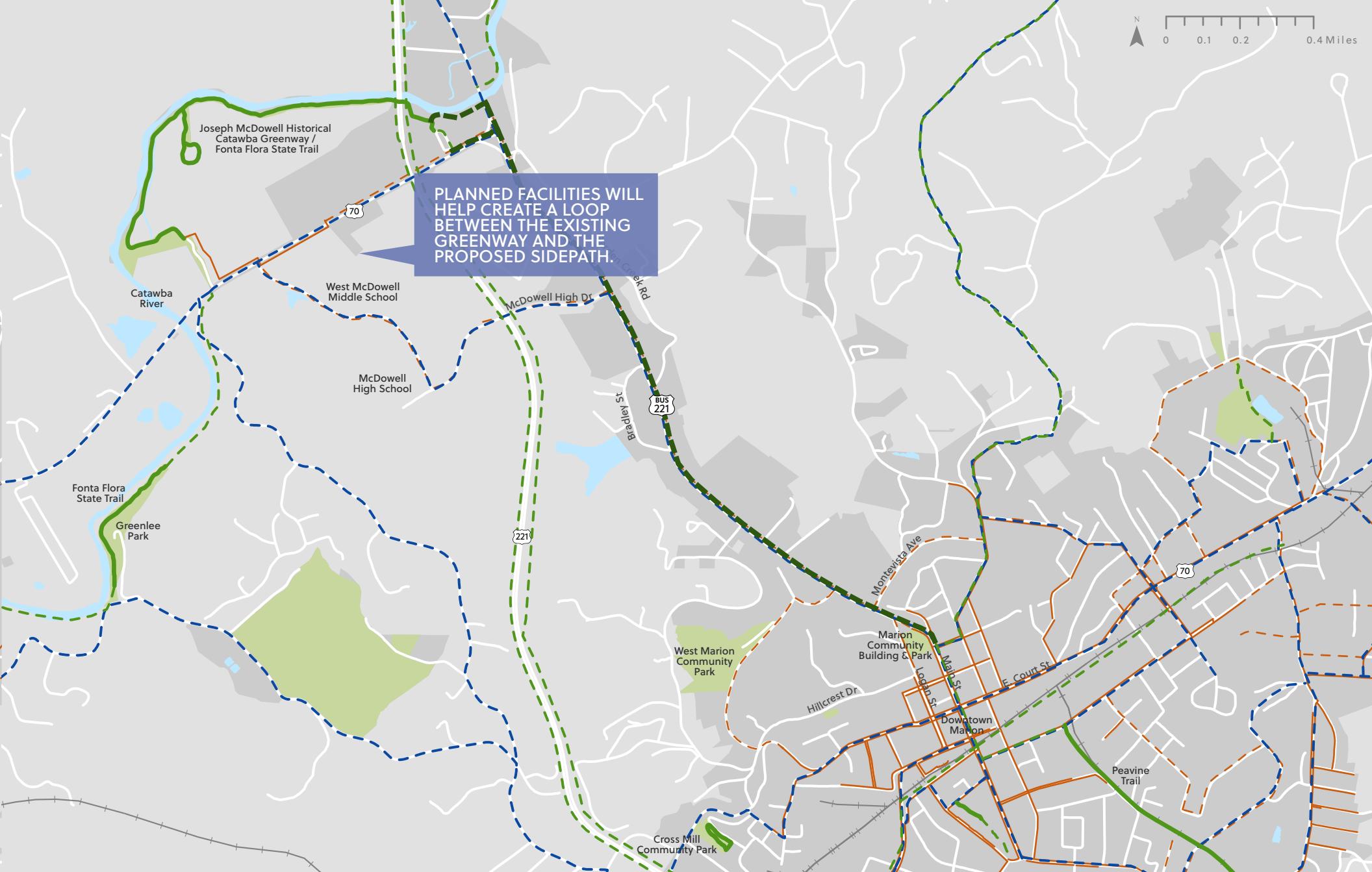


CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY

EXISTING BICYCLE + PEDESTRIAN FACILITIES

LEGEND

- Study Corridor (Dashed Green Line)
- Existing Greenway (Solid Green Line)
- Existing Sidewalk (Orange Line)
- Roadway (Grey Line)
- Rail (Dashed Grey Line)
- Stream / Pond (Blue Shaded Area)
- Park / Open Space (Green Shaded Area)
- City of Marion (Dark Grey Shaded Area)
- McDowell County (Light Grey Shaded Area)

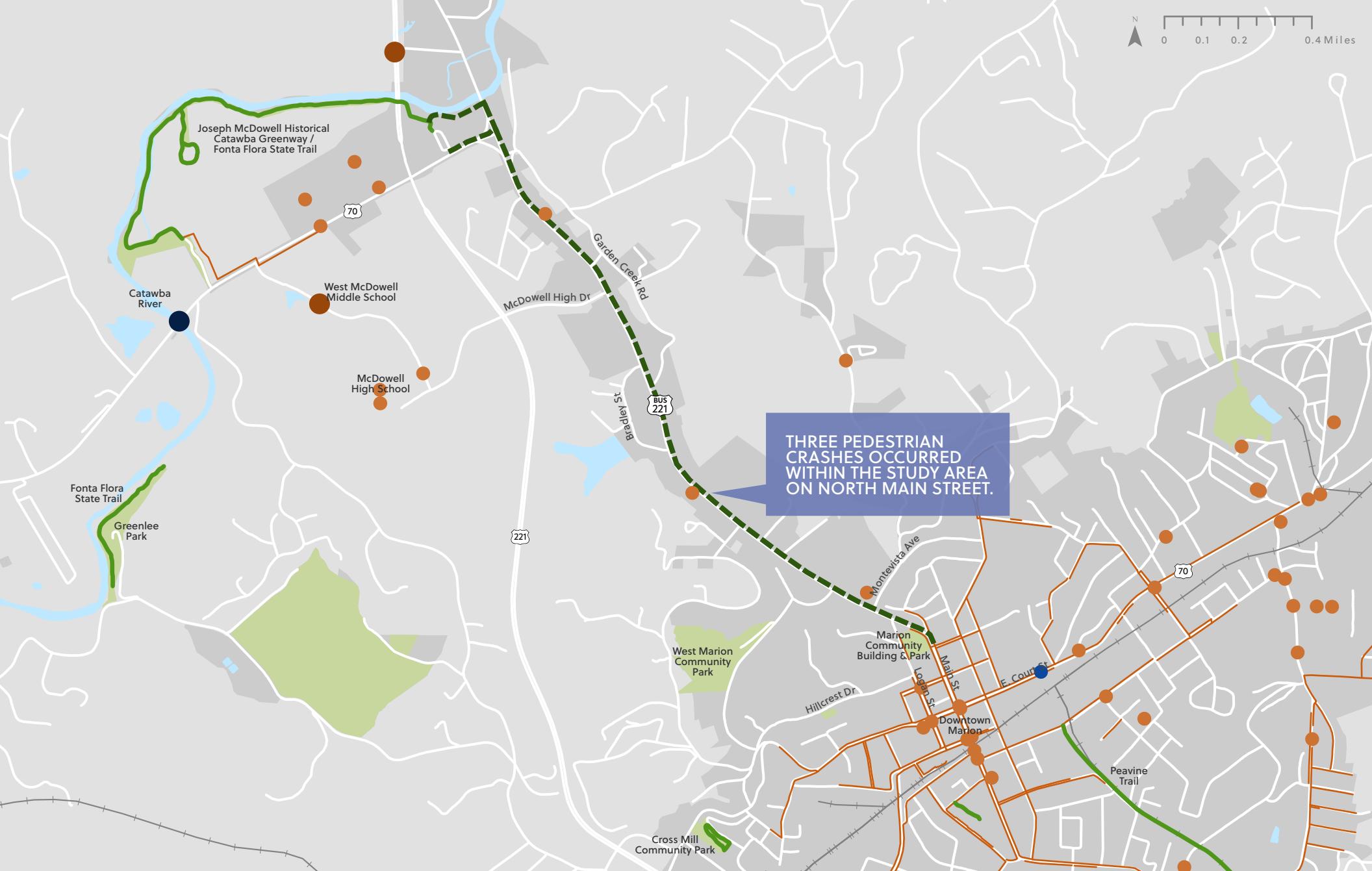


CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY

PLANNED BICYCLE + PEDESTRIAN FACILITIES

LEGEND

- Study Corridor
- Planned Greenway
- Existing Greenway
- Planned Sidewalk
- Existing Sidewalk
- Planned Bike Facility
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

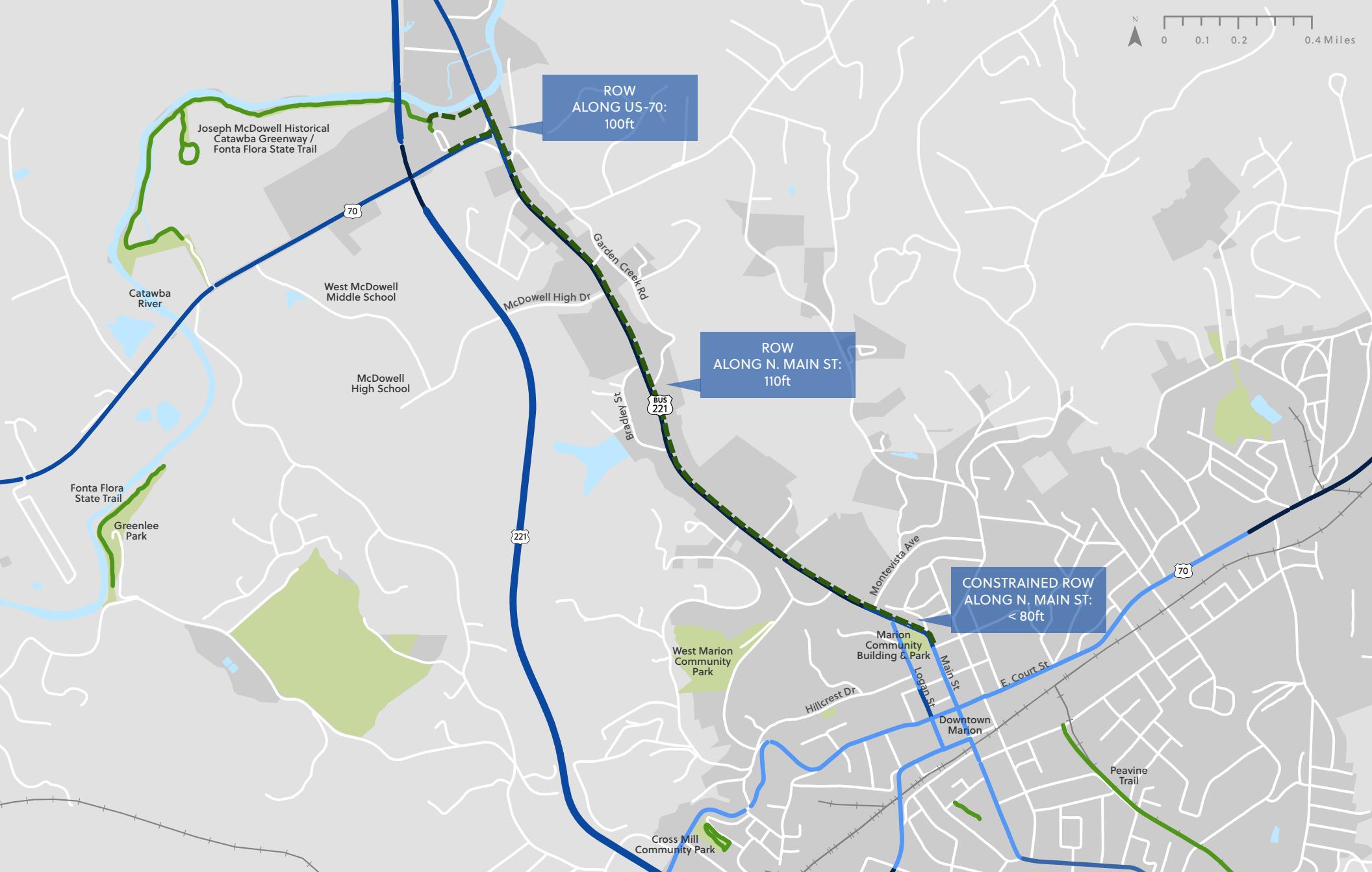


CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY

BICYCLE + PEDESTRIAN CRASHES (2007-2020)

LEGEND

- Study Corridor
- Existing Greenway
- Existing Sidewalk
- Pedestrian Fatality
- Pedestrian Crash
- Bicyclist Fatality
- Bicyclist Crash
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROADWAY RIGHT-OF-WAY (ROW)

LEGEND	
Study Corridor	Existing Greenway
< 40ft ROW	Roadway
40ft - 50ft ROW	Rail
51ft - 100ft ROW	Stream / Pond
100ft - 200ft ROW	Park / Open Space
	City of Marion
	McDowell County



Existing Sidewalk on North Main Street

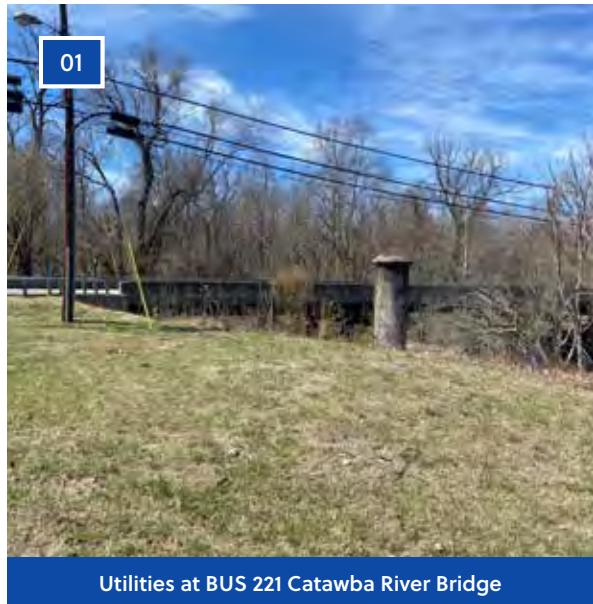
FIELD OBSERVATIONS

Fieldwork is an important part of the planning process that helps the project team understand the local culture and existing conditions associated with a site. It also helps the project team evaluate design solutions that respond to the specific needs and characteristics of the site. The project team conducted field work by visiting key destinations (i.e., existing parks, shopping centers, and businesses), existing bicycle and pedestrian facilities, roadways, bridges, environmentally sensitive areas, and constrained areas. The following opportunities and constraints, which may impact potential sidepath alignments, were identified based on site visit observations and other evaluations:

- Topography
- Jurisdictional Features
- FEMA Floodway / Floodplain
- Structures (Walls / Bridges / Boardwalks)
- Traffic Context (Volume / Speeds / Signals)
- ROW / Property Impacts
- Building Setbacks
- Driveways / Conflict Points
- Utility Impacts
- Drainage Impacts
- Constructability
- Cost Effectiveness
- Long-Term Maintenance



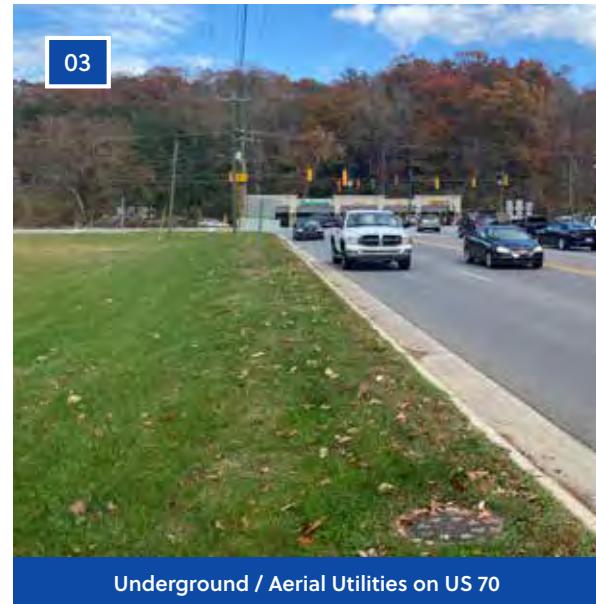
• UTILITY / DRAINAGE •



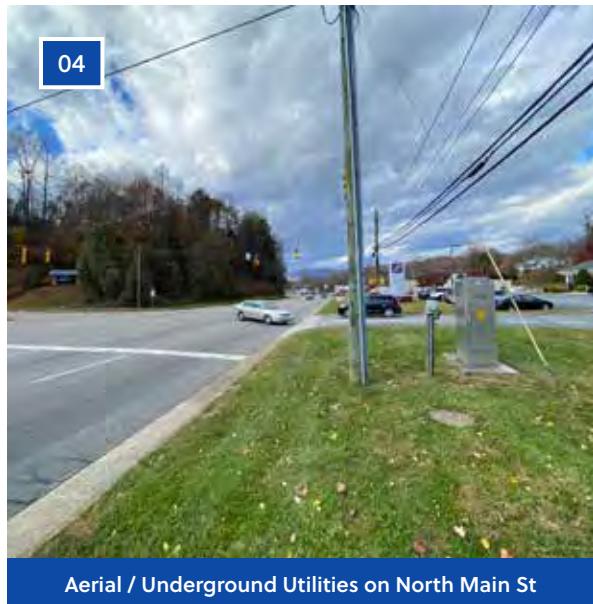
Utilities at BUS 221 Catawba River Bridge



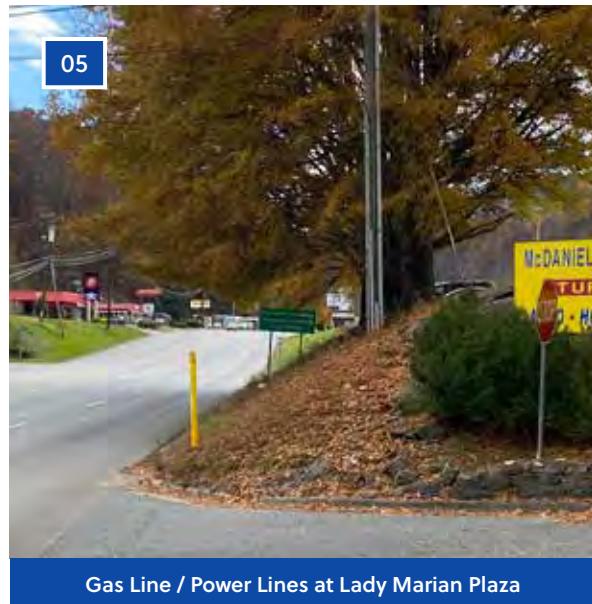
Gas Line at US 70 / North Main St Intersection



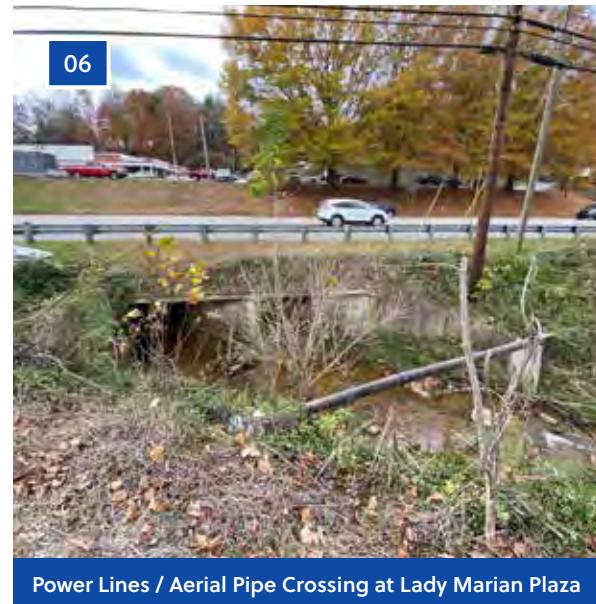
Underground / Aerial Utilities on US 70



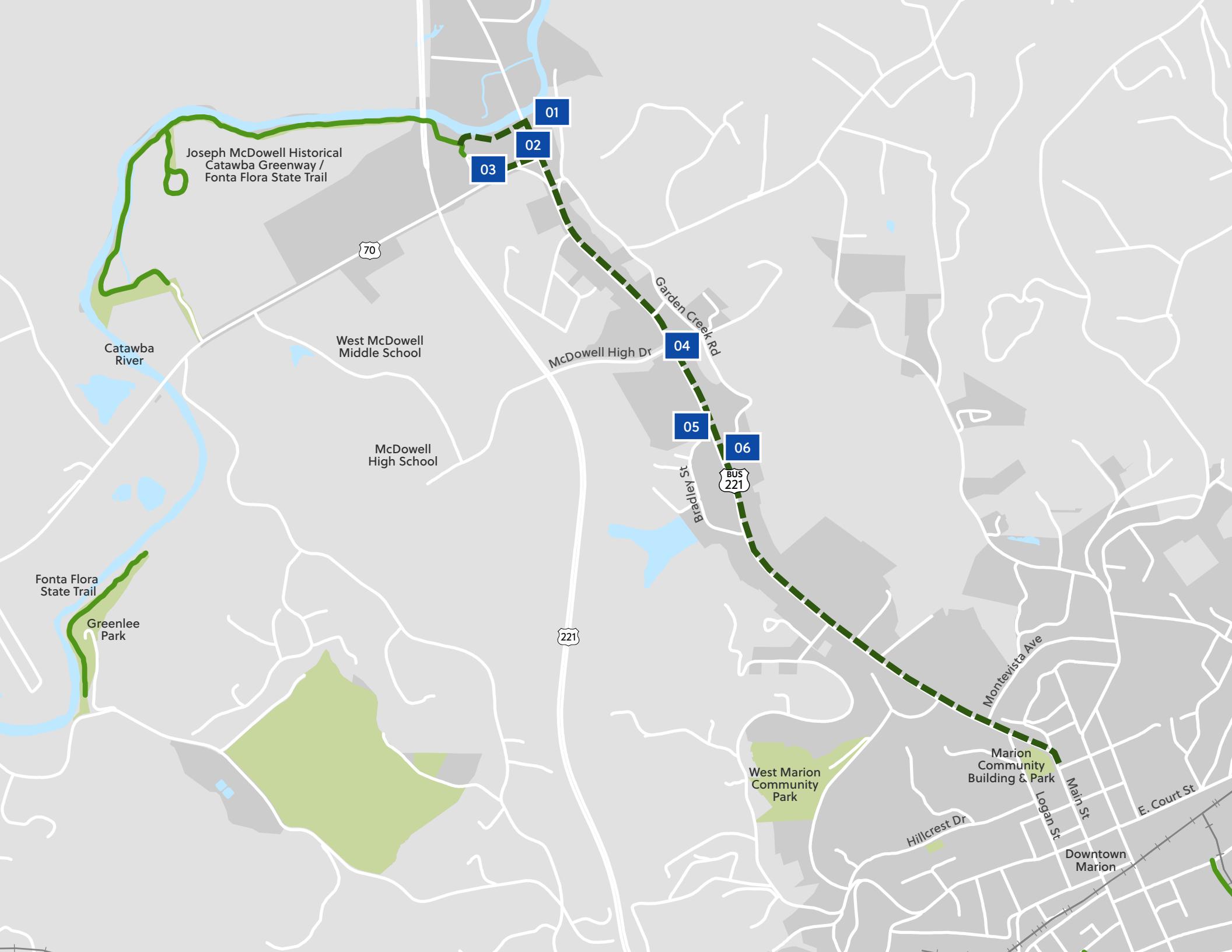
Aerial / Underground Utilities on North Main St

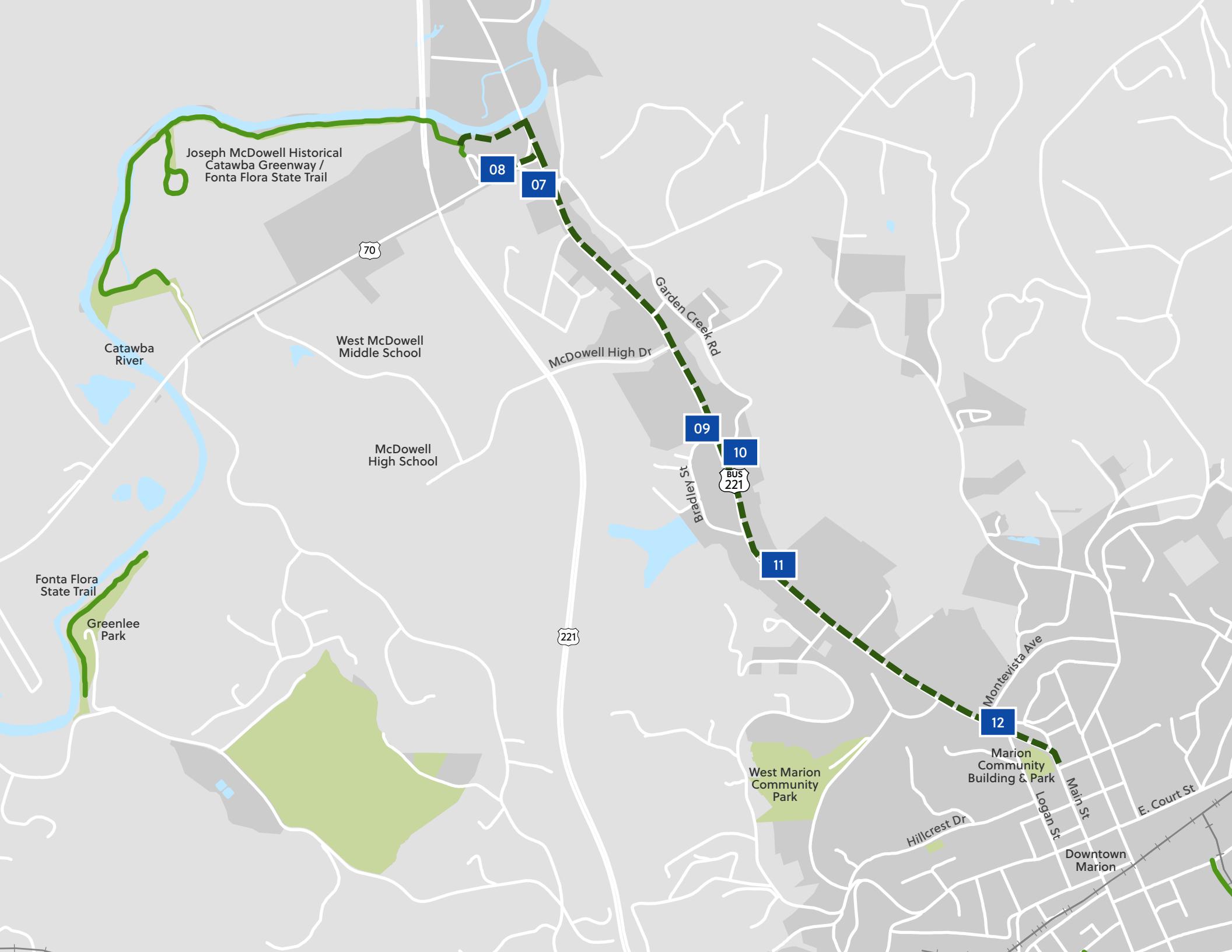


Gas Line / Power Lines at Lady Marian Plaza



Power Lines / Aerial Pipe Crossing at Lady Marian Plaza

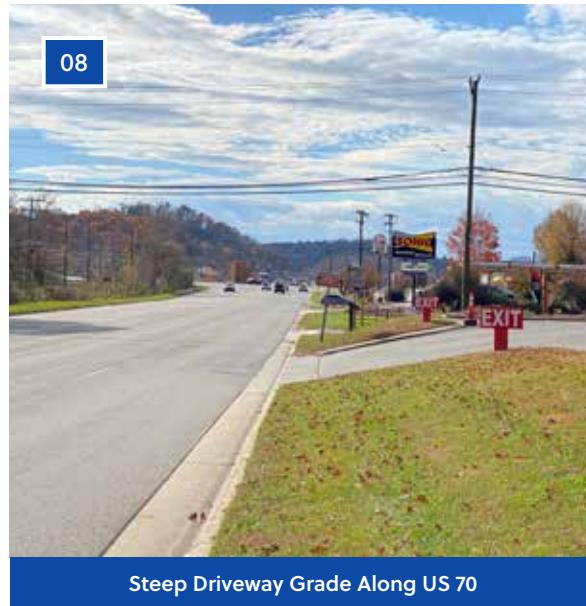




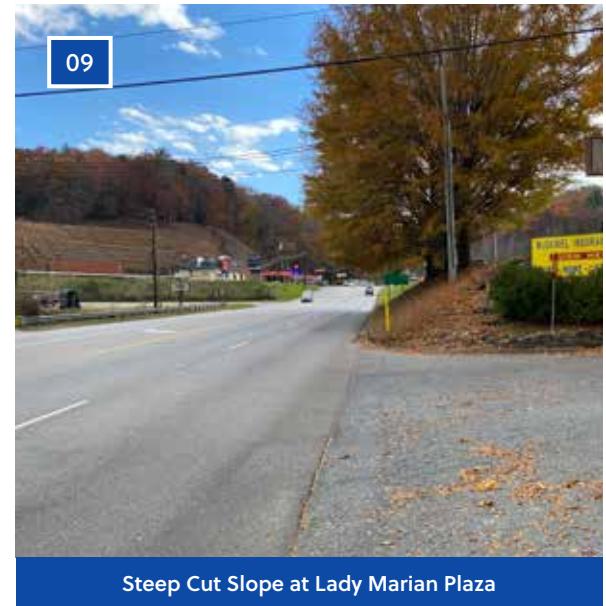
• TOPOGRAPHY / STRUCTURES (WALLS) •



Steep Topography / Landslide at US 70 Intersection



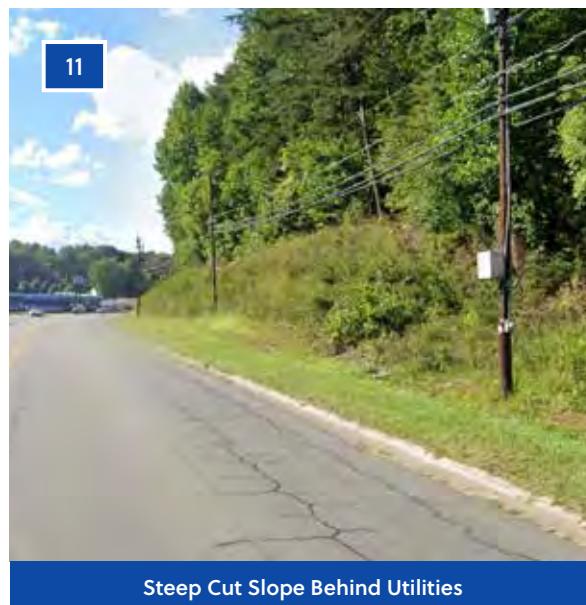
Steep Driveway Grade Along US 70



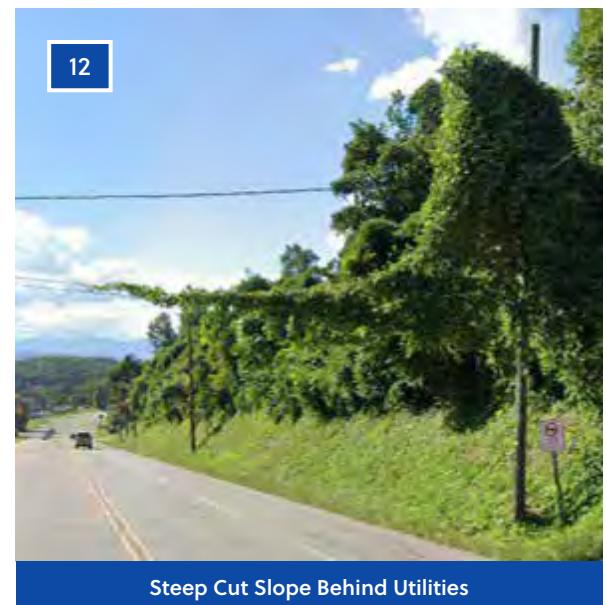
Steep Cut Slope at Lady Marian Plaza



Steep Cut Slope with Utilities



Steep Cut Slope Behind Utilities



Steep Cut Slope Behind Utilities



• JURISDICTIONAL FEATURES / FLOODPLAIN •



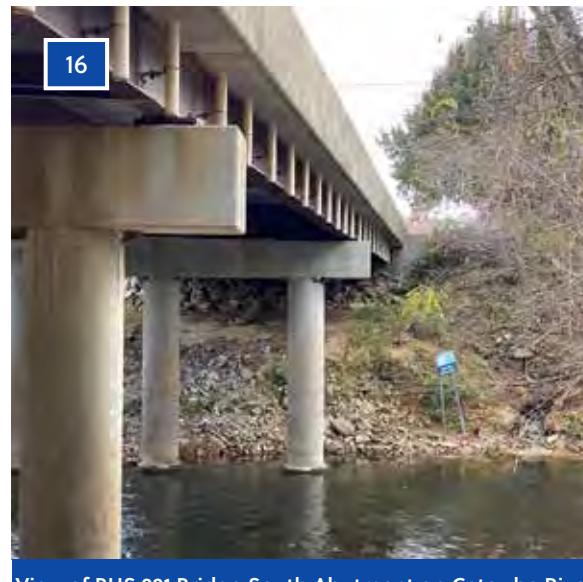
View Under BUS 221 Bridge at South Abutment on Catawba River



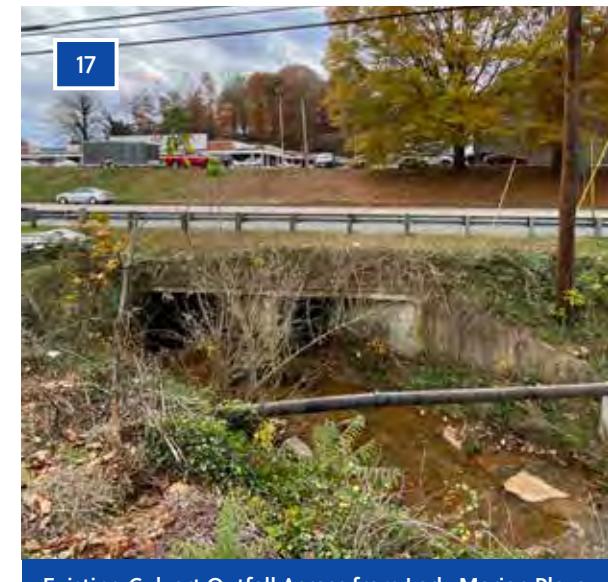
Steep Southern Bank of the Catawba River Under BUS 221 Bridge South Abutment



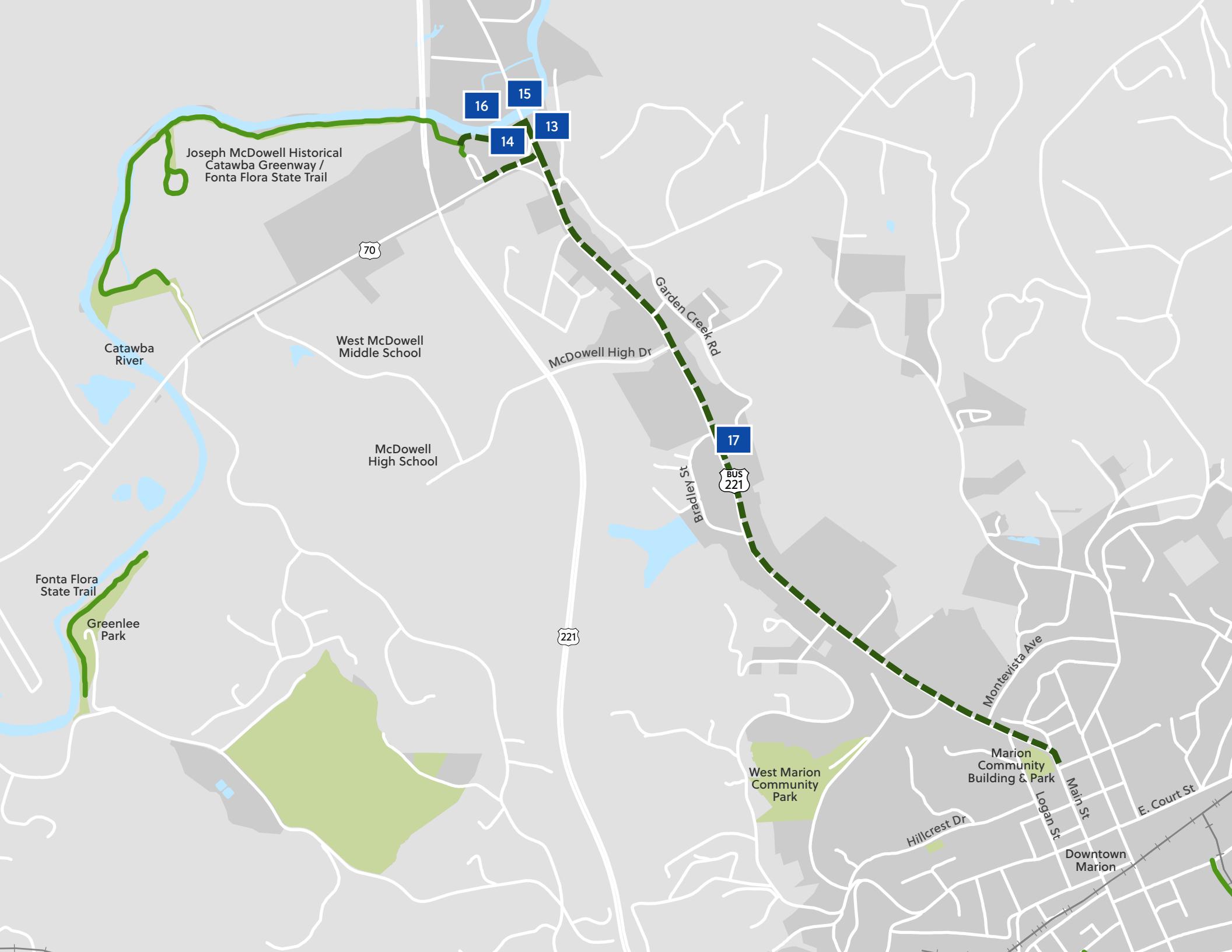
View of BUS 221 Bridge North Abutment on Catawba River

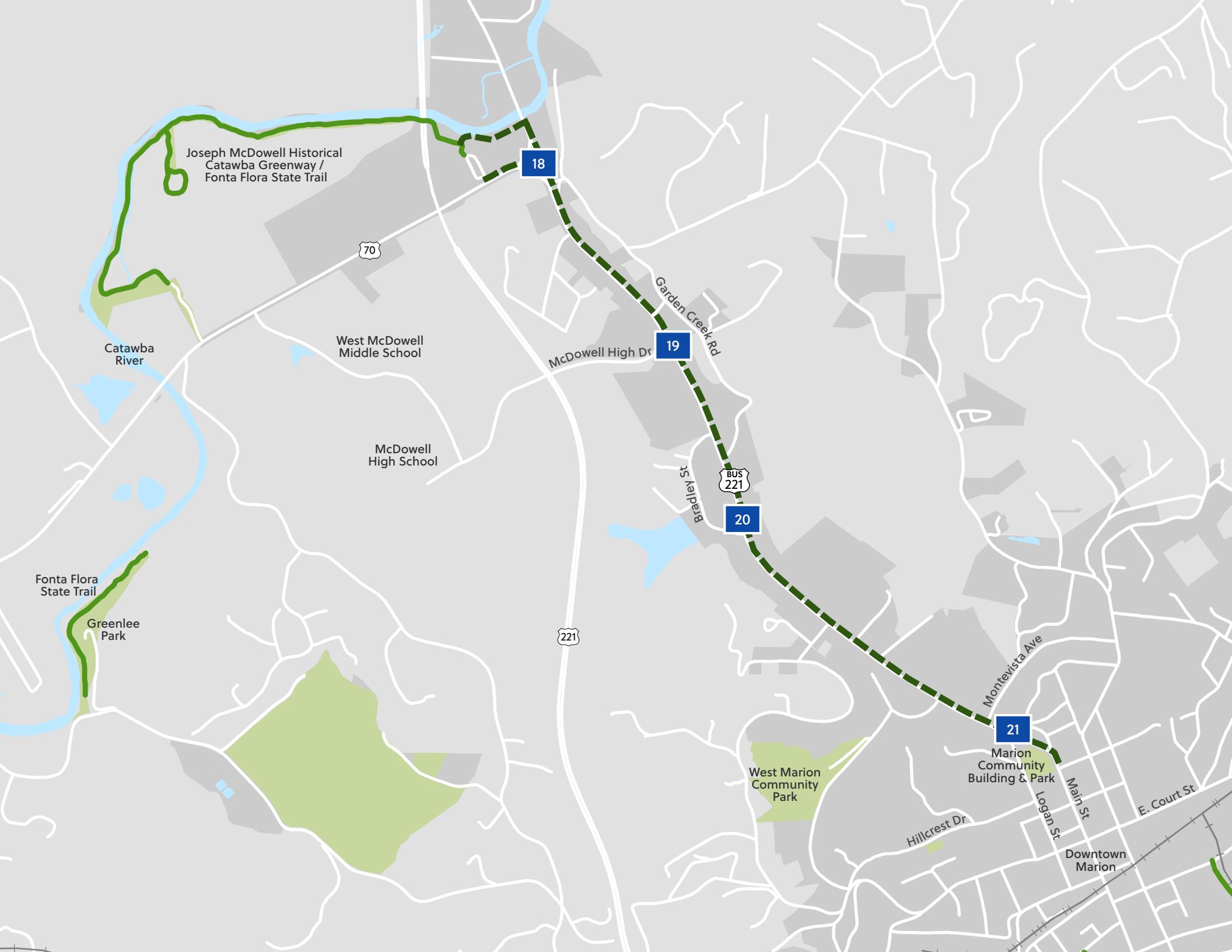


View of BUS 221 Bridge South Abutment on Catawba River

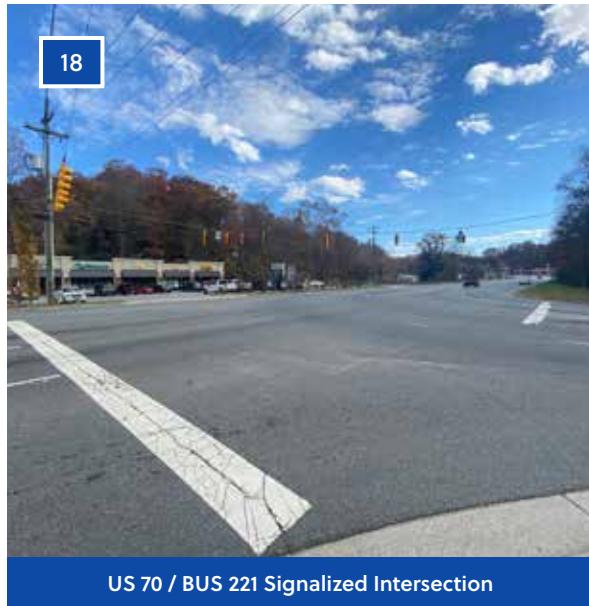


Existing Culvert Outfall Across from Lady Marian Plaza

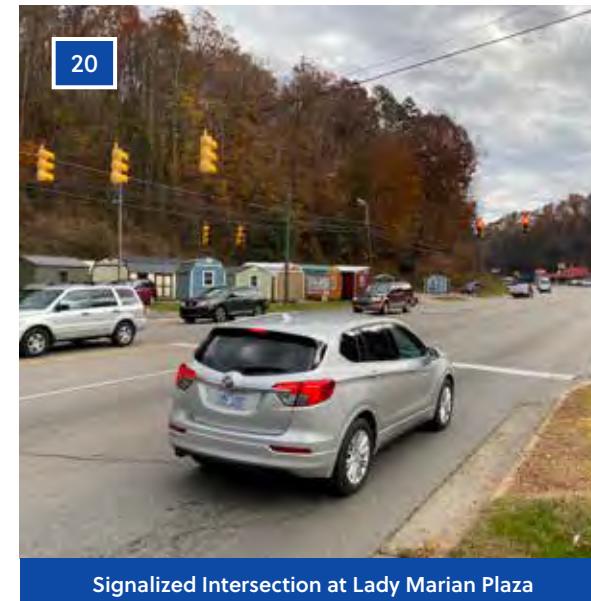
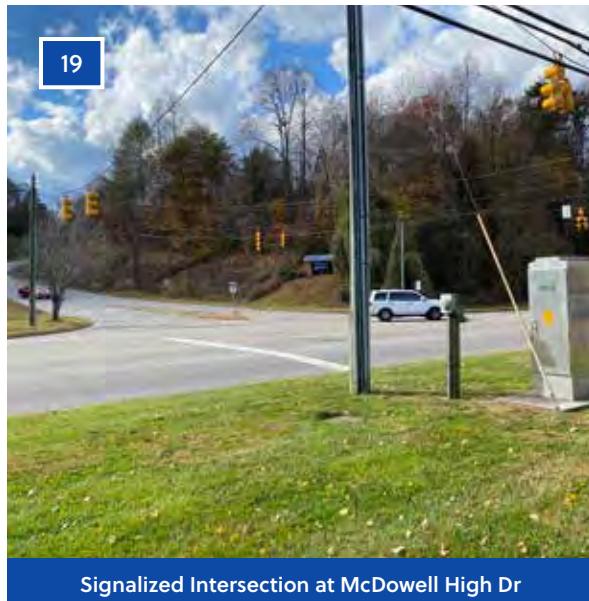
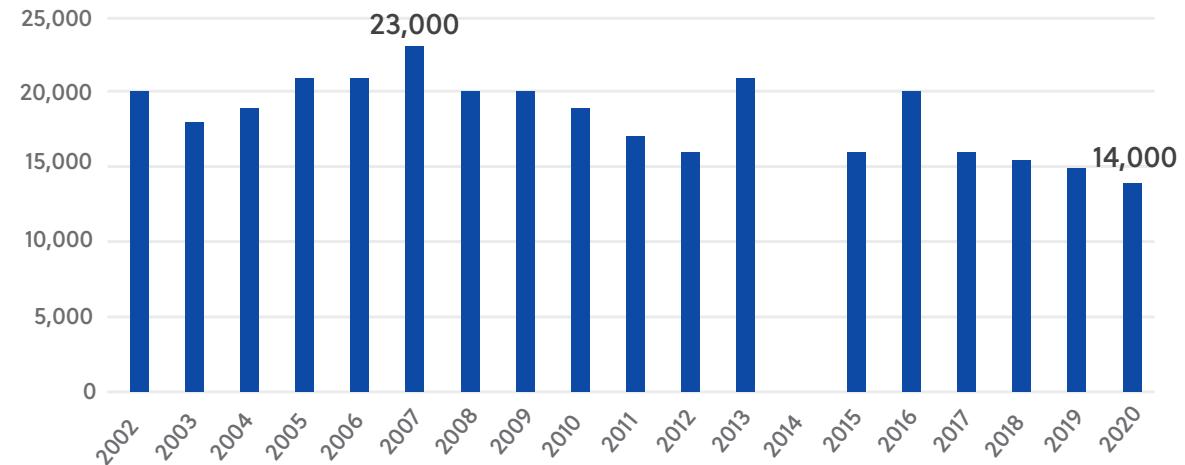




• TRAFFIC CONTEXT •

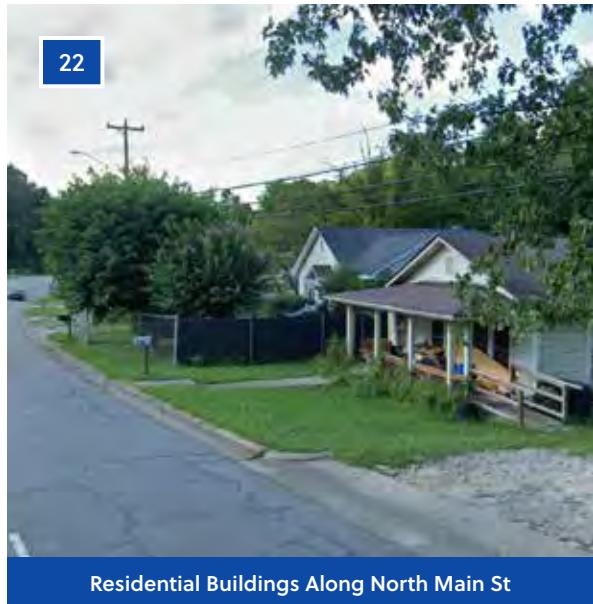


Annual Average Daily Traffic (AADT)
Source: NCDOT





• BUILDING SETBACKS / BUSINESS / PROPERTY IMPACTS •



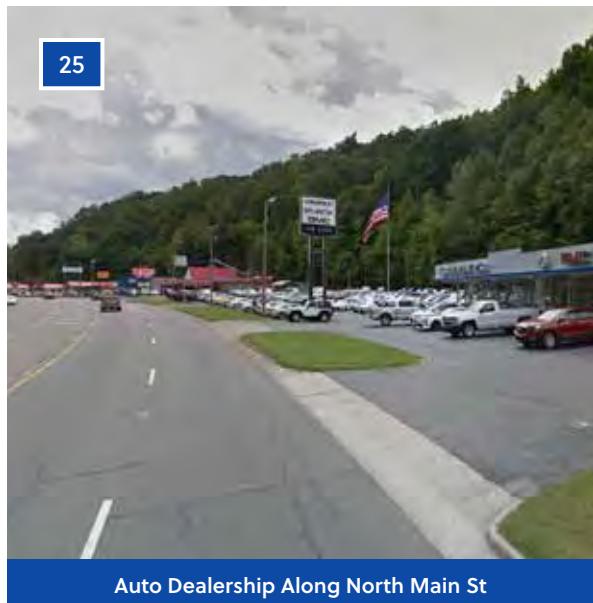
Residential Buildings Along North Main St



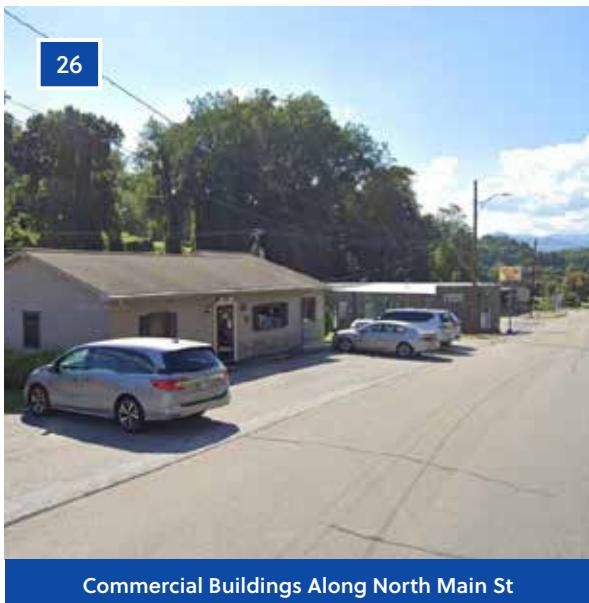
Commercial Buildings Along North Main St



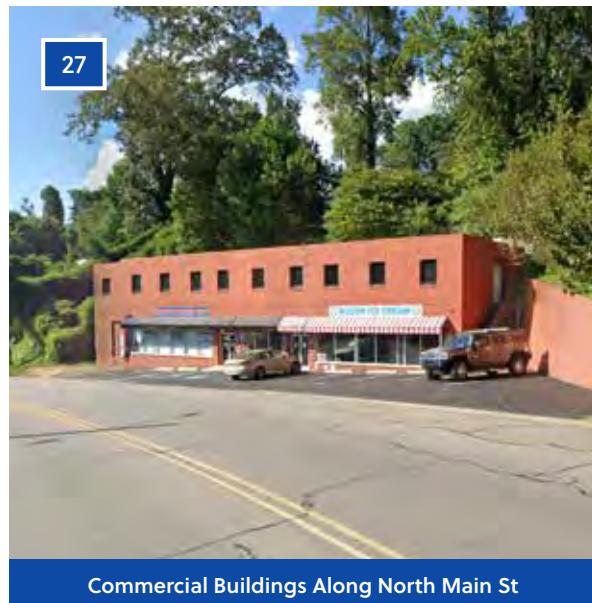
Auto Sales Business Along North Main St



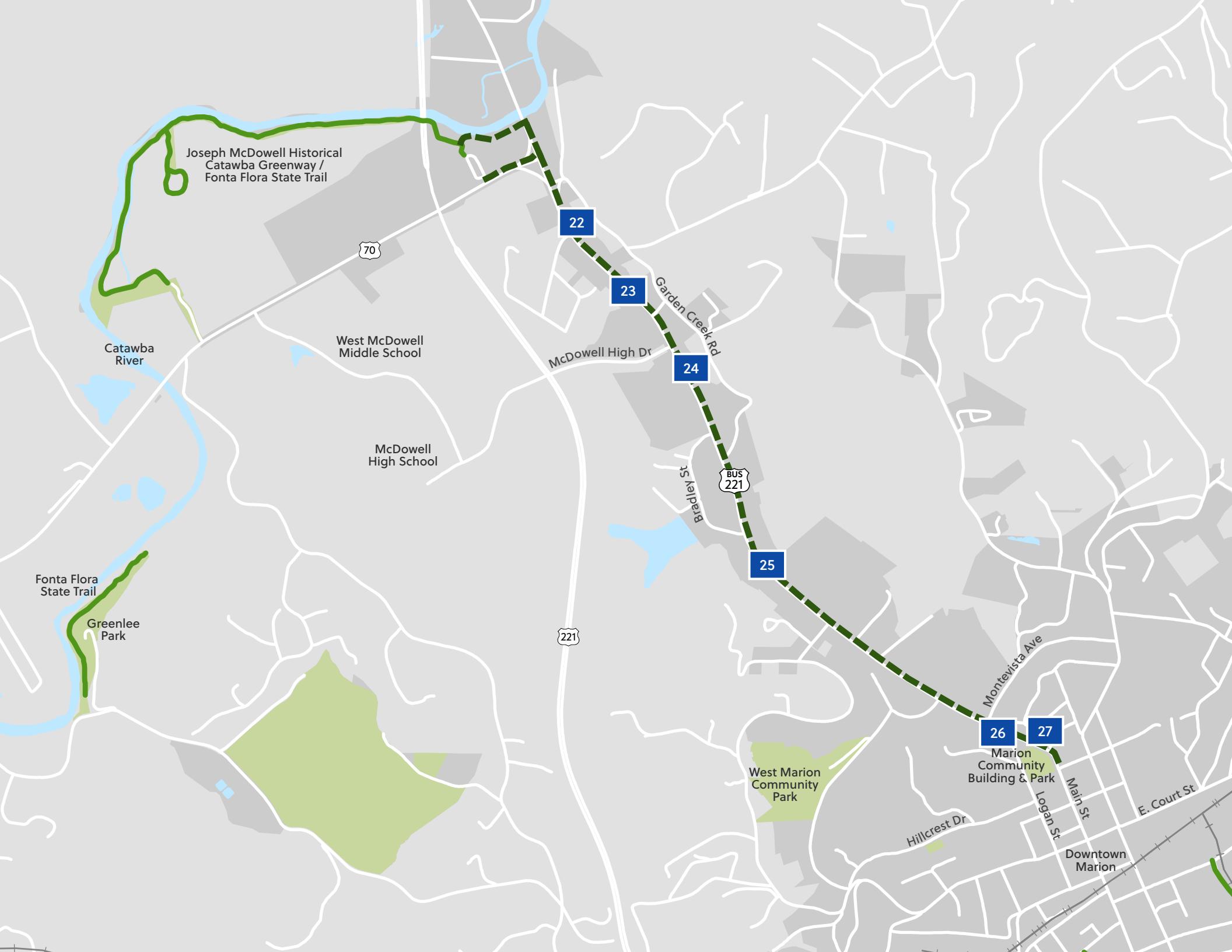
Auto Dealership Along North Main St

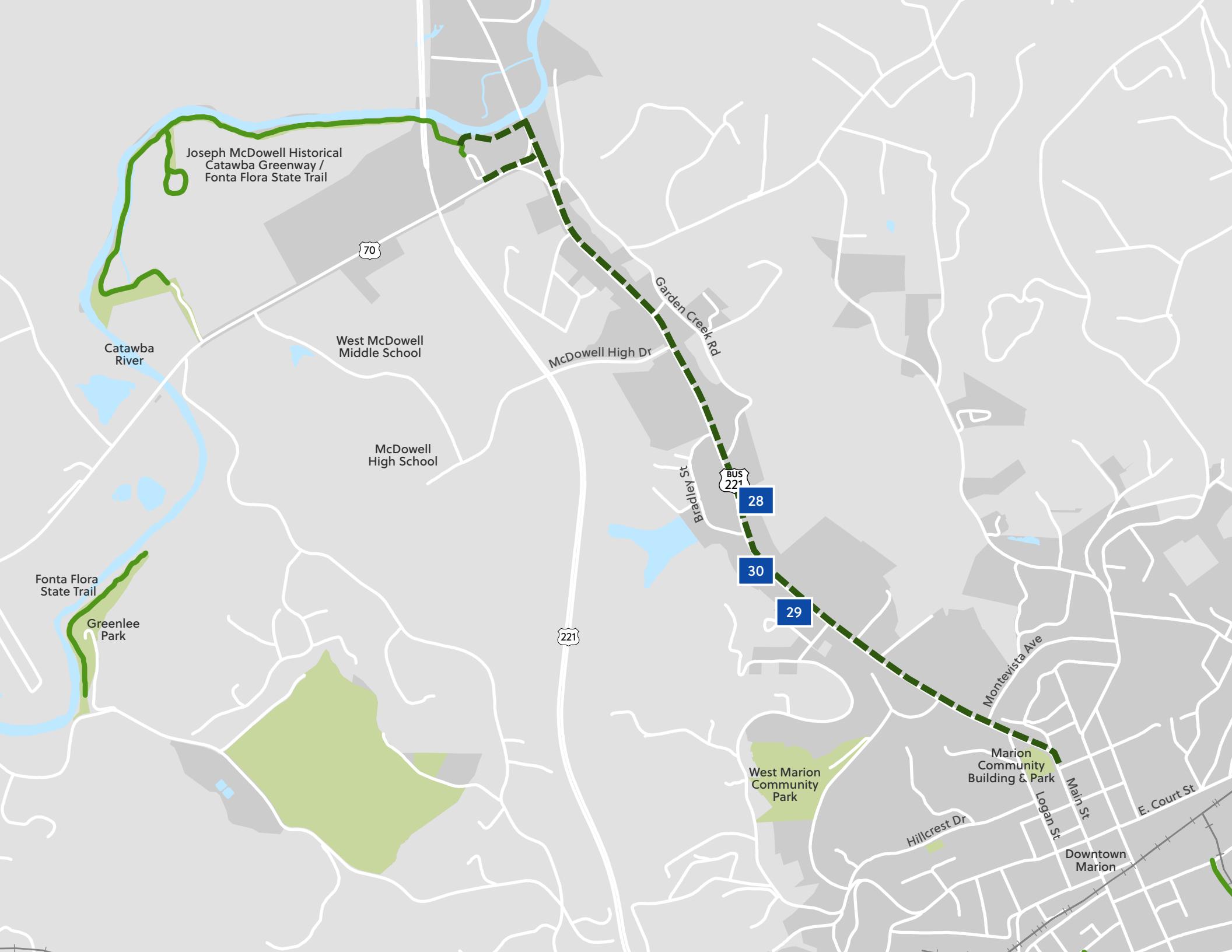


Commercial Buildings Along North Main St



Commercial Buildings Along North Main St





• DRIVEWAYS / CONFLICT POINTS •



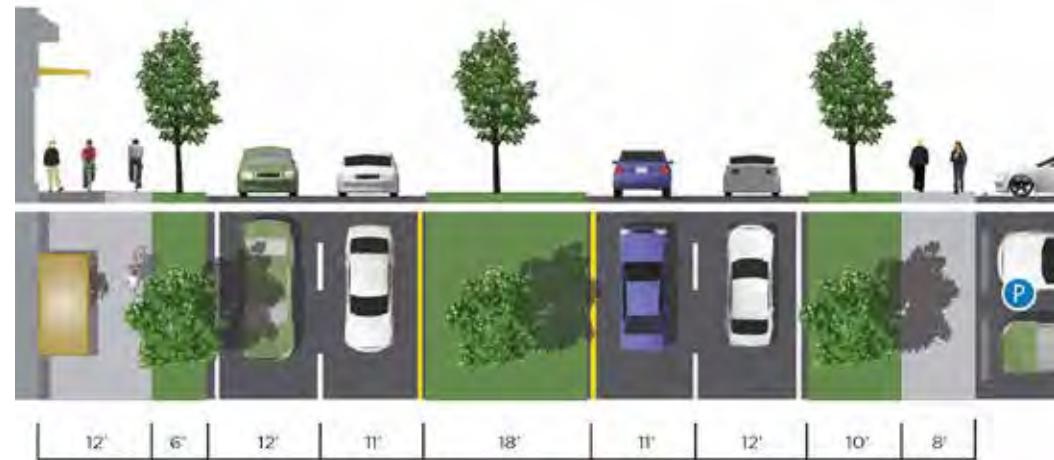


ALTERNATIVES DEVELOPMENT

DESIGN CRITERIA + TYPICAL SECTION CONSIDERATIONS

Based on feedback and concerns received from the community on the four-lane divided boulevard typical section proposed in the *2020 North Main Street Corridor Strategy Report* (as shown in the image to the right) and feedback from City staff, the project team sought to develop a design solution for the sidepath that:

- Maintains all five existing lanes on North Main Street (including the center left turn lane);
- Maintains existing driveway access to adjacent properties and businesses as much as practicable;
- Reduces the overall footprint of the project and minimizes impacts to adjacent properties;
- Is capable of being implemented in phases as funding allows; and
- Does not restrict the ability to achieve the long-term goals for the corridor outlined in the *2020 North Main St Corridor Strategy Report*.



4-Lane Divided Boulevard Typical Section (Source: 2020 North Main Corridor Strategy Report)

To achieve a solution that meets the criteria above, the project team coordinated with NCDOT Division 13 to reduce the existing 12-foot lanes to 11-foot lanes and shift the curb line adjacent to the sidepath 5 feet into the existing roadway pavement. A lane reduction will focus the attention of drivers on their surroundings, thereby contributing to a safer environment for pedestrians and bicyclists sharing and/or crossing the road. Typical sections of the existing condition and proposed condition options (side path on either side) shown on the next page illustrate how the lanes will be narrowed and the curb line will be shifted. For the purposes of this study, sidepath design criteria assumptions include a preferred paved trail width of 10 feet for bi-directional use and cross slopes of 2 percent or less. Any structures (bridges/boardwalks/tunnels) should provide a 10-foot minimum clear width. A minimum 6-foot planting strip between the curb and sidepath is desired to provide separation to enhance user comfort and experience, but it may be reduced to 2 feet in especially constrained areas.

Longitudinal slopes of 5 percent or less are desired and should be incorporated to the maximum extent practicable. In areas highly constrained by topography, steeper grades may be used for the sidepath but shall not exceed the grade of the adjacent roadway in accordance with the U.S. Access Board's Public Rights-of-Way Accessibility Guidelines (PROWAG). A minimum longitudinal grade of 0.5 percent should be provided per the AASHTO Guide for the Development of Bicycle Facilities. Also, in accordance with the AASHTO Guide for the Development of Bicycle Facilities, a vertical clearance of 10' should be provided above the sidepath. In highly constrained areas, the absolute minimum vertical clearance above the sidepath may be reduced to 8 feet. The minimum horizontal clear width for the sidepath shall be equal to the path width plus 2 feet on either side with no horizontal protrusions allowed.

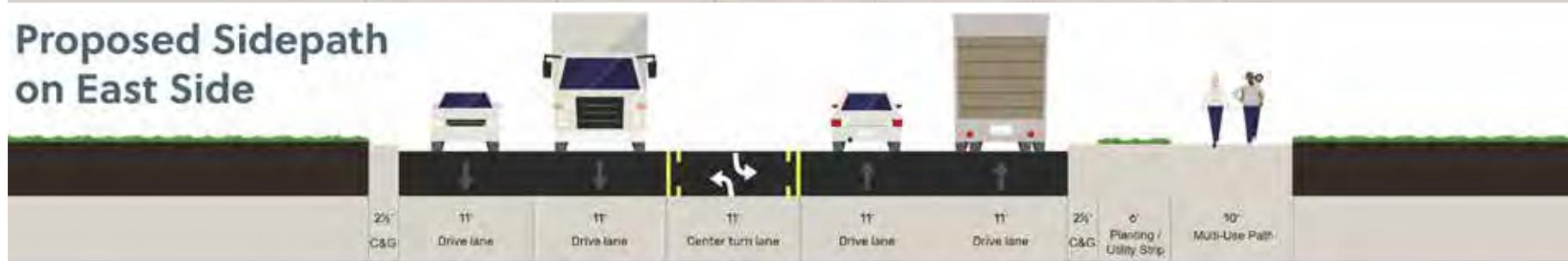
For the sidepath to provide maximum connectivity to desired destinations within the corridor, crossings of North Main Street must be incorporated. Grade-separated crossings, while preferred, are not practicable within this project's constraints. As such, well-designed at-grade crossings are a critical component of safety as users are transitioned from a separated space to a space that contains multiple conflict points with motorists. Mid-block crossings are not recommended for this corridor. Crossings should be made at existing signalized intersection or future signalized intersections to ensure safety. Crossing designs will ensure high levels of visibility and awareness between trail users and motorists through a variety of available measures including pavement markings, advance warning signage, pedestrian signalization and incorporating techniques such as leading pedestrian intervals which give pedestrians and cyclists a head start to cross the intersection before any traffic is allowed to enter the intersection.

Additional design resource information may be found in Appendix B.

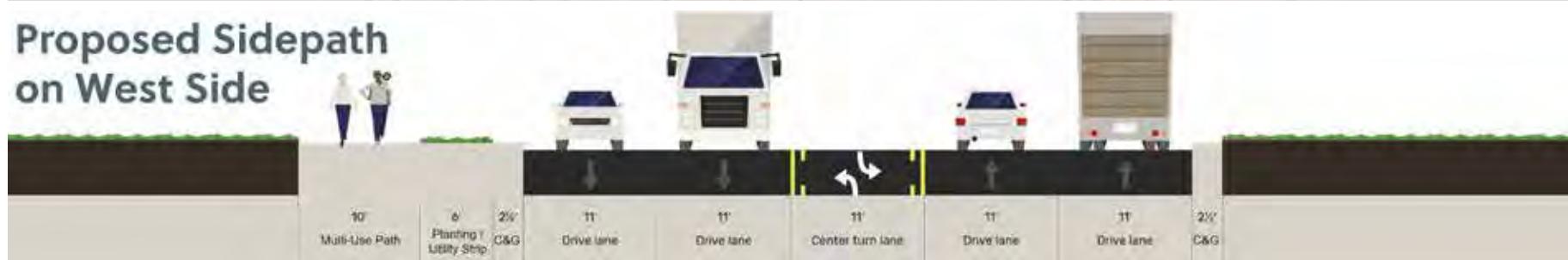
Existing Condition



Proposed Sidepath on East Side



Proposed Sidepath on West Side



(Image Source: Streetmix)



SEGMENT ALTERNATIVES

Route alternatives for the proposed sidepath were developed based on the study considerations and field observations detailed previously in this chapter. Alternatives were broken into segments at existing signalized intersections as shown on the map to the right and summarized below.

ID	Description	Length Est. Cost*	Challenges / Constraints
1A	Runs from existing greenway to US 70; follows north side of US 70 to existing traffic signal at North Main St	0.23 mi \$440K	Floodplain impacts; Utility impacts
1B	Runs from existing greenway along river; turns south and runs along west side BUS 221 to existing US 70 traffic signal	0.27 mi \$399K	Property impacts; Floodplain impacts; Stream buffer impacts
2A	Crosses on north leg of US 70 intersection and follows east side of North Main St between existing traffic signals at US70 and McDowell High Dr	0.55 mi \$963K	Building setbacks; Utility impacts
2B	Crosses on west leg of US 70 intersection and follows west side of North Main St between existing traffic signals at US70 and McDowell High Dr	0.55 mi \$1.659M	Topography; Building setbacks
3A	Follows east side of North Main St between existing traffic signals at McDowell High Dr and Lady Marian Plaza	0.41 mi \$980K	Topography; Building setbacks; Utility impacts; # of Driveways
3B	Follows west side of North Main St between existing traffic signals at McDowell High Dr and Lady Marian Plaza	0.41 mi \$1.902M	Topography; Building setbacks; Utility impacts
4A	Follows east side of North Main St between existing traffic signals at Lady Marian Plaza and Machine Shop Rd	0.65 mi \$2.826M	Topography; Utility impacts
4B	Follows west side of North Main St between existing traffic signals at Lady Marian Plaza and Machine Shop Rd	0.65 mi \$1.996M	Property impacts; Topography; # of Driveways
5A	Follows east side of North Main St between existing traffic signals at Machine Shop Rd and Logan St	0.19 mi \$1.025M	Topography; Utility impacts
5B	Follows west side of North Main St between existing traffic signals at Machine Shop Rd and Logan St	0.19 mi \$401K	Building setbacks; Property impacts
6A	Follows east side of North Main St between existing traffic signals at Logan St and New St	0.09 mi \$539K	Topography; Building setbacks; Property impacts; Utility impacts
6B	Follows west side of North Main St between existing traffic signals at Logan St and New St	0.09 mi \$109K	Building setbacks; Property impacts; On-street parking impacts; Utility impacts; Topography

*Resurfacing and striping costs, totaling \$1.513M for the overall 2.12 mi corridor, were not broken down by segment and should be added to any overall alternative alignment. Additional cost information is presented in Chapter 5.



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY SEGMENT ALTERNATIVES

LEGEND

ID	Segment Alternative ID
ID	Existing Greenway
ID	Roadway
ID	Rail
ID	Stream / Pond
ID	Park / Open Space
ID	City of Marion
ID	McDowell County





COMMUNITY ENGAGEMENT



OVERVIEW

Community engagement is an essential part of any planning process. The most effective plans are firmly rooted in the realities and visions of the communities that created them. This study relies on a combination of input from community members, steering committee members, supporting agencies, and non-profit organizations to inform the feasibility study for the Marion North Main Street Sidepath.

COMMUNITY ENGAGEMENT

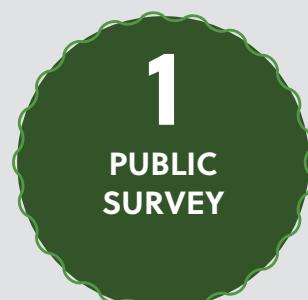
Several engagement events took place throughout the study process: steering committee meetings (3), landowner coordination meetings (3), a public meeting, and a public survey. A steering committee supported the study and was composed of representatives from the City of Marion, McDowell County, Foothills RPO, NCDOT, NC State Parks, McDowell County Trails Association, Friends of Fonta Flora State Trail, and local business leaders. Steering committee members met three times throughout the duration of the project and provided guidance for the study by reviewing and sharing feedback on relevant data, community engagement efforts, alignment recommendations, and implementation strategies. Members also supported the study by disseminating information and communication materials to the public.

LANDOWNER COORDINATION MEETINGS

Individual in-person meetings for landowners took place on July 14, 2022. During this time, the project team reviewed the project overview, opportunities and constraints associated with the study area, and typical cross sections. The project team also answered property-specific design concept questions and document concerns from landowners. Key findings are outlined below.

Key Findings:

- Overall, landowners were generally supportive of the project.
- Landowners favored the design concepts presented that were proposed in the previous corridor study for North Main Street.
- Landowners were concerned about impacts to parking.
- ROW will be minimized, and permanent easements will be required.
- The project team explained that the feasibility study is still in the study phase. Design and construction phases will be dependent on funding availability (likely at least several years from now).



STEERING COMMITTEE MEMBERS

Steve Pierce, President, McDowell Trails Association

Courtney Intres, Business Development Coordinator, McDowell Chamber of Commerce

Freddie Killough, Executive Director, Marion Business Association

Steve Bush, Board Member, Fonta Flora State Trail

Billy Martin, Board Member, Fonta Flora State Trail/ Marion City Council Member

Heather Cotton, Planning + Development Director, City of Marion

Bob Boyette, City Manager, City of Marion

Dewayne Riddle, Asst. Public Works Director, City of Marion

Phillip Tate, Business Owner, Tate's Insurance

Steve Jones, Business Owner, Joanne Howle Real Estate /Avid Cyclist

Carol Price, Executive Director, McDowell Tourism Association

Dawna Goode-Ledbetter, Director of Equity, West Marion Community Forum

Smith Raynor, State Trail Planner, State Parks

Hannah Cook, Senior Planning Engineer, NCDOT

Chris Guffey, District Engineer, NCDOT

Karyl Fuller, Economic + Community Development Director, Foothills RPO

Jerry Stensland, RPO Planner, Foothills RPO

STEERING COMMITTEE MEETING #1

The first steering committee meeting occurred on March 28, 2022. At the meeting, the project team discussed the project schedule, findings from the existing conditions analysis, and reviewed the project route alternatives. Meeting attendees provided comments on the routes during a Conceptboard exercise.

Key Findings:

- Attendees voiced safety concerns about the proposed crossing at the intersection of US 70 and North Main Street due to potential conflicts between bicyclists and pedestrians and motorists.
- Attendees expressed interest in pursuing a route that aligns along one side of North Main Street rather than an alignment that crosses North Main Street at signalized intersections.

STEERING COMMITTEE MEETING #2

The second steering committee meeting took place on July 26, 2022. The purpose of the meeting was to review the community survey results, draft typical cross sections, evaluation criteria, decision matrix, and route alternatives. Meeting attendees provided comments on the route alternatives during a Conceptboard exercise.

Key Findings:

- Attendees expressed interest in adding wildflowers at the corner of US 70 and north Main Street to increase the visibility of the sidepath and aid in placemaking.
- Alternative B was selected as the preferred route for the sidepath (route on east side of North Main Street).

STEERING COMMITTEE MEETING #3

The third steering committee meeting was held on August 23, 2022. The purpose of the meeting was to discuss the draft study, review concept design updates, potential phasing scenarios, cost estimates, and to present the implementation strategy for the sidepath.

Key Findings:

- Attendees voiced interest in funding opportunities for the sidepath. Federal and state funding options were discussed.
- Attendees want to prioritize connecting Downtown Marion to Marion City Square due to an expected increase in housing.
- State designated trails must be physically separated from the roadway so the design will be updated to include a buffer at the Joseph McDowell House.



PUBLIC MEETING

A public meeting took place on August 29, 2022, at the Marion Community Building. The purpose of the meeting was to discuss the project, route alternatives, evaluation criteria, and typical cross sections with members of the public. Members of the steering committee distributed flyers and information to the public through local networks and social media platforms. Input received at the public meeting is provided below.

Key Findings:

- Attendees voiced overall support of the study and the recommended alignment along the east side of North Main Street.
- Attendees voiced support for the proposed typical section that accommodates the sidepath within existing NCDOT ROW and appreciated the effort to reduce impacts to local business owners along the corridor.
- Some attendees expressed interest in exploring the alternative alignment to cross North Main Street at the Catawba River to reduce potential safety issues with crossing North Main Street at US 70.



Discussing the Proposed Design with the Public



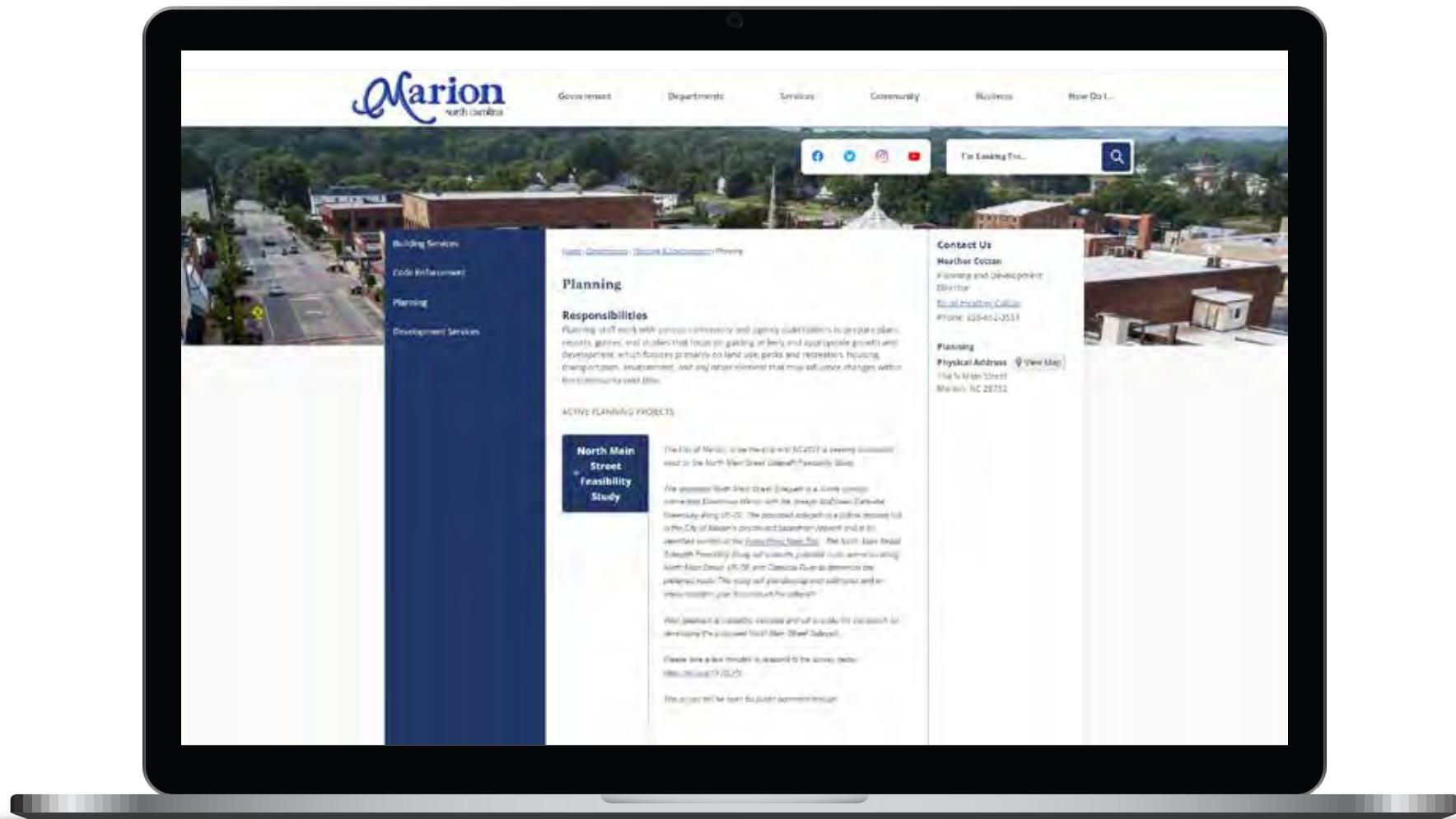
Local News Station Reporting on the Project



Reviewing Designs at the Public Meeting

PROJECT WEBPAGE

The City of Marion's Planning Department hosted project information on their website. Periodically, the webpage would update with information about the project overview and schedule, study area map, survey information and results, route alternative maps, public meeting information and presentations, as well as the *Draft North Main Street Feasibility Study*.





PUBLIC SURVEY

The project team launched a public survey on May 23, 2022, and it was open for public comment until June 17, 2022. The survey was distributed in both hard copy form and linked on the City of Marion's website as an ArcGIS Survey 123 survey. Hard copies were distributed by City of Marion staff and steering committee members. In addition, survey information was distributed through other means of communication such as flyers, QR codes, social media posts, emails, newsletters, and a press release. The survey received 224 survey responses.

The project team distributed the public survey to help accomplish the following:

- Introduce the project and gauge public support.
- Solicit and compile public comment on destinations, opportunities and challenges, user preferences, and route preferences.
- Fulfill requests for information.
- Develop an email contact list for interested parties.

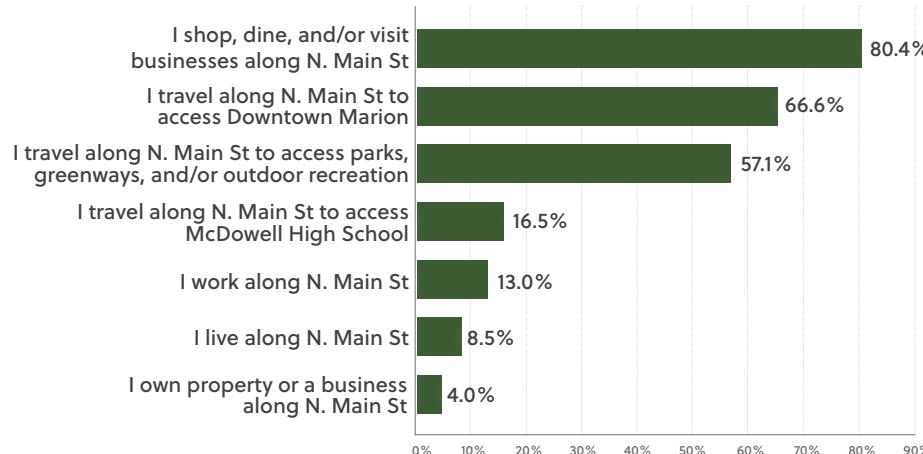
A copy of the survey is provided in Appendix D. Public feedback is summarized to the right by specific comment. Overall, the comments collected were generally positive and include several different perspectives on the project. The public survey is summarized on the following pages.



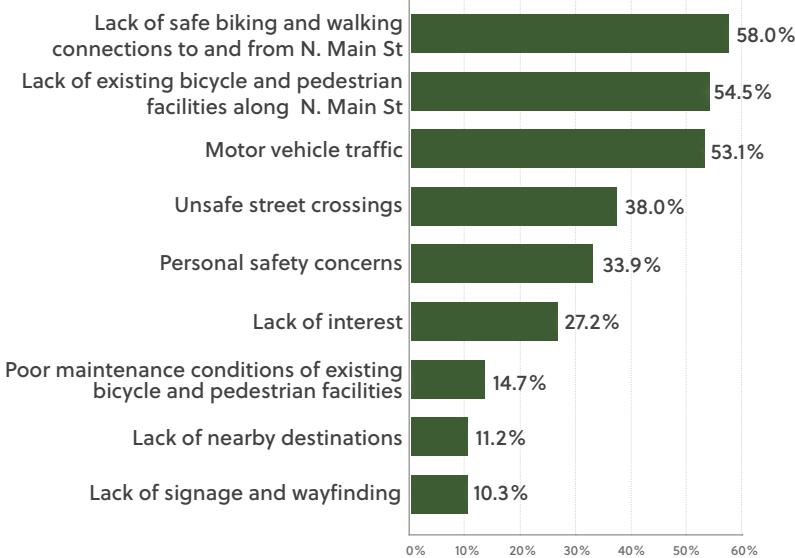
Key Takeaways:

- Respondents primarily visit North Main Street to shop, dine, and/or visit businesses.
- A lack of safe biking and walking connections to and from North Main Street discourage most respondents from biking or walking in the area.
- Many of the respondents currently use the Joseph McDowell Catawba Greenway a few times a month for health and exercise reasons. Respondents noted that they would use the proposed North Main Street Sidepath for the same reasons at the same expected frequency.
- Currently, respondents primarily drive a car to commute to work and/or school. This is consistent with the desired mode of travel for respondents in the future.
- When prompted to choose segmented areas that respondents would like for accessibility to the North Main Street Sidepath, the community primarily selected locations between Bradley Street and Garden Creek Road and in Downtown Marion between Logan Street and Main Street.
- Most respondents live in the City of Marion or in surrounding zip code areas.

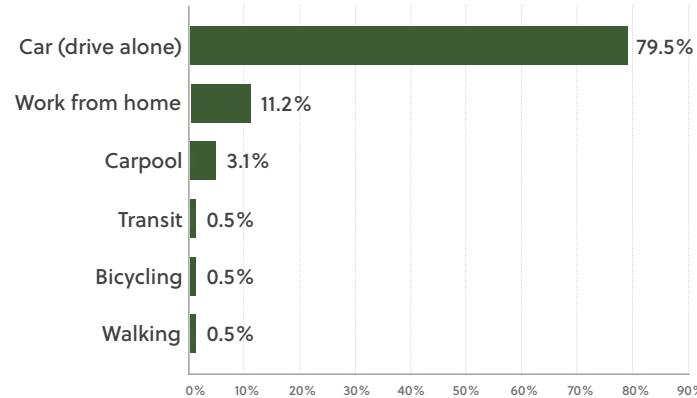
What Are Your Primary Reasons You Visit N. Main St?
Select All That Apply.



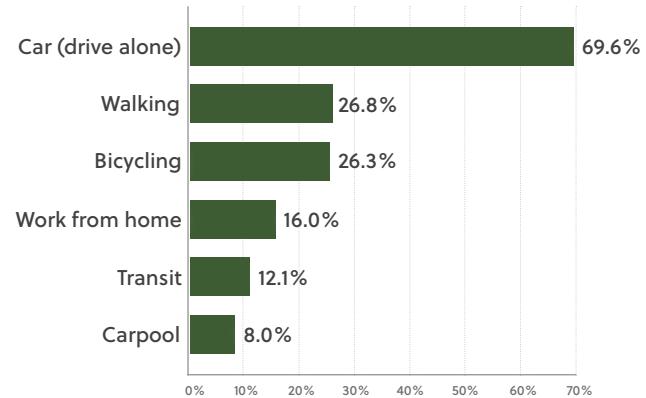
What Factors Discourage You From Biking and Walking Along N. Main St? Select All That Apply.



What Is Your Primary Mode of Transportation for Commuting to Work and/or School?

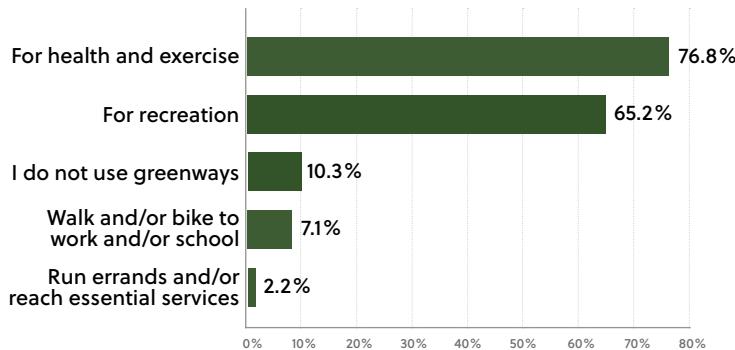


Now Consider Your Desired Commute in the Future. Which Modes Would You Like to Use? Select All That Apply.

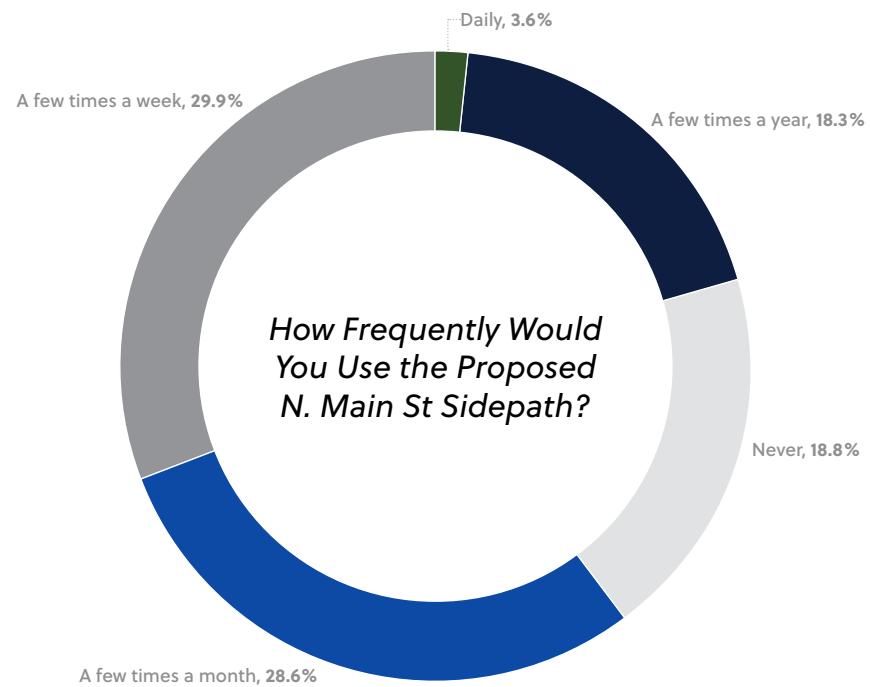
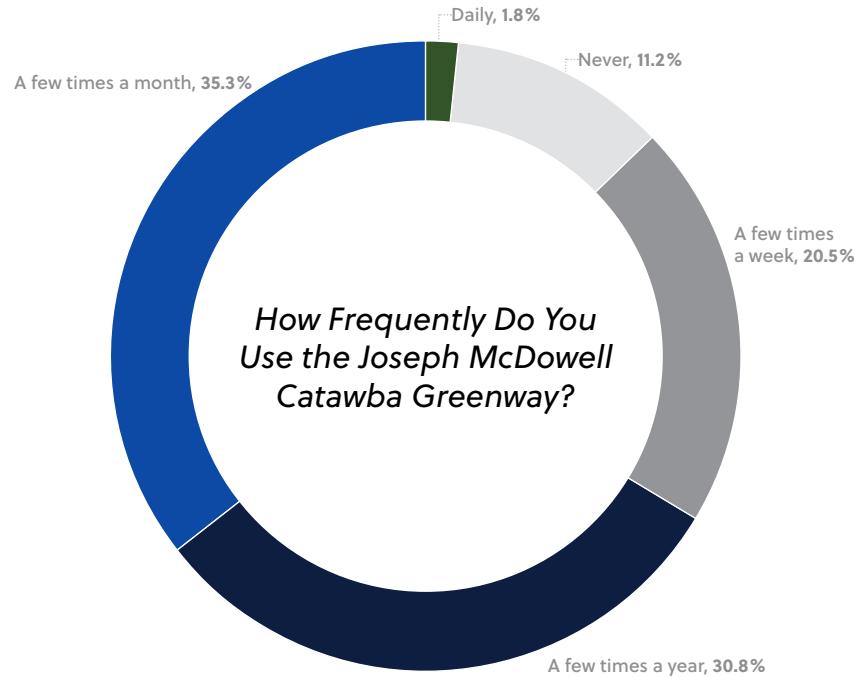
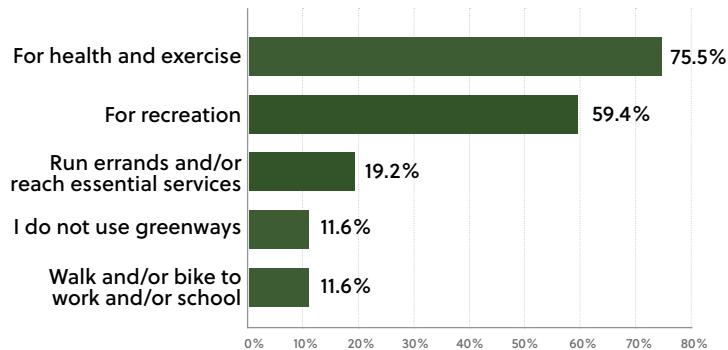


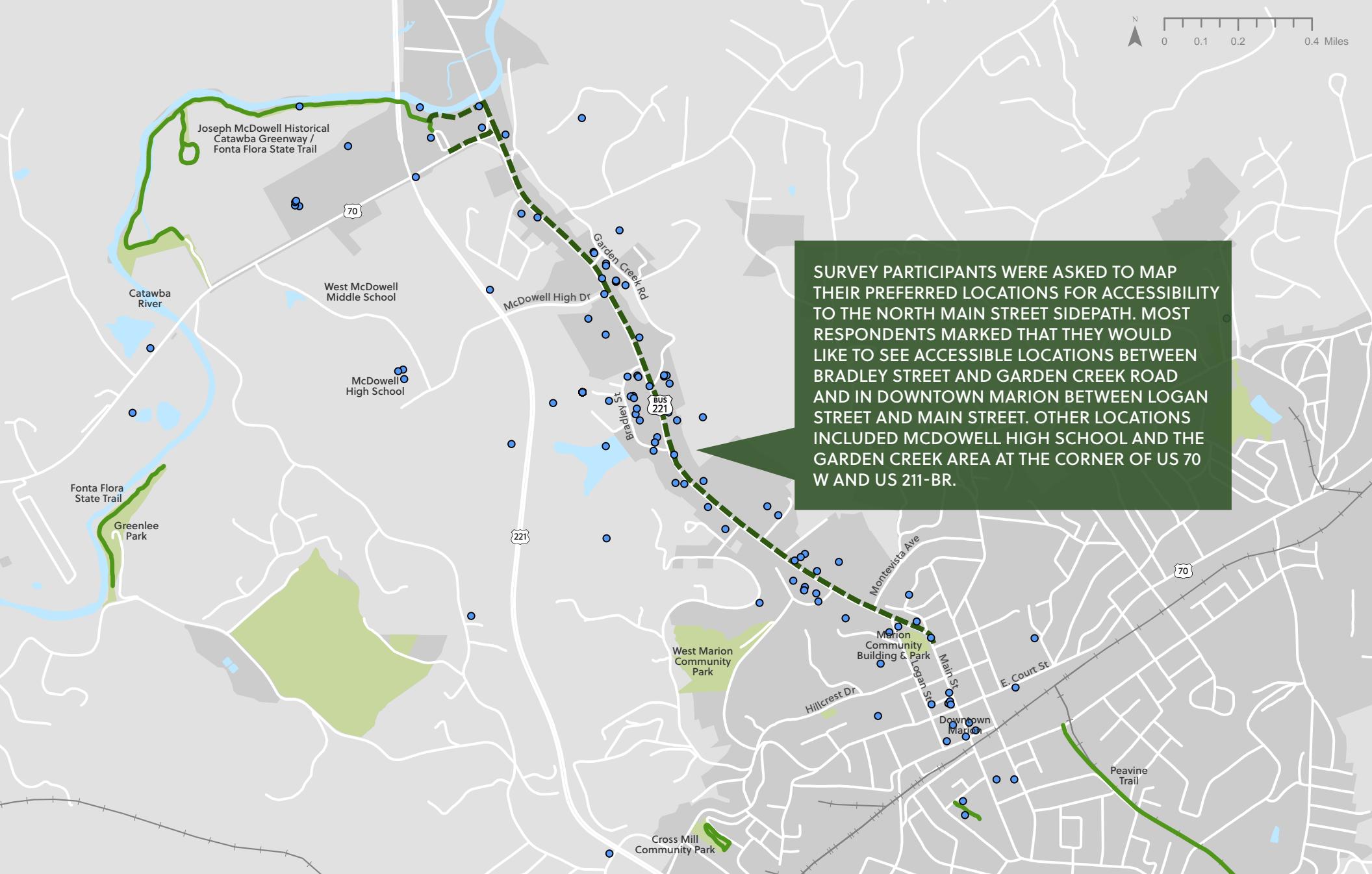


How Do You Currently Use the Joseph McDowell Catawba Greenway? Select All That Apply.



How Would You Use the Proposed N. Main St Sidepath? Select All That Apply.





CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY PREFERRED ACCESS POINTS

LEGEND

- Study Corridor
- Preferred Access Point
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County





EVALUATION + RECOMMENDATIONS

04



EVALUATION + RECOMMENDATIONS

OVERVIEW + ROUTE ALTERNATIVES FOR EVALUATION

The recommendations for the North Main Street Sidepath will provide residents with safe, comfortable, and direct travel choices between downtown Marion and the existing Joseph McDowell Catawba Greenway. Recommendations were developed based on community and stakeholder input, a review of existing conditions, key destinations, and connections identified through the planning process, and a prioritization process. This chapter outlines the overall route alternatives considered, discusses evaluation criteria, recommended routes, typical section recommendations, and amenities considerations. Overall, route alternatives were developed using various combinations of the segment alternatives presented in Chapter 2. Route alternatives that crossed North Main Street multiple times were initially considered but removed from evaluation due to loss of efficiency for through trips (between Downtown Marion and the Catawba River) as well as potential traffic safety hazards associated with multiple lane shifts where the curb shift transitions from one side of North Main Street to the other. The following pages detail the four route alternatives developed in this study.

ALTERNATIVE A

(SEGMENTS 1B > 2A > 3A > 4A > 5A > 6A)

Alternative A begins at the Joseph McDowell Catawba Greenway at the trailhead behind the McDowell House and continues along the bank of the Catawba River. The route then turns south and continues along the west side of BUS 221 to the US 70 intersection. After crossing over the north leg of the US 70 intersection, the route continues along the east side of North Main Street to Viewpoint Drive. After crossing Viewpoint Drive the route turns south utilizing the existing sidewalk in front of City Hall before terminating at the existing sidewalk on New Street. Additional at-grade crossings of North Main Street are proposed at the existing signalized intersections of McDowell High Drive, Lady Marian Plaza, Machine Shop Road, and Logan Street for connectivity along the corridor.

LENGTH: 2.16 miles

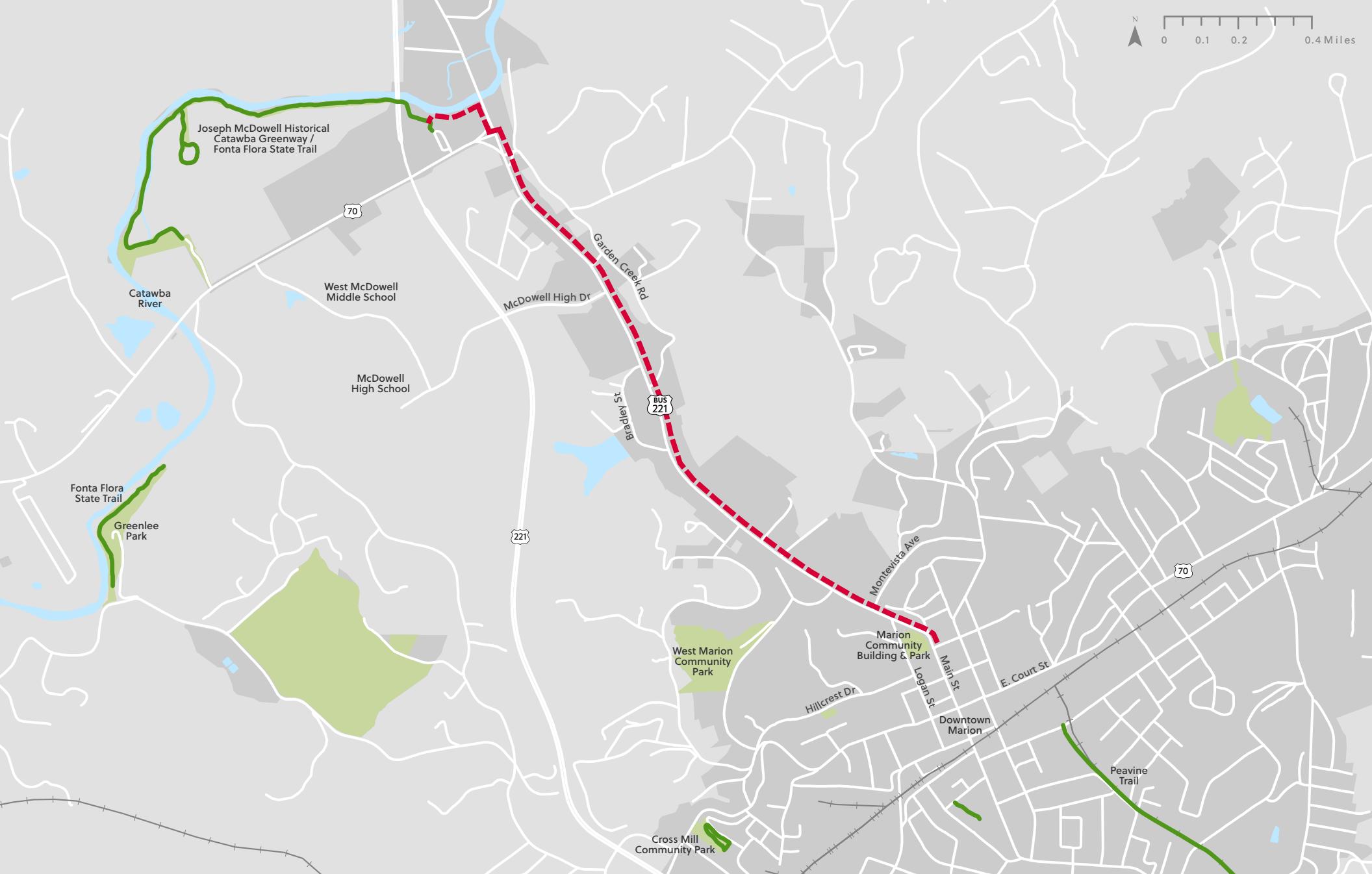
ESTIMATED 2022 CONSTRUCTION COST: \$8,245,000

PROS:

- Enhanced user experience by following the Catawba River along Segment 1B.
- US 70 intersection crossing avoids conflicts with dominant traffic movements (dual left turns to US 70 and dual right turns to North Main Street).
- Placemaking opportunities at northwest quadrant of US 70 intersection and at Scoop Ice Cream by Viewpoint Drive.

CONS:

- Property impacts / additional permanent easement required for Segment 1B.
- May require restoration / stabilization of the Catawba River along Segment 1B.



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROUTE ALTERNATIVES - ALTERNATIVE A

LEGEND

— Alternative A

- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



ALTERNATIVE B

(SEGMENTS 1A > 2A > 3A > 4A > 5A > 6A)

Alternative B begins at the Joseph McDowell Catawba Greenway at the trailhead behind the McDowell House and continues south alongside the entrance driveway to US 70. The route then turns east and continues along the north side of US 70 to the BUS 221 intersection. After crossing over the north leg of the BUS 221 intersection, the route continues along the east side of North Main Street to Viewpoint Drive. After crossing Viewpoint Drive the route turns south utilizing the existing sidewalk in front of City Hall before terminating at the existing sidewalk on New Street. Additional at-grade crossings of North Main Street are proposed at the existing signalized intersections of McDowell High Drive, Lady Marian Plaza, Machine Shop Road and Logan Street for connectivity along the corridor.

LENGTH: 2.12 miles

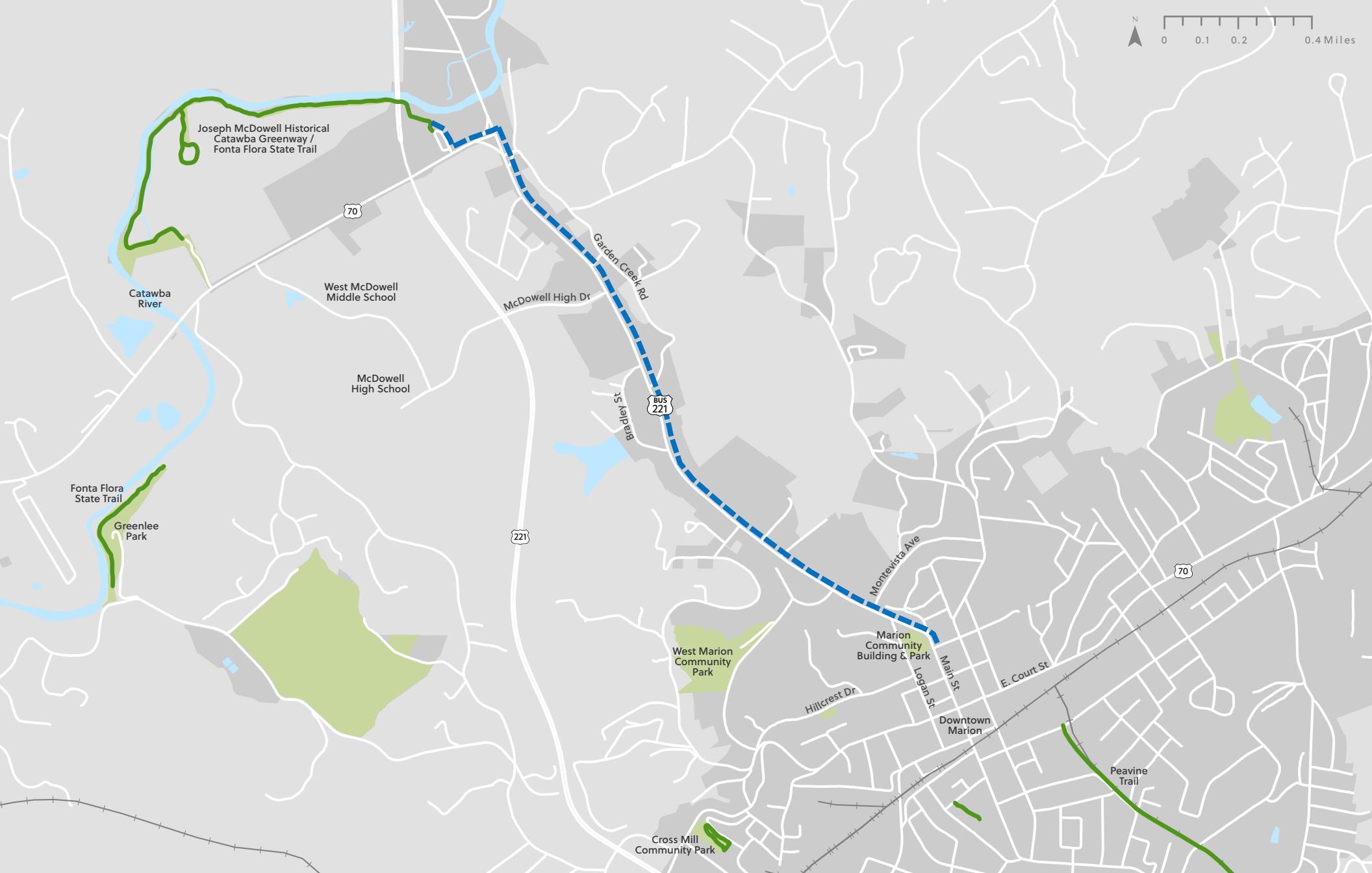
ESTIMATED 2022 CONSTRUCTION COST: \$8,286,000

PROS:

- Enhanced trail visibility / awareness by following US 70 along Segment 1A.
- US 70 intersection crossing avoids conflicts with dominant traffic movements (dual left turns to US 70 and dual right turns to North Main Street).
- Placemaking opportunities at northwest quadrant of US 70 intersection and at Scoop Ice Cream by Viewpoint Drive.
- Easement acquisition limited to temporary construction easement (permanent easement not anticipated as sidepath is within ROW or on County-owned land) along Segment 1A.

CONS:

- Deviates from the enhanced user experience provided by following the river along Segment 1B in Alternatives A and C.



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROUTE ALTERNATIVES - ALTERNATIVE B

LEGEND

— Alternative B

- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



ALTERNATIVE C

(SEGMENTS 1B > 2B > 3B > 4B > 5B > 6B)

Alternative C begins at the Joseph McDowell Catawba Greenway at the trailhead behind the McDowell House and continues along the bank of the Catawba River. The route then turns south and continues along the west side of BUS 221 to the US 70 intersection. After crossing over the west leg of the US 70 intersection, the route continues along the west side of North Main Street to Logan Street. After crossing Logan Street, the route utilizes the existing sidewalk in front of the Marion Community Building and crosses North Main Street at the New Street intersection before terminating at the existing sidewalk on New Street next to City Hall. Additional at-grade crossings of North Main Street are proposed at the existing signalized intersections of US 70, McDowell High Drive, Lady Marian Plaza, and Machine Shop Road for connectivity along the corridor.

LENGTH: 2.16 miles

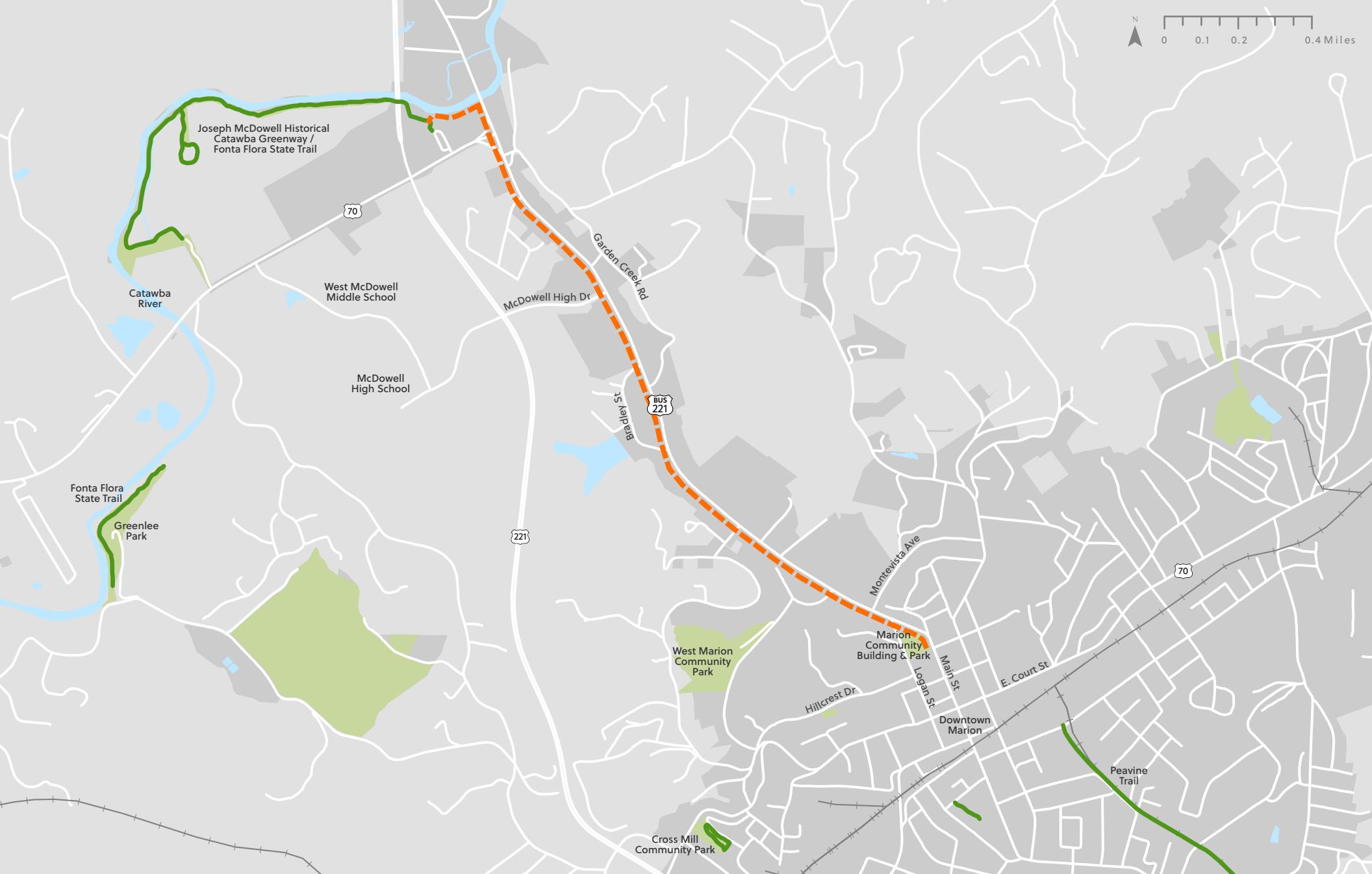
ESTIMATED 2022 CONSTRUCTION COST: \$7,979,000

PROS:

- Enhanced user experience by following the river along Segment 1B.
- Placemaking opportunity at northwest quadrant of US 70 intersection.

CONS:

- Property impacts / additional permanent easement required for Segment 1B.
- May require restoration / stabilization of the river along Segment 1B.
- US 70 intersection crossing conflicts with dominant traffic movements (dual left turns to US 70 and dual right turns to North Main Street).



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROUTE ALTERNATIVES - ALTERNATIVE C

LEGEND

- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

— Alternative C



ALTERNATIVE D

(SEGMENTS 1A > 2B > 3B > 4B > 5B > 6B)

Alternative D begins at the Joseph McDowell Catawba Greenway at the trailhead behind the McDowell House and continues south alongside the entrance driveway to US 70. The route then turns east and continues along the north side of US 70 to the BUS 221 intersection. After crossing over the north leg of the BUS 221 intersection, the route continues along the east side of North Main Street to Logan Street. After crossing Logan Street, the route utilizes the existing sidewalk in front of the Marion Community Building and crosses North Main Street at the New Street intersection before terminating at the existing sidewalk on New Street next to City Hall. Additional at-grade crossings of North Main Street are proposed at the existing signalized intersections of US 70, McDowell High Drive, Lady Marian Plaza, and Machine Shop Road for connectivity along the corridor.

LENGTH: 2.12 miles

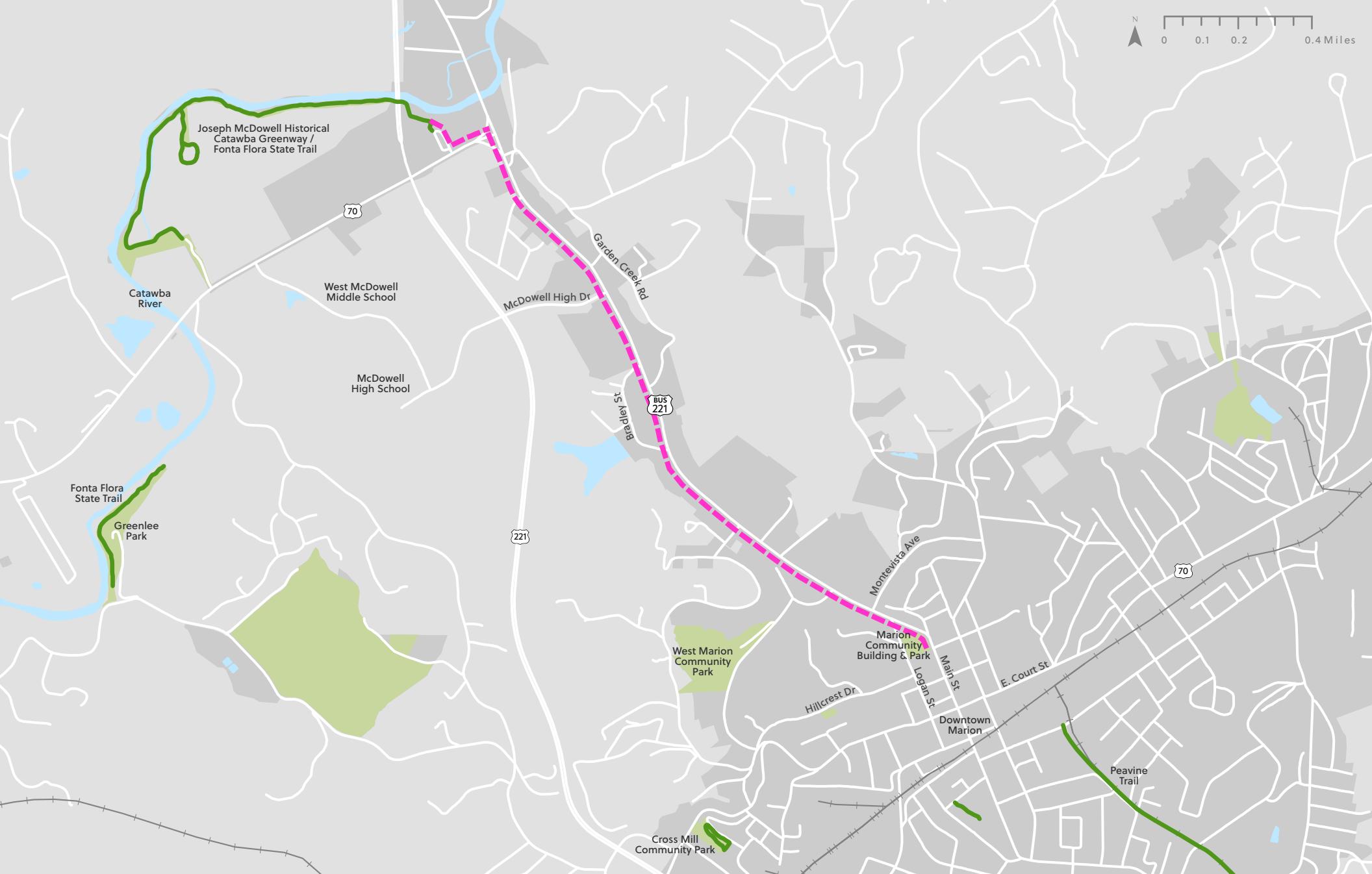
ESTIMATED 2022 CONSTRUCTION COST: \$8,020,000

PROS:

- Enhanced trail visibility / awareness by following US 70 along Segment 1A.
- Easement acquisition limited to temporary construction easement (permanent easement not anticipated as sidepath is within ROW or on County-owned land) along Segment 1A.
- Placemaking opportunity at northwest quadrant of US 70 intersection.

CONS:

- Deviates from the enhanced user experience provided by following the river along Segment 1B in Alternatives A and C.
- US 70 intersection crossing conflicts with dominant traffic movements (dual left turns to US 70 and dual right turns to North Main Street).



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY ROUTE ALTERNATIVES - ALTERNATIVE D

LEGEND

- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

— Alternative D



Harvest Drive-In Dining Service on North Main Street

EVALUATION METHODOLOGY

Evaluation criteria were used to supplement the decision-making process to determine the most appropriate alignments for the *Marion North Main Street Sidepath Feasibility Study*. The following evaluation criteria were used to guide the recommendations for the sidepath:

ROUTE ALTERNATIVE EVALUATION CRITERIA

COST-EFFECTIVENESS - The magnitude of the total life-cycle cost for each alternative (including design, construction and ongoing maintenance) is a significant factor in determining which alternative to implement.

PROPERTY IMPACTS - Real estate acquisition can play a major role in project cost and schedule. The ability of the route alternatives to utilize publicly-owned properties, existing easements, public ROW, and limit impacts to privately property owners is considered.

POTENTIAL FUNDING OPPORTUNITIES - Given the importance of securing funding from a variety of potential sources, the diversity, total amount, and likelihood of receiving funding available to each alternative is considered.

ENVIRONMENTAL IMPACTS - The ability of each alternative to minimize impacts to streams, wetlands, and other jurisdictional features (including associated buffers, floodplain elevations, and other environmental factors) during construction and operation of the proposed facility is also considered.

PHYSICAL FEASIBILITY - The ability to successfully engineer and permit each alternative is a critical consideration for determining realistic options for the route alternative.

COMMUNITY PRIORITIES - To ensure consistency with public preferences and existing plans, goals identified in previous planning efforts and feedback from public engagement/stakeholder outreach activities are utilized to evaluate the route alternative.

DESIRED CONNECTIVITY - In order to maximize use of the facility, determining which route alternatives connect popular origins and destinations identified by the public and other stakeholders is considered.

TRAFFIC IMPACTS - The magnitude of the disruption of vehicular traffic by the ultimate design of each route alternative and associated temporary impacts during the construction process is considered.

IMPLEMENTATION TIMEFRAME - The amount of time it takes to plan, fund, design, and ultimately construct each route alternative is important to consider, especially in conjunction with community priorities, as to how long is a tolerable time to wait for project completion.

ACCESSIBILITY - Convenience of use and accommodation for users of all ages and abilities is a significant consideration to ensure the ultimate route alternative is a community amenity designed for universal use.

LEADERSHIP SUPPORT - The depth of support from elected officials and agencies for each route alternative as well as whether there is a clear project sponsor to champion the route alternative through implementation, is an important factor for ensuring successful project completion.

PLACEMAKING + USER EXPERIENCE - The potential ability of the route alternatives to help drive tourism, contribute to the local economy, and brand the surrounding area by as one that promotes healthy, active lifestyles is also considered.



DECISION MATRIX + SCORING

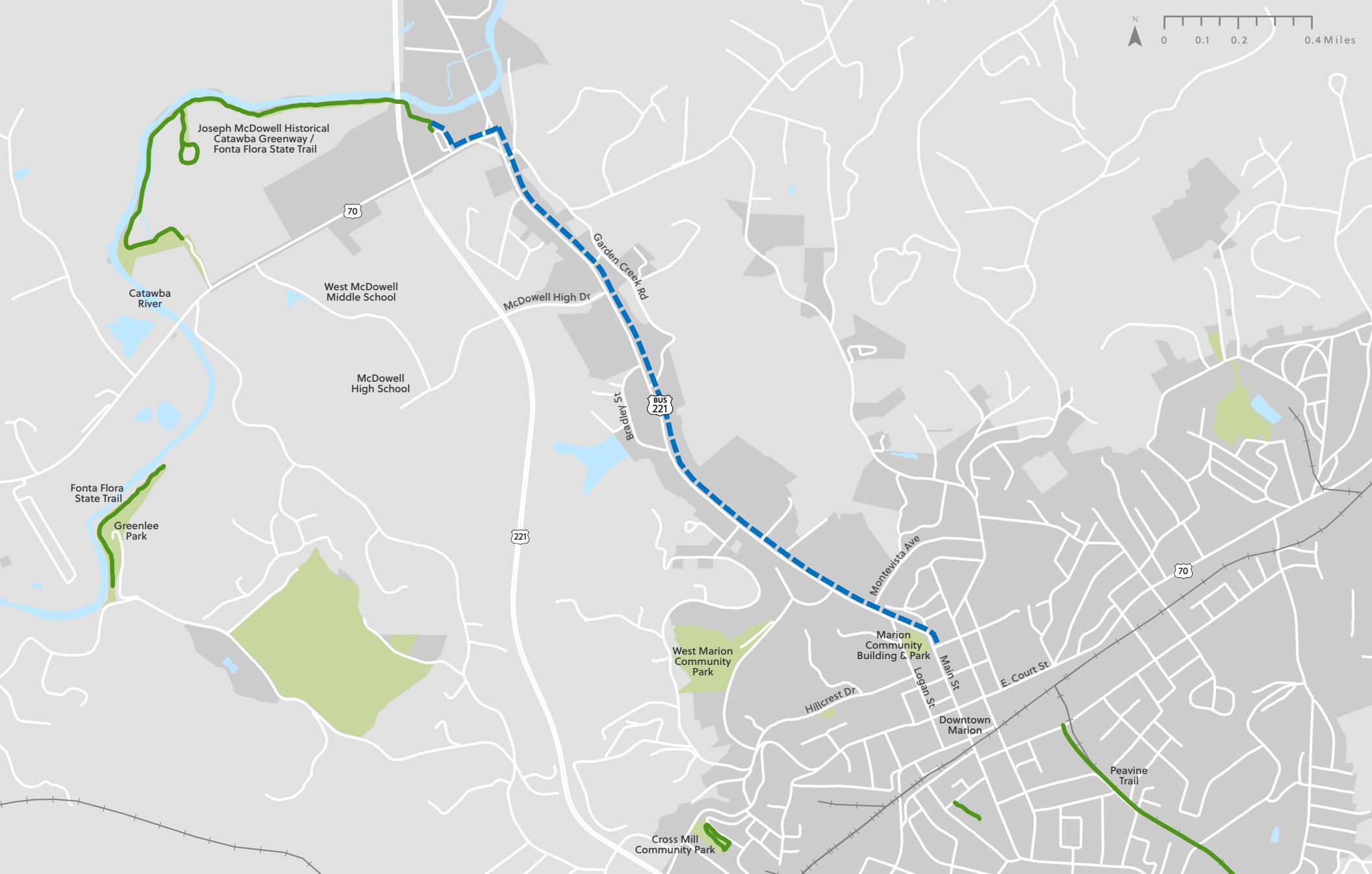
The decision matrix is a qualitative assessment tool utilized by the study team to incorporate feedback from the steering committee. The four alignment alternatives that were developed are assigned a qualitative ranking (High, Medium, or Low) by the study team based on the analysis performed. Steering committee members were asked to rank the evaluation criteria according to their priorities. Based on the feedback, the recommended route can be identified as the one that best aligns with the priorities of the steering committee.

ROUTE ALTERNATIVE EVALUATION CRITERIA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D
COST-EFFECTIVENESS	MEDIUM	MEDIUM	MEDIUM	MEDIUM
PROPERTY IMPACTS	MEDIUM	HIGH	LOW	MEDIUM
POTENTIAL FUNDING OPPORTUNITIES	MEDIUM	MEDIUM	MEDIUM	MEDIUM
ENVIRONMENTAL IMPACTS	MEDIUM	HIGH	LOW	MEDIUM
PHYSICAL FEASIBILITY	MEDIUM	HIGH	MEDIUM	HIGH
COMMUNITY PRIORITIES	MEDIUM	MEDIUM	MEDIUM	MEDIUM
DESIRED CONNECTIVITY	MEDIUM	MEDIUM	MEDIUM	MEDIUM
TRAFFIC IMPACTS	HIGH	HIGH	MEDIUM	MEDIUM
IMPLEMENTATION TIMEFRAME	MEDIUM	HIGH	LOW	MEDIUM
ACCESSIBILITY	MEDIUM	MEDIUM	MEDIUM	MEDIUM
LEADERSHIP SUPPORT	MEDIUM	HIGH	LOW	LOW
PLACEMAKING + USER EXPERIENCE	HIGH	MEDIUM	MEDIUM	LOW

(Score: High=Most desirable, Low=Least desirable)

RECOMMENDED ROUTE

Upon evaluation of the four route alternatives, **Alternative B** was chosen as the recommended alternative since it received the most "High" scores and offers the benefits of: avoiding conflicts with dominant traffic movements (dual left turns to US 70 and dual right turns to North Main Street) at the US 70 intersection; having multiple placemaking opportunities on either end of the corridor; not requiring additional permanent easement from landowners along the Catawba River; enhancing trail visibility/awareness along US 70; having fewer anticipated property impacts to adjacent businesses; and having the greatest support from leadership. A map showing the recommended route is shown on the following page and concept plans are included later in this chapter.



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY RECOMMENDED ROUTE

LEGEND

- Recommended Route
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County



Consistent design standards should be applied for the length of the project. Utilizing consistent facility widths and materials provides a seamless and intuitive user experience and promotes predictable user behavior that contributes to making the facility safe for users of all ages and abilities.

In conjunction with wayfinding and other branding efforts, applying consistent design standards will also increase recognition of the sidepath not only by users already on the facility but passing motorists as well. Recognition of the facility by the public in multiple locations through the course of their daily lives helps highlight and reinforce the connections the sidepath makes and may result in individuals considering alternative modes of transportation for some trips or for recreational purposes.

MATERIALS SELECTION

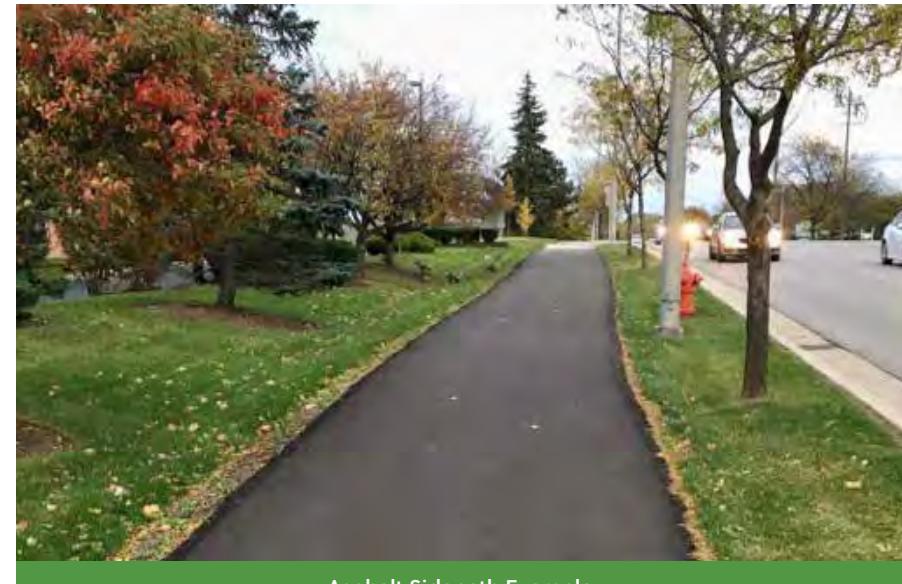
Factors to be considered in the selection of materials for sidepath projects include anticipated facility type (recreational versus commuter), expected use activities (i.e., walking/bicycling/running/rollerblading), age and ability of facility users, environmental conditions, construction cost, maintenance burden and costs, and funding source requirements among others.

PAVED SURFACE OPTIONS

Paved sidepath surfaces such as asphalt or concrete offer great accessibility to accommodate users of all ages and abilities. Asphalt pavement tends to be the most popular and cost effective for paved sidepaths. Concrete pavement is more durable, but costs more than asphalt pavement. As such, concrete sidepaths are typically more common in urban settings (where projected user volumes are high or the sidepath may be subject to vehicular loading more often) or in areas subject to heavy flooding forces that may cause damage to the sidepath.



Concrete Sidepath - Davis Drive, Cary



Asphalt Sidepath Example

TYPICAL CROSS SECTIONS

NORTH MAIN ST SIDEPATH (PREFERRED)

The preferred typical section is a 10-foot wide paved sidepath adjacent to the curb and gutter roadway section with five 11-foot-wide lanes. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary. A planting strip of six feet is recommended to enhance safety and user experience and to accommodate street trees for long-term future corridor streetscape. The strip may be reduced to two feet in limited areas to accommodate existing infrastructure that cannot be relocated or that would be cost prohibitive to relocate. Shoulders or shy zones of two feet or greater should be kept clear of any obstacles to ensure full path width remains usable.





NORTH MAIN ST SIDEPATH WITH RETAINING WALL (CONSTRAINED)

In topographically constrained areas, a 10-foot-wide paved asphalt sidepath pavement with a two-foot-wide shy zone between the outside edge of the sidepath and the face of the retaining wall. A planting strip of six feet is recommended to enhance safety and user experience and to accommodate street trees for long-term future corridor streetscape. The strip may be reduced to two feet in limited areas to accommodate existing infrastructure that cannot be relocated or that would be cost prohibitive to relocate. Shoulders or shy zones of two feet or greater should be kept clear of any obstacles to ensure full path width remains usable.





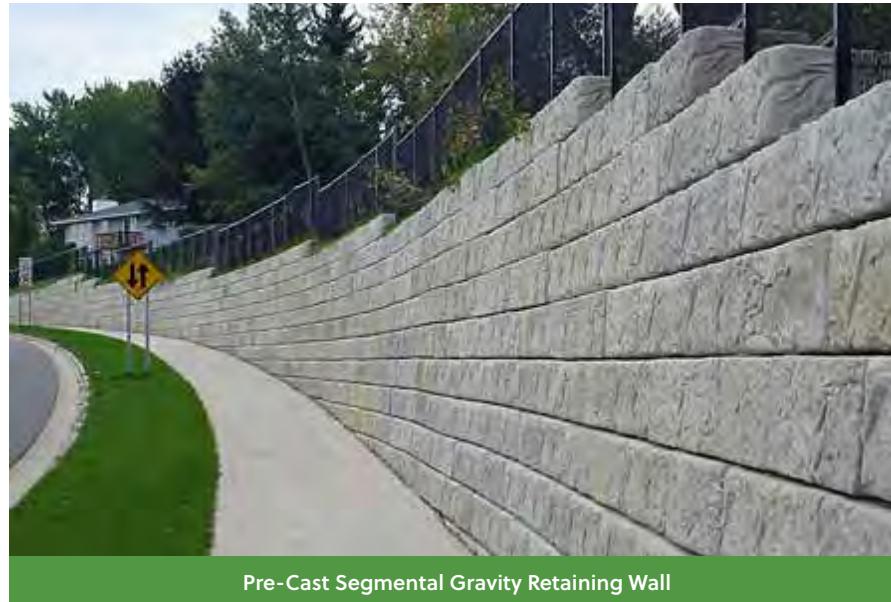
RETAINING WALL OPTIONS

A variety of retaining wall options are available depending on the required wall height and soil conditions at the site. Depending on geotechnical and structural engineering recommendations. Wall types that may be suitable for this project include cast-in-place reinforced concrete walls, pre-cast segmental gravity walls, mechanically stabilized earth (MSE) walls, soil nail walls, and soldier pile walls among others.

Many of these wall types offer a variety of aesthetic patterns and finishes to complement their surroundings. Smooth finished walls also provide placemaking opportunities for incorporating murals and other artistic installations. Enhanced lighting in these areas also provide opportunities to create a unique sense of place while increasing safety and user comfort after dark. Using a set of stepped or tiered walls may also provide opportunities for incorporating landscaping into the design.



Smooth Finished Retaining Wall with Art Mural



Pre-Cast Segmental Gravity Retaining Wall

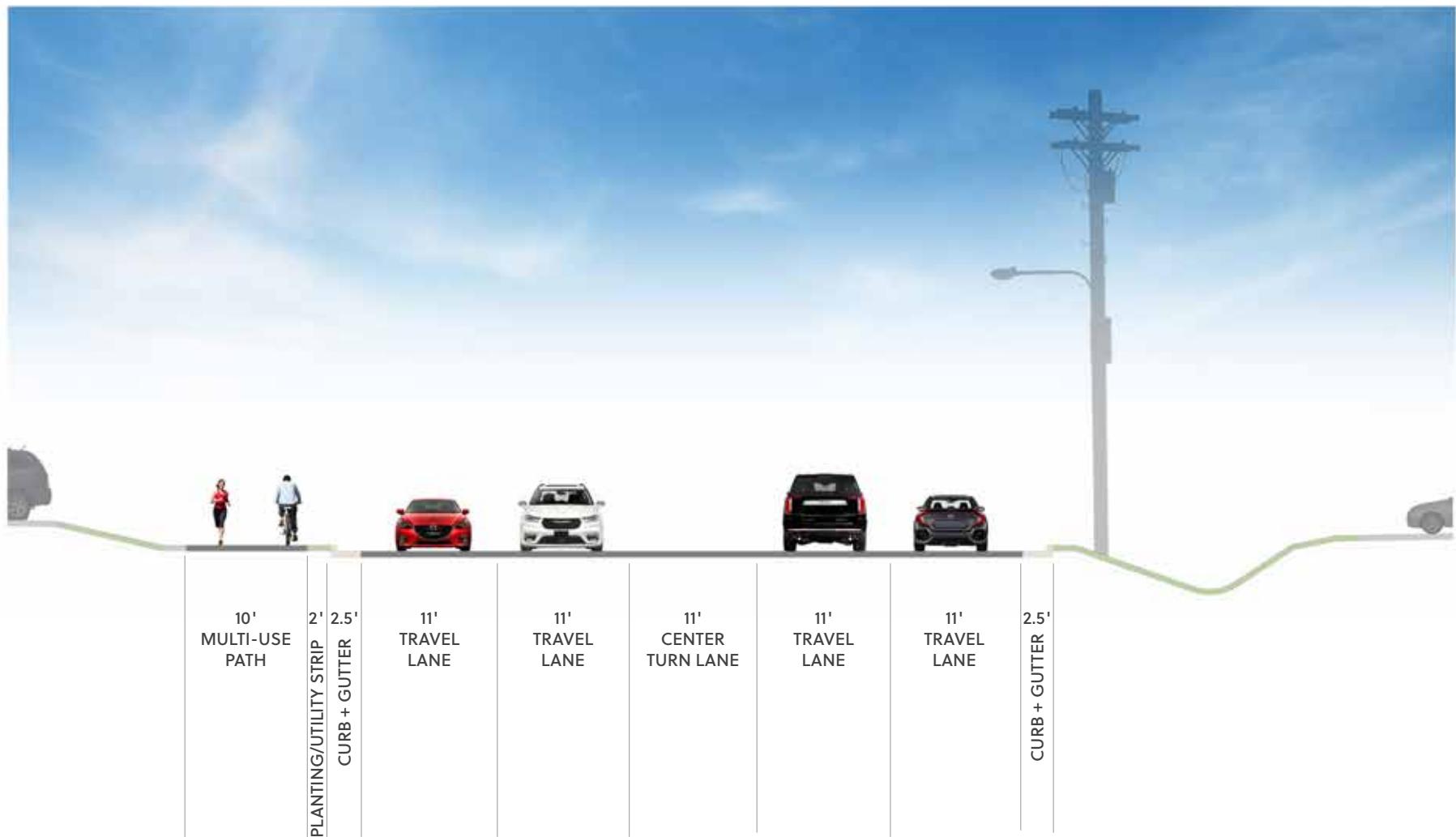


Soldier Pile Wall



US 70 SIDE PATH

The preferred typical section is a 10-foot wide paved sidepath adjacent to the curb and gutter roadway section with five 11-foot-wide lanes. Asphalt pavement is recommended based on site conditions, anticipated trail use, and cost considerations. Limited sections of concrete pavement may be required to accommodate site conditions, as necessary. A planting strip of two feet is recommended based on site constraints. Where constraints allow, the planting strip may be widened to enhance safety and user experience. Shoulders or shy zones of two feet or greater should be kept clear of any obstacles to ensure full path width remains usable.



SIDEPATH ALONG MCDOWELL HOUSE DRIVEWAY

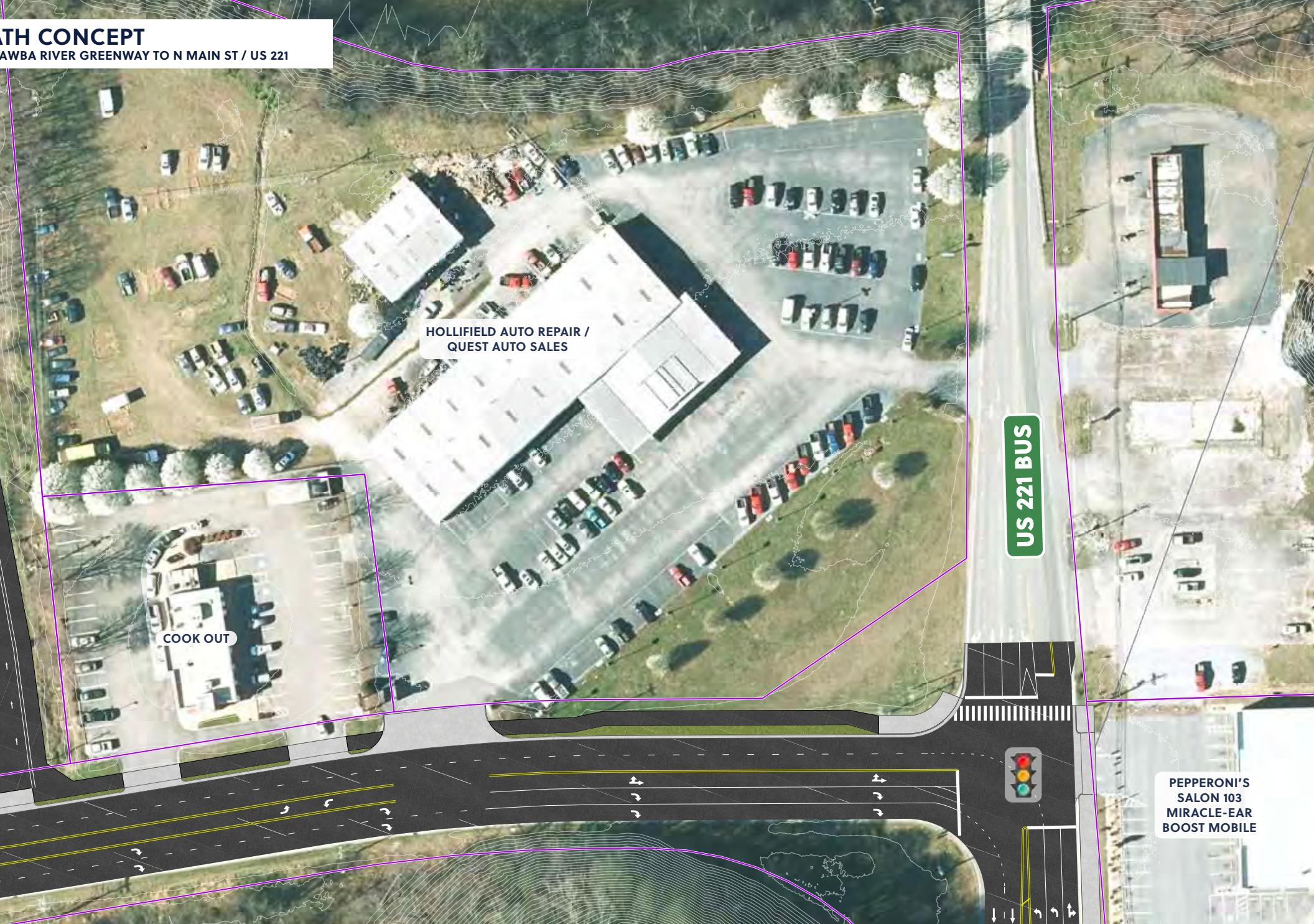
The preferred typical section is to widen the existing pavement to accommodate a 10-foot wide paved sidepath adjacent entry lane separated by a 2-foot buffer zone. The buffer zone may be striped and include flexible post delineators or consist of a raised median curb to provide vertical separation from motor vehicles. If a median curb is utilized, curb cuts should be provided at regular intervals to ensure adequate drainage. Americans with Disabilities Act (ADA) accessible parking adjacent to the McDowell House is maintained as is the existing exit lane on the west side of the house.





PATH CONCEPT

AWBA RIVER GREENWAY TO N MAIN ST / US 221





SIDEPATH CONCEPT

BUDGET INN





SIDEPATH CONCEPT

WYRD'S AUTO SALES

DOLLAR GENERAL

FIRST CITIZENS BANK

DAVE KEHLER
BUILDER, INC

MCDOWELL CHIROPRACTIC
FAMILY HEALTHCARE

MCDOWELL HIGH DR

LEGEND

GIS PROPERTY LINES

2-FT CONTOURS

PROPOSED ASPHALT

PROPOSED CONCRETE

PROPOSED GRASS STRIP

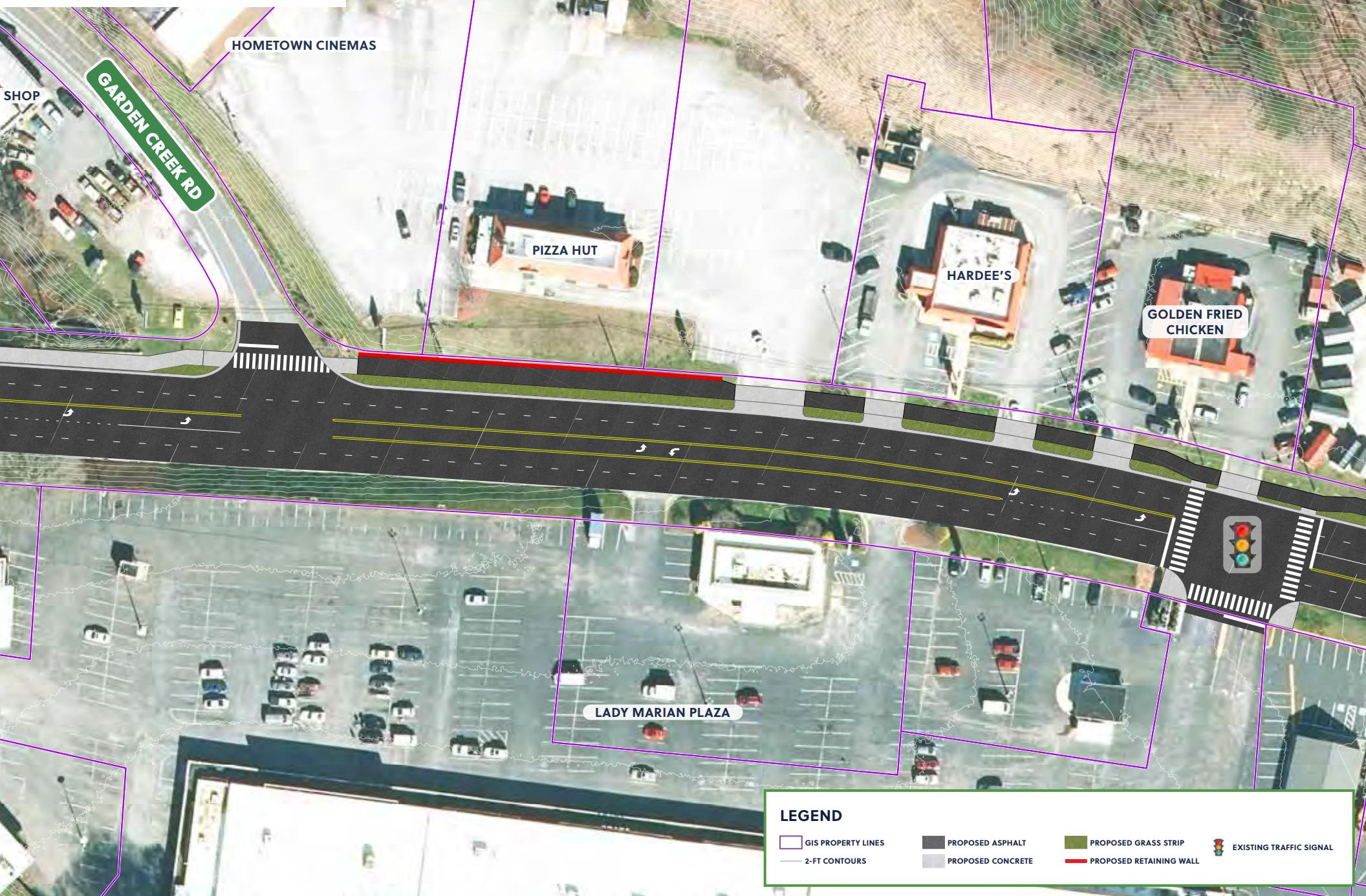
PROPOSED RETAINING WALL

EXISTING TRAFFIC SIGNAL



SIDEPATH CONCEPT

LADY MARIAN PLAZA



LEGEND

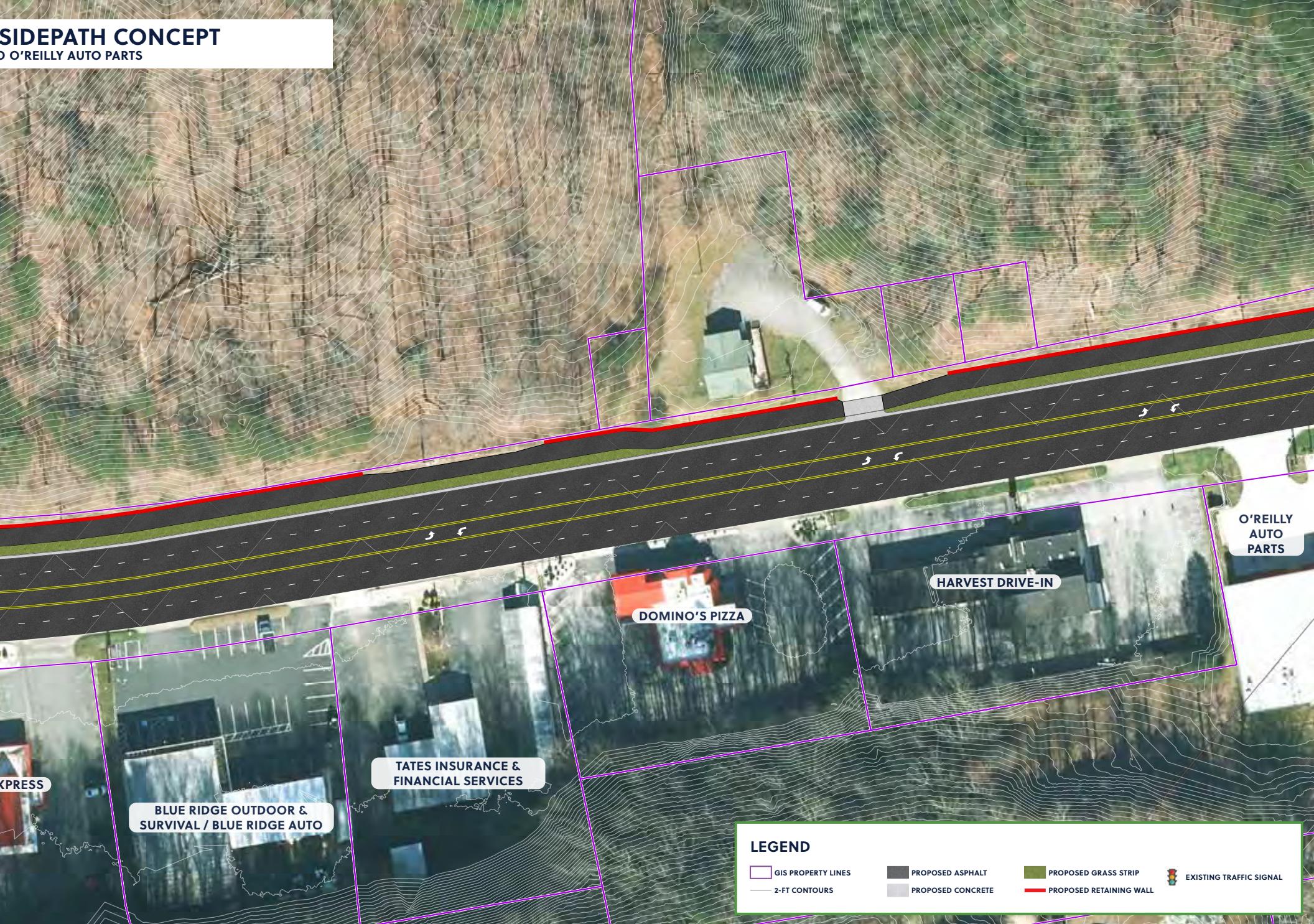
GIS PROPERTY LINES
2-FT CONTOURS

PROPOSED ASPHALT
PROPOSED CONCRETE

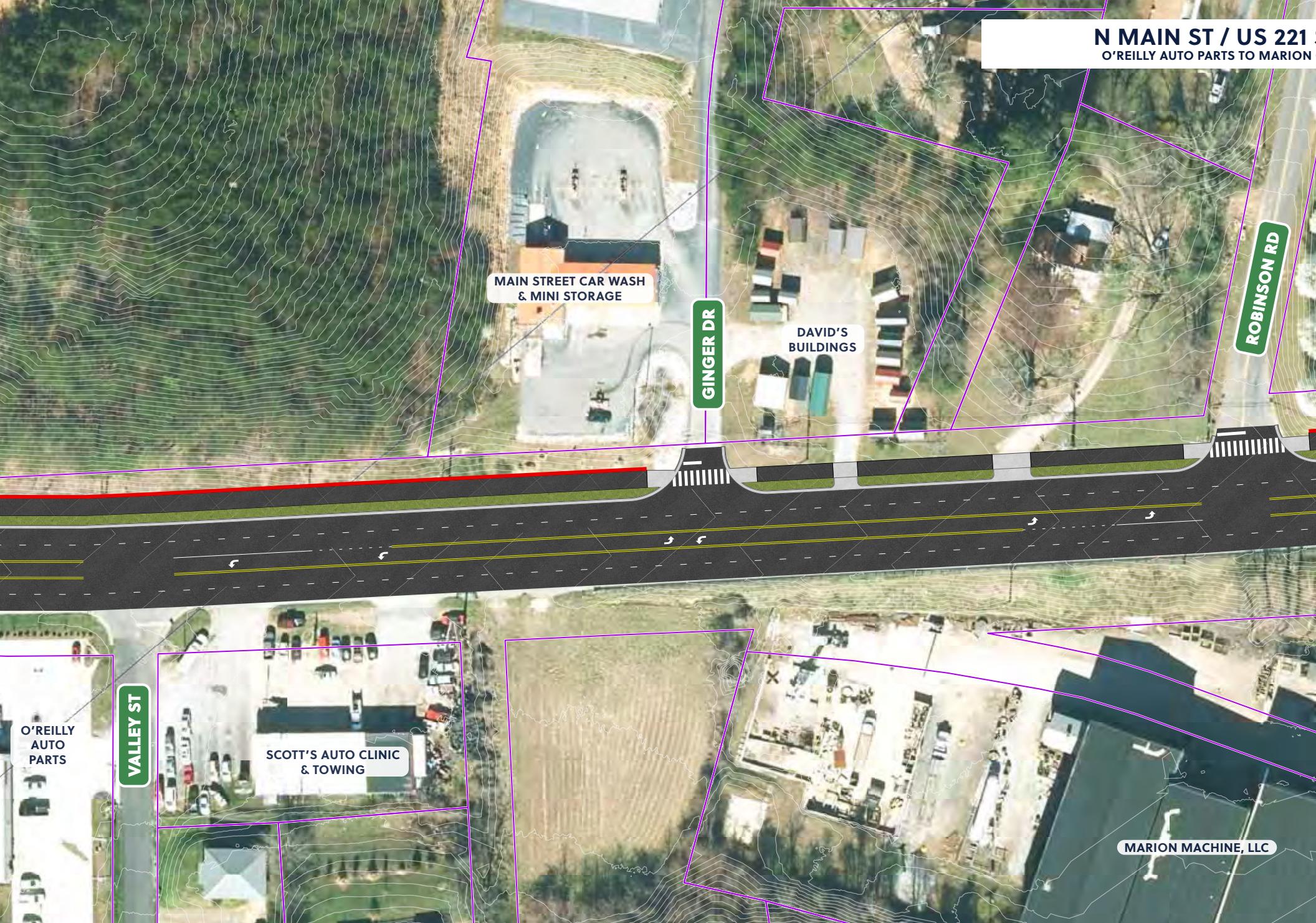
PROPOSED GRASS STRIP
PROPOSED RETAINING WALL

EXISTING TRAFFIC SIGNAL





N MAIN ST / US 221
O'REILLY AUTO PARTS TO MARION



SIDEPATH CONCEPT

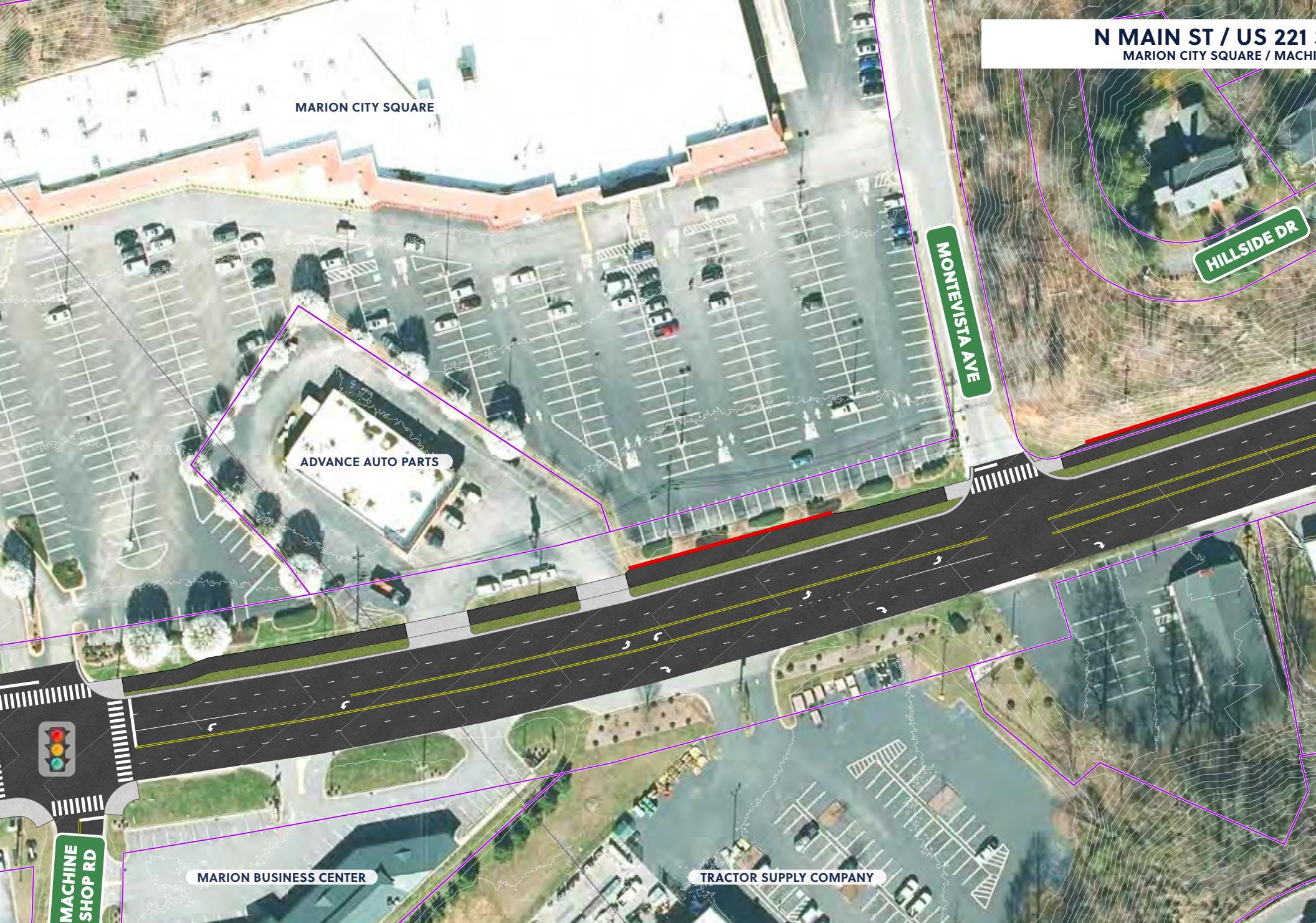
CITY SQUARE / MACHINE SHOP RD



LEGEND

GIS PROPERTY LINES	PROPOSED ASPHALT
2-FT CONTOURS	PROPOSED CONCRETE
	PROPOSED GRASS STRIP
	EXISTING TRAFFIC SIGNAL

N MAIN ST / US 221
MARION CITY SQUARE / MACHINE SHOP RD



SIDEPATH CONCEPT

NE SHOP RD TO VIEWPOINT DR



LEGEND

GIS PROPERTY LINES

2-FT CONTOURS

PROPOSED ASPHALT

PROPOSED CONCRETE

PROPOSED GRASS STRIP

PROPOSED RETAINING WALL





INTERSECTION TREATMENTS + CROSSINGS

Crossings vary in design and are vital to the overall safety and efficiency of a community's multimodal network. Crossing design should facilitate visibility and predictability for all users, creating an environment in which complex movements feel safe, easy, and comfortable. Design guidance documents that provide specific recommendations for crossing treatments include the 2019 National Association of City Transportation Officials (NACTO) *Don't Give Up at the Intersection*, the Federal Highway Administration (FHWA) *Safe Transportation for Every Pedestrian* and the 2012 AASHTO *Guide for the Development of Bicycle Facilities* (updated version forthcoming). Treatments should also comply with the *Manual on Uniform Traffic Control Devices* (MUTCD).

The following images represent some of the recommended typical treatments. As images are collected from across the United States, details and specific design features may vary from proposed treatments ultimately implemented for the sidepath in City of Marion. The recommended crossing treatments are not a comprehensive list of best practices and often respond to existing conditions along the proposed alignment.

Recommendations for intersection treatments and crossings include, but are not limited to, the following:

- Users to cross at existing signalized intersections
- Install marked crosswalks + ADA accessible curb ramps
- Install push-button activated pedestrian signals with countdown timers
- Consider utilizing Lead Pedestrian Intervals (LPIs) in the signal timing to give pedestrians a several second head start to cross the intersection to increase pedestrian visibility and reinforce their place in the roadway before turning vehicles enter the intersection
- Consider using specialized pavement markings or surface treatment across driveway entrances to raise awareness between trail users and motorists at conflict points



Pedestrian Push-Button



Pedestrian Signal + Countdown Timer



Leading Pedestrian Interval



ADA Accessible Curb Ramps / Marked Crosswalks



Conflict Markings at Driveway Entrances



TRAIL AMENITIES

In tandem with infrastructure and policy recommendations, trail amenities improve user safety and experience and enhance recreational and multi-modal accommodations in a community. The overall branding for the Fonta Flora State Trail has been developed previously and is in use along existing sections of the trail. A summary of recommended trail amenities is provided below and on subsequent pages.

WAYFINDING

Wayfinding consists of comprehensive signage, mapping, and marking systems that help inform and educate users as they make their way to, from, and along the greenway. A cohesive system across the corridor will enhance access, provide a greater sense of security and comfort, promote desired user behaviors, improve awareness of nearby trail and transit networks, and reinforce the brand and/or identity of the facility. The following principles should guide the continued implementation of the Fonta Flora State Trail wayfinding system:

- **CONSISTENCY** - User experience should feel consistent and continuous across the entire corridor, regardless of jurisdiction.
- **CONNECTIVITY** - A primary function of wayfinding is to connect users to destinations and other routes. It should clearly communicate current locations, access points, adjacent streets, distances, directions, destinations, estimated travel times, and historical/cultural/environmental information where applicable.
- **IDENTITY** - A strong wayfinding identity will make the greenway more recognizable and memorable to visitors and residents alike. Custom designs and graphics should be used to create a unique identity which reflects the goals of the Fonta Flora State Trail and the character of the region it will serve.
- **PREDICTABILITY** - Apply wayfinding in a predictable manner (including sign placement, design, and content) to allow users to quickly understand the information being presented. For users, this builds trust, increases comfort, reduces stress, and provides a welcoming and low-stress experience as they navigate the greenway.
- **SIMPLICITY** - Present information in a clear, logical, universal way to reach the widest possible demographic. The longer it takes to understand the information presented, the less likely the system will be used or relied upon.



Existing Fonta Flora State Trail Signage at Joseph McDowell Catawba Greenway



Existing Fonta Flora State Trail Signage at Greenlee Park



Bicycle + Pedestrian Counter - Dallas, TX



Real-time Display Counter - Montreal, Canada



Real-time Display Bicyclist + Pedestrian Counter - Jacksonville, FL



Bicyclist + Pedestrian Counter - Granby, Canada

DATA COLLECTION

Bicycle and pedestrian count data are an essential tool to justify investments in active transportation infrastructure and communicate needs with the public, elected officials, and other stakeholders. Collecting this data provides insights into temporal user volume trends (time of day and seasonal), user type trends (biking vs. walking), and user volume trends by geographic location (which sections are most frequently used). This information can also help identify potential areas of need as municipalities plan their future pedestrian and bicycling infrastructure projects.

A variety of counting technologies and products are available depending on the specific application and budget. These range from inductive loop detectors, pneumatic tube detectors, and passive infrared detectors among others.

Mobile counters provide the flexibility to collect data in one location before moving to another collection location and are typically battery-powered. Fixed counters are used at locations where long-term data collection is desired and may be wired or battery-powered. Some blend in with their surroundings and others utilize real-time display totems to present daily and yearly counts and engage directly with those users being counted.

Depending on the specific product, count data may be retrieved manually from the counter or may streamline the process via wireless transmission, reducing trips to the field. Online, easy-to-use data platforms are also offered to analyze and visualize the data. Features include dashboards and interfaces to provide access to count data for the development of custom websites and mobile applications. The emerging use of "Big Data" crowd-sourced from mobile phone users, via services such as Streetlight and Strava, may also be an option for collecting user count data.



IMPLEMENTATION

05

OVERVIEW

Recommendations outlined in the *Marion North Main Street Sidepath Feasibility Study* represent a significant investment in multimodal transportation that will positively impact how both residents and visitors travel and experience the City of Marion between the Joseph McDowell Catawba Greenway and Downtown Marion. Key outputs of this study are the project cut sheets and cost estimates, which are essential to establishing project implementation scenarios. The cut sheets and cost estimates are presented in this chapter. Additionally, successful implementation of the sidepath will require a coordinated, consistent effort with a wide range of partners. Some of the key agencies and partners include Friends of the Fonta Flora State Trail, NC State Parks, NCDOT, McDowell County, McDowell County, private partners, regional advocacy organizations, and community members.

STRATEGIES

PHASING + PRIORITIZATION

To accelerate implementation, the project corridor may be split into multiple phases. Considerations when phasing and prioritizing sections may include:

- Additional land acquisition needs
- NCDOT coordination
- Cost / available funding
- Connectivity (to existing segments of greenway and to parks/other destinations)

IMPLEMENTATION SCENARIOS + PHASING RECOMMENDATIONS

Based on analysis by the project team and input from the steering committee, this study recommends the following implementation scenarios:

- Scenario 1 - Construct the entire project corridor in one phase.
- Scenario 2 - Construct the project corridor in multiple phases as follows:
 - » Phase 1 - Machine Shop Road at Marion City Square to Downtown at Viewpoint Drive
 - » Phase 2 - McDowell House on US 70 to Lady Marian Plaza on North Main Street
 - » Phase 3 - Lady Marian Plaza to Machine Shop Road at Marion City Square

IMPLEMENTATION SCENARIOS

Spanning 2-miles along BUS-221, the North Main Street Sidepath may be implemented in phases and will involve a coordinated effort to design, fund, and construct the corridor. Project development opportunities will require collaboration from multiple agencies and may utilize various funding sources. The following implementation scenarios outline potential paths to develop the North Main Street Sidepath. Project leaders are also encouraged to explore additional implementation methods as new funding opportunities arise at both the federal and state levels. Please see Appendix A for a comprehensive list of funding resources that are referenced in the following scenarios.



SCENARIO 1

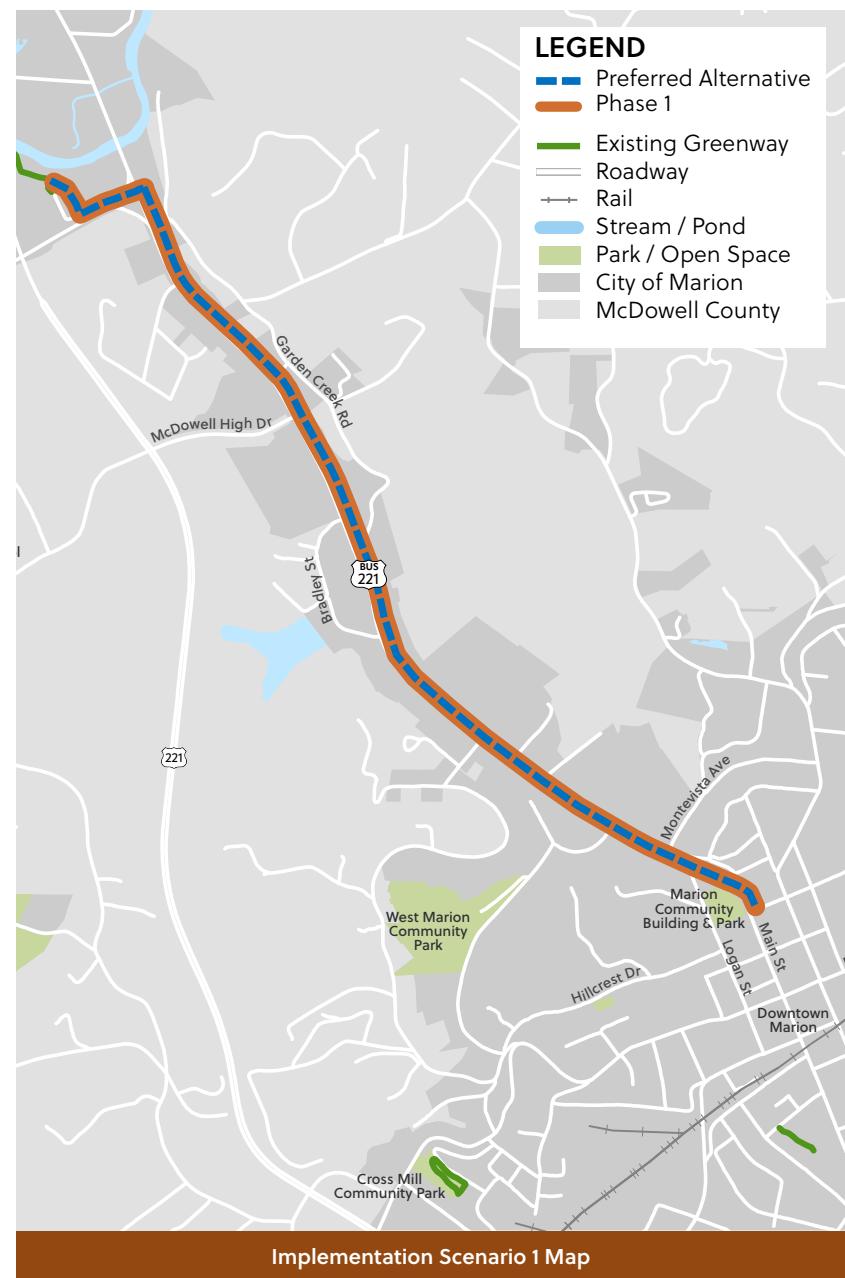
In this scenario, the City of Marion could construct the entire 2.12 miles of the North Main Street Sidepath from the existing Joseph McDowell Historical Catawba Greenway to Downtown Marion (Viewpoint Drive) in one phase. The total project length is 2.12 miles.

POTENTIAL FUNDING OPPORTUNITIES:

- The City of Marion should build with NCDOT SPOT Submittals. They should coordinate with the Foothills RPO and NCDOT to determine project phasing based on the recommended implementation scenarios in this report. Scenarios consist of constructing the entire corridor in one phase or constructing the corridor in multiple phases as funding and development opportunities arise.
- The City of Marion should also pursue USDOT Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant for design and construction. The City of Marion should consider partnering with McDowell County to strategically combine segments that provide connections from the corridor to neighboring schools and employment centers.
- The City of Marion should consider a USDOT Safe Streets & Roads for All Grant for design and construction of the sidepath as part of a streetscape improvement project that improves multimodal safety.

ESTIMATED COST: \$12,917,000* (FY2027)

*If constructed in conjunction with scheduled resurfacing of North Main St from US 70 to Logan St in 2027, the cost shown may be reduced by approximately \$2,200,000.



SCENARIO 2

In this scenario, the City of Marion could construct the North Main Street Sidepath in three phases:

- Phase 1 - Machine Shop Road at Marion City Square to Downtown at Viewpoint Drive (Project length: 0.28 miles)
- Phase 2 - McDowell House on US 70 to Lady Marian Plaza on North Main St (Project length: 1.19 miles)
- Phase 3 - Lady Marian Plaza to Machine Shop Rd at Marion City Square (Project length: 0.65 miles)

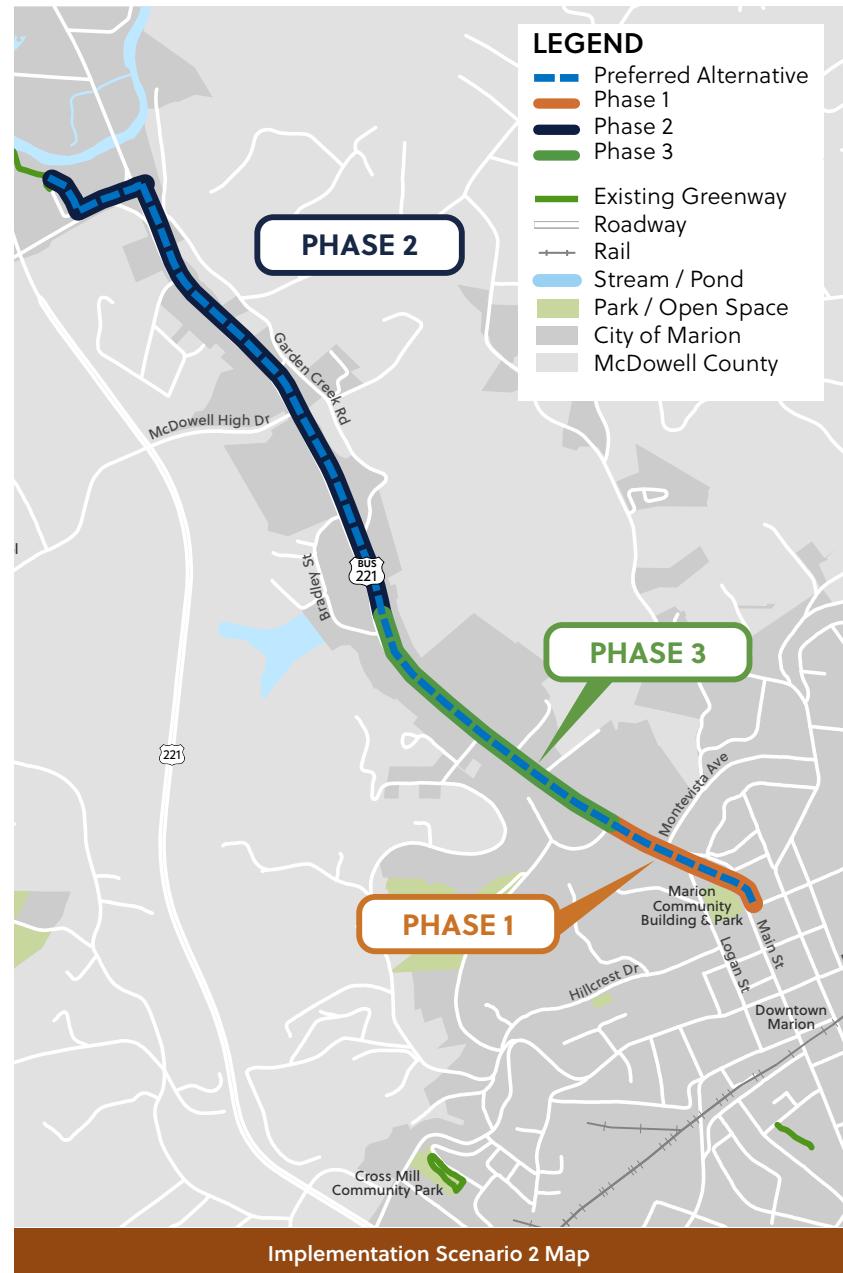
POTENTIAL FUNDING OPPORTUNITIES:

- While there are no programmed STIP projects along North Main Street, the City of Marion should coordinate with NCDOT on future roadway improvement projects programmed along the corridor.
- The City of Marion should explore other funding opportunities with the NC Department of Commerce: Rural Infrastructure Program and the Main Street Solutions Fund, and Appalachian Regional Commission Funds to design and construct the sidepath as a part of an economic development projects.
- The City of Marion should consider exploring funding with the NC Department of Natural & Cultural Resources, Recreational Trails Program, particularly the segment that connects to the existing Joseph McDowell Greenway.

ESTIMATED COSTS:

- Phase 1: \$2,849,000* (FY 2027)
- Phase 2: \$5,897,000 (FY 2030)
- Phase 3: \$7,542,000 (FY 2035)

*If Phase 1 is constructed in conjunction with scheduled resurfacing of North Main St from US 70 to Logan St in 2027, the cost shown may be reduced by approximately \$300,000.



RECOMMENDED ROUTE CUT SHEETS

Cut sheets for the recommended route are based on Implementation Scenario 2. Each cut sheet includes descriptive project information (i.e., description, length, roadway crossings, and connections), potential ROW impacts, and planning level cost estimates.

PROJECT COST ESTIMATES

In addition to understanding if a project is feasible from a technical perspective, understanding project cost is an equally important component to any feasibility study. This information enables communities to make informed decisions related to whether proceeding with the project and may influence funding strategies. There are several types of costs to consider when establishing a project budget including, but not limited to, the following:

Baseline Construction

Baseline construction costs for the current year, 2022, were generated using quantity takeoffs and calculations based on the preliminary design concepts. Detailed line-item estimates for the recommended routes analyzed, as well as for the individual segments which make up those routes can be found in Appendix C. Please note that due to rounding, the sum of individual segments may result in a greater estimate than that of the route they combine to form.

Survey / Design Services

Costs were estimated for survey and design services based on project size, design elements, anticipated permitting required, and other activities related to funding source requirements.

Right-Of-Way (ROW) Acquisition

Permanent easement and ROW acquisition costs were not developed as part of the scope for this project. However, the sidepath is anticipated to stay within the existing roadway ROW for the majority of the corridor. The total number of properties anticipated to be impacted by construction has been calculated. These costs should be calculated at a later date, as individual segments of the preferred route move into design and implementation.

Escalated Construction

To account for inflation, the baseline costs were projected into the future to a fiscal year of probable construction. Assumed future years for implementation ranges from 2027 to 2035 depending on the phase. This adjustment was performed using a linear compound interest formula assuming an annual inflation rate of 5%.

Construction Engineering + Inspection Services

A requirement for many state and federal funding sources, Construction Engineering & Inspection (CEI) services typically range from 9% to 12% of the estimated construction cost. This study assumes 10% based on the project size and elements of construction.

Total Budget Estimates

Project contingencies help address unforeseen costs due to a variety of reasons. They typically range from 5% to 25% or more of the construction cost, depending on how well defined the project scope is and the existing site condition are known at the time of the estimate. A 5% contingency was assumed for this project due to the extent of the study area, the total length of the project, the number of potential environmental impacts, total structures anticipated, and the amount of ROW which may need to be acquired. Total budget estimates were calculated by adding the aforementioned cost components and contingency. All calculated values were rounded up to the nearest \$1,000 for the simplicity of this exercise.

*Please note these are planning-level cost estimates and should be refined as more detailed information becomes available throughout the design process. Actual costs will vary based on final project scope and prevailing market conditions for materials and labor forces used.

PHASE 1 - NORTH MAIN ST SIDEPATH

Phase 1 begins at Machine Shop Rd at Marion City Square and heads south along the east side of North Main St to Viewpoint Drive. After crossing Viewpoint Drive the route turns south utilizing the existing sidewalk in front of City Hall before terminating at the existing sidewalk on New Street. At-grade crossings of North Main St are proposed at the existing signalized intersections of Machine Shop Rd and Logan St for connectivity along the corridor.

PROJECT SNAPSHOT

Location: Machine Shop Rd to New St

Facility Type(s): Shared Use Sidepath

Total Length: 0.28 miles

Structures: None

Grade-Separated Road Crossings: None

At-Grade Road Crossings:

- Montevista Ave
- Viewpoint Dr

Trail Connections:

- Future Fonta Flora State Trail at New St

Destinations Served:

• Marion City Square	• Pack & Post / Scoop Ice Cream
• Marion Community Building	• Downtown Marion

POTENTIAL REAL ESTATE ACQUISITION NEEDS

Temporary Easement: 5 Privately-Owned Parcels
(5 Owners)

POTENTIAL PERMITTING NEEDS

- Erosion Control
- NCDOT Encroachment

PRIMARY TYPICAL SECTIONS

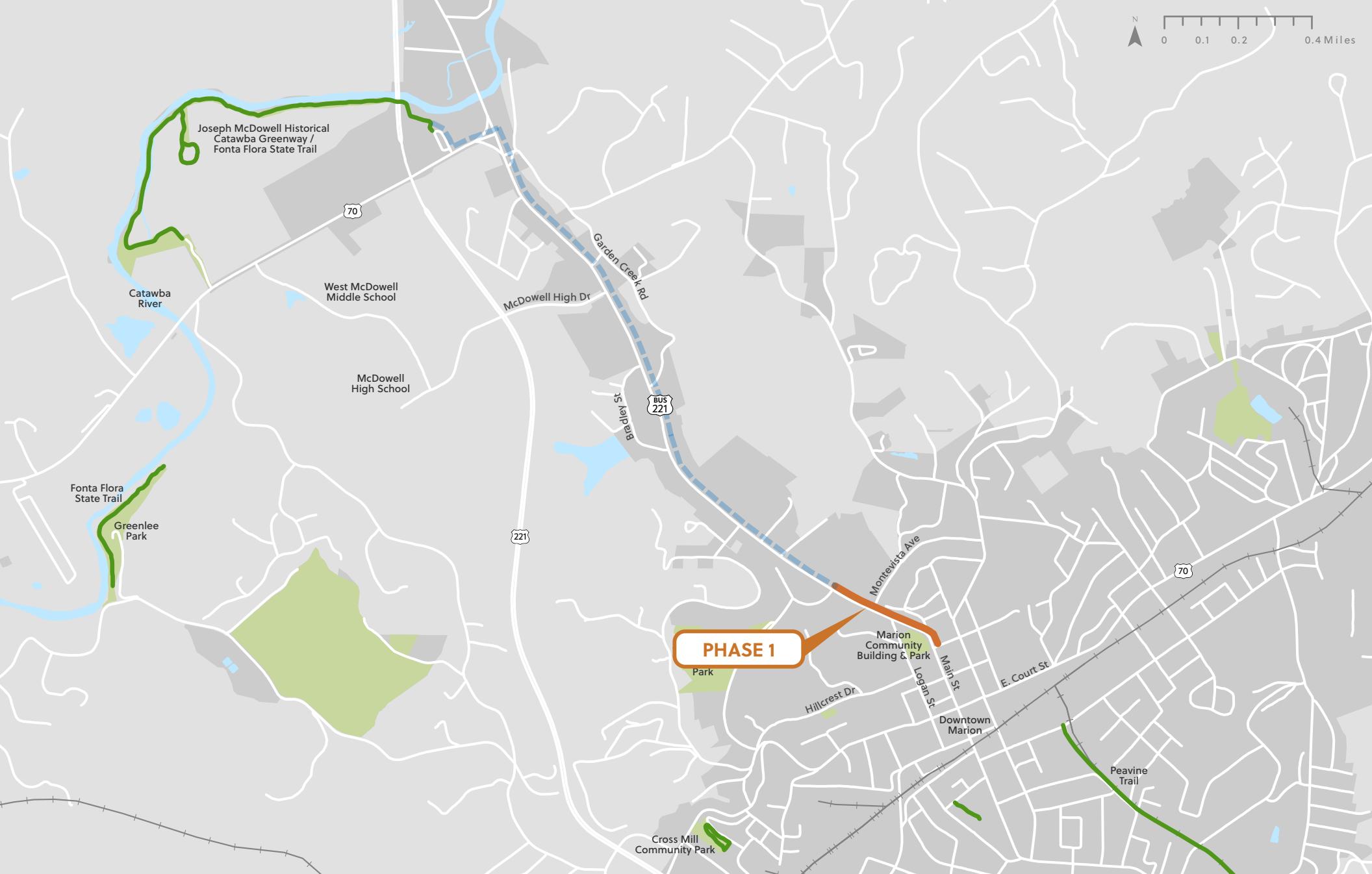


ESTIMATED PROJECT COSTS

2022 Baseline Construction Cost Estimate	\$1,763,000
Design Services Cost Estimate	\$250,000
Escalated Construction Cost Estimate (Build Year 2027)	\$2,260,000
Construction Engineering Inspection Services	\$226,000
Additional Project Contingency (5%)	\$113,000
TOTAL ESTIMATED BUDGET RECOMMENDATION	\$2,849,000

**Costs associated with real estate acquisition to be determined during design process and are not included in this estimate.*

***Detailed cost information is located in Appendix C.*



CITY OF MARION N. MAIN ST SIDE PATH FEASIBILITY STUDY

PHASE 1 - MACHINE SHOP RD TO NEW ST

LEGEND

Legend:

- Recommended Route (Blue line)
- Phase 1 (Orange line)
- Existing Greenway (Green line)
- Roadway (Grey line)
- Rail (Dashed line)
- Stream / Pond (Blue circle)
- Park / Open Space (Green circle)
- City of Marion (Grey circle)
- McDowell County (Grey circle)

PHASE 2 - US 70 / NORTH MAIN ST SIDE PATH

Phase 2 begins at the Joseph McDowell Catawba Greenway at the trailhead behind the McDowell House and continues south alongside the entrance driveway to US 70. The route turns east and continues along the north side of US 70 to the BUS 221 intersection. After crossing over the north leg of the BUS 221 intersection, the route continues along the east side of North Main Street to Lady Marian Plaza. An at-grade crossing is proposed at the existing signalized intersection of McDowell High Dr.

PROJECT SNAPSHOT

Location: McDowell House to Lady Marian Plaza

Facility Type(s): Shared Use Sidepath

Total Length: 1.19 miles

Structures: None

Grade-Separated Road Crossings: None

At-Grade Road Crossings:

- North Main St
- Creek St
- Garden Creek Rd (1st Crossing)
- Garden Creek Rd (2nd Crossing)

Trail Connections:

- Existing Joseph McDowell Historical Catawba Greenway
- Future Shared Use Path on McDowell High Dr

Destinations Served:

- McDowell House
- Various Retail Shops
- Various Restaurants
- Hometown Cinemas

POTENTIAL REAL ESTATE ACQUISITION NEEDS

Temporary Easement: 32 Privately-Owned Parcels
(27 Owners)

POTENTIAL PERMITTING NEEDS

- Erosion Control
- Floodplain Development Permit
- NCDOT Encroachment
- 401/404 Permit

PRIMARY TYPICAL SECTIONS

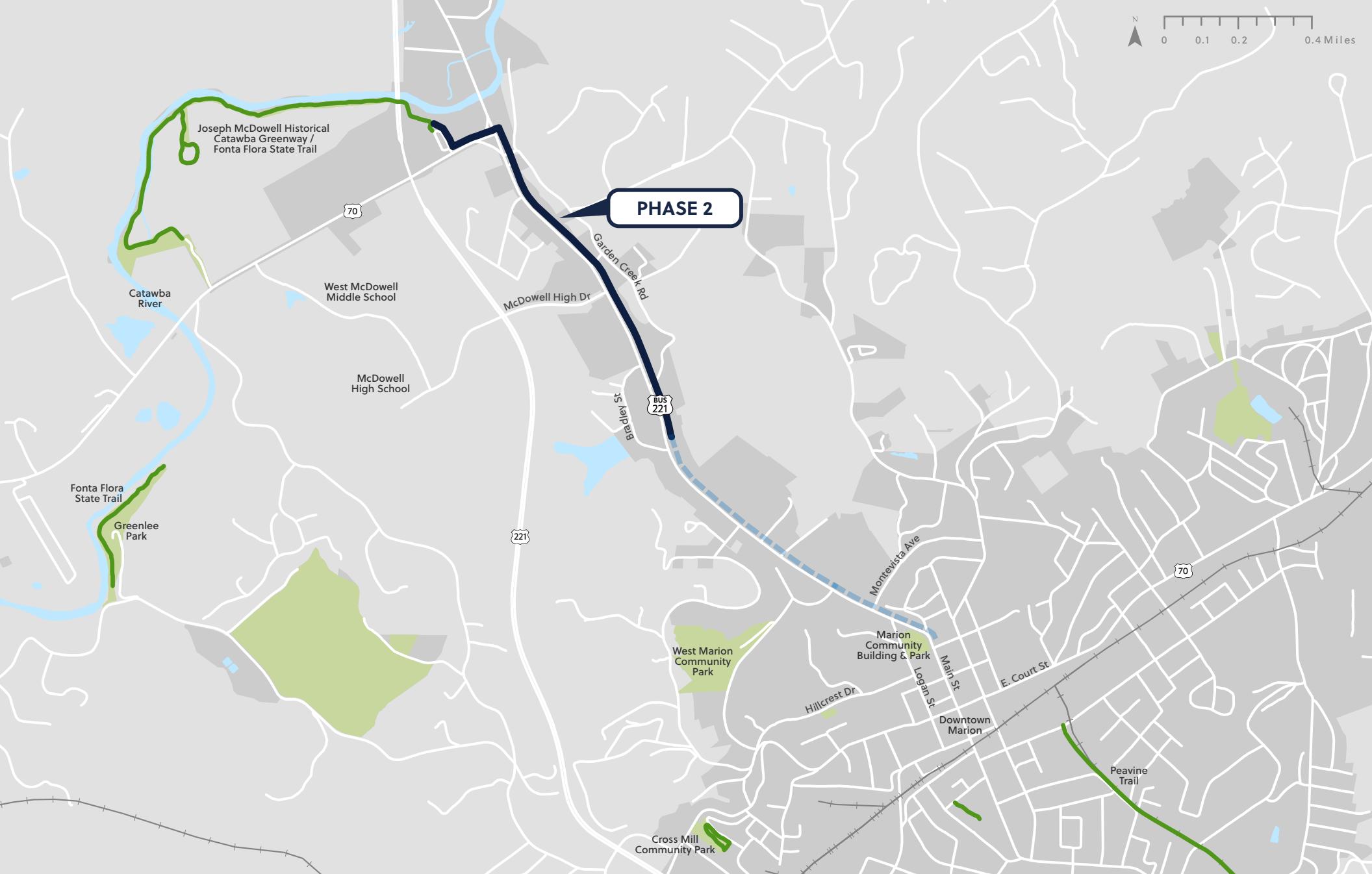


ESTIMATED PROJECT COSTS

2022 Baseline Construction Cost Estimate	\$3,233,000
Design Services Cost Estimate	\$400,000
Escalated Construction Cost Estimate (Build Year 2030)	\$4,780,000
Construction Engineering Inspection Services	\$478,000
Additional Project Contingency (5%)	\$239,000
TOTAL ESTIMATED BUDGET RECOMMENDATION	\$5,897,000

**Costs associated with real estate acquisition to be determined during design process and are not included in this estimate.*

***Detailed cost information is located in Appendix C.*



CITY OF MARION N. MAIN ST SIDEPATH FEASIBILITY STUDY

PHASE 2 - McDOWELL HOUSE TO LADY MARIAN PLAZA

LEGEND

- Recommended Route
- Phase 2
- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

PHASE 3 - NORTH MAIN ST SIDEPATH

Phase 3 begins at the Lady Marian Plaza intersection and heads south along the east side of North Main St Downtown to Machine Shop Rd. At-grade crossings of North Main St are proposed at the existing signalized intersections of Lady Marian Plaza and Machine Shop Rd for connectivity along the corridor.

PROJECT SNAPSHOT

Location: Lady Marian Plaza to Machine Shop Rd

Facility Type(s): Shared Use Sidepath

Total Length: 0.65 miles

Structures: None

Grade-Separated Road Crossings: None

At-Grade Road Crossings:

- Ginger Dr
- Robinson Rd

Trail Connections: None

Destinations Served:

• Lady Marian Plaza	• Various Retail
• Various Restaurants	• Marion City Square

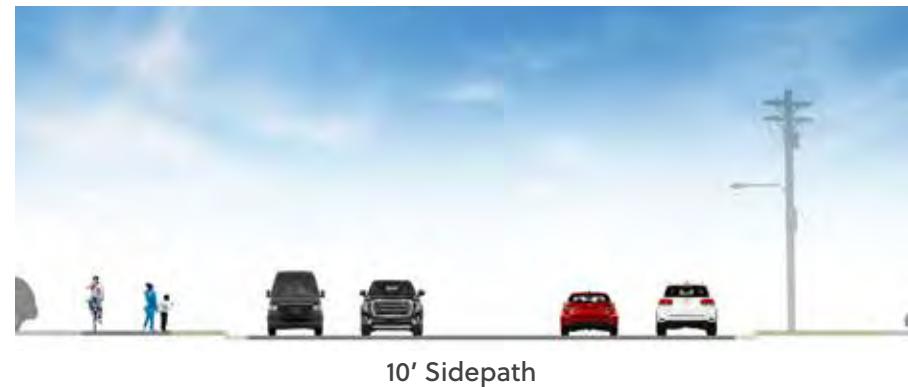
POTENTIAL REAL ESTATE ACQUISITION NEEDS

Temporary Easement: 13 Privately-Owned Parcels
(9 Owners)

POTENTIAL PERMITTING NEEDS

- Erosion Control
- NCDOT Encroachment

PRIMARY TYPICAL SECTIONS

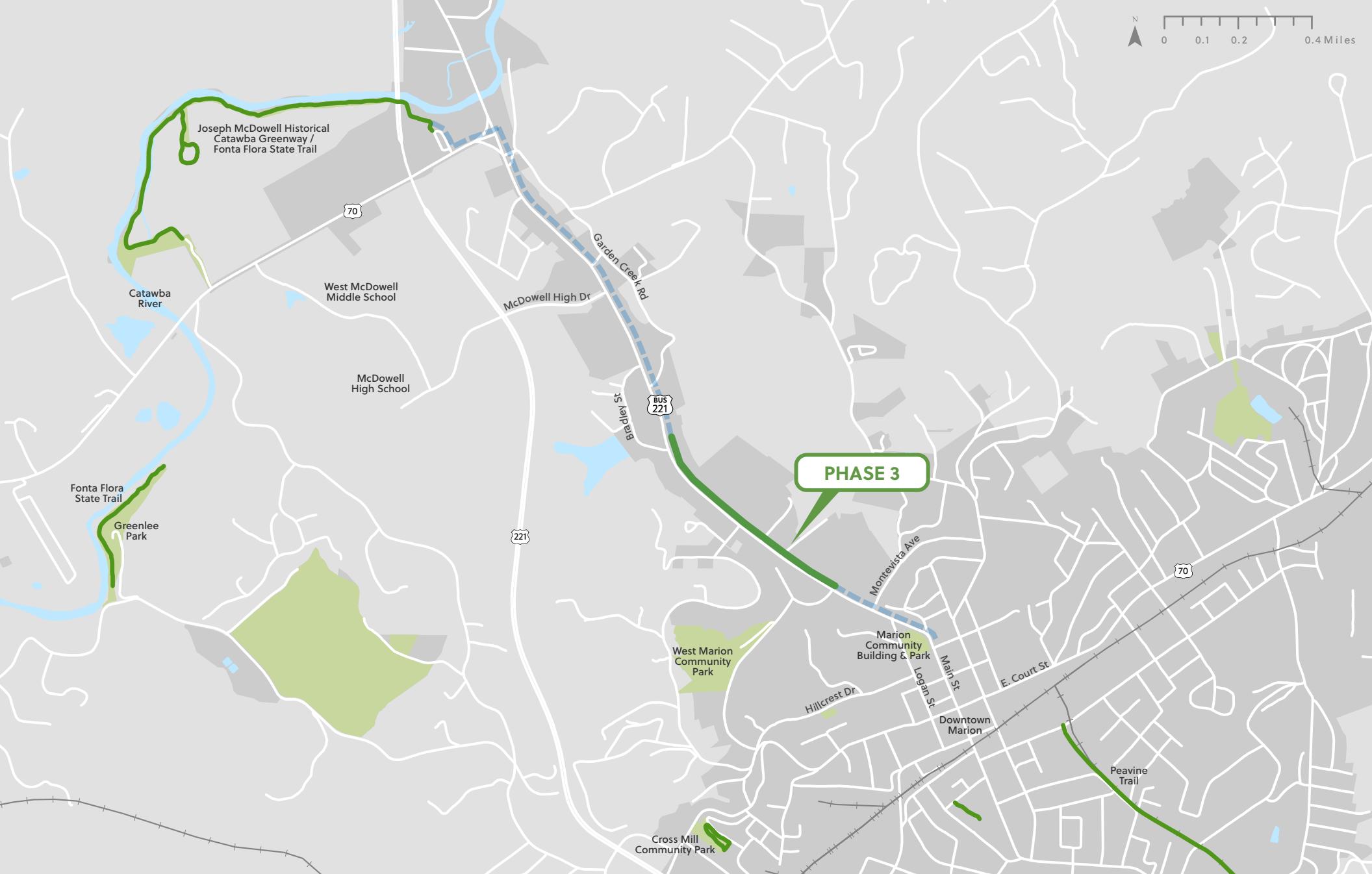


ESTIMATED PROJECT COSTS

2022 Baseline Construction Cost Estimate	\$3,290,000
Design Services Cost Estimate	\$400,000
Escalated Construction Cost Estimate (Build Year 2035)	\$6,210,000
Construction Engineering Inspection Services	\$621,000
Additional Project Contingency (5%)	\$311,000
TOTAL ESTIMATED BUDGET RECOMMENDATION	\$7,542,000

**Costs associated with real estate acquisition to be determined during design process and are not included in this estimate.*

***Detailed cost information is located in Appendix C.*



CITY OF MARION N. MAIN ST SIDEPATH

FEASIBILITY STUDY

PHASE 3 - LADY MARIAN PLAZA TO MACHINE SHOP RD

LEGEND

- Existing Greenway
- Roadway
- Rail
- Stream / Pond
- Park / Open Space
- City of Marion
- McDowell County

Recommended Route

Phase 3

IMPLEMENTATION PARTNERS

Achieving success in the development of the North Main Street Sidepath in the City of Marion will depend on collaboration with community partners and stakeholders at the state, regional, and local levels. Successful implementation of the sidepath will depend on maintaining and developing partnerships with all project stakeholders. Key partners and their respective roles in the implementation of the sidepath project are outlined in the following section.

Key partners and stakeholders in the implementation of the North Main Street Sidepath include the following:

- Local Partner: City of Marion (Project Leader)
- Regional Partner: Foothills Rural Planning Organization (RPO)
- County-wide Partners:
 - » McDowell County
 - » McDowell County Tourism Development Authority (TDA)
- State-wide Partners:
 - » NCDOT Division 13 & Integrated Mobility Division (IMD)
 - » NC Division of Parks & Recreation (State Trails)
- Non-Profit Partners:
 - » Friends of the Fonta Flora State Trail (F3ST)
 - » McDowell County Trails Association
- Private Sector Partners:
 - » Local Businesses
 - » Landowners
 - » Developers
- Community Partners + Advocacy Organization: Great Trails State Coalition (GTSC)





PARTNER ROLES

THE CITY OF MARION

The City of Marion's Planning and Development Services Department is responsible for the planning, review, and compliance of growth and development of private and public improvements within the City. In addition, the Department provides support and guidance to other agencies and organizations to carry out community development projects and programs. Municipal staff often play a large role on projects that they lead, such as through the act of primary coordinators for project development, community engagement, policy development, funding strategies, and maintenance. The City's Planning Department currently leads and supports the development of active transportation projects within their jurisdiction, such as the North Main Street Sidepath.

As the project leader for the North Main Street Sidepath, the City of Marion plays an integral role in shaping and developing a connection between the existing Joseph McDowell Catawba Greenway and Downtown Marion. The City should coordinate with all stakeholders and partners to create a vibrant corridor that attracts economic development and fosters a sense of place within the North Main Street corridor. Through plan adoption, the City expresses its commitment to expanding active transportation infrastructure within the City.

Anticipated Roles:

- City Council should adopt the North Main Street Sidepath Feasibility Study.
- The City should coordinate with the F3ST to support inter-agency coordination and assist in the project development of the sidepath.
- The City should consider forming an advisory committee to continue the work of the North Main Street Sidepath Steering Committee.
- The City should consider developing an annual work plan based on opportunities to advance project development.
- The City should coordinate with NCDOT Division 13 on the programmed HMIP improvements to incorporate pedestrian facility and intersection enhancements during roadway resurfacing of BUS 221 and US 70.
- The City should coordinate with Foothills RPO and NCDOT on determining the project phases for implementation.
- The City should coordinate with NCDOT and Foothills RPO on prioritizing the project corridor to submit as an NCDOT SPOT submittal.
- The City should coordinate with NCDOT Division 13 on future STIP projects proposed along the project corridor to ensure the sidepath is included with roadway improvement projects.
- The City should develop a landowner outreach program to coordinate with developers and landowners as development opportunities arise along the project corridor.
- The City should coordinate with NCDOT Division 13 on a speed limit reduction study along BUS 221, targeting areas where the posted speed limit exceeds 35 mph.
- The City should coordinate with NCDOT Division 13 on the design of the project corridor.
- The City should coordinate with the F3ST, NC State Parks, and the GTSC to utilize existing and future state trails funding as a potential alternative to fund design and construct of the sidepath.
- The City should ensure that land use and transportation policies for the City of Marion encourage and/or require developers to construct planned bicycle and pedestrian facilities, amenities, and connections in new developments.
- The City should coordinate with F3ST and NC State Parks on the proposed Fonta Flora State corridor through Downtown Marion between the project terminus at View Point Drive and New Street.
- The City should develop a community engagement plan to guide project development of the North Main Street Sidepath.
- The City should coordinate with F3ST and NC State Parks to incorporate Fonta Flora wayfinding and branding along the project corridor.
- The City should coordinate with NCDOT, McDowell County, and Friends of Fonta Flora State Trail to develop a maintenance plan for the project corridor.
- The City should coordinate with the McDowell County TDA and the GTSC to explore economic development opportunities along the Fonta Flora Trail, especially along the North Main Street corridor.



COUNTY-WIDE PARTNERS

McDowell County

The McDowell County Planning Department is responsible for administering all land use and land development ordinances within the County. Overall, the County will be responsible for supporting the City as a partner in the actions outlined in the Action Plan. A specific example of an action that the County should support the City on is developing a maintenance to plan to support the longevity of the sidepath and preserve safe conditions for users of the facility.

Anticipated Roles:

- McDowell County should coordinate with the City to develop a maintenance plan for the project corridor.

McDowell County TDA

The McDowell County TDA (also known as the Blue Ridge Traveler) is an independent government agency that was created in 1986 to promote tourism in the County. The Authority operates a visitor center employing an Executive Director and support staff. The TDA currently promotes the craftsmanship of local artists in the City of Marion, as well as the Joseph McDowell Historic Catawba River Greenway and other nearby outdoor recreation opportunities for visitors to explore. The TDA also encourages visitors to explore Marion through multimodal transportation options (i.e., bike, foot, and/or car). The proposed sidepath project could be a catalyst for economic development along the North Main Street corridor and into Downtown Marion.

Anticipated Roles:

- The McDowell County TDA should partner with City staff and the Great Trails State Coalition to explore economic development opportunities along the Fonta Flora Trail, especially along the North Main Street corridor.

REGIONAL PARTNER

Foothills RPO

The Foothills RPO is a voluntary organization of local officials formed through a Memorandum of Understanding (MOU) to work cooperatively with NCDOT to plan rural transportation systems and to advise NCDOT on rural transportation policy (136-66.210). The boundaries of a RPO may coincide with, but not overlap the boundaries of a Metropolitan Planning Organization (MPO) or another RPO.

In general, the four primary duties of the RPO are to:

- Develop, in cooperation with NCDOT, long-range, local and regional multimodal transportation plans;
- Provide a forum for public participation in the transportation planning process;
- Develop and prioritize suggestions for transportation projects the organization believes should be included in the State's Transportation Improvement Program (STIP); and
- Provide transportation-related information to local governments and other interested organizations and persons (GS 136-212).

The RPO often acts as a facilitator with local officials to develop plans and projects in conjunction with NCDOT. The RPO also ranks and prioritizes projects submitted to the Strategic Transportation Prioritization (SPOT), which is the methodology NCDOT uses to develop the State Transportation Improvement Program (STIP). The Foothills RPO has one key role in the implementation of the North Main Street Sidepath; however, it should act as a partner to the City in other actions outlined in the Action Plan table at the end of this chapter.

Anticipated Roles:

- The Foothills RPO should amend the McDowell County Comprehensive Transportation Plan (CTP) to include the North Main Street Sidepath alignment and to reference study recommendations into the CTP.
- The Foothills RPO should work with the City and NCDOT on determining the project phases for implementation.
- The Foothills RPO should work with the City and NCDOT on prioritizing the project corridor to submit as an NCDOT SPOT submittal.

STATEWIDE PARTNERS

NCDOT Division 13 + IMD

NCDOT allocates federal and state funding and establishes policies for transportation improvements in communities across North Carolina. Every two years, NCDOT develops the STIP, which identifies projects that will receive funding during a 10-year period. NCDOT policies, such as Complete Streets provide guidance and oversight for permitting and implementing active transportation projects. The Complete Streets Policy (adopted in August 2019) requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of the state's transportation projects. According to the Complete Streets Policy, if an active transportation facility is included in an adopted local plan, the municipalities will not be held responsible for the cost. As the lead state agency allocating funding, guiding implementation of the Complete Streets Policy, and approving activities along NCDOT-maintained roadway corridors, NCDOT plays a critical role in the implementation of the North Main Street Sidepath.

The majority of the sidepath will utilize NCDOT ROW, but there are no current STIP projects within the vicinity of the sidepath that would help fund the facility. Coordination between partners and property owners along the corridor will also be crucial in securing land for the sidepath. Infrastructure recommendations along NCDOT-maintained roadways would require review and approval by NCDOT Division 13 prior to implementation. IMD will also play a large role since it works with other business units of the NCDOT as well as local municipalities to develop and design active transportation projects.

Anticipated Roles:

- NCDOT Division 13 should provide guidance on the design of the North Main Street Sidepath.
- NCDOT Division 13 should coordinate with the City on the programmed HMIP improvements to incorporate pedestrian facility and intersection enhancements during roadway resurfacing of BUS-221 and US-70.
- NCDOT should support the City and Foothills RPO on determining the project phases for implementation.
- NCDOT Division 13 should support the City on a speed limit reduction study along BUS-221, targeting areas where the posted speed limit exceeds 35mph.

- NCDOT IMD and Division 13 should lead coordination with regional and municipal partners in Complete Streets implementation for future STIP projects in the North Main Street corridor.
- NCDOT IMD and Division 13 should provide technical assistance to regional, county, and municipal partners on Complete Streets Policy, STI, and other state funding opportunities.
- NCDOT IMD should provide guidance and technical assistance on the design of the proposed sidepath.

NC Department of Natural and Cultural Resources (NCDNCR), NC Division of Parks and Recreation (DPR) - North Carolina Trails Program

The NCDNCR is a state agency that focuses on leveraging the state's natural and cultural resources to build the social, cultural, educational, and economic future of North Carolina. The DPR aims to inspire all its citizens and visitors through conservation, recreation, and education. It also supports and assists other recreation providers by administering grant programs for park and trail projects, and by offering technical advice for park and trail planning and development. The North Carolina Trails Program is managed by the Division of Parks and Recreation.

Anticipated Roles:

- NC Trails should support the City in identifying and securing state trails funding as a potential alternative to fund design and construct of the sidepath.
- NC Trails should coordinate with the City and F3ST on the proposed Fonta Flora State corridor through Downtown Marion between the project terminus at View Point Drive and New Street.
- NC Trails should coordinate with F3ST and the City to incorporate Fonta Flora wayfinding and branding along the project corridor.

NON-PROFIT PARTNERS

In general, non-profits may participate as partners in active transportation projects, while others may act as advocates for policies and funding that support the facilities they support. Non-profits may also be able to provide technical assistance on a variety of subjects related to active transportation facilities, such as branding and wayfinding. Two key non-profits partners associated with the north Main Street Sidepath are described below.

Friends of the Fonta Flora State Trail

Friends of the Fonta Flora State Trail (F3ST) claimed 501(c)(3) status in 2021. The F3ST Board is supported by an Advisory Council; members are employees and volunteers from the various stakeholder groups and local governments. The group receives funding support from McDowell County, City of Marion, Town of Black Mountain, Town of Old Fort, Town of Glen Alpine, Burke County, and the City of Morganton.

F3ST supports the Fonta Flora State Trail, which runs through the City of Marion. The complete trail will connect Morganton to Asheville in Western North Carolina with 100 planned miles of scenic hiking, biking on a combination of natural surface and paved trail. The North Main Street Sidepath in the City of Marion will act as an extension of the Fonta Flora through its connection to the Joseph Catawba Greenway behind the historic McDowell House on US 70.

McDowell County Trails Association

The McDowell Trails Association is a non-profit 501 (c) (3) that works to improve access to outdoor spaces in McDowell County, North Carolina. This non-profit was created to plan, develop, build, and provide education and support for non-motorized trails. Their mission is to partner with local governments, agencies, clubs, and associations to create greenways, blueways, and non-motorized trails that will promote health, recreational, and economic opportunities for residents and visitors in McDowell County. McDowell Trails Association has provided support for the Point Lookout Trail, Peavine Trail, Corpening Memorial Greenway, and the local Joseph McDowell Historical Catawba Greenway.

Anticipated Roles:

- F3ST and the McDowell Trails Association should coordinate with the City to support inter-agency coordination and assist in the project development of the sidepath.
- F3ST and the McDowell Trails Association should meet with the City and NC State Parks to discuss the proposed Fonta Flora State corridor through Downtown Marion between the project terminus at Viewpoint Drive and New Street.
- F3ST and the McDowell Trails Association should work with the City and State Parks to incorporate Fonta Flora wayfinding and branding along the project corridor.



PRIVATE SECTOR PARTNERS

Private Landowners + Local Businesses

Local businesses adjacent to the North Main Street Sidepath may serve as key destinations and potential generators of bicycle and pedestrian travel along the corridor. As a result, they may have the resource capacity to advance phases of the sidepath project and make the case for increased investment in active transportation infrastructure within the region.

Anticipated Roles:

- Landowners and businesses should support regional agencies and municipalities in developing public/private partnerships to fund the design and construction of the North Main Street Sidepath.
- Landowners and businesses should support marketing efforts and participate in any future fundraising campaigns for the North Main Street Sidepath.
- Landowners and businesses should participate in the City's future landowner outreach program to streamline coordination between project stakeholders as development opportunities arise along the project corridor.

Developers

Municipalities may ask developers to construct planned sidepaths, greenways, and sidewalks as a requirement to development in municipal limits. For this reason, the City of Marion should consider adding developer-built sidepaths to the Unified Development Ordinance (UDO) since private developers play an important role in active transportation facility development. Planning staff should coordinate with developers to provide guidance on ordinance requirements and processes. Developers should be prepared to include active transportation facilities in future developments that provide connections to Marion's overall active transportation network.

Anticipated Roles:

- Developers should be prepared to include active transportation facilities in future developments that provide connections to the North Main Street Sidepath.

COMMUNITY PARTNERS / ADVOCACY ORGANIZATIONS

Advocates for active transportation, including residents and community groups that promote bicycling and walking as viable forms of transportation, serve a key role in advocating for project and program investment. Community members and groups generate support for projects by raising awareness among the public, advocating to elected officials to prioritize funding for active transportation, and fostering collaboration amongst jurisdictional partners. One key advocacy organization that may support the implementation of the North Main Street Sidepath is the GTSC.

Great Trails State Coalition

The GTSC is a broad-based group of diverse organizations, agencies and supporters advocating for increased state investment in all types of trails statewide. This group supports the establishment of the Great Trails State Fund (\$50M one time funding opportunity) which will support both natural and paved surface trails in the state. The North Main Street Sidepath will tie into the Fonta Flora which is a state designated trail.

Anticipated Roles:

- Community groups and advocacy organizations should support City Council in the adoption of the North Main Street Sidepath.
- Community groups and advocacy organizations should support regional agencies in developing public/private partnerships to fund the design and construction of the North Main Street Sidepath.
- Community groups and advocacy organizations should coordinate with regional agencies and municipalities on the design of the North Main Street Sidepath.
- Volunteers from the community or members associated with advocacy groups may assume responsibilities for community volunteer workdays along the North Main Street Sidepath.



ACTION PLAN

The following table provides a summary of action steps to implement the North Main Street Sidepath in Marion over a 10-year planning horizon. The previously mentioned partners may act as the responsible parties for various actions associated with the sidepath.

TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
1	Adopt the <i>North Main Street Sidepath Feasibility Study</i> . This action allows the study to become the official planning document for the Fonta Flora State Trail through the City of Marion and demonstrates local intention to support project implementation.	City of Marion: City Council	Foothills RPO, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Winter 2022	Plan Adoption, Minutes
2	Amend the McDowell County Comprehensive Transportation Plan (CTP) to include the North Main Street Sidepath alignment and to reference study recommendations into the CTP.	Foothills RPO, NCDOT Transportation Planning Branch	City of Marion, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Winter 2022/ Spring 2023	CTP Amendment, Meeting Minutes
3	Coordinate with the Friends of the Fonta Flora State Trail to support inter-agency coordination and assist project development of the North Main Street Sidepath. Consider developing an advisory committee that continues the work of the North Main Street Sidepath steering committee.	City of Marion	Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Spring 2023	Meeting Agendas and Minutes
4	Consider developing an annual work plan based on opportunities to advance project development. The work plan should include key goals/milestones to make progress on coordination with NCDOT, secure funding, design, permitting, and construction. The work plan should be updated annually.	City of Marion	Foothills RPO, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Spring / Summer 2023	Meeting Agendas and Minutes, Work Plan



TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
5	Coordinate with NCDOT Division 13 on the programmed HMIP improvements to incorporate pedestrian facility and intersection enhancements during roadway resurfacing of North Main St and US-70. North Main St from N. Logan St to US-70 is scheduled to be resurfaced in FY2027.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Spring 2023	Meeting Agendas and Minutes
6	Coordinate with Foothills RPO and NCDOT to determine project phasing based on the recommended implementation scenarios in this report. Scenarios consist of constructing the entire corridor in one phase or constructing the corridor in multiple phases as funding and development opportunities arise.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Ongoing, Spring 2023	Meeting Agendas and Minutes
7	Coordinate with NCDOT and Foothills RPO on prioritizing the project corridor to submit through the NCDOT SPOT submittal process. Project segments along North Main St and US-70 may be bundled as one submission to ensure competitive scoring.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Ongoing, Spring 2023	SPOT Submittal, Meeting Agendas and Minutes
8	Coordinate with NCDOT Division 13 on future STIP projects proposed along the project corridor to ensure that the sidepath may be developed through future roadway improvement projects.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Ongoing, Spring 2023	Meeting Agendas and Minutes



TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
9	Develop a landowner outreach program to coordinate with developers and landowners as development opportunities arise along the project corridor. The program should include strategies to work towards acquiring easements from willing landowners and working with developers to coordinate access across the trail and/or build planned segments that may be constructed outside of NCDOT ROW.	City of Marion	Foothills RPO, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Ongoing, Summer/Fall 2023	Landowner Outreach Program Guiding Document, Meeting Agendas and Minutes
10	Coordinate with NCDOT Division 13 on a speed limit reduction study along North Main St, targeting areas where the posted speed limit exceeds 35mph.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Fall 2023	SPOT Submittal, Meeting Agendas and Minutes
11	Coordinate with NCDOT Division 13 on the design of the project corridor. Design plans should be guided by the recommendations developed through this study.	City of Marion	NCDOT Division 13, NCDOT IMD, Foothills RPO, McDowell County	Dependent upon project schedules, Begin coordination Winter 2023/ Spring 2024	SPOT Submittal, Meeting Agendas and Minutes
12	Coordinate with the Friends of the Fonta Flora Trail, NC State Parks, and Great Trails State Coalition to utilize existing and future state trails funding as local match funding and a potential alternative to fund design and construct of the sidepath. Consider developing a grant procurement and fundraising plan using cost estimates developed through this study to identify steps in securing funding to design and construct the sidepath.	City of Marion	Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Ongoing, Winter 2023	Funding Strategies Plan, Meeting Agendas and Minutes



TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
13	Ensure that land use and transportation policies for the City of Marion encourage and/or require developers to construct planned bicycle and pedestrian facilities, amenities, and connections in new developments.	City of Marion	City of Marion Planning Department, McDowell County, NCDOT Div. 13, NCDOT IMD, Foothills RPO	Spring 2022	Code of Ordinances Updates, Meeting Agendas and Minutes
14	Coordinate with McDowell County on the connection between US-70 and the existing Joseph McDowell Catawba Greenway through the McDowell House property.	City of Marion	McDowell County, McDowell County Trails Association, Friend of Fonta Flora State Trail, NC State Parks	Ongoing, Beginning Spring/Summer 2024	Meeting Agendas and Minutes
15	Coordinate with McDowell County to plan and develop a connector trail between the North Main St Sidepath and McDowell High School along McDowell High Dr.	City of Marion	McDowell County, NCDOT Div. 13, NCDOT IMD, Foothills RPO, McDowell County Trails Association	Ongoing, Beginning Spring/Summer 2024	Meeting Agendas and Minutes
16	Coordinate with Friends of Fonta Flora State Trail and NC State Parks on the proposed Fonta Flora State Trail corridor through Downtown Marion between the project terminus at Viewpoint Dr and New St.	City of Marion	Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Ongoing, Beginning Spring/Summer 2024	Meeting Agendas and Minutes
17	Develop a community engagement plan to guide project development of the North Main Street Sidepath.	City of Marion	Foothills RPO, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Fall/Winter 2024	Meeting Agendas and Minutes
18	Coordinate with Friends of Fonta Flora State Trail and NC State Parks to incorporate Fonta Flora wayfinding and branding along the project corridor.	City of Marion	Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Dependent upon project schedules, Begin coordination Spring 2025	Meeting Agendas and Minutes



TASK #	ACTION	LEAD	PARTNERS	TIMEFRAME	PERFORMANCE MEASURES
19	Coordinate with NCDOT, McDowell County, and Friends of Fonta Flora State Trail to develop a maintenance plan for the project corridor.	City of Marion	Foothills RPO, McDowell County, NCDOT Div. 13, NCDOT IMD, NC State Parks, Friends of Fonta Flora State Trail, McDowell County Trails Association	Fall/Winter 2024	Meeting Agendas and Minutes
20	Coordinate with the McDowell County Tourism Development Authority and the Great Trails State Coalition to explore economic development opportunities along the Fonta Flora State Trail, especially along the North Main Street corridor.	City of Marion	McDowell County TDA, Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Ongoing, Beginning Spring/Summer 2023	Meeting Agendas and Minutes
21	Coordinate with community groups and non-profit partners such as Friends of Fonta Flora State Trail, McDowell County Trails, and the Great Trails State Coalition to advocate for project prioritization and funding at the local and state levels.	City of Marion	Friends of Fonta Flora State Trails, NC State Parks, McDowell County Trails Association, Great Trails State Coalition	Ongoing, Beginning Spring/Summer 2023	Meeting Agendas and Minutes



Intersection of South Main St and West Henderson St in Downtown Marion

FUNDING RESOURCES

Below are several funding sources that can be leveraged to provide the necessary dollars to plan, design, and/or construct active transportation facilities such as the North Main Street Sidepath. The following sources of funding have been instrumental in the successful development of bicycle and pedestrian networks in North Carolina communities. There are several funding opportunities at the local, state, and federal levels that should be considered to fund the North Main Street Sidepath.

NCDOT FUNDING OPPORTUNITIES

Build with NCDOT STIP Projects via the Complete Streets Policy
 At the state level, building the sidepath project with NCDOT STIP projects via the Complete Streets Policy may serve as a long-term strategy as there are no viable STIP projects along North Main Street. It is important to note that NCDOT funds sidepaths along NCDOT-owned roadways through roadway improvement projects.

Build with NCDOT SPOT Submittals

A second option would be to bundle the North Main Street Sidepath with the US 70 Sidepath segments as one competitive SPOT submission in SPOT. This option requires a 20 percent local match and state transportation funds cannot be used for independent bicycle and pedestrian projects. For this reason, the City of Marion should coordinate with NC State Parks, Trail Partners, Foothills RPO, and McDowell County on funding opportunities for a local match. This may be considered a longer-term strategy due to NCDOT/STIP budget shortfalls.

The prioritization process is NCDOT SPOT P6.0. Bicycle and pedestrian projects have specific STI prioritization scoring in this process. Project scores are based 50% on data (Quantitative), and local input points (Qualitative) represent 50% of the scoring for bicycle and pedestrian projects. Half of local input points are assigned by MPOs and RPOs, which are determined by municipal and county project priorities and public comment. The remaining half of the local input points are assigned by NCDOT Division Engineers.

CRITERIA	MEASURE	DIVISION NEEDS (50%)
Safety	$(\text{Number of crashes} \times 40\%) + (\text{Crash severity} \times 20\%) + (\text{Safety risk} \times 20\%) + (\text{Safety benefit} \times 20\%)$	20%
Accessibility / Connectivity	Points of interest pts + Connection pts + Route pts	15%
Demand / Density	# of households and employees per square mile near project	10%
Cost Effectiveness	$(\text{Safety} + \text{Accessibility / Connectivity} + \text{Demand / Density}) / \text{Cost to NCDOT}$	5%

ADDITIONAL STATE FUNDING OPPORTUNITIES

Additional state funding opportunities include the Main Street Solutions Fund, the Rural Infrastructure Program, the Recreational Trails Program, and Appalachian Regional Commission Funds, which are detailed below.

NC Dept of Commerce: Main Street Solutions Fund

The Main Street Solutions Fund helps planning agencies and small businesses in Tier 2 and Tier 3 counties with efforts to revitalize downtowns by creating jobs, funding infrastructure improvements, and rehabilitating buildings.

NC Department of Commerce: Rural Infrastructure Program

The Rural Infrastructure Program provides grants and loans to local governments to support economic development activity that will lead to the creation of new, full-time jobs in Tier 2 and Tier 3 counties.

The program funds publicly owned infrastructure including water, sewer, electric, broadband, rail, and road improvements that will lead to the direct creation of new, full-time jobs.

NC Department of Natural & Cultural Resources: Recreational Trails Program

The Recreational Trails Program (RTP) provides funds to develop and maintain recreational trails. The grant is available for planning construction, land acquisition, and permitting costs. Grants of up to \$100,000 are awarded with a 25% local match.

Appalachian Regional Commission Funds

Appalachian Regional Commission (ARC) Funds provide funding for the 13-state region stretching the Appalachian Mountains. Funding assistance supports investments in critical infrastructure—especially broadband, transportation, and water/wastewater systems.

FEDERAL FUNDING OPPORTUNITIES

Two primary federal funding opportunities that can be pursued to construct the North Main Street Sidepath include the Safe Streets & Roads for All Grant and the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant. Both opportunities are outlined below.

Safe Streets & Roads for All Grant

The Safe Streets & Roads for All Grant is a \$5 Billion competitive grant program that provides funding directly to local governments to support and advance vision zero or complete streets roadway improvements to reduce crashes and fatalities.

Rebuilding American Infrastructure with Sustainability and Equity Grant
RAISE Grants fund capital transportation investments that have significant local or regional impacts. Funds can be used to support planning, design, and construction of projects. The grant requires a 20% local match; however, a 30-40% match is encouraged due to the competitive nature of the grant.

LOCAL FUNDING OPPORTUNITIES

There are a few local funding opportunities that the City of Marion can pursue, including developer-built greenways/sidepaths and/or in-lieu fees, Capital Improvement Program (CIP) funds, and bonds. Strengthening Public/Private Partnerships could also be influential in pursing fundraising or Round-Up for Trails Campaigns in the City.

Please see Appendix A for a comprehensive list of funding opportunities.

MAINTENANCE RECOMMENDATIONS

Maintenance of active transportation facilities such as the proposed sidepath is essential to the long-term viability of the network. Facilities that are consistently maintained have lower costs over time and provide a safe and positive user experience than facilities that require major rehabilitation work from a lack of consistent maintenance. Good maintenance practices also prolong the useful life of these facilities, promote positive relationships with adjacent landowners, and create a sense of stewardship in the community. This feasibility study recommends a comprehensive approach to maintenance with the development of a maintenance plan to prioritize funding and responsibilities amongst project stakeholders. The maintenance plan should be reviewed and updated annually, responding to lessons learned and changes in tasks, operational policies, standards, and maintenance goals.

Key considerations for a sidepath maintenance plan include:

- Understanding the anticipated needs of the active transportation system and assessing the capacity of Town staff to meet those maintenance needs.
- Developing a facility inventory to understand the routine and substantial maintenance needs of signs, amenities, bridges, culverts, and pavement conditions.
- Estimation of baseline maintenance costs by determining necessary maintenance activities, such as mowing, edging, landscaping, trash removal, debris clearing, lighting, drainage, seasonal maintenance needs, sealcoating, repaving, patching, and bridge repair.
- Consideration of labor costs based on which maintenance activities can be completed in-house versus contracted out.
- Assessment of available technologies to collect data on facility conditions and facilitate maintenance functions.
- Developing methodology to prioritize annual maintenance needs based on facility conditions and available funding.
- Consideration of emergency services including designated ingress/egress locations, mile-marker signage along the facility for location identification, and emergency notification systems.



Facility Maintenance



MAINTENANCE TASK	TASK TYPE	RECOMMENDED FREQUENCY
Tree / Bush trimming		
Mowing		
Trail sweeping		
Signage / Map / Kiosk Updates / Replacement		
Trash removal / Litter clean-up		
Planting, pruning, landscaping		
Flooding repairs	Routine	On-Going / Annually
Repainting / Restriping		
Minor patching		
Minor bridge repairs		
Lighting replacement		
Bollard locks / Replacement		
Pest management		
Routine On-Going / Annually		
Sidepath sealcoating	Minor Repairs	Every 5 Years
Sidepath resurfacing:		
• Asphalt	Major Reconstruction	Every 10-15 Years
• Concrete		Every 20 Years
• Boardwalk		10 Years
Complete greenway and sidepath replacement, reggrading, and resurfacing	Major Reconstruction	Every 20 Years

Source: *Best Practices in Trail Maintenance: A Manual by the Ohio River Greenway, Perdue University*



SPEED
LIMIT
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APPENDICES

A

Funding Resources

B

Design Resources

C

Detailed Cost Information

D

Additional Community
Engagement Information

E

P6.0 SPOT Scoring
Component Resources

APPENDIX A: FUNDING RESOURCES

Below are several funding sources that can be leveraged to provide the necessary dollars to plan, design, and/or construct bicycle, pedestrian, and greenway facilities. The following sources of funding have been instrumental in the successful development of bicycle and pedestrian networks in North Carolina communities. Funding sources are broken down into the following levels: federal, state, local, and private.

FEDERAL FUNDING

North Carolina communities have partnered with Federal agencies to build multi-use paths, greenways, sidewalks, bike lanes and improve crossings. Federal funding is primarily distributed to municipalities through state agencies and Metropolitan Planning Organizations (MPO), as well as through discretionary grant programs.

The Fixing America's Surface Transportation (FAST) Act authorizes transportation funding for highway, transit, rail, bicycle and pedestrian, and safety programs and infrastructure. FAST Act funding is administered by the Federal Highways Administration (FHWA). FHWA distributes funding to NCDOT and directly to MPOs through the Locally Administered Projects Program (LAPP). Communities wishing to access Federal funding must submit their candidate projects to their MPO or RPO to then be entered into the NCDOT's Strategic Transportation Investment (STI) Mobility Formula. This formula ranks projects and identifies those to be funded in the State Transportation Improvement Program (STIP). These funds require a 20% match from the municipality. Federal transportation funds for bicycle and pedestrian projects are primarily distributed through four programs: Transportation Alternatives (TA), Congestion Mitigation & Air Quality (CMAQ), Recreational Trails Program, (RTP), and Highway Safety Improvement Program (HSIP).

Additional federal funding sources for bicycle and pedestrian projects are administered through the Department of Housing and Urban Development (HUD) with the Community Development Block Grant (CDBG) Program, and several discretionary grant programs administered by the US Department of Transportation (USDOT), National Park Service (NPS), and the National Endowment for the Arts (NEA).

STATE & MPO ADMINISTERED FUNDING

TRANSPORTATION ALTERNATIVES (TA)

Transportation Alternatives provides federal funds for community-based projects that expand travel choices and enhance the transportation experience by integrating modes and improving the cultural, historic, and environmental aspects of our transportation infrastructure. In North Carolina, TA funds are administered by NCDOT. Program-eligible projects must be submitted through STI and require a 20 percent local match.

Project types include:

- On and off-road pedestrian and bicycle facilities;
- Infrastructure projects for improving non-driver access to public transportation and enhanced mobility;
- Community improvement activities;
- Environmental mitigation;
- Safe routes to school projects;
- Streetscape improvements;
- Refurbishment of historic transportation facilities; and
- Other investments that enhance communities.

NCDOT created a bicycle and pedestrian scoping guidance document for local governments that have been awarded Transportation Alternatives funding. The Bike/Ped Project Scoping Guidance for Local Governments provides an overview of the four scoping tools used for locally managed, federally funded transportation projects in North Carolina. The document provides guidance on the project delivery process, scoping, identifying project risks, and project cost estimation. The document is available at the link below.

<https://connect.ncdot.gov/projects/BikePed/Documents/BikePed%20Project%20Scoping%20Guidance%20for%20Local%20Governments.pdf>
https://www.fhwa.dot.gov/environment/transportation_alternatives/

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic procedure that identifies and reviews specific traffic safety concerns throughout the state. The goal of the HSIP process is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential for these incidents on public roadways. Areas with bicycle and pedestrian safety concerns are primarily analyzed based on bicycle and pedestrian crash data.

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

RECREATIONAL TRAILS PROGRAM (RTP)

The Recreational Trails Program provides funds to state agencies to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). In North Carolina, the Recreational Trails Program is a \$1.5 million grant program that funds trails and trail-related recreational needs identified by the Statewide Comprehensive Outdoor Recreation Plan. Grant funding is available for trail planning, construction of new trails; maintenance and repair of existing trails; land acquisition; purchase of trail tools; and legal, environmental, and permitting costs. RTP is a reimbursement grant program. Municipalities must provide project funds upfront and are reimbursed upon completion of deliverables. Eligible applicants are state, federal, or local government agencies or qualified nonprofit organizations. Grants range from \$10,000 - \$100,000 and require a 25% match by the municipality.

https://www.fhwa.dot.gov/environment/recreational_trails/

<https://trails.nc.gov/trail-grants>

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing, suitable living environments, and expanding economic opportunities for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974. CDGB funds are allocated at the federal level by HUD and at the state level by the NC Department of Commerce. All municipalities are eligible to receive State CDBG funds except for entitlement communities, which receive funds directly from HUD. North Carolina's 24 entitlement municipalities are: Asheville, Burlington, Cary, Chapel Hill, Charlotte, Concord, Durham, Fayetteville, Gastonia, Goldsboro, Greensboro, Greenville, Hickory, High Point, Jacksonville, Kannapolis, Lenoir, Morganton, New Bern, Raleigh, Rocky Mount, Salisbury, Wilmington, and Winston-Salem. In addition, all counties are eligible to receive State CDBG funds except Mecklenburg County, Wake County, Union, and Cumberland County, which have been designated by HUD as urban entitlement counties.

CDBG funds may be used for activities which include, but are not limited to:

- Acquisition of real property;
- Relocation and demolition;
- Rehabilitation of residential and non-residential structures;
- Construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes;
- Public services, within certain limits;
- Activities relating to energy conservation and renewable energy resources; and
- Provision of assistance to profit-motivated businesses to carry out economic development and job creation/retention activities.

https://www.hud.gov/program_offices/comm_planning/communitydevelopment

DISCRETIONARY GRANTS

REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE)

The 2021 Consolidated Appropriations Act appropriated \$1 billion to be awarded by the Department of Transportation (DOT) for National Infrastructure Investments, formerly known as TIGER and BUILD Grants and now as Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants. RAISE Grants are for capital investments in surface transportation that will have a significant local or regional impact. Since this program was created, \$8.9 billion has been awarded for capital investments in surface transportation infrastructure over 12 rounds of competitive grants. The FY2021 RAISE Notice has been updated to reflect the current Administration's priorities for creating good-paying jobs, improving safety, applying transformative technology, and explicitly addressing climate change and advancing racial equity. Consistent with the FY 2021 Appropriations Act requirement, the Secretary shall award projects based solely on the selection criteria. The primary selection criteria are safety, environmental sustainability, quality of life, economic competitiveness, and state of good repair, and the secondary selection criteria are partnership and innovation. The Federal share of project costs may not exceed 80 percent for a project located in an urban area. The Secretary may increase the Federal share of costs above 80 percent for projects located in rural areas and for planning projects located in areas of persistent poverty.

Project Awards:

- Total Funding: \$1 billion.
- Minimum Project Awards: Urban Projects: \$5 million, Rural Projects: \$1 million.
- Planning Grants: No project minimum required.
- Maximum Awards: Urban/Rural Projects: \$25 million, Per State: \$100 million.
- Geographic Distribution: 50% of total funds (\$500 million) awarded to both urban and rural projects.

<https://www.transportation.gov/RAISEgrants>

FEDERAL LANDS ACCESS PROGRAM (FLAP)

The Federal Lands Access Program (FLAP) provides funds for projects to improve Federal Lands Access Transportation Facilities that provide access to, are adjacent to, or are located within federal lands. This can include public roads, bridges, paved trails, or transit systems that are owned and/or maintained by the state, county, town, township, tribal, municipal, or local government. Funds may be used for the costs of transportation planning, research, engineering, preventive maintenance, rehabilitation, restoration, construction, and reconstruction of transportation facilities located on or adjacent to, or that provide access to, federal lands. Applicable activities include parking areas; acquisition of scenic easements or historic sites; bicycle and pedestrian provisions; environmental mitigation; public safety; and roadside rest areas. Other eligible activities include the operation and maintenance of transit facilities, and any transportation project that is within, adjacent to, or provides access to federal land. The program requires a minimum 20% local match.

<https://highways.dot.gov/federal-lands/programs-access/nc>

FEDERAL LAND AND WATER CONSERVATION FUND (LWCF)

The Land and Water Conservation Fund was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. The LWCF program is divided into the "State Side" which provides grants to State and local governments for the acquisition and development of public outdoor recreation areas and facilities, and the "Federal Side" which is used to acquire lands, waters, and interests therein necessary to achieve the natural, cultural, wildlife, and recreation management objectives of federal land management agencies. State Side funds are distributed by the State and Local Assistance Programs Division of the National Parks Service. Funding is available as 50/50 matching grants to states and territories to plan, acquire, and develop public lands for outdoor recreation. Projects are selected by states and submitted to NPS for approval. In North Carolina, grants are selected by the Parks and Recreation Division in the NC Department of Cultural and Natural Resources. To be eligible for LWCF assistance, every state must prepare and regularly update a statewide comprehensive outdoor recreation plan (SCORP). Applicants can request a maximum grant of \$500,000. An applicant must match the grant with a minimum of 50 percent. Due to a federal share cap of \$500,000, a greater match is required for projects that exceed total costs of \$1 million.

<https://www.nps.gov/subjects/lwcf/stateside.htm>

<https://www.ncparks.gov/more-about-us/grants/lwcf-grants>

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM (RTCA)

The National Parks Service (NPS) Rivers, Trails and Conservation Assistance Program supports community-led natural resource conservation and outdoor recreation projects across the nation. Although RTCA is not a traditional funding program, NPS staff provide planning, design and technical expertise for trails and outdoor recreation projects. Depending on the project scale, RTCA can invest up to four years of planning and project development assistance. Eligible entities include community groups, nonprofit organizations, tribes, and governments.

Technical Assistance Services:

- Define project vision and goals.
- Set priorities and build consensus.
- Inventory and map community resources.
- Identify funding strategies.
- Identify and analyze key issues and opportunities.
- Design community outreach, participation, and partnerships plans.
- Create project management and strategic action plans.
- Develop concept plans for trails, parks, and natural areas.

<https://www.nps.gov/orgs/rtca/index.htm>

NATIONAL ENDOWMENT FOR THE ARTS (NEA) OUR TOWN PROGRAM

Our Town is the National Endowment for the Arts' creative placemaking grants program. Through project-based funding, the NEA supports projects that integrate arts, culture, and design activities into efforts that strengthen communities by advancing local economic, physical, and/or social outcomes. These projects require a partnership between a local government entity and nonprofit organization, one of which must be a cultural organization; and should engage in partnership with other sectors (such as agriculture and food, economic development, education and youth, environment and energy, health, housing, public safety, transportation, and workforce development). Cost share/matching grants range from \$25,000 to \$150,000, with a minimum cost share/match equal to the grant amount.

<https://www.arts.gov/grants/our-town>

STATE FUNDING

North Carolina communities have partnered with state agencies to build bicycle and pedestrian facilities. State agency funding sources for bicycle and pedestrian planning, infrastructure, and programs are administered primarily through the North Carolina Department of Transportation (NCDOT), North Carolina Department of Natural and Cultural Resources, and North Carolina Department of Commerce. Discretionary grant programs focusing on public health and community development are administered by the North Carolina Department of Health and Human Services (DHHS), North Carolina Department of Environmental Quality (NCDEQ), and the North Carolina Department of Agriculture when funding is available.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

STRATEGIC TRANSPORTATION INVESTMENTS (STI)

The Strategic Transportation Investments law, passed in 2013, establishes the Strategic Mobility Formula, which allocates available funding based on data-driven scoring and local input. The Strategic Mobility Formula is used to develop the State Transportation Improvement Program (STIP), which identifies projects that will receive funding during a 10-year period. The STIP is state and federally mandated and updated by NCDOT every 2 years. The Strategic Mobility Formula groups projects in three categories: Division Needs, Regional Impact, and Statewide Mobility.

FUNDING CATEGORY	FUNDING DISTRIBUTION	OVERVIEW
Division Needs	30%	Funding in this category is shared equally between NCDOT's 14 transportation divisions. Project scores are based 50% on data and 50% on rankings by MPOs and RPOs and the NCDOT Divisions.
Regional Impact	30%	Projects on this level compete within regions made up of two NCDOT Divisions with funding based on population. Project scores are based 70% on data and 30% on rankings by MPOs and RPOs and the NCDOT Divisions.
Statewide Mobility	40%	Projects in this category are of statewide significance and are based 100% on data.

Independent bicycle and pedestrian projects are programmed in the Division Needs category. Eligible bicycle and pedestrian projects submitted for prioritization must be included in a locally adopted plan and have a minimum project cost of \$100,000. Eligible activities include ROW acquisition, design, and construction. Additionally, the STI law prohibits the use of state funding for bicycle and pedestrian projects, requiring municipalities to provide the 20% match for federally funded projects.

Bicycle and Pedestrian STI Prioritization Qualitative Scoring:

Local input points represent 50% of the scoring for bicycle and pedestrian projects. 25% of local input points are assigned by MPOs and RPOs, which are determined by municipal and county project priorities and public comment. The remaining 50% of the local input points are assigned by NCDOT Division Engineers.

CRITERIA	MEASURE	DIVISION NEEDS (50%)
Safety	$(\text{Number of crashes} \times 40\%) + (\text{Crash severity} \times 20\%) + (\text{Safety risk} \times 20\%) + (\text{Safety benefit} \times 20\%)$	20%
Accessibility / Connectivity	Points of interest pts + Connection pts + Route pts	15%
Demand / Density	# of households and employees per square mile near project	10%
Cost Effectiveness	$(\text{Safety} + \text{Accessibility / Connectivity} + \text{Demand / Density}) / \text{Cost to NCDOT}$	5%

Project Bundling:

Multiple bicycle and pedestrian projects can be bundled to better compete with other projects submitted in the Division Needs category. Bundled projects are allowed across geographies and project types. Projects do not have to be contiguous or related, and projects can be in a single or multiple jurisdictions. Bundled projects must be under one project manager, which must be a TAP eligible entity.

<https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx>

INCIDENTAL BICYCLE AND PEDESTRIAN FACILITIES WITH ROADWAY PROJECTS

The NCDOT Complete Streets Policy Update was adopted by the Board of Transportation in August 2019. This policy requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of all transportation projects in North Carolina. The adopted Comprehensive Transportation Plan (CTP) is considered the controlling plan for the identification of non-motorized facilities to be evaluated as part of a roadway project. The CTP may include and/or reference locally adopted plans for public transportation, bicycle and pedestrian facilities, and greenways. Bicycle, pedestrian, and public transportation facilities that appear in the CTP directly or by reference will be included as part of the proposed roadway project, and NCDOT is responsible for the full cost of the project. Bicycle, pedestrian, and transit facilities incidental to a roadway project where a need has been identified through the project scoping process but not identified in an adopted plan may be included in the project. Inclusion of these incidental facilities requires the local jurisdiction to share the incremental cost of constructing the improvements based on population thresholds. Projects that have not completed environmental review prior to August 2019 are subject to the Complete Streets Policy.

<https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx>

STATEWIDE PROJECTS FUNDS

Small Construction Funds: These funds were established in 1985 to fund small projects in and around cities and towns that could not be funded in the Statewide Transportation Improvement Program (STIP). Funds are allocated equally to each of 14 Transportation Divisions. Funds can be used on a variety of transportation projects for municipalities, counties, businesses, schools, and industries throughout the State. Funds projects up to \$250,000 per fiscal year, unless otherwise approved by the Secretary of Transportation. ROW and utility relocations should be provided and accomplished at no cost to NCDOT. Funding requests should be submitted to the Division Engineer providing technical information such as location, improvements being requested, and project timeline.

Statewide Contingency Funds: These funds were created for statewide rural or small urban highway improvements and related transportation enhancements to public roads/public facilities, industrial access roads, and spot safety projects. The President Pro Tempore of the Senate, the Speaker of the House, and the Secretary of Transportation sponsor project requests from this fund. \$12 million in funds are administered by the Secretary of Transportation. Requests can be submitted from municipalities, counties, businesses, schools, citizens, legislative members, and NCDOT staff. Request should include a clear description and justification of the project.

Economic Development Funds: These funds were created to expedite transportation projects that promote commercial growth as well as either job creation or job retention. \$2500 per job (new & retained) allowed unless waived by the Secretary of Transportation. Funds projects up to \$400,000 per fiscal year, unless otherwise approved by the Secretary of Transportation. New access roads must be approved by NCDOT and serve multiple property owners or government owned property; roads will become part of the State Highway System or serve as public roads maintained by a government agency.

High Impact / Low-Cost Funds: This program provides funds complete low-cost projects with high impacts to the transportation system including intersection improvement projects, minor widening projects, and operational improvement projects. Funds are allocated equally to each of 14 Transportation Divisions. Each Division is responsible for selecting their own scoring criteria for determining projects funded in this program. At a minimum, Divisions must consider all of the following in developing scoring formulas: (1) The AADT of a roadway and whether the proposed project will generate additional traffic. (2) Any restrictions on a roadway. (3) Any safety issues with a roadway. (4) The condition of the lanes, shoulders, and pavement on a roadway. (5) The site distance and radius of any intersection on a roadway. Funds projects up to \$1.5 million per fiscal year, unless otherwise approved by the Secretary. Projects are expected to be under contract within 12 months of funding approval by the BOT.

<https://connect.ncdot.gov/projects/planning/Economic%20Development/Small%20Project%20Fund%20Request.docx>

SPOT SAFETY PROGRAM

The Spot Safety Program is used to develop smaller improvement projects to address safety and potential safety and operational issues. The program is funded with state funds and currently receives approximately \$9 million per fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$400,000. A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

STATE PLANNING & RESEARCH FUNDS (SPR)

The State Planning and Research Program funds States' statewide planning and research activities. This program funds metropolitan and statewide planning for future highway programs and local public transportation systems. The FAST Act expanded the statewide transportation planning process' scope of consideration to include projects, strategies, and services that will improve transportation system resiliency and reliability; reduce (or mitigate) the stormwater impacts of surface transportation; and enhance travel and tourism. In 2017, NCDOT extended the use of SPR funds to Rural Planning Organizations (RPOs) by establishing an annual call for proposals to fund planning and research projects for rural communities. Since the program expansion, RPOs have used SPR funds for a range of transportation planning activities, including to develop greenway and trail feasibility studies. SPR funding requires a 20% local match. However, the local match is 5% for Tier 1 Counties with NCDOT contributing 15% of the local match and 10% for Tier 2 Counties with NCDOT contributing 10% of the local match. RPOs must administer the funds.

<https://connect.ncdot.gov/projects/planning/Pages/Transportation-Planning-Program-and-Services.aspx>

POWELL BILL FUNDS

The State Street Aid to Municipalities Program, also known as Powell Bill Funds, assists local governments with transportation system improvements. The Powell Bill requires municipalities to use the money primarily for street resurfacing, but it can also be used for the construction and maintenance of roads, bridges, drainage systems, sidewalks, and greenways.

Funding amounts for each municipality are based on a formula set by the N.C. General Assembly, with 75 percent of the funds based on population, and 25 percent based on the number of locally maintained street miles.

NORTH CAROLINA DEPARTMENT OF NATURAL AND CULTURAL RESOURCES

PARKS AND RECREATION TRUST FUND (PARTF)

PARTF provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the public. PARTF is the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks.

<https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund>

NORTH CAROLINA LAND & WATER FUND (NCLWF)

The NCLWF (formerly known as the Clean Water Management Trust Fund) was created in 1996 by the General Assembly to conserve North Carolina's streams, rivers, and open space. The NCLWF funds land acquisition, stream restoration, stormwater, and planning projects that protect and conserve riparian buffers for the purpose of providing environmental protection for surface waters and urban drinking water supplies and establishing a network of riparian greenways for environmental, educational, and recreational uses. NCLWF also funds mini grants of up to \$25,000 for donated property or the value of the conservation donation to pay transaction costs associated with the donation of property in fee simple, or a permanent conservation agreement. NCLWF has one grant cycle per year. Applications are available in early December and close in February. Final award decisions are made in the fall.

<https://nclwf.nc.gov/apply>

NORTH CAROLINA DEPARTMENT OF COMMERCE

MAIN STREET SOLUTIONS FUND

The Main Street Solutions Fund supports small businesses in designated micropolitans located in Tier 2 and Tier 3 counties or designated North Carolina Main Street communities. The grants assist planning agencies and small businesses with efforts to revitalize downtowns by creating jobs, funding infrastructure improvements and rehabilitating buildings.

<https://www.nccommerce.com/grants-incentives/downtown-development-funds>

RURAL INFRASTRUCTURE PROGRAM

The Rural Economic Development Division provides grants and loans to local government units to support economic development activity that will lead to the creation of new, full-time jobs. The program gives priority to projects located in the 80 most distressed counties in the state; and resident companies as defined in N.C.G.S. 143B-472 (a) 4. The Rural Infrastructure Program funding is available for publicly owned infrastructure including water, sewer, electric, broadband, rail, and road improvements that will lead to the direct creation of new, full-time jobs. Eligible applicants are units of local government with priority given to the Tier 1 and Tier 2 counties. A cash match equivalent to at least 5% of the grant amount is required for all projects.

Eligible project activities include:

- Construct public infrastructure improvements;
- Upgrade or repair of public drinking water or wastewater treatment plants;
- Upgrade, extensions, or repair of public water or sewer lines;
- Publicly owned natural gas lines (requires an executed Pipeline Construction, Operating and Resale Agreement);
- Installation or extension of public broadband infrastructure;
- Construction of public rail spur improvements; and
- Construction of publicly owned access roads not funded or owned by the Department of Transportation.

<https://www.nccommerce.com/grants-incentives/public-infrastructure-funds/infrastructure-state-rural-grants>

NORTH CAROLINA NEIGHBORHOOD REVITALIZATION PROGRAM

The NC Neighborhood Program offers non-entitlement municipalities and counties the opportunity to tailor a project to meet the community development needs specific and most critical to their locality, primarily for their low- and moderate-income residents. NC Neighborhood Program projects must incorporate at least one of the following three livability principles as an area of focus:

- Promote equitable, affordable housing. Expand location and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
- Support existing communities. Target federal funding toward existing communities - through strategies like transit-oriented, mixed-use development, and land recycling - to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
- Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in health, safe, and walkable neighborhoods - rural, urban, or suburban.

All municipalities are eligible to receive State CDBG funds except for entitlement communities, which receive funds directly from HUD. The maximum grant amount is \$750,000 per grantee with some restrictions for specific activities. There is no minimum grant amount, and the program does not have a matching fund requirement.

<https://www.nccommerce.com/grants-incentives/community-housing-grants#neighborhood-revitalization--federal-cdbg>

NORTH CAROLINA STATE CAPITAL INFRASTRUCTURE FUND (SCIF)

The NC Office of State Budget and Management administers several Directed Grants as appropriated by the NC General Assembly, which includes the State Capital Infrastructure Fund (SCIF). The SCIF dedicates 4 percent of General Fund revenues each year to debt service and state capital needs (i.e., greenway funding).

<https://www.osbm.nc.gov/stewardship-services/directed-grants/osbm-administered-grants#:~:text=Your%20SCIF%20grant%20funds%20may.language%20of%20the%20current%20law>

LOCAL FUNDING

BONDS

Wake County, City of Raleigh, City of Wilmington, Town of Chapel Hill, Town of Cornelius, and City of Greenville have all passed bonds to protect open space corridors and build greenway networks. Multi-use paths and greenways are also frequently included in municipal transportation bond packages. Successful bond campaigns require a well-defined plan with specific projects supported by the community. Bond campaigns should be well organized with a community's public affairs department and thoroughly coordinated across all internal departments. Public outreach during the campaign is essential to educate residents about the benefits of infrastructure investment and to understand which projects garner the highest community support.

DEVELOPER BUILT TRAILS/IN-LIEU FEES

The Town of Cary built its first greenway 40 years ago and now has more than 80 miles of greenway trails. A significant portion of their network development has been the result of developer-built trails. The Town of Cary requires developers to set aside important open space providing trail connectivity, wildlife habitat corridors, and water quality protection. Per the Cary Land Use Ordinance, developers must dedicate land or make payment in-lieu of public park and/or greenway development to serve the recreational needs of residents. Land dedications for greenways are required for both residential and commercial development for those locations indicated in the Town's greenway master plan.

IMPACT FEES

Impact fees represent financial payments made to a local government by a developer to fund certain off-site capital improvements needed to accommodate future growth. Many communities impose impact fees for transportation, parks and recreation, and open space facility needs. The City of Durham imposes transportation impact fees to fund for a portion of the costs for new streets and sidewalks, paving, grading, resurfacing, and widening of existing streets, traffic control signals and markings, lighting, and crosswalks. The City's development fees for open space and parks and recreation are used for the acquisition of park land and the provision of facilities, including athletic fields, parks, playgrounds, courts, recreation centers, shelters, stadiums, arenas, swimming pools, lighting, trail construction, and bike paths.

CAPITAL IMPROVEMENT PROGRAM (CIP)

A Capital Improvement Program (CIP) is one element in a municipality's long-term planning process. It is a bridge between the municipality's Comprehensive Plan and short-term planning for infrastructure and operations. A Capital Improvement Program analyzes major facility and equipment needs, establishes priorities, estimates fiscal resources, and schedules the development of funded projects. The City of Raleigh funds parks, greenways, and active transportation facilities through the city's Capital Improvement Program. The Parks, Recreation and Cultural Resources Department's CIP primary sources of funding come from Parks and Recreation Bonds, Facility Fees, General Fund (Tax Base), grants, and donations.

MUNICIPAL SERVICE DISTRICTS (MSD)

Municipal Service Districts provide an equitable method for funding special improvements to public ROW areas because property owners share in the cost. The Town of Morrisville uses Municipal Service Districts in several neighborhoods to perform pavement, curb and gutter, and sidewalk enhancements and repairs on the public streets throughout neighborhoods in the MSD.

PUBLIC/PRIVATE PARTNERSHIPS

The City of Greensboro is leading North Carolina in leveraging public-private partnerships to complete their Downtown Greenway Loop. Through the Action Greensboro Foundation, the project has raised over \$10 M in private funds by working with foundations and private givers. This money leverages over \$21 M in local and federal funds.

PRIVATE FUNDING

NORTH CAROLINA LAND TRUSTS AND CONSERVANCIES

North Carolina land trusts partner with landowners and local communities to permanently protect natural resources with agricultural, cultural, recreational, ecological, and scenic value across the state. In Watauga County, the Blue Ridge Conservancy is leading the effort to develop the Middle Fork Greenway along the Middle Fork New River to connect Boone and Blowing Rock via trail. The Blue Ridge Conservancy has purchased property and easements along the Middle Fork New River to preserve the corridor and develop the greenway in partnership with Watauga County, the Town of Blowing Rock, and the Town of Boone. The conservancy is also leading planning, design, and construction of each phase of the greenway's development.

Provided below is a list of Land Trusts & Conservation Organizations active in eastern North Carolina: Conservation Trust for North Carolina;

- Land Trust for Central North Carolina;
- NC Coastal Land Trust; and
- Tar River Land Conservancy.

<https://www.presnc.org/nc-land-trusts-conservation-organizations/>

NORTH CAROLINA COMMUNITY FOUNDATION (NCCF)

The NCCF is the statewide community foundation serving North Carolina and sustains more than 1,200 endowments established to provide long-term support of a broad range of community needs, nonprofit organizations, institutions, and scholarships. The NCCF partners with a network of affiliate foundations to provide local resource allocation and community assistance across the state. NCCF's community grantmaking programs are advised by its network of affiliate foundations. Each affiliate is advised by a local board who help to assemble resources through their unique knowledge and understanding of local needs and opportunities. Organizations must be qualified as tax-exempt public charities under Section 501(c)(3) of the Internal Revenue Code or be classified as a unit of local government or public school.

<https://www.nccommunityfoundation.org/apply/grants>

THE CONSERVATION FUND

The Conservation Fund works with public, private, and nonprofit partners to protect land and water resources through land acquisition, sustainable community and economic development, and leadership training. The City of Durham partnered with the Conservation Fund to assist with negotiations to purchase the Durham Belt Line rail corridor from Norfolk Southern to convert the rail line into an urban trail. In 2017 the Conservation Fund successfully purchased the property as the interim owner while the city secured the necessary funding. The property was transferred to the City of Durham in 2018, which allowed for the rail-trail's development.

<https://www.conservationfund.org/where-we-work/north-carolina>

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION

The Blue Cross Blue Shield of North Carolina Foundation funds a range of programs from targeted, mini grants to multi-year partnerships. Their grantmaking supports initiatives that focus on early childhood, healthy communities, healthy food, and oral health. The Foundation does not operate regular grant cycles. Instead, the Foundation invites applications based on specific strategic objectives or announces broader opportunities to apply for funding on a periodic basis.

<https://www.bcbnsncfoundation.org/grants-programs/grantmaking-overview/>

NATIONAL ASSOCIATION OF REALTORS SMART GROWTH AND PLACEMAKING GRANTS

The National Association of Realtors (NAR) funds placemaking and smart growth grants to make communities better places to live by transforming unused or underutilized sites into welcoming destinations accessible to everyone in a community.

Smart Growth Grants: Smart Growth Grants fund efforts to engage in local land-use, growth, and transportation policy issues with other stakeholders and elected officials. Eligible projects include Better Block events, placemaking visioning processes, charettes, pop-up workshops, project mock-ups, developer open houses, public open houses, utility roundtables, Main Street analysis, walkable community workshops/audits, assistance with updating land use ordinances and codes and community plans, and hosting conferences and webinars. Applications can only be submitted by a state or local REALTOR® association, and grants provide up to \$5,000 per award.

Placemaking Grants: Placemaking Grants fund the creation of new, outdoor public spaces and destinations in a community. Funds can be used for amenities such as street furniture, paint, signage, materials, landscaping, murals, site preparation, and artist fees. Applications can only be submitted by a state or local REALTOR® association, and grants provide up to \$5,000 per award.

<https://realtorparty.realtor/community-outreach/>

AARP COMMUNITY CHALLENGE GRANT

The AARP Community Challenge provides small grants to fund quick-action projects that can help communities become more livable for people of all ages. Applications are accepted for projects to improve public spaces, housing, transportation, civic engagement, coronavirus recovery, diversity, and inclusion, and more. Project types include those that provide permanent physical improvements in the community, temporary demonstrations that lead to long-term change, and innovative programming or services. The program is open to 501(C)(3), 501(C)(4) and 501(c)(6) nonprofits and government entities. Grants can range from several hundred dollars for smaller, short-term activities to several thousand or tens of thousands of dollars for larger projects.

<https://www.aarp.org/livable-communities/community-challenge/info-2021/2021-challenge.html>

APPENDIX B: DESIGN RESOURCES

OVERVIEW

Below are several design resources that can be used to inform bicycle and pedestrian design decisions. Organizations such as Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO), National Association of City Transportation Officials (NACTO), and North Carolina Department of Transportation (NCDOT) offer general guidelines and project-specific tools to help professionals make design decisions. These guidelines promote flexibility to ensure context-sensitive applications.

AASHTO GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES

The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities provides guidance for pedestrian facilities along streets and highways. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whom make decisions on a daily basis that affect pedestrians. The guide focuses on identifying effective measures for accommodating pedestrians on public ROW, and it recognizes the effect that land use planning and site design have on pedestrian mobility and addresses these topics as well.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

The Manual on Uniform Traffic Control Devices for Streets and Highways, or MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. The MUTCD is published by the Federal Highway Administration (FHWA) and is a compilation of national standards for all traffic control devices, including road markings, roadway signs, and traffic signals.

NCDOT ROADWAY DESIGN GUIDE

The North Carolina Department of Transportation (NCDOT) Roadway Design Guide defines standards for roadways owned and maintained by NCDOT, including typical sections for roadways. Typical sections establish design elements that emphasize safety, mobility, complete streets, and accessibility for multiple modes of travel. Typical sections also provide guidelines for comprehensive transportation planning, project planning, and project design activities.

NCDOT COMPLETE STREETS IMPLEMENTATION GUIDANCE

The North Carolina Department of Transportation (NCDOT) Complete Streets Implementation Guide is designed to assist NCDOT staff engineers, project managers and designers in implementing the Complete Streets Policy adopted by the Board of Transportation in August 2019. This document provides comprehensive guidance for incorporating a complete streets approach into NCDOT's planning, programming, design, and maintenance processes.

NACTO URBAN BIKEWAY DESIGN GUIDE

The NACTO Urban Bikeway Design Guide provides cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. Design treatments included in the guide offer required, recommended, and optional design elements to address the complexity of individual streetscape situations. In August 2013, the FHWA issued a memorandum officially supporting the use of this document. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

NACTO URBAN STREETS DESIGN GUIDE

The Urban Street Design Guide charts the principles and practices of the nation's foremost engineers, planners, and designers working in cities today. A blueprint for designing 21st century streets, the guide unveils the toolbox and the tactics cities use to make streets safer, more livable, and more economically vibrant. The Guide outlines both a clear vision for complete streets and a basic road map for how to bring them to fruition.

NACTO URBAN STREET STORMWATER GUIDE

The Urban Street Stormwater Guide advances the discussion about how to design and construct sustainable streets. The guide provides cities with national best practices for sustainable stormwater management in the public ROW, including core principles about the purpose of streets, strategies for building inter-departmental partnerships around sustainable infrastructure, technical design details for siting and building bioretention facilities, and a visual language for communicating the benefits of such projects. The guide sheds light on effective policy and programmatic approaches to starting and scaling up green infrastructure, provides insight on innovative street design strategies, and proposes a framework for measuring performance of streets comprehensively.

FHWA SMALL TOWN & RURAL MULTIMODAL NETWORKS

The Federal Highway Administration (FHWA) Small Town and Rural Multimodal Networks applies existing national design guidelines in a rural setting and highlights small town and rural case studies. It addresses challenges that are specific to rural areas and focuses on opportunities to make improvements despite the geographic, fiscal, and other challenges that many rural communities face. It also includes several design concepts applicable to National Scenic and Historic Trails.

FHWA BIKEWAY SELECTION GUIDE

A resource to help transportation practitioners consider the trade-offs relating to the selection of bikeway types. The document builds upon other FHWA resources that promote design flexibility and support connected, safe, and comfortable bicycle networks. This guide outlines a process for identifying the desired bikeway type and assessing and refining potential options based on real-world conditions and decision-making factors. This process is intended to accelerate the delivery of high-quality multimodal projects that improve safety for everyone and meet the transportation needs of people of all ages and abilities.

FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE

The Separated Bike Lane Planning and Design Guide outlines planning considerations for separated bike lanes and provides a menu of design options covering typical one and two-way scenarios. It highlights different options for providing separation, while also documenting

intersection treatments and mid-block design considerations for driveways, transit stops, accessible parking, and loading zones. Case studies highlight best practices and lessons learned.

FHWA ACHIEVING MULTIMODAL NETWORKS: APPLYING DESIGN FLEXIBILITY AND REDUCING CONFLICTS

This publication is resource for practitioners seeking to build multimodal transportation networks. It highlights ways that planners and designers can apply the design flexibility found in current national design guidance to address common roadway design challenges and barriers. It focuses on reducing multimodal conflicts and achieving connected networks so that walking and bicycling are safe, comfortable, and attractive options for people of all ages and abilities.

ADA STANDARDS FOR ACCESSIBLE DESIGN

This guide explains requirements in the current editions of the Americans with Disabilities Act (ADA) Standards issued by the Department of Justice (DOJ) and the Department of Transportation (DOT). It provides the scoping and technical requirements for new construction and alterations resulting from the adoption of revised 2010 Standards in the final rules for Title II and Title III.

ADA & ABA ACCESSIBILITY GUIDELINES for the PUBLIC RIGHTS-OF-WAY

The Access Board is developing new guidelines under the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) that will address access to sidewalks and streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other components of public rights-of-way. These guidelines also review shared use paths, which are designed primarily for use by bicyclists and pedestrians for transportation and recreation purposes.

RESOURCES:

AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES
https://nacto.org/wp-content/uploads/2015/04/AASHTO_Bicycle-Facilities-Guide_2012-toc.pdf

AASHTO GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES
[https://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07\(263\)_FR.pdf](https://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(263)_FR.pdf)

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
<https://mutcd.fhwa.dot.gov/>

NCDOT ROADWAY DESIGN GUIDE
<https://connect.ncdot.gov/projects/Roadway/pages/roadway-design-manual.aspx>

NCDOT COMPLETE STREETS IMPLEMENTATION GUIDANCE
<https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx>

NACTO URBAN BIKEWAY DESIGN GUIDE
<https://nacto.org/publication/urban-bikeway-design-guide/>

NACTO URBAN STREETS DESIGN GUIDE
<https://nacto.org/publication/urban-street-design-guide/>

NACTO URBAN STREET STORMWATER GUIDE
<https://nacto.org/publication/urban-street-stormwater-guide/>

FHWA SMALL TOWN & RURAL MULTIMODAL NETWORKS
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/

FHWA BIKEWAY SELECTION GUIDE
https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm

FHWA ACHIEVING MULTIMODAL NETWORKS: APPLYING DESIGN FLEXIBILITY & REDUCING CONFLICTS
https://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt2021/

ADA STANDARDS FOR ACCESSIBLE DESIGN
https://www.ada.gov/2010ADAsstandards_index.htm

ADA & ABA ACCESSIBILITY GUIDELINES for the PUBLIC RIGHTS-OF-WAY (PROWAG)
<https://www.access-board.gov/prowag/>

APPENDIX C: DETAILED COST INFORMATION

Baseline construction costs for the current year of 2022 were generated using quantity takeoffs and calculations based on the preliminary design concepts. Detailed line item estimates for each project component are shown on the following pages.



Prepared By: JAP Date: 8/22/2022
Checked By: AJH Date: 8/22/2022
McAdams Project No: NCD-2021210422

N Main St Sidepath Feasibility Study

Project Location: Marion, NC
Project Description: 10' Paved Multi-Use Side Path
Client: City of Marion
Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT SUMMARY

Segment	Segment Length (mi.)	Cost
1A	0.23	\$440,000
1B	0.27	\$399,000
2A		\$963,000
2B		\$1,659,000
3A		\$980,000
3B	0.41	\$1,902,000
4A		\$2,826,000
4B		\$1,996,000
5A		\$1,025,000
5B		\$401,000
6A		\$539,000
6B	0.09	\$109,000

PAVING & STRIPING SUMMARY

Segment	Segment Length (mi.)	Cost
ENTIRE LENGTH (McDOWELL HOUSE TO VIEWPOINT DR)	2.12	\$1,513,000

N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

ALTERNATIVES SUMMARY

ALTERNATIVE A

Segment	Segment Length (mi.)	Cost
1B	0.27	\$399,000
2A	0.55	\$963,000
3A	0.41	\$980,000
4A	0.65	\$2,826,000
5A	0.19	\$1,025,000
6A	0.09	\$539,000
<i>Subtotal</i>		\$6,732,000
PAVING & STRIPING	-	\$1,513,000
Total	2.16	\$8,245,000

ALTERNATIVE B

Segment	Segment Length (mi.)	Cost
1A	0.23	\$440,000
2A	0.55	\$963,000
3A	0.41	\$980,000
4A	0.65	\$2,826,000
5A	0.19	\$1,025,000
6A	0.09	\$539,000
<i>Subtotal</i>		\$6,773,000
PAVING & STRIPING	-	\$1,513,000
Total	2.12	\$8,286,000

ALTERNATIVE C

Segment	Segment Length (mi.)	Cost
1B	0.27	\$399,000
2B	0.55	\$1,659,000
3B	0.41	\$1,902,000
4B	0.65	\$1,996,000
5B	0.19	\$401,000
6B	0.09	\$109,000
<i>Subtotal</i>		\$6,466,000
PAVING & STRIPING	-	\$1,513,000
Total	2.16	\$7,979,000

ALTERNATIVE D

Segment	Segment Length (mi.)	Cost
1A	0.23	\$440,000
2B	0.55	\$1,659,000
3B	0.41	\$1,902,000
4B	0.65	\$1,996,000
5B	0.19	\$401,000
6B	0.09	\$109,000
<i>Subtotal</i>		\$6,507,000
PAVING & STRIPING	-	\$1,513,000
Total	2.12	\$8,020,000

N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Combined						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
607	1297000000-E	MILLING ASPHALT PAVEMENT, 1.5" DEPTH	70000	SY	\$ 2.00	\$ 140,000.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE 59.5C	5800	TON	\$ 120.00	\$ 696,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	345	TON	\$ 650.00	\$ 224,250.00
SP		PAVEMENT MARKINGS	1	LS	\$ 150,000.00	\$ 150,000.00

SUBTOTAL \$1,210,250.00

CONTINGENCY @ 25% \$302,562.50

CONSTRUCTION COST SAY \$1,513,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated August 2022 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 16,300.00	\$ 16,300.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1800	SY	\$ 4.00	\$ 7,200.00
520	1121000000-E	AGGREGATE BASE COURSE	810	TON	\$ 50.00	\$ 40,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	30	TON	\$ 130.00	\$ 3,900.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	200	TON	\$ 115.00	\$ 23,000.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	20	TON	\$ 120.00	\$ 2,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 40,000.00	\$ 40,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	610	LF	\$ 35.00	\$ 21,350.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	5	EA	\$ 5,000.00	\$ 25,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	80	SY	\$ 90.00	\$ 7,200.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 30,000.00	\$ 30,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 25,000.00	\$ 25,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 1A	1	LS	\$ 30,000.00	\$ 30,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 10,000.00	\$ 10,000.00
SP		INTERSECTION IMPROVEMENTS AT US-70/N MAIN ST	1	LS	\$ 45,000.00	\$ 45,000.00

SUBTOTAL \$351,600.00

CONTINGENCY @ 25% \$87,900.00

CONSTRUCTION COST SAY \$440,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 1B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 14,700.00	\$ 14,700.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 10,000.00	\$ 10,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1170	SY	\$ 4.00	\$ 4,680.00
520	1121000000-E	AGGREGATE BASE COURSE	450	TON	\$ 50.00	\$ 22,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	10	TON	\$ 130.00	\$ 1,300.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	130	TON	\$ 115.00	\$ 14,950.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	10	TON	\$ 120.00	\$ 1,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 10,000.00	\$ 10,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	40	LF	\$ 35.00	\$ 1,400.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	1	EA	\$ 5,000.00	\$ 5,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	70	SY	\$ 90.00	\$ 6,300.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 10,000.00	\$ 10,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 30,000.00	\$ 30,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 1B	1	LS	\$ 30,000.00	\$ 30,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 10,000.00	\$ 10,000.00
SP		12' WIDE BOARDWALK (TIMBER PILES, CONCRETE DECK)	60	LF	\$ 1,500.00	\$ 90,000.00
SP		INTERSECTION IMPROVEMENTS AT US-70/N MAIN ST	1	LS	\$ 45,000.00	\$ 45,000.00

SUBTOTAL \$318,530.00

CONTINGENCY @ 25% \$79,632.50

CONSTRUCTION COST SAY \$399,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 2A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 36,000.00	\$ 36,000.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1780	SY	\$ 4.00	\$ 7,120.00
520	1121000000-E	AGGREGATE BASE COURSE	1190	TON	\$ 50.00	\$ 59,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	100	TON	\$ 130.00	\$ 13,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	200	TON	\$ 115.00	\$ 23,000.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	70	TON	\$ 120.00	\$ 8,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 80,000.00	\$ 80,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1800	LF	\$ 35.00	\$ 63,000.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	24	EA	\$ 5,000.00	\$ 120,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	340	SY	\$ 90.00	\$ 30,600.00
864	3345000000-E	REMOVE & RESET EXISTING GUARD-RAIL	50	LF	\$ 50.00	\$ 2,500.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 10,000.00	\$ 10,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP	8847000000-E	RETAINING WALL	280	SF	\$ 100.00	\$ 28,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 2A	1	LS	\$ 50,000.00	\$ 50,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 40,000.00	\$ 40,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/MCDOWELL HIGH DR	1	LS	\$ 30,000.00	\$ 30,000.00

SUBTOTAL \$770,370.00

CONTINGENCY @ 25% \$192,592.50

CONSTRUCTION COST SAY \$963,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated August 2022 and are subject to revision prior to bid.
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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 36,600.00	\$ 36,600.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1520	SY	\$ 4.00	\$ 6,080.00
520	1121000000-E	AGGREGATE BASE COURSE	1000	TON	\$ 50.00	\$ 50,000.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	80	TON	\$ 130.00	\$ 10,400.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	170	TON	\$ 115.00	\$ 19,550.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	60	TON	\$ 120.00	\$ 7,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	20	TON	\$ 650.00	\$ 13,000.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 60,000.00	\$ 60,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1600	LF	\$ 35.00	\$ 56,000.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	17	EA	\$ 5,000.00	\$ 85,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	230	SY	\$ 90.00	\$ 20,700.00
864	3345000000-E	REMOVE & RESET EXISTING GUARD-RAIL	160	LF	\$ 50.00	\$ 8,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 10,000.00	\$ 10,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 50,000.00	\$ 50,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 45,000.00	\$ 45,000.00
SP	8847000000-E	RETAINING WALL	1650	SF	\$ 100.00	\$ 165,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 3A	1	LS	\$ 40,000.00	\$ 40,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/LADY MARIAN PLAZA	1	LS	\$ 60,000.00	\$ 60,000.00

SUBTOTAL \$783,530.00

CONTINGENCY @ 25% \$195,882.50

CONSTRUCTION COST SAY \$980,000

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 106,700.00	\$ 106,700.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3890	SY	\$ 4.00	\$ 15,560.00
520	1121000000-E	AGGREGATE BASE COURSE	2050	TON	\$ 50.00	\$ 102,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	120	TON	\$ 130.00	\$ 15,600.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	430	TON	\$ 115.00	\$ 49,450.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	90	TON	\$ 120.00	\$ 10,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	40	TON	\$ 650.00	\$ 26,000.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 70,000.00	\$ 70,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	3100	LF	\$ 35.00	\$ 108,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	5	EA	\$ 5,000.00	\$ 25,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 15,000.00	\$ 15,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 70,000.00	\$ 70,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 70,000.00	\$ 70,000.00
SP	8847000000-E	RETAINING WALL	12680	SF	\$ 100.00	\$ 1,268,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 4A	1	LS	\$ 75,000.00	\$ 75,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 200,000.00	\$ 200,000.00

SUBTOTAL \$2,260,110.00

CONTINGENCY @ 25% \$565,027.50

CONSTRUCTION COST SAY \$2,826,000

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 38,800.00	\$ 38,800.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 5,000.00	\$ 5,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	1040	SY	\$ 4.00	\$ 4,160.00
520	1121000000-E	AGGREGATE BASE COURSE	590	TON	\$ 50.00	\$ 29,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	40	TON	\$ 130.00	\$ 5,200.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	120	TON	\$ 115.00	\$ 13,800.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	30	TON	\$ 120.00	\$ 3,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	15	TON	\$ 650.00	\$ 9,750.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 20,000.00	\$ 20,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	825	LF	\$ 35.00	\$ 28,875.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	2	EA	\$ 5,000.00	\$ 10,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 20,000.00	\$ 20,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 20,000.00	\$ 20,000.00
SP	8847000000-E	RETAINING WALL	4600	SF	\$ 100.00	\$ 460,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 5A	1	LS	\$ 30,000.00	\$ 30,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/MACHINE SHOP RD	1	LS	\$ 50,000.00	\$ 50,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/LOGAN ST	1	LS	\$ 40,000.00	\$ 40,000.00

SUBTOTAL \$819,685.00

CONTINGENCY @ 25% \$204,921.25

CONSTRUCTION COST SAY **\$1,025,000**

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 6A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 20,300.00	\$ 20,300.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 5,000.00	\$ 5,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	170	SY	\$ 4.00	\$ 680.00
520	1121000000-E	AGGREGATE BASE COURSE	160	TON	\$ 50.00	\$ 8,000.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	20	TON	\$ 130.00	\$ 2,600.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	20	TON	\$ 115.00	\$ 2,300.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	20	TON	\$ 120.00	\$ 2,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 5,000.00	\$ 5,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	420	LF	\$ 35.00	\$ 14,700.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	1	EA	\$ 5,000.00	\$ 5,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	450	SY	\$ 90.00	\$ 40,500.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 10,000.00	\$ 10,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 10,000.00	\$ 10,000.00
SP	8847000000-E	RETAINING WALL	2600	SF	\$ 100.00	\$ 260,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 6A	1	LS	\$ 20,000.00	\$ 20,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 10,000.00	\$ 10,000.00

SUBTOTAL \$430,730.00

CONTINGENCY @ 25% \$107,682.50

 CONSTRUCTION COST SAY **\$539,000**
Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 2B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 62,500.00	\$ 62,500.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3180	SY	\$ 4.00	\$ 12,720.00
520	1121000000-E	AGGREGATE BASE COURSE	1740	TON	\$ 50.00	\$ 87,000.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	100	TON	\$ 130.00	\$ 13,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	330	TON	\$ 115.00	\$ 37,950.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	70	TON	\$ 120.00	\$ 8,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	30	TON	\$ 650.00	\$ 19,500.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 100,000.00	\$ 100,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2600	LF	\$ 35.00	\$ 91,000.00
848	2605000000-N	CONCRETE CURB RAMPS	2	EA	\$ 3,000.00	\$ 6,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	7	EA	\$ 5,000.00	\$ 35,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 10,000.00	\$ 10,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 60,000.00	\$ 60,000.00
SP	8847000000-E	RETAINING WALL	6190	SF	\$ 100.00	\$ 619,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 2B	1	LS	\$ 60,000.00	\$ 60,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ -	\$ -
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/MCDOWELL HIGH DR	1	LS	\$ 30,000.00	\$ 30,000.00

SUBTOTAL \$1,327,070.00

CONTINGENCY @ 25% \$331,767.50

CONSTRUCTION COST SAY \$1,659,000

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 3B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 71,800.00	\$ 71,800.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 15,000.00	\$ 15,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	2200	SY	\$ 4.00	\$ 8,800.00
520	1121000000-E	AGGREGATE BASE COURSE	1240	TON	\$ 50.00	\$ 62,000.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	80	TON	\$ 130.00	\$ 10,400.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	230	TON	\$ 115.00	\$ 26,450.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	60	TON	\$ 120.00	\$ 7,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	25	TON	\$ 650.00	\$ 16,250.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 60,000.00	\$ 60,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	1800	LF	\$ 35.00	\$ 63,000.00
848	2605000000-N	CONCRETE CURB RAMPS	6	EA	\$ 3,000.00	\$ 18,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	3	EA	\$ 5,000.00	\$ 15,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 10,000.00	\$ 10,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 50,000.00	\$ 50,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 45,000.00	\$ 45,000.00
SP	8847000000-E	RETAINING WALL	8820	SF	\$ 100.00	\$ 882,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 3B	1	LS	\$ 50,000.00	\$ 50,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 50,000.00	\$ 50,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/LADY MARIAN PLAZA	1	LS	\$ 60,000.00	\$ 60,000.00

SUBTOTAL \$1,520,900.00

CONTINGENCY @ 25% \$380,225.00

CONSTRUCTION COST SAY \$1,902,000

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 4B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 75,100.00	\$ 75,100.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 20,000.00	\$ 20,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	3180	SY	\$ 4.00	\$ 12,720.00
520	1121000000-E	AGGREGATE BASE COURSE	1850	TON	\$ 50.00	\$ 92,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	120	TON	\$ 130.00	\$ 15,600.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	330	TON	\$ 115.00	\$ 37,950.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	90	TON	\$ 120.00	\$ 10,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	35	TON	\$ 650.00	\$ 22,750.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 70,000.00	\$ 70,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	2600	LF	\$ 35.00	\$ 91,000.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	22	EA	\$ 5,000.00	\$ 110,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 15,000.00	\$ 15,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 70,000.00	\$ 70,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 70,000.00	\$ 70,000.00
SP	8847000000-E	RETAINING WALL	7560	SF	\$ 100.00	\$ 756,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 4B	1	LS	\$ 65,000.00	\$ 65,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ 50,000.00	\$ 50,000.00

SUBTOTAL \$1,596,420.00

CONTINGENCY @ 25% \$399,105.00

CONSTRUCTION COST SAY \$1,996,000

Notes:

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N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 5B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 15,100.00	\$ 15,100.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 5,000.00	\$ 5,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	860	SY	\$ 4.00	\$ 3,440.00
520	1121000000-E	AGGREGATE BASE COURSE	540	TON	\$ 50.00	\$ 27,000.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	40	TON	\$ 130.00	\$ 5,200.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	90	TON	\$ 115.00	\$ 10,350.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	30	TON	\$ 120.00	\$ 3,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	10	TON	\$ 650.00	\$ 6,500.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 20,000.00	\$ 20,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	700	LF	\$ 35.00	\$ 24,500.00
848	2605000000-N	CONCRETE CURB RAMPS	4	EA	\$ 3,000.00	\$ 12,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	3	EA	\$ 5,000.00	\$ 15,000.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 20,000.00	\$ 20,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 20,000.00	\$ 20,000.00
SP	8847000000-E	RETAINING WALL	180	SF	\$ 100.00	\$ 18,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 5B	1	LS	\$ 20,000.00	\$ 20,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ -	\$ -
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/MACHINE SHOP RD	1	LS	\$ 50,000.00	\$ 50,000.00
SP		INTERSECTION IMPROVEMENTS AT N MAIN ST/LOGAN ST	1	LS	\$ 40,000.00	\$ 40,000.00

SUBTOTAL \$320,690.00

CONTINGENCY @ 25% \$80,172.50

CONSTRUCTION COST SAY \$401,000

Notes:

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3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated August 2022 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

N Main St Sidepath Feasibility Study

Project Location: Marion, NC
 Project Description: 10' Paved Multi-Use Side Path
 Client: City of Marion
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

Segment 6B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 3,900.00	\$ 3,900.00
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 5,000.00	\$ 5,000.00
520	1121000000-E	AGGREGATE BASE COURSE	50	TON	\$ 50.00	\$ 2,500.00
610	1503000000-E	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	10	TON	\$ 130.00	\$ 1,300.00
610	1523000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	10	TON	\$ 120.00	\$ 1,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	5	TON	\$ 650.00	\$ 3,250.00
SP	2474000000-N	DRAINAGE	1	LS	\$ 10,000.00	\$ 10,000.00
846	2549000000-E	2'-6" CONCRETE CURB & GUTTER	200	LF	\$ 35.00	\$ 7,000.00
848	2760000000-N	6" CONCRETE DRIVEWAY ENTRANCE	1	EA	\$ 5,000.00	\$ 5,000.00
848	2761000000-E	6" REINFORCED CONCRETE PATH	140	SY	\$ 90.00	\$ 12,600.00
SP	4370000000-N	SIGNAGE	1	LS	\$ 5,000.00	\$ 5,000.00
SP	4457000000-N	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 10,000.00	\$ 10,000.00
SP	6133000000-N	EROSION CONTROL	1	LS	\$ 10,000.00	\$ 10,000.00
226	0043000000-N	COMPREHENSIVE GRADING, SEGMENT 6B	1	LS	\$ 10,000.00	\$ 10,000.00
SP		UTILITY RELOCATIONS/ADJUSTMENTS	1	LS	\$ -	\$ -

SUBTOTAL \$86,750.00

CONTINGENCY @ 25% \$21,687.50

CONSTRUCTION COST SAY \$109,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition.
2. Cost opinion does not include engineering, geotech, design survey, or construction administration.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate, and do not account for inflationary cost escalation.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated August 2022 and are subject to revision prior to bid.
6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

APPENDIX D: ADDITIONAL COMMUNITY ENGAGEMENT INFORMATION

A copy of the survey and full results data from the online community survey are provided below and on the following pages:



City of Marion North Main Street Sidepath Feasibility Study Survey Questions

Welcome!

The City of Marion, in partnership with NCDOT is seeking community input on the North Main Street Sidepath Feasibility Study.

The proposed North Main Street Sidepath is a 2-mile corridor connecting Downtown Marion with the Joseph McDowell Catawba Greenway along US-70. The proposed sidepath is a critical missing link in the City of Marion's bicycle and pedestrian network and is an identified corridor of the Foothills State Trail. The North Main Street Sidepath Feasibility Study will evaluate potential route scenarios along North Main Street, US-70, and Catawba River to determine the preferred route. The study will also develop cost estimates and an implementation plan to construct the sidepath.

Your feedback is incredibly valuable and will provide the framework for developing the proposed North Main Street Sidepath in the City of Marion.

Please take a few minutes to respond to the following questions. Thank you!

1. What are the primary reasons you visit North Main Street? *Select all that apply.*

- I live along North Main Street.
- I work along North Main Street.
- I own property or a business along North Main Street.
- I shop, dine, and/or visit businesses along North Main Street.
- I travel along North Main Street to access McDowell High School.
- I travel along North Main Street to access parks, greenways, and/or outdoor recreation.
- I travel along North Main Street to access Downtown Marion.
- Other (please specify)

2. What factors discourage you from biking and walking along North Main Street? *Select all that apply.*

- Lack of existing bicycle and pedestrian facilities along North Main Street.
- Poor maintenance conditions of existing bicycle and pedestrian facilities.
- Lack of safe biking and walking connections to and from North Main Street.
- Unsafe street crossings
- Motor vehicle traffic
- Lack of signage and wayfinding
- Lack of nearby destinations
- Personal safety concerns
- Lack of interest
- Other (please specify)

3. How do you currently use the Joseph McDowell Catawba Greenway? *Select all that apply.*

- For health and exercise
- For recreation
- Walk and/or bike to work and/or school
- Run errands and/or reach essential services

- Other (please specify)
- I do not use greenways.

4. How frequently do you use the Joseph McDowell Catawba Greenway?

- Daily
- A few times a week
- A few times a month
- A few times a year
- Never

5. How would you use the proposed North Main Street Sidepath (connecting Downtown Marion and the Joseph McDowell Catawba Greenway) in the future? *Select all that apply.*

- For health and exercise
- For recreation
- Walk and/or bike to work and/or school
- Run errands and/or reach essential services
- Other (please specify)
- I do not use greenways and sidepaths.

6. How frequently would you use the proposed North Main Street Sidepath (connecting Downtown Marion and the Joseph McDowell Catawba Greenway) in the future?

- Daily
- A few times a week
- A few times a month
- A few times a year
- Never

7. Mark destinations that you would like to access via the proposed North Main Street Sidepath (connecting Downtown Marion and the Joseph McDowell Catawba Greenway). *Map will be provided in the survey to mark destinations.*

8. What is your primary mode of transportation for commuting to work and/or school?

- Walking
- Bicycling
- Transit
- Car (Drive Alone)
- Carpool
- Work from Home
- Other (please specify)

9. Now consider your desired commute in the future. Which modes would you like to use? *Select all that apply.*

- Walking
- Bicycling
- Transit
- Car (Drive Alone)
- Carpool
- Work from Home
- Other (please specify)



10. What is your home zip code?

11. Please provide any additional comments or feedback for the North Main Street Sidepath Feasibility Study.

12. If you would like to stay informed on the development of the study, please provide your email below.

Optional Demographic Questions:

- What is your age?
 - Under 18
 - 18-25
 - 26-34
 - 35-49
 - 50-64
 - 65-74
 - Over 75
 - Prefer not to answer
- What is your gender?
 - Female
 - Male
 - Non-Binary
 - Prefer not to answer
- What is race/ethnicity?
 - Asian
 - Black or African American
 - Hispanic or Latinx
 - Native American
 - Native Hawaiian or Pacific Islander
 - White
 - Other (please specify)
 - Prefer not to answer
- What is your annual household income?
 - Less than \$25,000
 - \$25,000 - \$49,999
 - \$50,000 - \$74,999
 - \$75,000 - \$99,999
 - \$100,000 - \$149,999
 - \$150,000 or more
 - Prefer not to answer

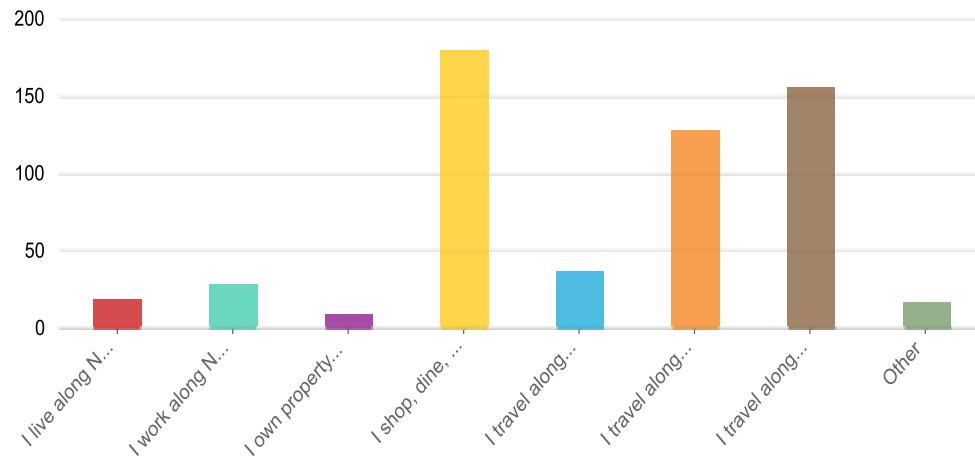
• What is the highest level of education you have completed?

- Less than a high school diploma
- High school diploma or GED
- Some college, no degree
- Vocational Training
- Associates degree
- Bachelor's degree
- Master's degree
- Doctorate degree
- Other (please specify)

• Do you have a disability?

- Yes
- No
- Prefer not to answer

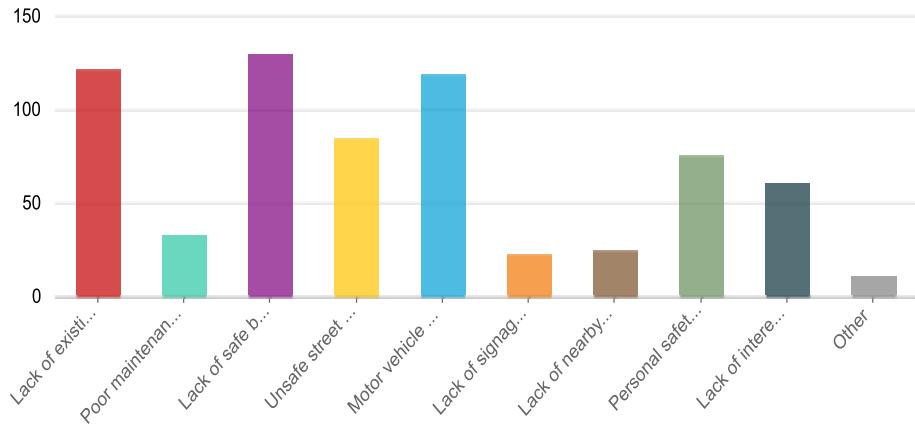
o What are the primary reasons you visit North Main Street? Select all that apply.



Answers	Count	Percentage
I live along North Main Street.	19	8.48%
I work along North Main Street.	29	12.95%
I own property or a business along North Main Street.	9	4.02%
I shop, dine, and/or visit businesses along North Main Street.	180	80.36%
I travel along North Main Street to access McDowell High School.	37	16.52%
I travel along North Main Street to access parks, greenways, and/or outdoor recreation.	128	57.14%
I travel along North Main Street to access Downtown Marion.	156	69.64%
Other	17	7.59%

Answered: 222 Skipped: 2

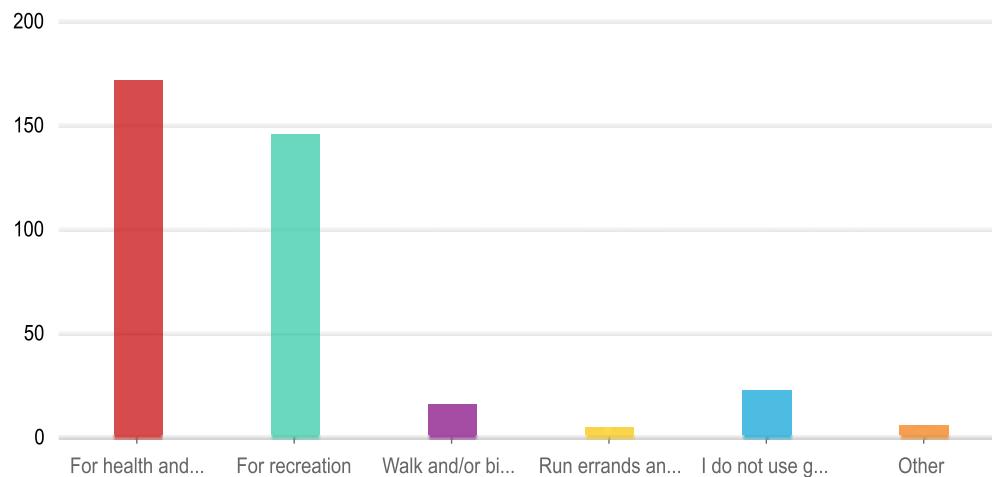
○ What factors discourage you from biking and walking along North Main Street? Select all that apply.



Lack of existing bicycle and pedestrian facilities along North Main Street.	122	54.46%
Poor maintenance conditions of existing bicycle and pedestrian facilities.	33	14.73%
Lack of safe biking and walking connections to and from North Main Street.	130	58.04%
Unsafe street crossings	85	37.95%
Motor vehicle traffic	119	53.13%
Lack of signage and wayfinding	23	10.27%
Lack of nearby destinations	25	11.16%
Personal safety concerns	76	33.93%
Lack of interest	61	27.23%
Other	11	4.91%

Answered: 220 Skipped: 4

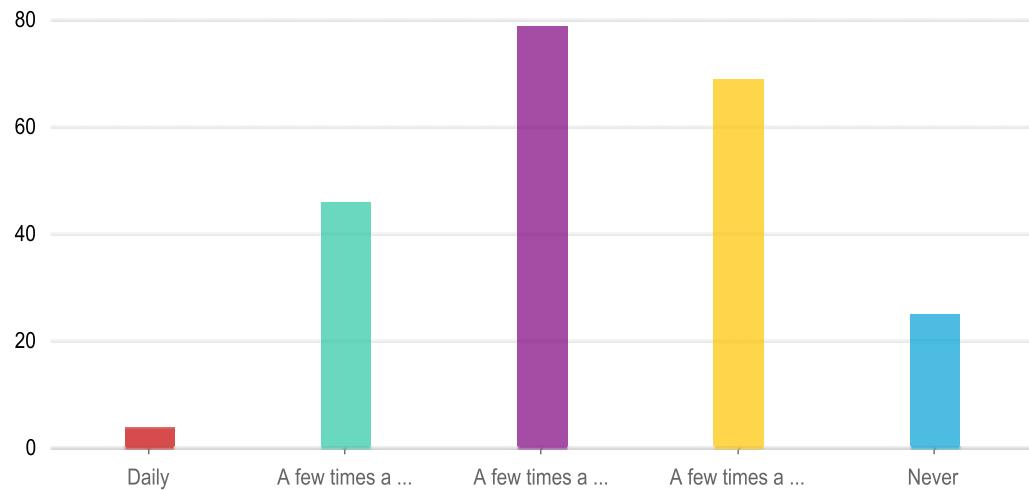
o How do you currently use the Joseph McDowell Catawba Greenway? Select all that apply.



Answers	Count	Percentage
For health and exercise	172	76.79%
For recreation	146	65.18%
Walk and/or bike to work and/or school	16	7.14%
Run errands and/or reach essential services	5	2.23%
I do not use greenways.	23	10.27%
Other	6	2.68%

Answered: 222 Skipped: 2

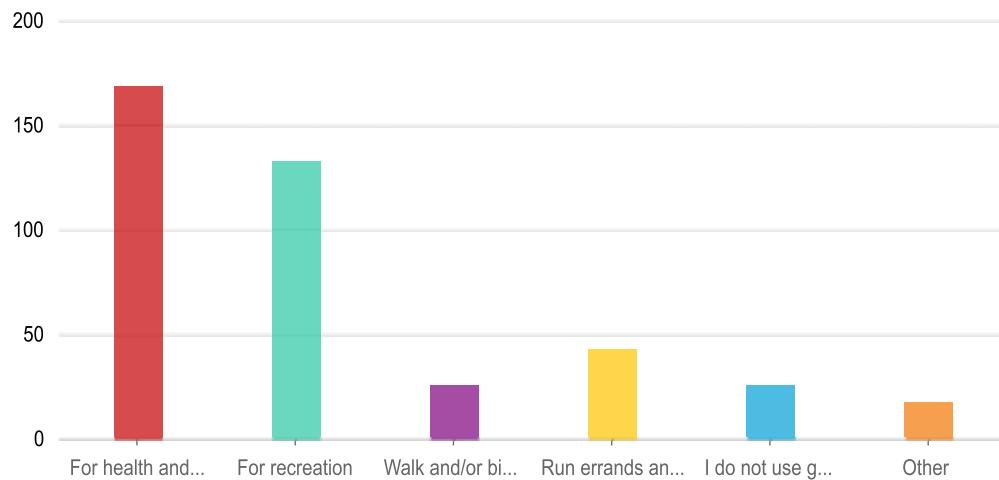
o How frequently do you use the Joseph McDowell Catawba Greenway?



Answers	Count	Percentage
Daily	4	1.79%
A few times a week	46	20.54%
A few times a month	79	35.27%
A few times a year	69	30.8%
Never	25	11.16%

Answered: 223 Skipped: 1

o How would you use the proposed North Main Street Sidepath (connecting Downtown Mario...

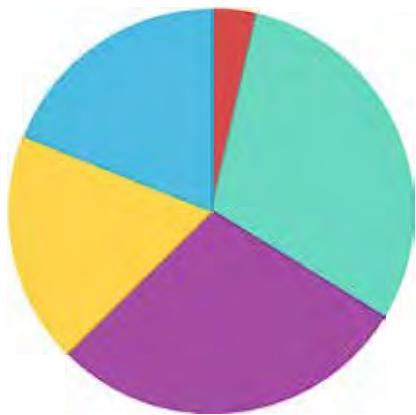


Answers **Count** **Percentage**

For health and exercise	169	75.45%
For recreation	133	59.38%
Walk and/or bike to work and/or school	26	11.61%
Run errands and/or reach essential services	43	19.2%
I do not use greenways and sidepaths.	26	11.61%
Other	18	8.04%

Answered: 221 Skipped: 3

o How frequently would you use the proposed North Main Street Sidepath...

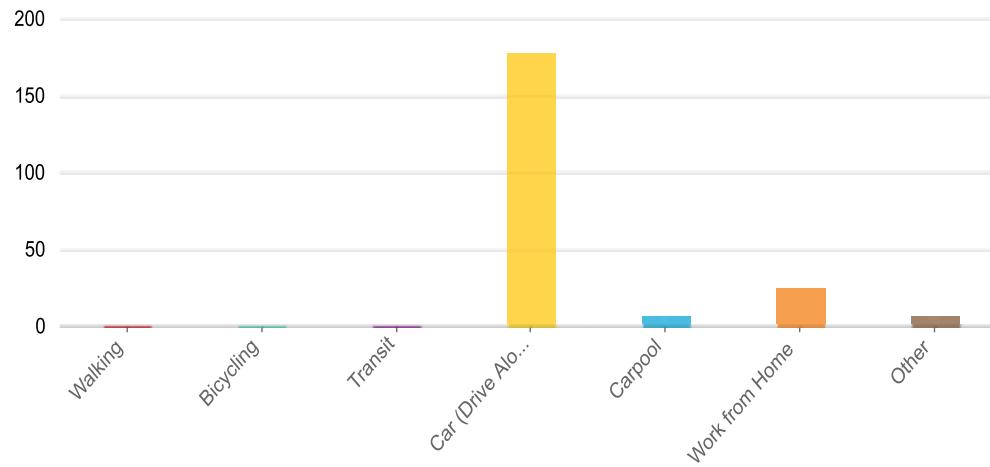


- Daily
- A few times a week
- A few times a month
- A few times a year
- Never

Answers	Count	Percentage
Daily	8	3.57%
A few times a week	67	29.91%
A few times a month	64	28.57%
A few times a year	41	18.3%
Never	42	18.75%

Answered: 222 Skipped: 2

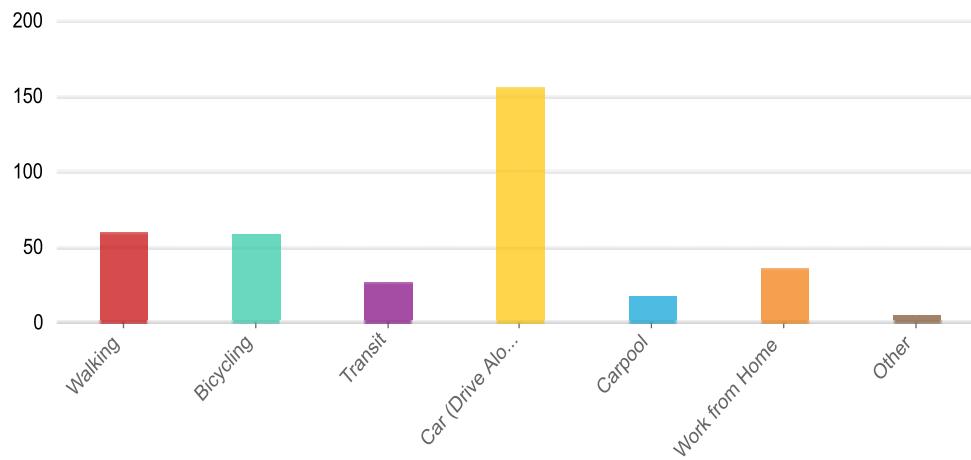
o What is your primary mode of transportation for commuting to work and/or...



Answers	Count	Percentage
Walking	1	0.45%
Bicycling	1	0.45%
Transit	1	0.45%
Car (Drive Alone)	178	79.46%
Carpool	7	3.13%
Work from Home	25	11.16%
Other	7	3.13%

Answered: 220 Skipped: 4

○ Now consider your desired commute in the future. Which modes would you like to use?...



Answers	Count	Percentage
Walking	60	26.79%
Bicycling	59	26.34%
Transit	27	12.05%
Car (Drive Alone)	156	69.64%
Carpool	18	8.04%
Work from Home	36	16.07%
Other	5	2.23%

Answered: 217 Skipped: 7

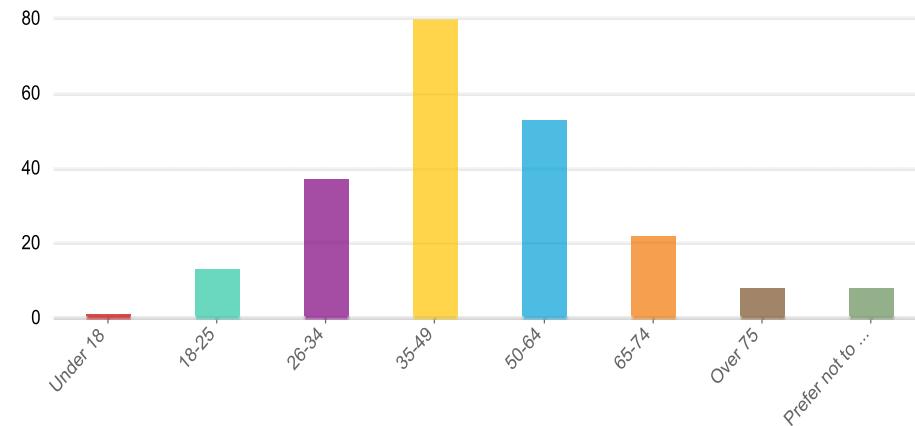
o What is your home zipcode?

highway	1
restiction	1
vote	1
final	1
decission	1
made.	1

Answered: 106 Skipped: 118

> Optional Demographic Questions

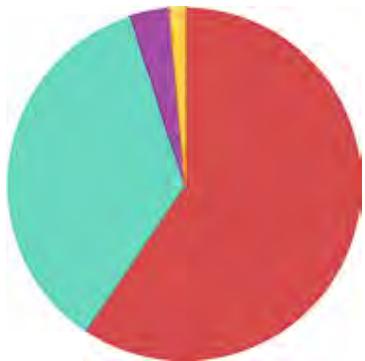
o o What is your age?



Answers	Count	Percentage
Under 18	1	0.45%
18-25	13	5.8%
26-34	37	16.52%
35-49	80	35.71%
50-64	53	23.66%
65-74	22	9.82%
Over 75	8	3.57%
Prefer not to answer	8	3.57%

Answered: 222 Skipped: 2

o o What is your gender?



- Female
- Male
- Prefer not to answer
- Non-Binary

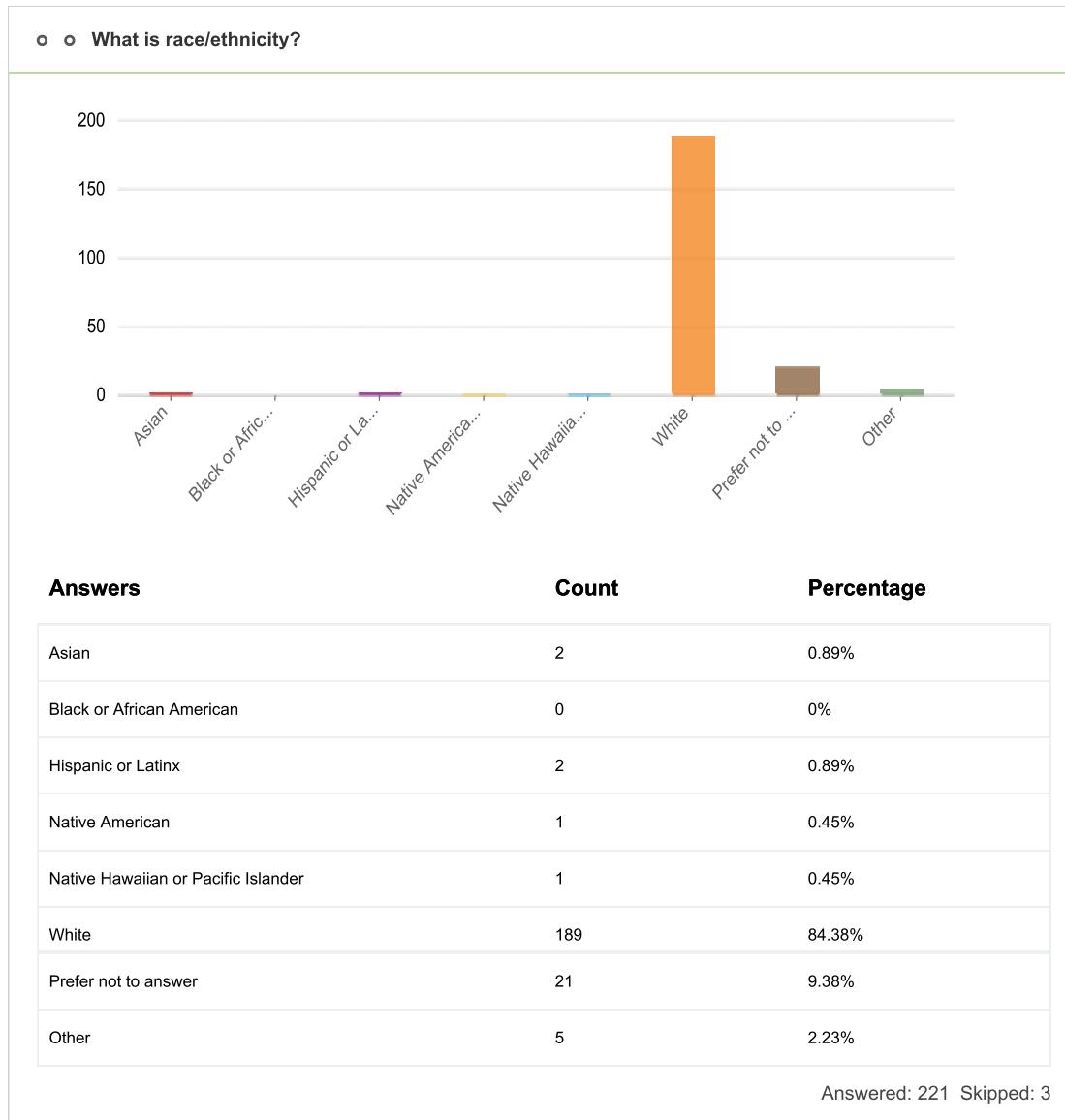
Answers

Count

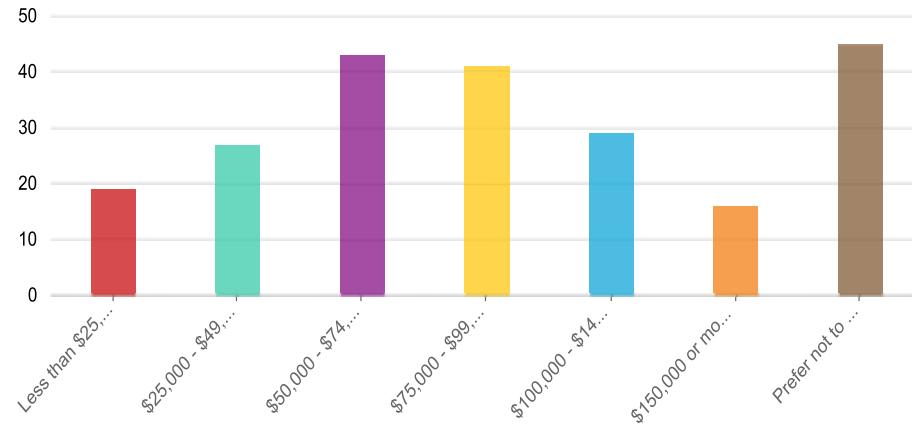
Percentage

Female	132	58.93%
Male	79	35.27%
Prefer not to answer	8	3.57%
Non-Binary	3	1.34%

Answered: 222 Skipped: 2



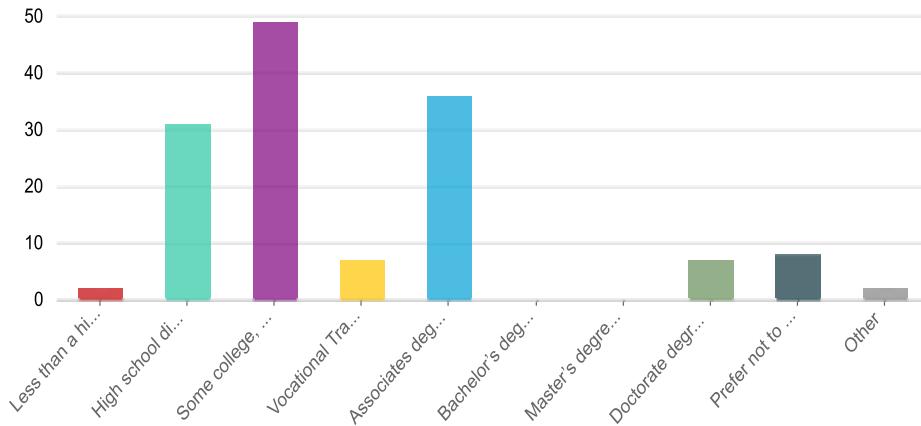
• • What is your annual household income?



Answers	Count	Percentage
Less than \$25,000	19	8.48%
\$25,000 - \$49,999	27	12.05%
\$50,000 - \$74,999	43	19.2%
\$75,000 - \$99,999	41	18.3%
\$100,000 - \$149,999	29	12.95%
\$150,000 or more	16	7.14%
Prefer not to answer	45	20.09%

Answered: 220 Skipped: 4

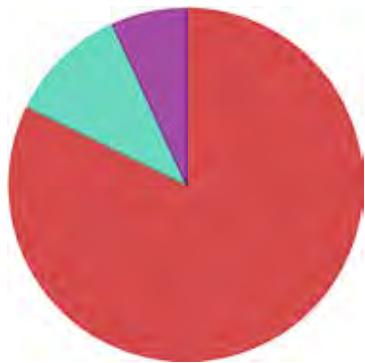
○ ○ What is the highest level of education you have completed?



Answers	Count	Percentage
Less than a high school diploma	2	0.89%
High school diploma or GED	31	13.84%
Some college, no degree	49	21.88%
Vocational Training	7	3.13%
Associates degree	36	16.07%
Bachelor's degree	0	0%
Master's degree	0	0%
Doctorate degree	7	3.13%
Prefer not to answer	8	3.57%
Other	2	0.89%

Answered: 220 Skipped: 4

o o Do you have a disability?



- No
- Yes
- Prefer not to answer

Answers	Count	Percentage
No	181	80.8%
Yes	24	10.71%
Prefer not to answer	15	6.7%

Answered: 220 Skipped: 4

APPENDIX E: P6.0 SPOT SCORING COMPONENT RESOURCES

NCDOT uses a strategic, data-driven process to develop the State Transportation Improvement Program (STIP). The process involves scoring all roadway, public transportation, bicycle, pedestrian, rail, and aviation projects on a number of criteria. Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), and the NCDOT Divisions also contribute to the final project score by assigning local priority points to projects. The current round of prioritization is referred to as "P6.0" which is used to update the 2023-2032 STIP.

HOW IT WORKS

Projects receive a percentage of available revenue in the following three categories: Statewide Mobility (40%), Regional Impact (30%), and Division Needs (30%). The Statewide Mobility projects are 100% data driven and selected based on quantitative scores. Regional Impact projects focus on improving connectivity within regions (7). Selection is based on 70% data and 30% local input. Division Needs projects focus on addressing local needs, and selection is based on 50% data and 50% local input. Projects that receive the highest scores will have a greater chance of being programmed into the STIP.

BICYCLE + PEDESTRIAN SCORING

Bicycle and pedestrian projects are scored in a specific manner. Independent bicycle and pedestrian projects are programmed in the Division Needs category. Eligible bicycle and pedestrian projects submitted for prioritization must be included in a locally adopted plan and have a minimum project cost of \$100,000. Eligible activities include ROW acquisition, design, and construction. Additionally, the STI law prohibits the use of state funding for bicycle and pedestrian projects, requiring municipalities to provide the 20% match for federally funded projects. More details on the scoring for these projects are outlined in the following pages. The scoring mechanism should be used to score the preferred alignment presented in this feasibility study.

For scoring purposes, project criteria include safety, accessibility/connectivity, demand/density, and cost effectiveness. Measure and Division Needs for each are provided below.

CRITERIA	MEASURE	DIVISION NEEDS (50%)
Safety	$(\text{Number of crashes} \times 40\%) + (\text{Crash severity} \times 20\%) + (\text{Safety risk} \times 20\%) + (\text{Safety benefit} \times 20\%)$	20%
Accessibility / Connectivity	Points of interest pts + Connection pts + Route pts	15%
Demand / Density	# of households and employees per square mile near project	10%
Cost Effectiveness	$(\text{Safety} + \text{Accessibility / Connectivity} + \text{Demand / Density}) / \text{Cost to NCDOT}$	5%

To access scoring resources online, follow these two links:

Project ATLAS

<https://connect.ncdot.gov/resources/Environmental/EAU/Project-Atlas/Pages/default.aspx>

SPOT On!ne

<https://gis13.services.ncdot.gov/SpotOn!ne/login.aspx?ReturnUrl=%2fSpotOn!ne%2fdefault.aspx>

Safety Risk

The analysis for Safety Risk is based on all bicycle and pedestrian crashes to identify scores per risk factor, weighted to calculate total score per roadway segment. This information is geoprocessed in SPOT On!ine. It is important to note that the higher the exposure means that the risk is higher, which results in a higher score. Five safety risk factors are outlined in the table below.

RISK FACTOR	BACKGROUND	NOTES	WEIGHT
Location within an incorporated area (includes ETJ)	Overall descriptor for crash locations	Preferred over urbanized/non-urbanized; similar to land use results	10
Surrounding land uses	More refined context descriptor for crash locations, indicates travel	Residential/Commercial rank highest; Agriculture/Vacant, Institutional, Other lower categories	20
Roadway configuration	Median without positive control OR one-way may indicate longer crossing distances	Heavy emphasis on two-way, undivided roadways (over one-way or divided roadways)	20
Posted speed limit	Indicator for risk for severe or fatal crashes	25, 35 mph rank highest; 45, 55 mph mid-tier; 60+ mph lowest scores	20
Annual average daily traffic	Indicates increased risk for crash (exposure)	Highest scores to 15,000-40,000; Mid-tier scores for (2,000-6,000), (6,000-9,000), (9,000-15,000); Lowest scores for roads <2,000 or >40,000	30

Safety Benefit

Safety Benefit assesses the Specific Improvement Types (also referred to as SIT).

BICYCLE	SIT	PEDESTRIAN	SIT	SCORE
New Bicycle/Pedestrian Bridge, New Bicycle/Pedestrian Tunnel, Rail-Trail, Shared-Use Path / Multi-Use Path	1, 2	New Pedestrian Bridge, New Pedestrian Tunnel, Rail-Trail, Shared-Use Path / Multi-Use Path	6, 7	7
Buffered Bicycle Lane, Contra-Flow Bicycle Lanes, Separated Bike Lane, Sidepath	2	Sidepath, Sidewalk	7	6
Bicycle Lane	3	Sidewalk Widening, Trail Improvement	9	5
Paved Shoulder	4	Crossing Island, Curb Extensions, Streetscape / Corridor Improvements	8, 9	4
Bicycle Detection / Actuation, Bicycle Signal, Curb Radii Revisions, Hybrid Beacon, Intersection Markings / Signage, Lighting, Mid-Block Crossing	5	Accessible Pedestrian Signals, Curb Ramp, Lighting, Marked Crosswalk, Mid-Block Crossing, Pedestrian Hybrid Beacon, Pedestrian Signal, Rectangular Rapid Flashing Beacon	8	3
Shared Lane Marking ("Sharrows"), Signage	4			2
Bicycle Corral, Bicycle Parking, Bicycle Share / Micro-Mobility Share, Bicycle Wheel Channel, Wayfinding	5	Wayfinding	8	1

Accessibility / Connectivity

The purpose of Accessibility / Connectivity is to identify projects that provide access to nearby points of interest; improve connectivity between destinations; improve connectivity of bicycle/pedestrian network; and improve access and continuity of designated bicycle routes. The Division Needs are 15%, while the criteria weight for Statewide Mobility and Regional Impact are unavailable.

HOW TO MEASURE

POI # total (no cap) +
Connection # total (no cap/average) +
Route # total

Points of Interest (POI)

POI utilizes Advancing Transportation through Linkages, Automation, and Screening (ATLAS) data and other data layers to measure the number of points of interest within a project buffer.

Project ATLAS: <https://connect.ncdot.gov/resources/Environmental/EAU/Project-Atlas/Pages/default.aspx>

HOW TO MEASURE

1.5-mile buffers for bicycle projects (SITs 1-5)

0.5-mile buffers for pedestrian projects (SITs 6-9)

Specific Improvement Types (SIT)

The nine SITs for bicycle and pedestrian projects are listed below.

NUMBER	SIT	TYPE
1	Grade-Separated Bicycle Facility	Bicycle
2	Off-Road/Separated Linear Bicycle Facility	Bicycle
3	On-Road; Designated Bicycle Facility	Bicycle
4	On-Road Bicycle Facility	Bicycle
5	Multi-Site Bicycle Facility	Bicycle
6	Grade-Separated Pedestrian Facility	Pedestrian
7	Protected Linear Pedestrian Facility	Pedestrian
8	Multi-Site Pedestrian Facility	Pedestrian
9	Improved Pedestrian Facility	Pedestrian

Points of Interest (POI) Categories

POI categories automatically measure the following within SPOT Online:

- Government buildings
- Fire/EMS
- Transit routes
- Schools (K-12, public/private), universities, colleges
- Parks (national, state, and local)
- Tourist destinations (historic districts, major sports)
- Medical (hospitals and public/private clinics)
- Places of worship
- Adult education centers

The following POI categories are manually added by project submitters:

- Employment centers
- Tourist destinations (museums, theaters, auditoriums, historic landmarks)
- Shelters

Connectivity

Points are totaled for connections made by project to various degrees of bicycle / pedestrian infrastructure / projects. Connections are allowed at either end of a project or anywhere along a project (Not required to have connection at endpoints). You may assign one point per each connection to existing bicycle/pedestrian infrastructure or committed bicycle/pedestrian projects. "Committed" means that the project is in the STIP or has local funds. One point (max) may be assigned to any connections to bicycle/pedestrian projects in a plan. Connections should be entered manually by project submitters. ATLAS Pedestrian Bicycle Infrastructure Network (PBIN) should be utilized as the reference layer since it displays existing and planned infrastructure.

Project ATLAS: <https://connect.ncdot.gov/resources/Environmental/EAU/Project-Atlas/Pages/default.aspx>

Designated Routes

Points are assigned if the project is improving a National/State/Regional bike route or is designated as state/federal trails. Two points are assigned if the project is on or improves a designated route. One point is assigned if the project connects to a designated route. NC State Parks State Trails and NC Bike routes are listed below for reference.

NC STATE PARKS STATE TRAILS	NC BIKE ROUTES
Dan River Deep River East Coast Greenway Fonta Flora French Broad River Hickory Nut Gorge Mountains-to-Sea Northern Peaks Overmountain Victory Roanoke River Wilderness Gateway Yadkin River	US 1 - Carolina Connector NC 2 - Mountains-to-Sea NC 3 - Ports of Call NC 4 - North Line Trace NC 5 - Cape Fear Run NC 6 - Piedmont Spur NC 7 - Ocracoke Option NC 8 - Southern Highlands NC 9 - Sandhills Sector Lake Norman Bicycle Route (Regional) Pottery Loop (Regional)

Bundling Projects

Project bundling is allowed across geographies and across varying project types. This means that projects do not have to be contiguous or related. Projects can consist of multiple SITs (SIT used for submittal must be majority by cost). Projects can be within a single municipality, or across multiple governments. However, multiple governments will need to provide documentation of agreement on bundling, local matches, and project management – further requirements documentation will be created by SPOT.

Bundling will be limited by project management requirements rather than geographic limitations. Any bundled project must be expected to be under one project manager/administrative unit. These must be Transportation Alternative Program (TAP)-eligible entity. Bundling projects makes projects more attractive for Local Input Points (LIP) and easier to manage/let.



2022