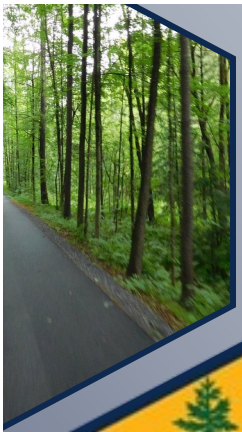
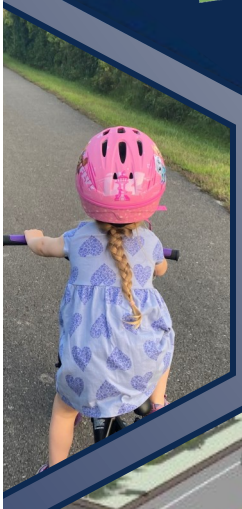
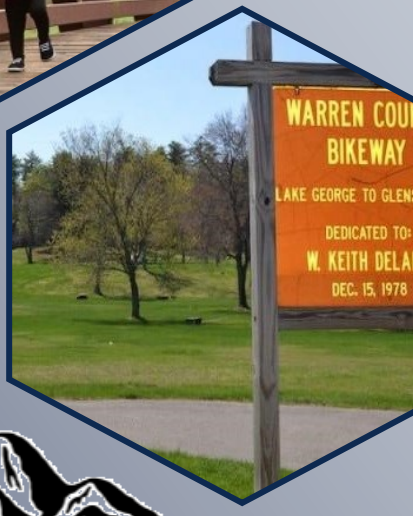


Warren County
Multi-Use Trail Modernization and Connectivity Study

August 2025





Northern Border Regional Commission

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Acknowledgements

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Table of Contents

Executive Summary

Background

Warren County's multi-use trail system is one of its most visible and most heavily used public assets—supporting active transportation, everyday recreation, tourism, and community connectivity across municipal boundaries. As interest in multi-modal transportation and outdoor recreation continues to grow locally and regionally, the Bikeway and Feeder Canal Trail are increasingly relied upon not only as recreational amenities, but as essential infrastructure that supports quality of life, public health, and economic activity. With funding support from the Northern Border Regional Commission, this Study was undertaken to ensure that this system is positioned to meet current and future demands in a safe, accessible, and sustainable manner.

Barton and Loguidice, D.P.C. ("B&L") was retained by the Warren County Planning and Community Development Department to prepare a Modernization and Connectivity Study for the trail system extending from the Village of Lake George and West Glens Falls to the Empire State Trail in Washington County. The Study integrates transportation engineering, long-range planning, and facility management to evaluate existing physical conditions, identify safety and accessibility deficiencies, and define a coordinated set of improvements. This includes analysis of trail surfaces, road crossings, system gaps, and wayfinding. Through these recommendations, the Study establishes a long-term framework for reinvestment in the trail system as a cornerstone of Warren County's outdoor recreation economy and a lasting contributor to community development and regional vitality.

Goals of the Study

Warren County recognizes the trail system's standing as a beloved transportation and recreational amenity and realizes its potential as a regional outdoor recreation economic catalyst. In order to enhance this asset for residents and visitors alike, the goals of the study have been established as the following:

1. **Safety and Inclusivity.** Ensure that the trail system is a welcoming and enjoyable amenity for all by identifying safety concerns and accessibility issues and devising implementable solutions. These solutions are wide-ranging and may take the form of signage addressing rules and regulations, enforcement, public relations, physical improvements, or a combination thereof.
2. **Physical Improvements.** Evaluate existing physical conditions to identify deficiencies and offer industry-proven, innovative solutions that provide a safer and more enjoyable trail experience, as well as reduce long-term maintenance cost and frequency.
3. **Close the Gaps.** Establish a contiguous trail system through exploration of opportunities to convert on-road segments to off-road and, in areas where this is not feasible, ensure safe on-road or roadside facilities.
4. **Connections**. Identify opportunities to connect the trail system to the three downtowns and several nearby recreational, cultural, commercial, and residential attractions and destinations along the trail. Establishing and strengthening these connections will help to unlock the potential of the trail system to be an economic catalyst and produce positive direct, indirect, and induced effects.
5. **Wayfinding and Branding.** Resolve discrepancies, inconsistencies, deficiencies, and clutter among instructional, informational and regulatory signage along, and leading to and from, the trail system. A cohesive, well-planned approach to this will also brand the trail with a distinctive appearance that increases recognition and emphasizes the individual segments as part of a larger, unified linear park.
6. **Amenity Improvements.** Improve overall visitor experience by elevating trail quality and increasing amenities along the trail system that provide convenience, comfort, and lengthening visitation time.

Recommendations

The study has resulted in the identification of 26 recommendations to achieve the aforementioned goals and improve the overall trail system. These recommendations are summarized below by category and are discussed in greater detail throughout this study.

Best Practices for Safety and Inclusivity

1. **Safety Enhancements.** Explore opportunities to add bike patrols, emergency call boxes, mile markers, and safety lighting.
2. **Trail Counters.** Install trail counters at trailheads and key road crossings to collect long-term data on trail use frequency and tendencies.
3. **Establish Consensus on Trail Regulations and Etiquette.** New use types, new ways we interact with our public spaces, and increased visitation will all place stress on the safe and sustainable functionality of the trail system. Clear and consistent information that has been thoroughly vetted should be provided on issues such as dog and pet walking, speed limits, and e-bike usage.
4. **Explore Opportunities for Expanded Four-Season Recreation.** Expanding recreational access to the trail system, or segments of the trail system beyond the shoulder seasons will help brand the Multi-Use Trail as a unique regional destination and provide additional economic benefits to businesses during down times. Impacts on maintenance costs and efforts, such as plowing, trail grooming, etc., must be considered in developing a viable plan. By nature of trail design and setting, certain segments of the trail system will be better suited for certain activities. Accommodation of any winter recreation should also be incorporated and clearly defined within the informational and regulatory signage.

Physical Improvements along Current Trail

1. **Improved Roadway At-Grade Crossings.** There are a total of 42 roadway/access drive crossings along the entire trail system; 36 of these are deemed ADA non-compliant, primarily due to the lack of curb ramps or insufficient passageway width around entrance control objects. Many of these crossings also lack adequate road signage to warn motorists of potential crossings ahead.

   The project team has developed an at-grade crossing standard based on the *Empire State Trail Design Guidelines* (see Section 4.1) and plan to implement the treatment through five pilot crossings over the next two years. If successful, this standard should be applied to other at-grade crossings as appropriate. **At the very least, at-grade crossings should be modified to replace fence barriers with evenly-spaced removable or collapsible bollards that provide a minimum paved travel lane width of 5' on each side**.

Example of utility poles acting as obstructions.

2. **Other Physical Deficiencies.** A total of 61 other physical deficiencies (i.e., washouts, significant cracks, potholes, obstructions, etc.) have been inventoried. The Section 8 Appendix should be consulted during routine maintenance or periods of paving to identify opportunities to correct these deficiencies. Locations of ADA non-compliance should be given priority.

Expanding the Trail's Reach: Connections

1. **Glens Falls Downtown Connection.** Three viable options have been identified (see Section 7):

- Option A (Short-term): Shared-lane markings ("sharrows" on Maple Street).
- Option B (Preferred): Cycletrack or bike lanes on either Bay Street or Ridge Street.
- Option C (Alternative): Sidepath on Warren Street.

2. **Hudson Falls Downtown Connection.** Preferred connection is to establish directional bike lanes on Main Street/State Route 4 (see Section 7).

3. **The Lake George Downtown Connection.** The preferred connection is to establish an enhanced multi-modal trailhead at the corner of Beach Road and Elizabeth Little Boulevard (see Section 7).

4. **New Recreational and Cultural Connections.** Several nearby recreational and cultural assets have been identified; some of these currently exhibit unofficial connections to the trail system. Ensuring safe connections and clear signage will vastly expand interest and activity at these key areas:

   - East Field Park.
   - Hovey Pond and Halfway Brook.
   - SUNY Adirondack Campus.
   - Sullivan Nature Preserve.
   - Gurney Lane Mountain Bike Trails.
   - Warren County Municipal Complex.
   - French Mountain Trail.
   - Bloody Pond (connection should also address site improvements).
   - Lake George Elementary School & McPhillips Preserve.
   - Cooper's Cave.
   - Jointa-Galusha Quarry.
   - Moran-Derby Park
   - Hudson Falls Schools
   - Washington County Municipal Complex.
   - Sandy Hill Art Center

5. **Improved and Enhanced Recreational and Cultural Connections**. A few recreational and cultural assets currently have sanctioned or formalized connections at trail system nodes. Enhancing and maintaining these connections by addressing safety concerns and deficiencies in signage will strengthen these assets as extensions of the trail system:

   - Sagamore Street Park.
   - Colonel Williams Monument.
   - Haviland's Cove Park.

6. **Formalize Neighborhood Connections.** Several neighborhood connections have already been established along the trail system. Connections vary greatly in safety, visibility, and signage. Formalizing and standardizing treatments at these connections will help to strengthen the bond between the trail system and the community:

   - Mason Street.
   - Terra Cotta Avenue.
   - MacArthur Drive.
   - Douglas Avenue.
   - Orchard Drive.
   - Southern Adirondack Independent Living.
   - The Landing at Queensbury.

7. **Strengthen Commercial/Business Connections.** In addition to three nearby downtowns, several commercial entities are located adjacent to the trail system (i.e., the Shirt Factory, Sprinkles Ice Cream, Cooper's Cave Brewery). Collaborating with existing businesses and encouraging new commercial development along the trail corridor will help in establishing the trail system as an economic catalyst. Existing deficiencies in physical connections should be addressed and opportunities to strengthen social connections that raise awareness of the trail while promoting businesses should be explored.

Closing the Gaps

1. **Bikeway Off-Road Gap (Country Club Road and Round Pond Road.** The Bikeway contains a gap in the off-road corridor that necessitates a 1.25-mile traverse on public roads with narrow shoulders and rights-of-way. These unfriendly conditions act as a deterrent along this segment of the trail and discourage exploration and continual enjoyment of the Bikeway. This study identifies to options for addressing the issue:

- Option A : Establish an off-road corridor along the adjacent National Grid powerline and unused area of the Glens Falls Country Club (for switchbacks where steep grades necessitate).
- Option B: Enhance the on-road corridor with separated bike lanes or a side-path.

2. **Feeder Canal Trail Off-Road Gap.** The Feeder Canal Trail contains a gap in the off-road corridor that necessitates a one-mile traverse on busy urban roads, with some minimal accommodations for cyclists or pedestrians. Several potential routes could improve trail user comfort and safety and merit further investigation (see Section 8.5).

Wayfinding and Signage Improvements

1. **Removal of Unnecessary Signage.** Signage that exhibits redundant, inaccurate, or confusing signage content has been identified in several locations and should be removed as soon as possible.

2. **Replacement of Signage.** Illegible, faded, or old sign content has been identified in several locations and should be replaced using the design palette, materials, and typologies defined in Section 10.

3. **Trail Centerline Striping and Pavement Markings.** In higher-use and conflict-prone segments of the trail system, centerline striping and supplemental pavement markings (e.g., directional arrows, pedestrian/bicycle icons, and yield guidance) should be installed to clarify travel behavior, reduce passing conflicts, and improve safety for all users.

4. **Installation of Trailhead Wayfinding Signage.** The study has identified several locations for new wayfinding locations, that should serve as central locations for the dissemination of information for navigational and regulatory assistance. These include:

- Leonard Street Parking Lot (Bikeway).
- Bay Street Road Crossing (Bikeway).
- Country Club Road Parking Lot (Bikeway).
- Country Club Road Junction with Off-Road Facility (Bikeway).
- Round Pond Road Parking Area (Bikeway).
- Birdsall Road Junction with Off-Road Facility (Bikeway).
- Route 9L Access (Bikeway).
- Lake George Battlefield State Park, Northern Trailhead (Bikeway).
- Overlook Park (Feeder Canal).
- Haviland Cove Park (Feeder Canal).
- Glen Lake Road/State Route 9 Parking Area (Feeder Canal).
- Shermantown Road Trailhead (Feeder Canal).
- Murray Park, Hudson Falls (Feeder Canal).
- Five Combines Park (Feeder Canal).

5. **Review and Replacement (as needed) of Educational and Interpretive Signage.** Given the upcoming 250th anniversary of the Revolutionary War, special attention should be given to programs such as the "Making of Nations" signage series through the Lake Champlain Basin Program to promote the area's historic significance in this conflict. Interpretive signage should be designed and installed in a manner that is cohesive with other signage.

6. **Branding and Marketing Campaign.** The new color palette, style, and logo for signage improvements should be incorporated into marketing efforts to create a recognizable and familiar brand to attract new and returning users to the various Multi-Use Trail facilities and events. Information pertaining to implement-ation of this Study should also be disseminated through these formats.

Amenity Improvements

1. **Development of High-Quality Trailheads.** With trailheads of varying levels of convenience and accessibility, opportunities to develop central hubs with standard amenities such as adequate parking, bike racks and repair stations, restrooms, warming areas, and seating should be pursued. Potential locations include:

- Leonard Street Parking Lot.
- Mullen Property (Bay Road Crossing).
- Country Club Road Parking Lot.
- Round Pond Road Parking Area.
- Lake George Battlefield State Park (Northern Trailhead).

2. **Amenity Enhancements.** Amenities targeted at improving trail user experience and lengthening visit time should be installed throughout the trail system. Specific amenity treatment will be dictated by the setting on a case-by-case basis, taking into account factors such as availability of space, visibility, frequency of use, ease of access and maintenance, and other considerations.

3. **Shirt Factory Collaboration.** Warren County should support the Shirt Factory's mission to develop a unique "muralgarten" art exhibit surrounding the vibrant and eclectic facility. The County should look for opportunities to partner with the Shirt Factory and other arts partners such as the Hyde Collection on shared goals that elevate the connection between the site and the Multi-Use Trail.

4. **Colonel Williams Monument Site Collaboration.** The Colonel Williams Monument site is perhaps the most prominent historic site along the Multi-Use Trail system. Access to the site from the Bikeway, however, requires crossing a National Grid berm and ditch and then scrambling up a steep incline via a footpath. Warren County should partner with National Grid, Williams College, and the Warren County Historical Society to bring about improvements to this spur trail, ensuring that this interpretive amenity can be safely and more frequently accessed.

5. **Bloody Pond Site Enhancements.** Bloody Pond is another significant historic site along the Multi-Use Trail. Access to the small pond, however, is blocked by a narrow, privately-owned parcel. Warren County should explore opportunities to provide access from the trail to and around this site, adding to the amenities along the trail.

6. **Four-Seasons Access.** While the trail system is used year-round, it is not maintained in the winter, except for the northern two miles of the Bikeway which is used and maintained by a snowmobile club. The County should develop a plan for the plowing of trailheads and a set of rules for trail use during the winter months.

Section 1: Background

1.1 History

The Warren County Bikeway and the Feeder Canal Trail comprise the trail system corridor. These two trails were built separately in sections from the late 1970s to the 1990s and have been periodically maintained and upgraded over the years. However, recent changes to trail design standards and increased popularity by both tourists and residents have necessitated a comprehensive study of the existing trail system including the development of this Study.

The bikeway primarily follows the former branch alignment of the Delaware & Hudson's Lake George Branch railroad line, originally constructed in 1882. The railroad was primarily used to bring vacationers from New York City and Albany directly to the southern end of Lake George. The Bikeway was constructed in four phases. The first section was established in 1978 and began at the intersection of Glenwood Avenue north to State Route 9. Keith DeLarm, Supervisor of the Town of Hague for nearly two decades, worked to create a bike path through Warren County which was dedicated and named for him upon his death in 1979. Subsequent sections were developed over the next 21 years, culminating with the Leonard-to-Platt Street section in 2000.

The Feeder Canal Trail generally follows the towpath that served as the sides of the canal prism that stretched nine miles from the Hudson River to the Champlain Canal. Commercial transportation was discontinued on the canal in 1941 and the Feeder Canal Alliance, a 501c3, was formed by Gaynell Moore in 1988. Moore's vision was to preserve and restore the Feeder Canal and towpath trail, educating visitors about the canal's history and providing four-season recreational opportunities along the corridor.

1.2 Planning Process

1.2.1 Planning Advisory Committee

At the outset of this study, Warren County formed a Project Advisory Committee (PAC) to assist with leading the project by providing local knowledge, advice, and feedback to the project team. The PAC is comprised of representatives from the neighboring municipalities, County departments, New York State Department of Transportation (NYSDOT), the area's Metropolitan Planning Organization (MPO), stakeholders, local residents, and the project team. The PAC met at key milestones throughout the development of the study where the members provided their input on the presented materials, goals and objectives of the project, and project recommendations. The initial kickoff meeting for the project and with the PAC was held on August 9, 2023 at the Warren County Municipal Center. The subsequent PAC working meetings were held on

January 26, 2024 (via Zoom), April 24, 2024 (via Zoom), and September 16, 2024. The PAC meeting materials and meeting notes can be found in Appendix A. The PAC members are:

- Cassandra Allen, Village of Hudson Falls
- Stuart Baker, Queensbury Planning
- Dan Barusch, Village/Town of Lake George
- Audrey Burneson, NYSDOT
- Patrick Dowd, City of Glens Falls
- Aaron Frankenfeld, A/GFTC
- Celeste Harp, NYSDOT
- Jordan Haskins, Cycling Advocate
- Barbara Joudry, Adirondack Cycling Advocates
- Pamela Landi, Washington County
- Dean Moore, Warren County DPW
- Shelby Moore, NY Power Authority
- Jacquiline Schillinger, NY Power Authority
- Patti Simone, Feeder Canal Alliance
- John Strough, Queensbury Supervisor

1.2.2 Tasks

This Study is the result of a two-year planning process that engaged the PAC, the public, important stakeholders, and key County staff at every step of the process. The chart on the following page identifies project milestones.

- **Project Kickoff Meeting** | June 2023
- **Usage Data Collection** | June—July 2023
- **Site Assessment** | September 2023
- **Online Survey** | October—November 2023
- **Data Analysis** | Data Analysis
- **Glens Falls Public Event** | July 11, 2024 @ Shirt Factory Food Truck Rodeo
- **Hudson Falls Public Event** | July 17, 2024 @ Concert at the Coal Silos (Maple Street)
- **Lake George Public Event** | August 7, 2024 @ ADK Pub & Brewery Wednesday Market
- **Downtown Connections Coordination** | September—December 2024
- **Wayfinding Program Development** | November 2024—January 2025
- **Draft Report** | February - July 2025
- **Public Comment on Draft Report** | August 2025
- **Final Report & Plan Adoption** | September 2025

1.3 Data Collection Methodology

Barton & Loguidice personnel visited the trail corridor during the summer and fall of 2023 to assess and document the existing conditions found throughout the corridor. B&L staff used handheld GPS data collection instruments to record existing conditions and to log geospatial location information along the corridor. Additionally, existing data that included a signage and bollard inventory was obtained by agencies partnered with Warren County. B&L obtained the following data along the corridor:

- Existing trail/path width.
- Surface type and condition.
- Compliance with current design standards.
- Existing operating characteristics such as number of users.
- Presence of trail amenities (i.e., picnic tables, bike racks, benches, etc.) and locations for future installation or needs.
- Current and future connections to the trail corridor.
- Safety concerns.
- Trail deficiencies.
- Trailhead locations.
- Existing tree and vegetation removal needs.
- Options to connect previously disconnected areas of the trail network.
- Roadway crossing compliance for ADA and safety from the perspective of the trail users and roadway users.

1.3 Multi-Use Trail Usage Data

Pedestrian and bicyclist use data was collected by NYSDOT from June 15, 2023 to June 21, 2023 for the Bikeway and Feeder Canal Trail. The data is summarized in Chart 1-1 on the following page. Full data is provided in Appendix B.

Weather can have a significant impact on outdoor recreation. During the data collection period, the observed weather was generally ideal for outdoor recreation. The high temperatures ranged from 61 to 78 F with some scattered showers.

1.4 Previous Completed Plans and Studies

- **Hudson River and Champlain Feeder Canal Regional Waterfront Plan (2008).** This Plan focused on improving water access and recreation on the Hudson River. The bike route catered toward giving greater access to the Hudson River. The document also noted that there needs to be a better connection between

Chart 1-1: Recorded Pedestrian and Bicycle Use Data.

Segment	Avg Daily Pedestrians	Avg Daily Bicyclists	Notes
FCT - Bush St to Polly Beeman Ln	59	16	6/17 & 18 not counted due to equipment issue
FCT - Murray St to Glen St	25	17	6/18 not counted due to equipment issue
FCT - Shermantown Rd. to Cement Plant Rd.	5	23	6/18 not counted due to equipment issue
FCT - Warren St to Main St	25	22	6/18 to 6/21 not counted due to equipment issue
FCT - Burgoyne Ave to Empire State Trail	47	59	
WCB - Hunter St to Ridge St	71	83	6/18 not counted due to equipment issue
WCB - Sweet Rd. to Country Club Rd.	56	67	6/18 not counted due to equipment issue
WCB - Old Military Rd. to NY 9L	34	87	6/18 not counted due to equipment issue

the two halves of the Feeder Canal Trail. The Plan also recommended cycle and pedestrian improvements to the local street network or off-road alternatives. However, no specific proposal was made.

- **A/GFTC Warren County Bike Plan (2012).** This plan was a comprehensive bike plan for Warren County. The plan identified improvements, set short and long-term goals, and facilitated implementation. The project identified several corridors that Warren County and/or A/GFTC have noted as priority corridors. Several priority corridors overlap with this current study, including Glen Street, Bay Street, Ridge Street, and Dix Avenue in the City of Glens Falls, as well as Beach Road in the Village of Lake George.

- **Redevelopment and Connection Plan for Pruyn's Island (2013).** This Plan focused on enhancing industrial uses and adding more recreation use on the Island. The Plan proposed an off-road connection between Downtown Glens Falls and the Feeder Canal Trail West via Elm Street and Park Street through private parking lots. In addition, improving amenities and connectivity to Pruyn's Island was recommended. This would be accomplished by creating gateways to the Island along the Feeder Canal Trail with an additional crossing from Water Street (since completed) to connect residential neighborhoods on the north side of the Feeder Canal.

- **Glens Falls Connectivity Study (2013).** This study focused on assessing transportation mobility issues within the City of Glens Falls. Among the findings were several proposed shared roadways along major corridors, aligning, in theory, with the downtown connections that are a centerpiece of this current study. The shared roadways were earmarked for key thoroughfares like Glen Street, Bay Street, and Dix Street, with future plans for expansion to include Ridge Street and Sanford Avenue. The recommendation for shared roadways stemmed from considerations such as narrow pavement width and the potential loss of parking that would accompany the installation of dedicated off-road facilities, issues that this current study grapples with as well. More so, the plan delved into enhancing the Feeder Canal Trail and Bikeway, proposing various solutions to elevate the user experience. These proposals ranged from routing the Feeder Canal Trail gap along Glen and Warren Street with shared roadways to constructing a new bridge at Shermantown Road across the canal; all ideas supplemented with a signage plan. By outlining corridors and suggesting new infrastructure, many of these proposals aim to enhance cyclist connections within the City of Glens Falls., thus contributing to overall transportation improvements that are multi-modal.

- **Glens Falls Downtown Vision (2013).** This plan focused on implementing zoning changes and beautifying downtown Glens Falls. The plan recommended implementing complete streets projects along Glen, Bay, Ridge, and Warren streets and in the adjacent neighborhoods to accommodate all users. Maple and Walnut Streets were also identified as streets with sidewalks, prioritizing pedestrian safety and comfort.

- **Glens Falls Downtown Revitalization Initiative (DRI) (2016).** The Glen Falls DRI focused on directing investments toward downtown revitalization. To that extent, the guiding document identified the Glens Falls' complete streets guidebook. An off-road connection between downtown and the Feeder Canal Trail to the west was proposed. The routing would be from Elm Street and Park Street through private parking lots and Mohican Street to the Feeder Canal Trail. This proposal was specifically recommended in the Pruyns Island redevelop-ment project.

- **Queensbury South: Brownfield Opportunity Area Pre-Nomination Study (2017).** This study focused on the complex web of intersections close to the Washington County border that the

Feeder Canal Trail intersects. A goal of this study was to implement improved crossings for trail users, as well as better trail amenities. The sponsors are the Town of Queensbury and New York State Department of State.

- **A/GFTC Lake George—Warrensburg Bikeway Extension (2019).** This project, jointly sponsored by A/GFTC and the Town of Lake George, assessed potential routes for extending the Warren County Bikeway from Lake George to Warrensburg. The proposal recommended implementing a buffered bike lane along U.S. Route 9 to cater to interested but concerned cyclists, as well as recommended shared roadways to connect Route 9 north of Lake George to Canada Street. On the west side of Canada Street, a two-way protected bikeway would link to Elizabeth Little Boulevard, while a protected bike path on the north side of Elizabeth Little Boulevard would tie into the existing Bikeway. This proposal through the village could potentially extend the Lake George downtown connection recommended in this current study.

- **A/GFTC Regional Bicycle Plan (2021).** This plan identified various priority corridors and projects throughout the A/GFTC service area. Priority projects identified included several that overlap with this project, such as trail improvements along the Warren County Bikeway and Feeder Canal Trail, or better connections from the trails to neighborhoods and downtowns.

- **Hudson Falls Downtown Revitalization Plan (2020).** This plan, funded through the NYS Department of State Brownfield Opportunity Area (BOA) program, identified projects and strategies to revitalize downtown Hudson Falls. The plan emphasizes connectivity between assets.

- **Update to the Feeder Canal Park Masterplan (2000).** This document outlines a physical and programmatic plan for the entirety of Feeder Canal Park. Many of the recommendations from this 25-year-old study are still relevant, including wayfinding, historic interpretation, trailside amenities, and community connections.

Section 2: Public and Stakeholder Outreach

Key Takeaways

- Robust public participation, in both the online survey and during community events, resulted in clear, well-defined issues to address to make the trail system safer, more accessible, and more enjoyable.
- Replacing the road crossing barriers (i.e., gates or fences) with a consistent physical treatment that allows for ease of navigation and provides adequate clearance and pavement is among the public's highest priority projects.
- Other priorities identified during the public outreach include closing the trail system gaps, providing additional amenities such as restrooms and lighting, and consistent messaging regarding regulations and trail etiquette.

The study included a robust public and stakeholder outreach plan that included individual meetings with key stakeholders, a project website, an interactive project mapping tool, a public survey, and three pop-up events strategically held in each of the downtown connection focus areas (Glens Falls, Hudson Falls, and Lake George). Outreach was a key element of this planning study and necessary in order to ensure the public and stakeholders had the opportunity to review project materials and provide their input on existing conditions, needed improvements, and their vision for the future of the multi-use trail network.

2.1 Project Website and Social Pinpoint

Social Pinpoint was utilized to host the project website (Warren County Connectivity Plan | Social Pinpoint), public survey, and interacting mapping tool. The website was rolled out to the public in October 2023. To advertise the project and website, email links were sent out through the Project Advisory Committee (see Section 2.4.1), links were placed on municipal websites, trail sign yards were placed along the Bikeway and Feeder Canal Trail, and postcards were handed out by volunteers along both trails throughout Columbus Day weekend.

The website served as the central location to share project updates, the project schedule, background information on the project, as well as to guide the public to the survey and interactive mapping tool.

2.2 Public Survey

The online public survey was launched in October 2023 and concluded in December of 2023. In order to better understand the overall trail user profile and survey respondents, the survey asked for general demographic information, frequency of trail use, when they use the trail, where they access the trail, areas that are avoided, improvements they would like to see, among other questions.

The survey resulted in more than 600 comments that are summarized in this section; the full results are included in Appendix A. The Warren County Planning Department also created a webpage to filter and sort the comments by categories using ArcGIS: Warren County Multi-Use Trail Survey Results.

Figure 2-1: Survey Yard Sign for the Study.

The comments were summarized and organized into six main common themes:

- Safety Concerns,
- Amenities and Amenity Suggestions,
- Accessibility and Connectivity,
- Environmental and Maintenance Issues,
- General Observations, and
- Specific Recommendations.

2.2.1 Safety Concerns

- Need for better lighting, including a suggestion for a blue light security system for emergencies.
- Safety concerns at road crossings and road segments, particularly at Bay Street, Country Club Road, and Glen Street where traffic is fast and cyclists and pedestrians are not highly visible. Include improved roadway and inter-section signage.
- The issue of dogs on the trail: both leashed and unleashed, which can pose a safety risk. Enforce the dog laws/rules.
- Improve enforcement of bicycle speed limits.
- Provide a centerline stripe, it will help people keep right and not walk three- and four-wide without regard for bicycles.
- Concern for, and avoidance of, on-road sections when with children. Users may avoid also avoid less traveled areas over safety concerns.
- Comments calling for more police presence to deter unsociable behavior and provide a sense of security.
- Increased presence of homeless individuals, homeless camps, intoxicated individuals, and groups using the trail as gathering spots. This intimidates some users and causes avoidance.
- Patrols are needed for safety and enforcement of rules, potentially by police on bikes.

2.2.2 Amenities and Amenity Suggestions

- Restrooms and water bottle filling stations are a common request, with an emphasis on the usefulness of composting toilets.
- Wayfinding improvements are needed with signs to help locate trails and nearby attractions and updated maps of the trail system would be helpful.

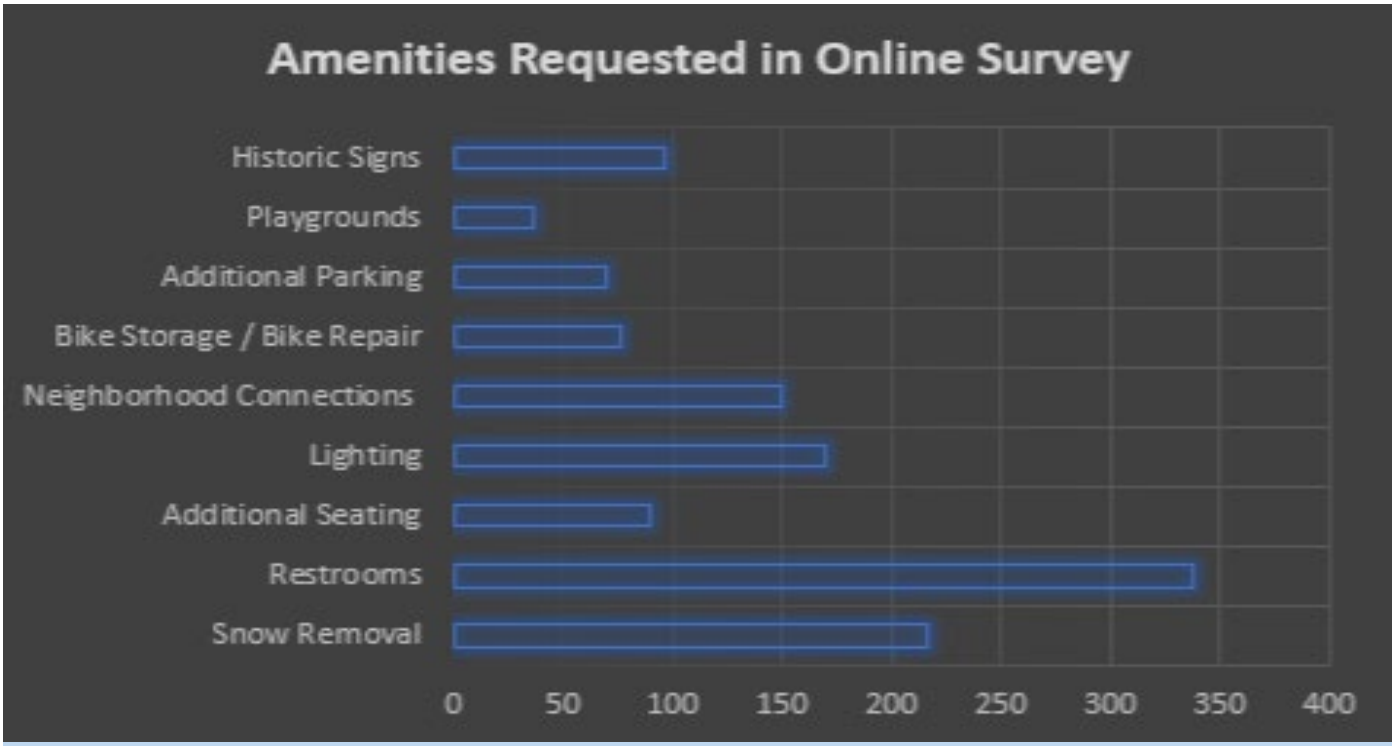


Chart 2-1: Frequency of Certain Amenities Requested for Multi-Use Trail System.

- Suggestions for maintenance, such as repairing roots and potholes, and providing pavement markings for delineation.
- Some indicated a desire for water-based activities at Haviland Cove (such as whitewater rafting).
- Tool stands, bike racks, air supply, and other amenities for bikes were a common request.
- Provide shaded areas or design trail areas to utilize existing shaded areas.
- Recommendations for improvements to trail infrastructure, such as wider paths, better barriers at road crossings, and dedicated bike lanes, especially on shared road sections.
- Instruction and information on biking etiquette will help improve user experience and safety, including e-bike users.

2.2.3 Accessibility and Connectivity

- Better connections from trails to downtown areas and other trails.
- Specific improvements at hazardous crossings, like the installation of pedestrian-controlled stoplight or flashing lights.
- Advocacy for respect toward pedestrians and cyclists, physically challenged by motorists.
- Improve accessibility, ADA ramps, and mobility for all individuals.

2.2.4 Environmental and Maintenance Issues

- Concerns over sections of the trail that become slippery due to moss or are damaged by tree roots.
- Improve stormwater management in certain areas.
- Add environmental education signage along the trails.
- Regular maintenance like snow removal, clearing leaves, and trash management.
- Interest in trail usage in the winter if plowed. snowshoe and x-country ski divots and tracks freeze-over making walking treacherous. Footprints also ice-over making walking difficult.
- There have been mixed feelings about surface materials with some people like stone dust (mostly equestrians and some walkers) and others preferring asphalt (cyclists). Most people who want asphalt cite concern about washouts.
- Emphasis on Shermantown Road and adjacent Feeder Canal Trail to improve maintenance and security.

2.2.5 General Observations

- The trails are valued community assets, but there are concerns about their cleanliness and the behavior of other users.
- There are mixed feelings about allowing dogs on the trails, with some wanting restrictions enforced and others suggesting amenities like waste bags and bins.
- There was a consensus that e-bikers are using the trail at an excessive rate of speed. However, there are mixed feelings on ban (all or certain classes of e-bikes) or restricting the speed of e-bikes.
- Gravel surface is rough to ride on.
- Consider reducing steep grades and hilly areas where possible.
- Various concerns about navigation through the on-street sections is a common theme.
- Update signage; add modern touches to the design.

2.2.6 Specific Recommendations

- Install “yield to pedestrian” signs at dangerous intersections.
- Clearer laws regarding the responsibility of motorists at crosswalks.
- More restrooms and potentially a focus on non-motorized trail use to keep the trails safe and welcoming for all users.
- Need more enforcement where dogs are not allowed, and for leash enforcement.
- Some concerns over how funds will be utilized.
- Better control of unauthorized vehicles accessing the trail, particularly at the Five Combines area.

2.3 Pop-Up Events

Public outreach for the project continued during the summer of 2024 through a series of three pop-up events scheduled at regular events, one for each of the downtown focus areas (Glens Falls, Hudson Falls, and Lake George). The pop-up approach has become a popular and successful format for engaging the public with the project team and the volume of comments and interactions and, over recent years, is proving to be much higher than the traditional, formal, night-time presentation. Many of the conversations with the public for these pop-up events included praise for this approach as it allowed for a more casual conversation, provided an opportunity for input from those that normally would remain silent in a public speaking setting, and offered the public more direct interaction with the project materials. Several interactive maps and boards were available for attended to interact with including voting on preferred downtown connection routes, as well as space to provide comments on what issues are most important to users. Project "business cards" were handed out with the study logo and a QR code to connect people to the project website.

Figure 2-2: Project "business card."

2.3.1 Glens Falls Event

The project team attended the July 11, 2024 Market and Food Truck Corral from 4:30 to 8PM at the Shirt Factory in Glens Falls. The Shirt Factory is located at 71 Lawrence Street & 21 Cooper Street, primarily occupying the block contained within. The site provides direct access to the Bikeway through an informal connection created between Curran Lane and Leonard Street. The Market is a very popular weekly event throughout the summer where many attendees typically walk or bike to the event. The event includes shopping inside and outside, food trucks, craft vendors, and music on three stages. The project team set up a booth with several graphic boards, survey materials, and handouts for visitors to the booth. Approximately 52 people formally engaged with the project team members and reviewed project materials.

From the survey board, the greatest priorities were:

- Close the pathway gaps (11),
- Improve safety (8),
- Improve signage (7),
- Extend trail to new destinations (7).

General comments received included:

- *"Use Edge Lane Road (ELR) Design"*
- *"Fix gates and bollards"*
- *"E-bikes are too fast and interactions with other users need to be improved"*
- *"Please enforce rules"*
- *"Dogs should be allowed, and maybe add doggie bag stations"*
- *"Add bike racks near retail to make it easy to ride and shop"*
- *"Smoking near Cooper Street building is an issue"*
- *"ADA accessibility needs to be improved"*

2.3.2 Hudson Falls Event

The project team attended the "Concert at the Coal Silos" event on Wednesday, July 17, 2025 from 6 to 8PM. The event was hosted by the Feeder Canal Alliance at the historic Feeder Canal Coal Silos located adjacent to the Feeder Canal Trail at 72 Maple Street in Hudson Falls. Approximately 15 attendees stopped in at the project booth to review the project materials and talk with the project team.

From the survey board, the greatest priorities were:

- Close the pathway gaps (5),
- Improve safety (3),
- Clarify rules and regulations, particularly in respect to dogs (3),
- Improve signage (2).

General comments received included:

- *"Replace stop signs (on the trail) with yield signs because it is safer as documented by the US Dept of Transportation's Stop as Yield Fact Sheet."*[1]
- *"Add lighting."*
- *"Add blue light (emergency) call boxes."*

The project team also presented four route options to connect the Feeder Canal Trail with downtown Hudson Falls. The following votes were received:

- Maple Street (3) (mainly due to lower speed limit through the school zone),
- Martindale/Main Street (2) (with possible alternative to N. Oak Street with some sort of work-around near kindergarten and library),
- Main Street only (1),
- Pearl Street (1).

Please refer to Section 7.3 for a map and detailed description of the potential downtown connection routes.

Figure 2-3: Event set up to discuss the study in Hudson Falls.

2.3.3 Lake George Event

The project team attended the August 7, 2024 Wednesday Market in the Adirondack Pub and Brewery and High Peaks Distillery parking lot at 1 Canada Street, Lake George from 3pm to 7pm. This is a weekly event that brings together farms, local artisans, crafters, distilleries, breweries, and entertainment throughout the summer season. There were approximately 20 attendees that stopped by the project booth and engaged with the project team. Among the topics discussed was the "Idaho Stop" concept for road crossings, which allows bicyclists to treat trail stop signs as yield signs. There was also extensive discussion on improvements that could be made to Canada Street, both north and south of the Beach Road intersection, with a familiar refrain that bicycling (or any travel) through the Village will always be challenging.

Other comments on priorities included:

- *"No bollards and no gates."*
- *"Extend the trail on Beach Road to the north."*
- *"Turn Canada Street into two lanes with center turn lane."*
- *"Clarify rules regarding e-bikes."*
- *"Need signs to Village public restrooms."*

Input on potential connections to downtown Lake George consisted of two votes for the south side of Beach Road, separated from the lakeside sidewalk.

[1] The project team noted that "*Stop as Yield*" has been implemented in other states but not in New York at this time. A key distinction with this approach is that the U.S. Dept of Transportation has proposed this at vehicular stop or signal-controlled intersections. This practice is not intended to be implemented for stop signs on the trail at mid-block/uncontrolled roadway crossings.

2.4 Stakeholder Outreach

In order to capture detailed input on high-profile issues and areas, key stakeholders were engaged on an individual basis. A summary of these discussions is provided below.

2.4.1 City of Glens Falls

The City of Glens Falls is a key stakeholder in this study because the City is the focus of one of the downtown connection project objectives, is the southern terminus of the Bikeway, and contains the convergence of the Bikeway and the Feeder Canal Trail. Three focus meetings (April 4, 2024; September 25, 2024; and December 19, 2024) were held with the City to discuss the project goals, the planning process, and future implementation. The meetings were attended by the Mayor, Community Development, Department of Public Works, Engineering, A/GFTC, the County, and B&L. In order to assist with developing recommended solutions for a downtown connection and a Bikeway-Feeder Canal Trail connection, detailed materials were reviewed at these meetings, including potential routes, on- and off-road connections, parking impacts, safety data, and cost estimates. The City of Glens Falls meeting materials are included in Appendix C.

2.4.2 Village of Hudson Falls

The project team had an initial meeting with Mayor Barton and Cassandra Allen, Village Clerk, on October 25, 2024. The meeting was intended to provide an overview of the project, the project goals, and options for the downtown connection from the Feeder Canal Trail to Hudson Falls. The project team presented four potential connection routes. For each potential route, a map, traffic volumes, traffic speeds, the type of on- and off-road facilities, and how each type of facility would be implemented was provided. The potential routes under consideration were Main Street (Route 4), Martindale Avenue to Main Street, Maple Street, and Pearl Street. Three of these routes include roadways under New York State ownership and maintenance jurisdiction, therefore, a second meeting with Greg Wichser from NYSDOT Region 1 Program Management was held on December 6, 2024. The second meeting included a summary of the potential connection routes, evaluation criteria for each route, methods for progressing these projects on state roads, and a list of potential funding opportunities. After extensive discussion, consensus was established among the meeting participants that Main Street (Route 4) was the preferred option as it provides the most direct route between downtown and the Feeder Canal Trail, it would have the least amount of impact to private properties, and it is already a designated State Bike Route. This is discussed in greater detail in Section 7.3; meeting materials are included in Appendix D.

2.4.3 Glens Falls Country Club

The Country Club Road and Round Pond Road on-road segment of the Bikeway were identified as a top priority to address during the inventory of existing conditions (Section 3), the public survey, and the public outreach events. Because of the inadequate accommodations on these roadways, this segment of the Bikeway is generally regarded as a facility gap. The Glens Falls Country Club is directly adjacent to the Country Club Road and is bisected by Round Pond Road. Coordination was initiated on August 2, 2024 to discuss the project in general, identify addressing this on-road segment as a priority, and discuss the operations and future plans of the Country Club as they relate to the Bikeway. Following the initial meeting, the project team investigated conceptual options for improving the existing shared roadways. A shared use path was the preferred option on these roads so as to provide a route that is separated from vehicles. Two concept renderings were developed to show how the shared use path could be implemented on either side of Round Pond Road and how that relates to Country Club property.

A second meeting was held on October 4, 2024 to review the conceptual ideas and it was agreed that a shared use path on the south side of the road would be preferred by the Country Club, and that it is possible that more detailed engineering could further reduce any impacts to the Country Club. The

Country Club will be a supporter of these Bikeway improvements into the future as long as there are no impacts to the regular operations of the course.

2.4.4 Finch Paper

Finch Paper is a premier, vertically-integrated paper manufacturer specializing in high-bright, uncoated papers for North American printing and converting markets that has been in business at their Glens Falls location for more than 150 years. The Finch property follows the north shoreline of the Hudson River primarily between Route 9 to just west of Shermantown Road on both sides of the Feeder Canal. The project team met with Finch Paper on April 24, 2024 to discuss potential options for closing the Feeder Canal Trail east-west gap in Glens Falls. Due to the obstacles of Finch's manufacturing facilities, lumberyard, and 24-7 operation schedule, extending the Feeder Canal Trail along the original canal alignment was deemed to be infeasible.

2.4.5 New York Power Authority

The project team met with Shelby Moore of the Power Authority on March 25, 2024 to review available GIS data, how implementation of recommended improvements could be handled, and to better understand how the Feeder Canal Trail ownership and maintenance jurisdiction details are organized.

The New York Power Authority (NYPA) oversees the operations of the NYS Canal Corporation, which in turn maintains the Feeder Canal Trail. Ultimately, the NYPA has the jurisdictional rights over anything within the Feeder Canal Trail boundaries and they would take lead on any contracts or proposed improvements to the trail. The County or a local municipality could take lead on administering improvements along the trail alignment that are outside of the immediate canal property, such as the at-grade roadway crossings.

NYPA recently completed a wayfinding signage plan for the canal system.

2.4.6 National Grid

National Grid was contacted by the project team to discuss potential shared use of their current property between Sweet Road and Round Pond Road in the Town of Queensbury. This area could provide a direct off-road alternative route for the facility gap that necessitates on-road travel along Country Club Road and Round Pond Road. The property in question currently includes active overhead National Grid electrical transmission lines. A right-of-way entry application was submitted by the project team to allow B&L personnel to access and inspect the property. This work was completed on December 15, 2023. The property presents several difficulties with very steep inclines and declines which would not be inducive to creating an ADA-accessible path, as well as several encroachments by adjacent private properties. This is discussed in further detail in Section 3.2.2 and Section 8.2.3.

National Grid has indicated that the transmission lines are due for an upgrade in the near future but details of that project are not available at this time. Coordination of the potential shared utility right-of-way for the Bikeway and the timeline for upgrades to the transmission line will continue between the County and National Grid.

Section 3: Existing Physical Conditions Inventory and Assessment

Key Takeaways

- Several physical deficiencies have been documented. These present safety hazards, reduce user enjoyment, or serve as blight. This inventory should be utilized to prioritize maintenance and repairs whenever opportunities arise.
- Some of the most serious deficiencies are the inadequate bike and ped facilities along the on-road portions of the trail system. Oftentimes, these deficiencies actively work as a deterrent to the "Interested But Concerned" user group.
- Elevating the trail conditions to recommended and accepted standards will help to establish the Multi-Use Trail as a high-quality facility worthy of recognition as an extension of the Empire State Trail.

3.1 Recommended Design Standards

Typical trail design standards of this nature should utilize the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities (2012)* and the *Empire State Trail Design Guide* ("EST"). Design standards from these guides were used to develop a priority ranking system to address deficiencies in the trail system.

ADA standards applicable to the trail design include maintaining no greater than a 2.0% cross-slope of the trail and a 5.0% running slope, and providing a trail surface that is firm and stable. During the assessment of this project, the cross-slope and running slope were not measured. The cross-slope should be measured and brought up to current standards when the trail segment, or portion thereof, is rehabilitated. Correcting the running slope is not feasible and would be cost-prohibitive to implement as it would require altering the existing terrain throughout the trail system. Any areas that exceed a 5.0% running slope are considered to not meet the current standards.

According to AASHTO guidelines, a pedestrian safety railing with a minimum height of 42" should be installed adjacent to the trail when a clear area of five feet across a maximum slope of 1:6 cannot be achieved and one of the following conditions are present:

- Slope is equal to or steeper than 1:3 for a vertical drop greater than 6 feet.
- Slope is equal to or steeper than 1:2 for a vertical drop greater than 4 feet.
- Slope is equal to or steeper than 1:1 for a vertical drop greater than 1 foot.
- Slope is equal to or steeper than 1:3 adjacent to a parallel body of water or other substantial obstacle.

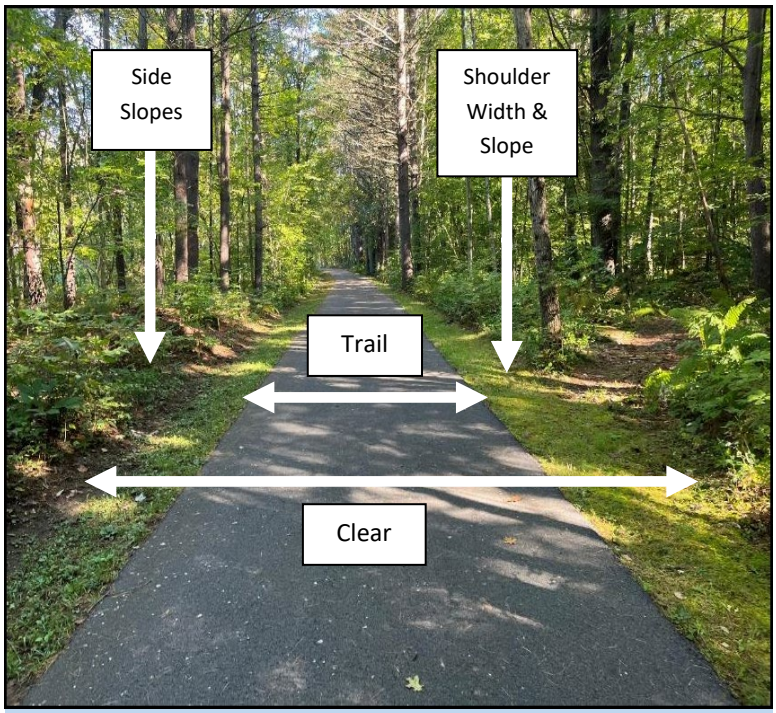


Figure 3-1: Corridor Dimensions & Measurements.

Chart 3-1: Recommended Design Standards.

Element	Standard
Minimum Design Speed	18 MPH
Multi-use Trail Width:	12 ft. (Min.)* 10-14 ft. (Rec.)**
Multi-use Trail Shoulder Width (without railings) Slope of 1V:6H Slope of 1V:3H	2 ft. (Min.) 3-5 ft. (Rec.) 5.0 ft.
Distance between edge of trail and top of slope without barrier	5 ft.
Maximum Grade (ADA Compliance)	5% (Max.)
Minimum Horizontal Curve Radius	120 ft.
Path Cross Slope (ADA Standard):	2.0% (Max.)
Stopping Sight Distance	300 ft.
Lateral Clearance (from edge of trail)	1.0 ft. (to fence) 2.0 ft. (to obstruction)
Vertical Clearance	8.0 ft. (Min.) 10.0 ft. (Rec.)
Bridge Structure Capacity (Emergency vehicle)	H-20
Pedestrian Safety Rail Height	42 inches (Min.) 54 inches (rec. over water)

Notes:

** Design standard established is a 10-foot width; however, short segments with an 8-foot width may be adequate in areas of limited physical width or other obstructions.*

*** A 10-foot wide trail should only be used in areas with moderate use and low levels of mixed pedestrian and bicycle use.*

3.2 Bikeway Corridor Conditions Evaluation *(map on page 32)*

The existing Bikeway corridor consists of an asphalt-paved multi-use trail that spans approximately 9.9 miles from Platt Street in the City of Glens Falls to Beach Road in the Village of Lake George. The path is mostly separated from adjacent roadways, except in a few areas within Glens Falls and a portion of Route 9 near the former Magic Forest Amusement Park. There is also one major gap in the separated trail system at Country Club Road and Round Pond Road in the Town of Queensbury. The Bikeway ends abruptly at Country Club Road and begins again on Birdsall Road. Along this section, there are no separate provisions for bicyclists or pedestrians; rather, trail users are accommodated on four to five-foot wide shoulders adjacent to travel lanes.

For the purposes of this study, in order to better understand the varying conditions and treatments, the Bikeway has been divided into five distinct subsections, based on the unique setting of each segment. They are as follows:

- Platt Street to Country Club Road.
- Country Club Road to Birdsall Road.
- Birdsall Road.
- Birdsall Road to State Route 9.
- State Route 9 to Elizabeth Little Boulevard.

A map depicting these segments can be viewed at the end of this section.

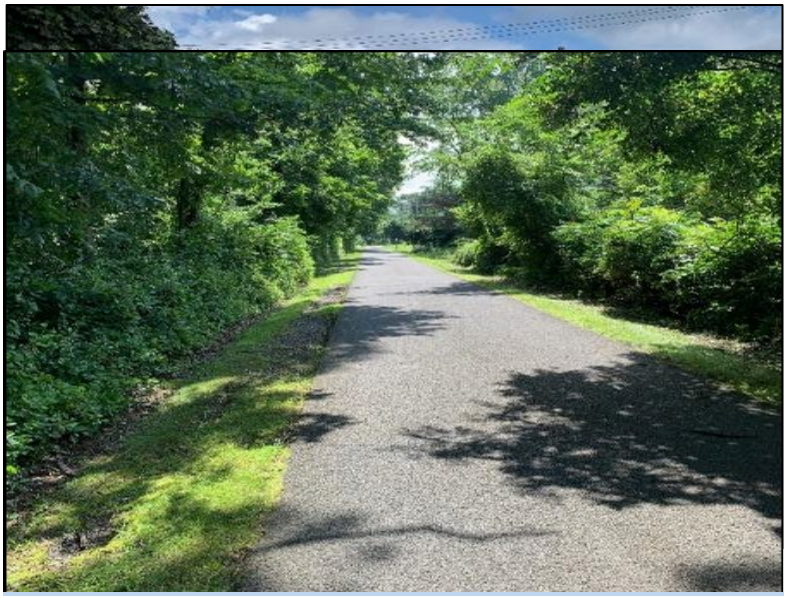


Figure 3-4: Bikeway between Lexington Ave. and Bay Road.

Figure 3-3: Bikeway along Cooper Street.

3.2.1 Platt Street to Country Club Road

This segment of the Bikeway consists primarily of a 10 foot wide asphalt multi-use trail that is in good condition and well-maintained. This width generally meets the current recommended standard though volume along this segment suggests that a width of 12 to 14 feet may be warranted. Additionally, an established sidepath spur from McDonald Street to Warren Street is frequently used for vehicle parking resulting in this segment being unavailable for use.

The route is generally flat and traverses adjacent to residential properties and commercial businesses. The street network along this segment is well-

Figure 3-5: Bikeway Along Woodvale Road.

Figure 3-6: Western Shoulder of Country Club Road.

Figure 3-7: Eastern Shoulder of Country Club Road.

established, resulting in 20 road crossings that are in varying need of upgrades to meet current multi-use trail crossing standards. Common deficiencies include faded and peeling crosswalk markings, non-standard or absent pedestrian and bicyclist crossing warning signage at the crossing location, and a lack of detectable warning units.

3.2.2 Country Club Road to Birdsall Road

The isolated multi-use trail ends where it meets Country Club Road. From here, bike route signs guide bicyclists along the four to five-foot wide shoulders of Country Club Road and Round Pond Road. There are no separate pedestrian facilities along this stretch of the Bikeway. Combined pedestrian and bicyclist warning signs (W11-15) and "Share the Road" plaques warn drivers that there may be pedestrian and bicyclist activity on the roadway.

Country Club Road has a posted speed limit of 45 mph and an estimated Average Annual Daily Traffic (AADT) count of 5,000 vehicles per day (vpd). Round Pond Road has similar characteristics with a posted speed limit of 40 mph and an AADT of 4,331 vpd.

Constraints along Country Club Road consist of the Glens Falls Country Club to the west, as well as numerous trees that separate the Country Club from the roadway. The line of trees is located approximately six feet from the edge of pavement. The right-of-way boundary to the west is approximately seven feet from the edge of pavement of Country Club Road, and approximately 11 to 12 feet on the east side. There are also several residences along Country Club Road near Wincrest Drive and Browns Path. Utility poles line the east side of the road, approximately three feet from the edge of pavement. A farm with a barbed-wire fence is also adjacent to the road.

Constraints along Round Pond Road from the intersection of Country Club Road to Birdsall Road consist of trees, steep side slopes, guiderail, and utility poles. Additionally, there is a sharp curve in the middle of this segment of roadway where a

crossing serving the golf course is located. The right-of-way width from the edge of pavement ranges from 8 to 12 feet on the northside of the roadway and 5 to 8 feet on the southside.

National Grid owns a right-of-way corridor that runs parallel to the Bikeway from Quaker Road north past Round Pond Road. B&L staff investigated this utility corridor for use as an alternate route to close this gap between Country Club Road and Birdsall Road. The existing terrain along this route has significant challenges to overcome including steep sections, potential wetland impacts, and property encroachments. Land use grades approach 30% in some areas, well above the maximum 5% for an ADA compliant multi-use trail. This alternative is addressed in greater detail in Section 8.2.3.

Figure 3-8: Round Pond Road Looking East at Sharp Curve.

3.2.3 Birdsall Road

Birdsall Road is a local dead-end roadway that connects Round Pond Road to residences on or near the shore of Glen Lake. This road is labeled as part of the Bikeway and "Bike Route" signs direct users onto this roadway. However, there are no warning signs or pavements markings on Birdsall Road to alert drivers that they should expect bicyclists and pedestrians on the road. The total pavement width of Birdsall Road varies from 24 to 27 feet with little clear width adjacent to the road-way due to the close proximity of trees and slopes. The roadway also has tight curves that result in poor sight distances for drivers.

Figure 3-9: Narrow Pavement Width on Birdsall Road.

Similar to Country Club Road, an alternative to the Birdsall Road connection would utilize the adjacent National Grid ROW and utility corridor to connect a shared gravel parking area to the existing off-road segment of the Bikeway just north of Birdsall Road. This route currently consists of a dirt maintenance pathway used to maintain the existing utility lines and is generally level in grade. There is a 250-foot section of this alternative that may be challenging to navigate between Birdsall Road and Marley Way. The current path traverses this section on private land, rather than remaining within the National Grid ROW. It is unknown if an easement exists for National Grid to access this land or not. Remaining

Figure 3-10: Tight Curves on Birdsall Road.

Figure 3-11: Dirt Maintenance Road along National Grid ROW.

Figure 3-12: View of Round Pond from National Grid ROW.

Figure 3-13: View from bridge over Glen Lake inlet.

within the National Grid corridor through this segment would be challenging as the terrain rises and declines approximately 15 feet between Marley Way and Birdsall Road.

3.2.4 Birdsall Road to State Route 9

This 2.9-mile segment of the Bikeway is almost entirely off-road, with as short 400-foot section of the Bikeway on a large shoulder along Ash Drive. There are two at-grade roadway crossings of Ash Drive and Glen Lake Road. The Bikeway through this segment consists of a 10-foot wide asphalt path with 12 to 16 feet of total clear width within the corridor. The running grade of the trail exceeds 5% in several locations as it traverses along the National Grid ROW. There are also two bridge structures along this segment, one crossing a tributary to Glen Lake and another crossing State Route 149. The bridges appear to be in good condition and were not structurally investigated as part of this report. The bridge over an inlet of Glen Lake also serves as a popular accessible fishing destination for local families. Any future improvement to this bridge structure should consider further accommodating anglers while recognizing the stunning vista to the west.

Generally, the utility poles through this segment are located adjacent to the 10-footwide path. However, one small stretch has three utility poles installed directly in the middle of the trail. The embankment width through this stretch is very narrow as it traverses a causeway parallel to Canterbury Drive, just south of Ash Drive. The path is lined with timber guiderail on both sides and the paved area is approximately five feet wide on both sides of the poles, with a three-foot gravel shoulder between the asphalt and the fence.

Continuing north, the on-road segment that runs parallel to Ash Drive is not signed as a bike route but a white pavement stripe is assumed to delineate the vehicular traveled way from the ten-foot wide asphalt bikeway shoulder. An informal gravel and dirt parallel parking lane is located on the edge of the pavement on the south side of Ash Drive.

North of Ash Drive, the Bikeway continues separate from a roadway, generally running parallel to the National Grid-owned utility lines. The 10-foot wide asphalt path traverses through more remote sections of the Town of Queensbury than previously experienced in the City of Glens Falls. B&L staff noted minor deficiencies and imperfection through-out this portion, such as potholes, shoulder wash-outs, significant cracking, uneven surface conditions and drainage issues. There were 12 instances of these deficiencies noted along the remaining 2.4 miles until the Bikeway reaches State Route 9.

Figure 3-14: Bikeway adjacent to Ash Drive.

3.2.5 State Route 9 to Elizabeth Little Boulevard

This segment of the Bikeway begins where it meets State Route 9 in the area known locally as “Magic Forest.”

For the first 0.25 miles, the Bikeway is adjacent to State Route 9, separated by a run of guiderail or curbing between the roadway and the path. This small portion contains several safety concerns: At nine feet wide, the asphalt path is less than the minimum recommended standard and has a steep drop off in many places to the east of the path. The asphalt path directly behind the Route 9 guiderail is also a hazard as the box beam guiderail has a deflection distance of five feet and, if it were impacted by a vehicle, the vehicle and guiderail would enter the multi-use path and impact any users present. The posts for the guiderail also have sharp angles that could pose a safety hazard to trail users if they inadvertently brush up against the guiderail. The Bikeway also crosses several driveways and two private roadways through this segment. There is no signage at these crossings to warn drivers of the presence of the Bikeway and potential for pedestrians or bicyclists. Additionally, there are no bollards or signage to deter motorists from accessing the Bikeway with their vehicle. “Bike Lane” pavement markings are faded and should be replaced.

Figure 3-15: Typical Bikeway Setting North of Ash Drive.

Figure 3-16: Typical Bikeway Setting North of Ash Drive.

The Bikeway then separates from State Route 9 and heads down the embankment toward Old Military Road. This portion is generally in good condition and meets the minimum standards. There are a few

Figure 3-17: Pothole and Moss Growth on the Bikeway.

Figure 3-18: Bikeway with Guiderail Adjacent to Route 9.

Figure 3-19: Typical Bikeway Setting North of State Route 9.

minor deficiencies, such as an area of steep slopes adjacent to the path where timber railing should be considered.

The Bikeway then joins Old Military Road for a short stretch of on-road travel. The existing pavement width on this portion is 20 feet, which is below the guidelines for an on-road segment of trail. However, Old Military Road is a dead-end roadway that only serves as access to five residences and has very low vehicle volumes. The signage on Old Military Road does not meet current standards for a shared on-road bikeway.

Continuing north from Old Military Road, the Bikeway separates again from the roadway traverses through generally remote sections of the Town of Queensbury and Village of Lake George. There are two large at-grade crossings, one at Fish Hatchery Road and one at Fort George Road. There is also a truss bridge over State Route 9L. The Bikeway ends at Elizabeth Little Boulevard in the Village of Lake George with stunning views looking up the Lake. The 10-foot wide path here is generally in good condition with minor deficiencies noted.

Figure 3-20: Junction Between Bikeway and Old Military Road.

Figure 3-21: Approach to the Fish Hatchery Road Crossing.

Figure 3-22: Bikeway Bridge Over Route 9L.

Figure 3-23: Typical Bikeway Setting North of Old Military Rd.

Figure 3-24: Bikeway adjacent to Beach Road, near terminus.

3.3 Feeder Canal Trail Conditions Evaluation

The Feeder Canal Trail is a 7-mile long trail that extends from Haviland Avenue at Overlook Park eastward to the Empire State Trail in Washington County. The trail follows the historic towpath of the old Feeder Canal, which provided water from the Hudson River to the highest point of the Champlain Canal near Fort Edward, guaranteeing adequate water supply at its summit.

Similar to the Bikeway, the Feeder Canal Trail has been divided into subsections to better understand the various settings and treatments. The four sub-sections are:

- Haviland Avenue to Glen Street
- Glen Street to Shermantown Road
- Shermantown Road to Hudson Falls Main Street
- Hudson Falls Main Street to Empire State Trail

A map depicting these segments can be viewed at the end of this section.

3.3.1 Haviland Avenue to Glen Street

This segment starts at the western-most end of the trail at Overlook Park on Haviland Avenue. The Trail

begins at a trailhead that has an asphalt paved parking area with ample room for users to park their cars. Parking spaces are not delineated. There are also several amenities at this trailhead such as a small pavilion, picnic table, trash receptacles, benches, and informational signage. The trail starts north of the feeder canal and crosses over the canal on a bridge. The trail is a 4-foot wide asphalt path that does not meet width standards for a multi-use path. There is plenty of flat, clear area adjacent to the trail for users to step off the asphalt in order to pass others. Once on the south side of the canal, the trail becomes a 9-foot wide stone dust path. The path has several noted deficiencies such as uneven surface, washouts, undefined edges, washouts on the side slopes, narrow shoulders, and areas where railing should be considered.

Figure 3-25: Four-Foot Wide Asphalt Path Through Overlook Park.

Figure 3-26: Typical Stone Dust Trail Adjacent to Feeder Canal.

Figure 3-27: Typical Segment of the Trail Adjacent to Feeder Canal.

Trail amenities such as benches are located frequently throughout this segment, often placed overlooking the feeder canal or other scenic areas. There are also a few areas with robust railing through this segment. Although this railing is located on the opposite side of the water, most likely to keep users from veering off the path. Roadway crossings at Bush Street and Murray Street do not meet current multi-use path crossing standards including deficiencies with the signage and pavement striping at these areas. There are also trailheads at these crossing locations that have poorly defined parking and vehicle access and no vehicular control to keep motor vehicles off of the path. The trailheads have several amenities including wayfinding and educational signs and trash receptacles.

Figure 3-28: Feeder Canal, Trail, and Railing.

3.3.2 Glen Street to Shermantown Road

Currently, the Feeder Canal ends at Glen Street (U.S. Route 9) in the City of Glens Falls. There is no off-road connection between Glen Street eastward to Shermantown Road. This gap is slightly less than one mile in length. Please see Section 8 of this Study for an analysis of joining these segments.

Figure 3-29: Bush Street trailhead with signage.

3.3.3 Shermantown Road to Main Street

The trail resumes the off-road route at Shermantown Road and continues east from there. Several amenities are located at this trailhead, such as informational and educational signage and a bench. There are no formal vehicle parking spaces at this trailhead, though some users park alongside the roadway here. The stone dust trail continues east at varying widths, from five feet to 10 feet wide, which does not meet standards for multi-use trails. Several deficiencies such as surface and side slope washouts, and steep side slopes were noted along this segment. Amenities such as benches are placed sporadically throughout this segment of the trail and mostly concentrated at the trailhead or roadway crossing locations.

Figure 3-30: Murray Street Parking Area.

There are three at-grade roadway crossings along this segment of the trail, including one major crossing of River Street (State Route 254). This crossing meets current standards and includes pavement striping, advanced warning signs, and a Rectangular Rapid Flashing Beacon. Stop signs are present on the trail approaches. The minor roadway crossings of Warren Street and an industrial roadway do not meet current roadway crossing standards and should be improved. The canal through this segment is contained by a concrete wall on the south bank of the canal. In some instances, the trail is within three feet of this wall and drop off into the canal.

Figure 3-31: Shermantown Road Trailhead and Informational Signage.

3.3.4 Main Street to Empire State Trail

The last segment of the Feeder Canal Trail exhibits many of the same conditions as the other two, including a non-standard varying width stone dust path, deficiencies such as washouts and steep slopes, and amenities such as informational and educational signage and benches. Short portions of the trail from the Main Street and Martindale Avenue. intersections double as on-road segments that that provide access to one and three residences, respectively. Signage indicating that this is a shared roadway is not present. The on-road portion of the trail and the segment from Martindale Avenue to Maple Street is asphalt paved and 10 feet wide, meeting the minimum requirements for a multi-use path. East of Maple Street, the path resumes the stone dust surface.

Figure 3-32: Narrow Trail Adjacent to Canal Wall & Railroad Bridge

The five roadway crossings, including Main Street, all exhibit various levels of deficiencies such as insufficient signage, faded and peeled pavement markings, and inadequate wayfinding signage that can result in user confusion.

A complete inventory of deficiencies recorded along the trail system can be found in Appendix E.

Figure 3-33: Example of Trail Surface Washout.

3.4 Existing Conditions Recommendations

3.4.1 Bikeway Recommendations

Overall, the Bikeway is well-maintained, with a

consistent asphalt paved width of approximately ten feet. This provides for a smooth riding/walking surface with few hazards. Adjacent to the trail, the graded shoulder is mowed and generally meets the recommended recovery width for errant bicyclists. However, there are segments of the trail that exhibit multiple deficiencies and need more maintenance attention than others. Specifically, the segment of the trail from State Route 149 north to Bloody Pond Road exhibits more deficiencies than the other segments of the Bikeway. Additionally, the segment of the trail from Bloody Pond Road to Elizabeth Little Boulevard exhibits more frequent localized hazards, such as potholes or tree root cracks, than the southern portion of the Bikeway. There are also a few locations where steep drop-offs are present adjacent to the trail. Any drop-offs of more than four feet with a steep slope and less than five feet of shoulder width should be under consideration for the addition of a safety railing. However, it is noted that there are no known reports of bicyclists falling down the steep slopes adjacent to the trail. Please refer to Appendix E for comprehensive figures and tables of the local and segment deficiencies. **The County should consider assigning priority to improving the areas with the greatest number of deficiencies.**

Managing User Conflict/Various User Groups

Several comments were received during the public outreach campaign that suggested the Bikeway should be widened to accommodate more users. The comments stated that users regularly walk three to four people wide, completely taking up the width of the trail and making it difficult for cyclists to pass them from behind. However, the trail user data collected by NYSDOT indicated that less than 150 pedestrians and cyclists use the trail on a given day. The AASHTO Guide for the design of bicycle facilities recommends that paths wider than ten feet are considered when peak hour user volumes exceeds 300, or when approximately 30% of the users are pedestrians. Given that the volume of pedestrians often exceeds the number of cyclists, installing a wider path (11 to 14 feet) may be advisable, especially in more densely populated areas such as the City of Glens Falls and the Village of Lake George.

Striping multi-use trails is another low-cost practice to manage different user groups. A centerline can be used to delineate which side users should be using as well as provide a clearer passing zone for cyclists. Striping of trails should be reinforced through clear and consistent messaging on wayfinding.

Figure 3-34: Narrow Trail Adjacent to Canal Wall & Steep Sideslope.

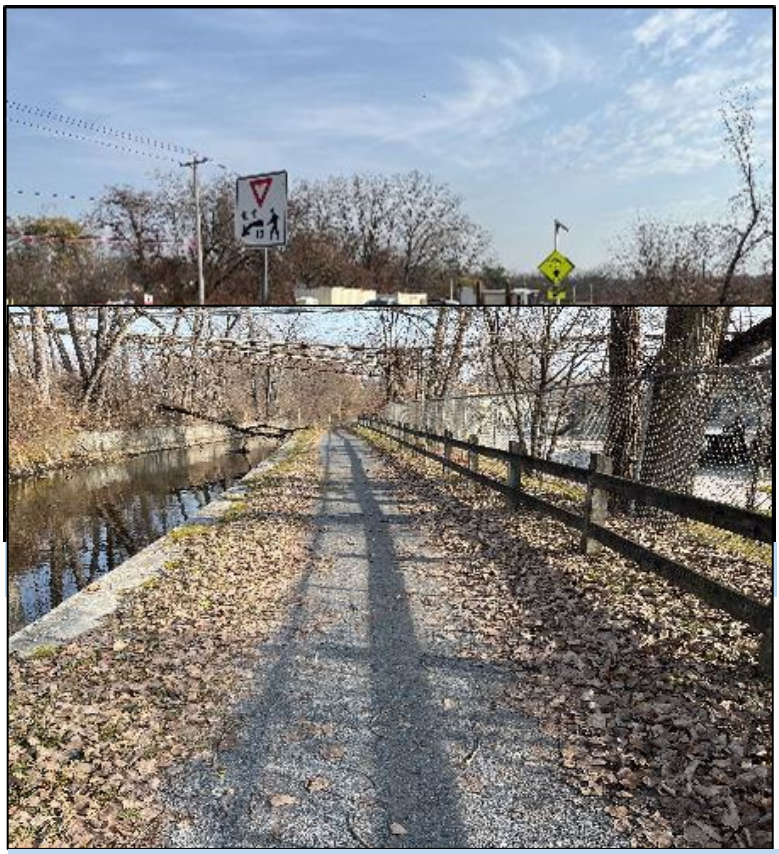


Figure 3-36: Narrow Trail Adjacent to Fence & Galusha Quarry.

3.4.2 Feeder Canal Trail Recommendations

The surface of the Feeder Canal Trail is the most noticeable deficiency of the system. The existing stone dust surface is uneven in many places and less than the recommended minimum width of ten feet. **The entire surface should be graded and topped with a more stable stone surface course that is bound by clay particles and containing slightly larger crushed stone fragments**. Crushed stone surfaces provide a durable and relatively flat surface, making them suitable for various types of trail users, such as dogwalkers. While crushed stone trails can be ADA compliant, they may not offer the same level of convenience and smoothness as other surface materials, such as asphalt. **Crushed stone is susceptible to washouts, as well as vegetation growth impeding the trail from the sides, making regular maintenance critical**.

A minimum trail width of ten feet should also be established across the system for consistency.

Appendix F contains a map and a table of the noted deficiencies found along the Feeder Canal Trail system. There were numerous deficiencies such as washouts, potholes, uneven surface locations, steep side slopes, and other obstructions within the trail. These deficiencies should be corrected to provide a consistent trail system that connects to the Bikeway and the Empire State Trail.

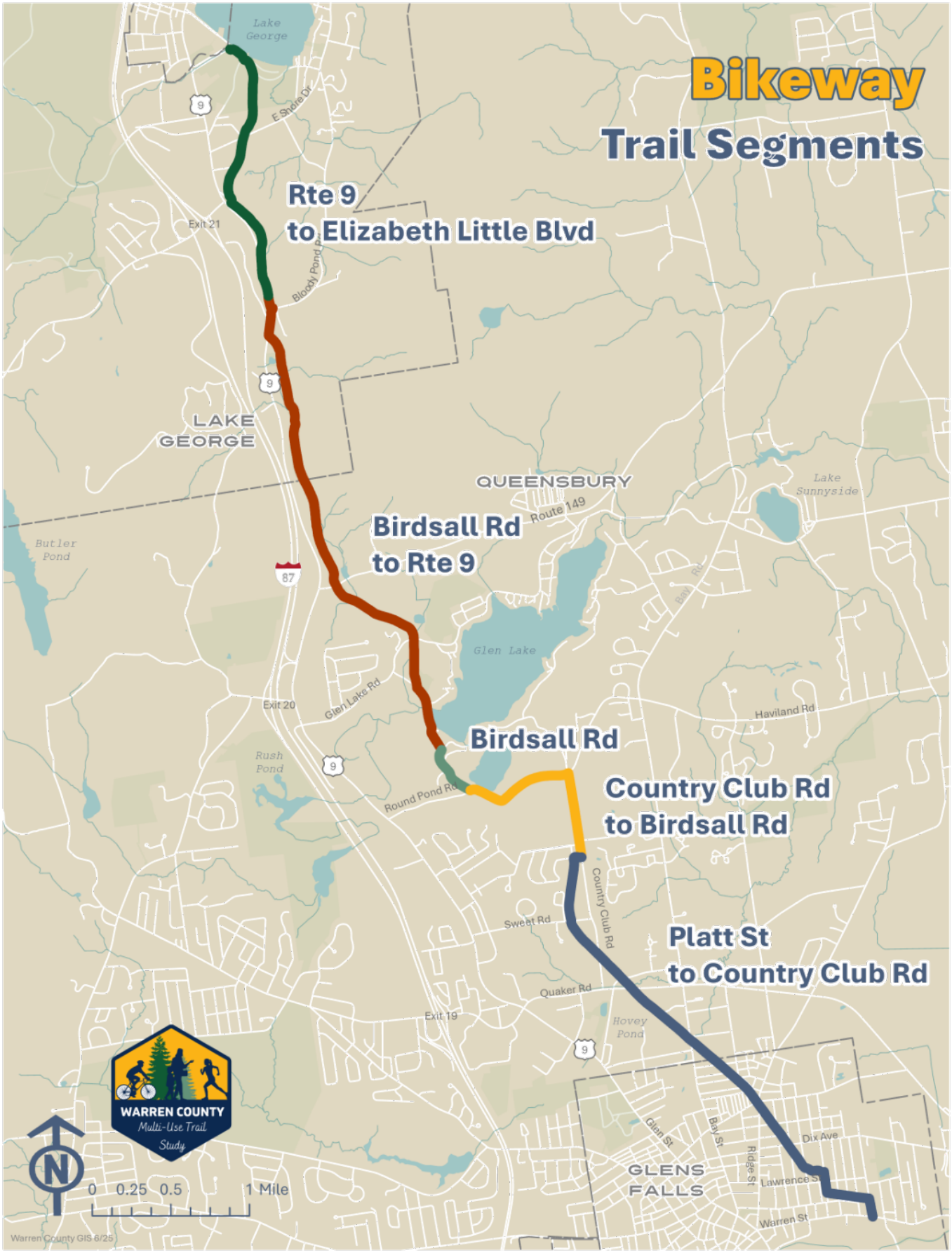
Figure 3-37: Narrow Stone Dust Trail Adjacent to Canal.

Figure 3-38: Crossing of Trail and Martindale Ave.

Figure 3-39: Unsafe Conditions at Martindale Boat Basin.

Figure 3-40: Access Control Gate East of Burgoyne Ave at the Five Combines Site.

Figure 3-41: Bridge Crossing the Old Champlain Canal at Feeder Canal Terminus.


Bikeway
Trail Segments
Rte 9
to Elizabeth Little Blvd
Birdsall Rd
to Rte 9
Birdsall Rd
Country Club Rd
to Birdsall Rd
Platt St
to Country Club Rd
Lake George
LAKE GEORGE
QUEENSBURY
GLENS FALLS
Butler Pond
Glen Lake
Rush Pond
Hovey Pond
Lake Sunnyside
Exit 21
Exit 20
Exit 19
Route 149
Glen Lake Rd
Round Pond Rd
Haviland Rd
Sweet Rd
Quaker Rd
Country Club Rd
Bay Rd
Bay St
Glen St
Ridge St
Dix Ave
Lawrence St
Warren St
E Shore Dr
Bloody Pond Rd
WARREN COUNTY
Multi-Use Trail
Study
N
0 0.25 0.5 1 Mile
Warren County GIS 6/25


Feeder Canal Trail
Trail Segments
Shermantown Rd to Main St
Glen St to Shermantown Rd
Haviland Ave to Glen St
Main St to Empire State Trail
QUEENSBURY
HUDSON FALLS
GLENS FALLS
SOUTH GLENS FALLS
Hudson River
Empire State Trail
Warren County Bikeway
Dean Rd
Main St
Burgoyne Ave
Boulevard
Dix Ave
River St
Lawrence St
Warren St
Ridge St
Bay St
Glen St
Broad St
Haviland Ave
Country Club Rd
Quaker Rd
Hovey Pond
WARREN COUNTY Multi-Use Trail Study
0 0.25 0.5 1 Mile
N

Section 4: Roadway At-Grade Crossings Evaluation

Key Takeaways

- Deficient and inadequate road crossings can pose a serious safety hazard. Crossings with missing standard safety features can also lead to user avoidance or dangerous crossing attempts.
- The overall trail system has inconsistent crossing facilities. Establishing a standard of necessary crossing features, such as the Empire State Trail Guideline treatment, will help to eliminate the most serious deficiencies including lack of ADA compliance and problematic entrance control structures (i.e. bollards, fences).
- Consistent signage with appropriate messaging will help in providing a predictable environment for both trail users and vehicle operators and should be considered a priority.

4.1 Recommended Design Standards

4.1.1 Overview

There are a total of 33 road/driveway crossings along the Bikeway and 12 on the Feeder Canal Trail. The existing road crossings were evaluated by assessing existing features present at each location, such as signage, pavement markings, trail entrance control, etc. The crossings were then compared to standardized crossing features established by the American Association of State Highway and Transportation Officials' ("AASHTO") *Guide for the Development of Bicycle Facilities (2012)* and the *Empire State Trail Design Guide*, to determine which features are missing from each crossing and what improvements need to be made.

An ideal at-grade roadway crossing has a variety of features that warn the trail users that they are approaching a roadway crossing, as well as warning roadway users that pedestrians and bicyclists may be crossing the roadway. Ideally, a roadway crossing has all of the following components:

1. Crossings should be conspicuous to both road users and trail users.
2. Visibility and sight lines should be maintained within the vicinity of the crossings for both vehicles and trail users.
3. Trail crossings should be at a right angle to the roadway.
4. Appropriate traffic controls of the crossing (signs, pavement striping, RRFBs, etc.) should be present.

Figures 4-1 and 4-2: Above: The Barrier, or Fence, Installed at Several Locations along the Bikeway. Note the Inadequate Lane Width. Below: Typical Bollard Installation on the Bikeway.

5. ADA compliant features should be present.
6. Emphasis on safety is placed on both roadway and trail users equally.
7. Speed reduction measures for both trail users and motorists should be present.
8. Trail entrance control measures should be present.

As the purpose of this study is to evaluate existing facilities, many ideal features or treatments will not be able to be implemented without significant investment. Components such as the clearing of vegetation or realignment of the path would likely need to occur outside of the public right-of-way, and are not easily implemented. Therefore, the criteria identified in the following subsections was evaluated because they are easily correctible and the most critical.

4.1.2 Traffic Control

Traffic control installed on the roadway to warn vehicles of the presence of a trail crossings should, at a minimum, include pavement marking, such as a crosswalk, and both pedestrian/cyclist (W11-15) warning signs installed at the crossing point with the downward pointing diagonal arrow (W16-7P) and in advance of the crossing.

Per the diagram opposite (figure 4-4), each crossing should have, at a minimum, a crosswalk (A) and pedestrian/bicycle warning signs (B) installed at the location of the trail crossing, as well as advanced pedestrian/bicycle crossing warning signs (C).

On roadways with higher vehicle volumes, or where drivers regularly fail to yield at the crossings, additional measures should be installed to increase pedestrian and cyclist safety. These measures are the in-street pedestrian crossing sign on lower speed/volume roadways, or the Rectangular Rapid Flashing Beacon (RRFB) on higher speed/volume roadways.

RRFBs consist of a rapid, high-intensity, flashing yellow beacon mounted to the standard pedestrian warning sign at a crosswalk of an uncontrolled approach to a trail crossing. The beacons are activated when a trail user pushes a button to cross

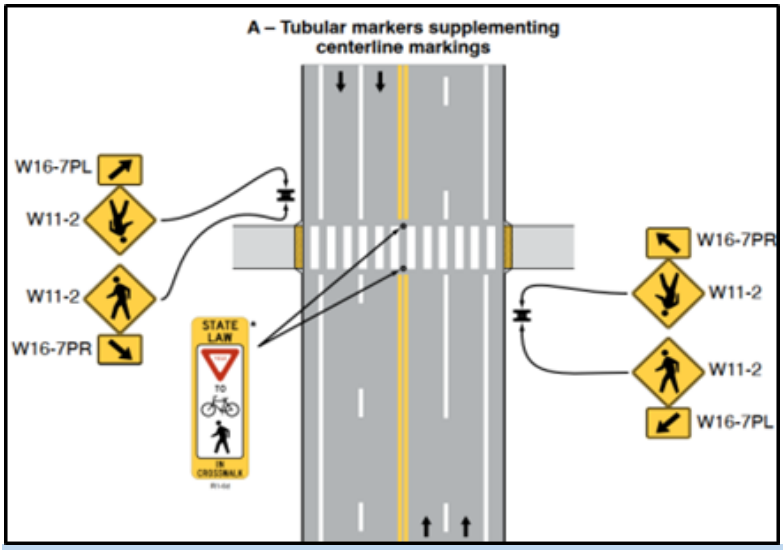


Figure 4-3: Recommended pavement markings and crossing warning signs, from the MUTCD.

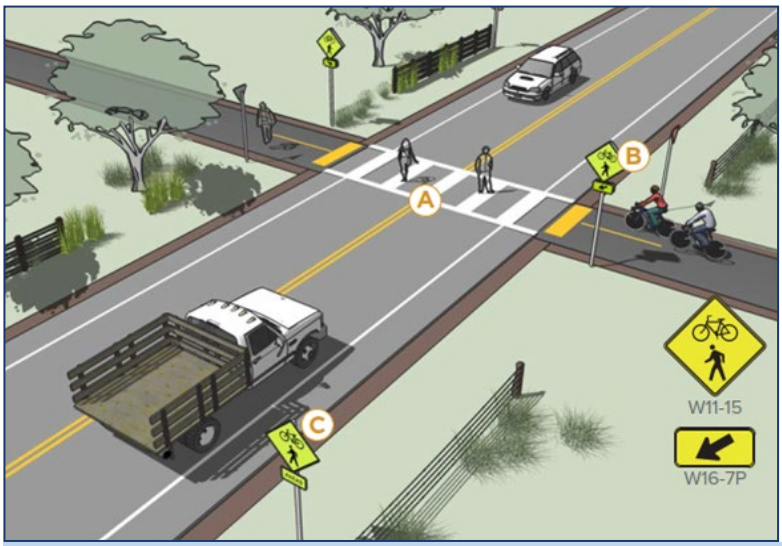


Figure 4-4: In-street signs for lower speed/volume roadways.

Figure 4-5: Example of a RRFB. Source: Universalsigns.com.

the roadway. The installation of these are relatively low cost and have been proven to be highly effective at improving the yield rate of motorists at marked crosswalks. RRFBs can be solar-powered or can be hard-wired into the electric grid to provide electrical power. Additional signage and pavements markings such as Yield Lines and "Yield Here to Pedestrians" signage can also be installed in advance of a RRFB-controlled crossing.

Installing a traffic signal at a trail crossing (or re-routing the trail to cross at an intersection) would include the highest level of both vehicular and pedestrian safety at a trail crossing. **A signal warrant analysis would need to be performed prior to progressing the installation of a traffic signal and a traffic study should be performed to assess the need in order to coordinate the new signal with existing signals in the area of the crossing. The warrant analysis would need to meet the requirements of the *Manual on Uniform Traffic Control Devices (MUTCD)* for traffic signal installation**.

If analysis does not indicate that a full traffic signal is appropriate at the crossing, the MUTCD states that a high-intensity activated crosswalk (HAWK) beacon may be installed to facilitate trail user crossings. A HAWK signal would have a similar effect as a traffic signal by stopping vehicular traffic when activated by a trail user. Outside of the time the signal is activated, the signal heads will be dark, allowing vehicles to travel freely through the intersection. Upon activation by a pedestrian or cyclist, the stop sequence begins with flashing yellow beacons and ending as a solid red beacon for approaching vehicles and a walk symbol for trail users. HAWK signals are typically installed at mid-block crossings but can also be placed at crossings at intersections.

The images on the following page were extracted from the Small Town and Rural Design Guidelines and depict two recommended crossing treatments discussed here from the perspective of a vehicle approaching a trail crossing.

[2] Figures vary by speed limit, number of lanes, crossing distance, and time of day.

*According to the FHWA, RRFBs can reduce pedestrian crashes up to **47%** and can increase motorist yielding rates up to **98%**[2].*

4.1.2 ADA Compliance

Features that establish ADA compliance are among the most critical because they allow someone with a disability to navigate through the intersection more safely. They also improve predictability and enhance safety for all users. ADA-compliant crossings should have curb ramps that result in the trail being flush with the roadway at the crossing. This ensures ease of entering and exiting the roadway. Additional ADA-compliant features include the absence of abrupt changes in height, tactile warning pads, and a smooth and level surface.

4.1.3 Entrance Control

Entrance control identifies different methods to prevent motor vehicles from accessing the trail. These methods can include vertical posts, such as bollards, swing gates, or, unique to the Bikeway, a horizontal rail mounted on two wooden posts (referred to by trail users as the barrier or fence).

The routine use of bollards as entrance control to the trail is not recommended by existing guidelines due to the safety hazard that they may present to cyclists. Bollards, however, are still preferable to the Bikeway barrier/fence treatment which severely limits navigable space to the trail edges, and may be used if certain design considerations are met.

Recommended Design & Layout of Bollards

1. Bollards should permit passage for all users with a minimum of 5 ft width between bollards or edge of pavement.
2. Minimum height of 40" and diameter of 4".
3. Pavement striping around the bollard.
4. Setbacks from roadway edge of 30'.
5. Removable for entry by maintenance and emergency vehicles.
6. Reflectorized on both sides.

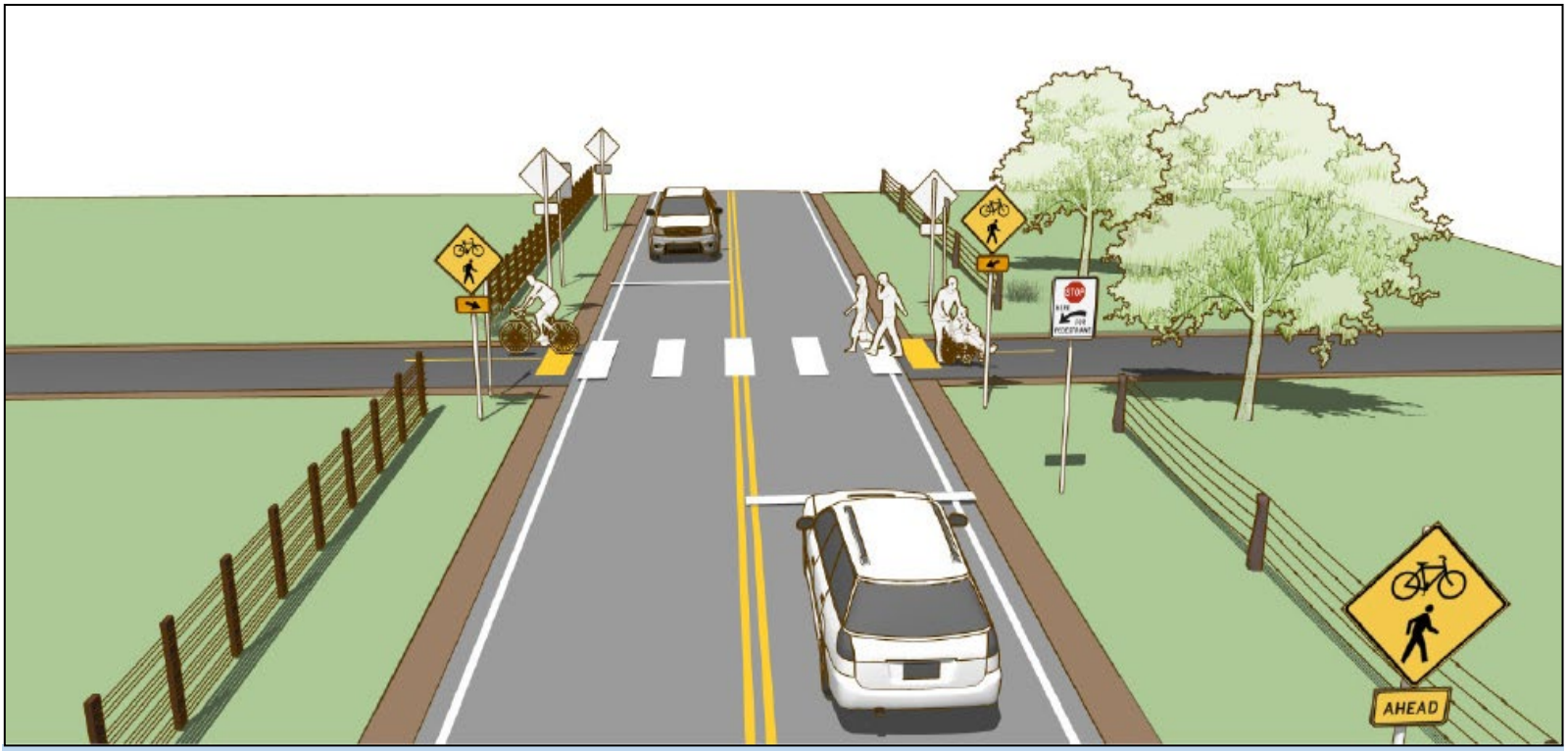


Figure 4-6: Typical signage and striping depicting pavement marking, W11-15 and W16-7P signage.

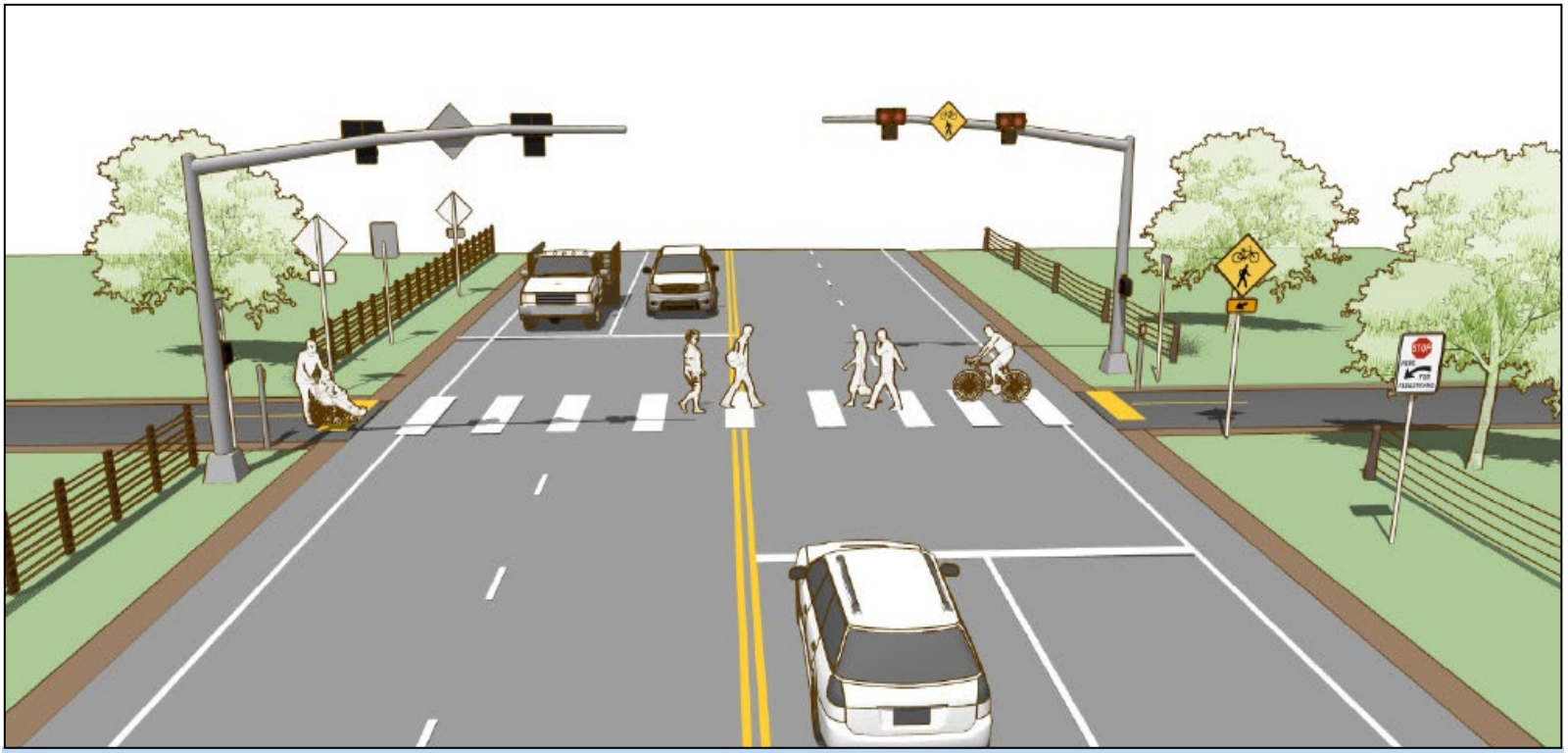


Figure 4-7: Typical signage and striping depicting pavement marking, W11-15 and W16-7P signage, and HAWK beacon/traffic signal. This may be appropriate for high-volume or multi-lane streets but should be reviewed through a traffic signal analysis.

4.2 At-Grade Crossings Evaluation

4.2.1 Bikeway Evaluation

In general, most of the crossings along the bikeway are missing at least one key crossing feature, with the absence of proper roadway signage being one of the most prevalent issues, and potentially most important to a safe crossing. Most of the crossings are also not ADA compliant. The tables on the following pages show each of the 33 crossings found on the Bikeway and note the key features of the crossing that are not present.

4.2.2 Feeder Canal Trail Evaluation

The Feeder Canal Trail generally exhibits fewer components that contribute to a safe roadway crossing than found on the Bikeway. The majority of crossings are missing curb ramps, ADA-compliant features, pedestrian/bicycle warning signs, and crosswalks. The table following the Bikeway tables shows each of the 11 crossings found on the Feeder Canal Trail and notes the key features of each crossing that are not present.

Chart 4-1: Bikeway Crossing Evaluation (Page 1)

Road Crossing	Curb Ramp	ADA Compliant	Entrance Control	Road Signage[1]	Trail Signage[2]	Crosswalk	Comments
Platt Street	No	No	Bollard	N	S; W	Yes	Curb ramp on west side.
McDonald Street	No	No	Bollard	A	R; S	Yes	Curb ramp on west side.
Orchard Street	Yes	No	Bollard	A	R; S	Yes	
Prospect Street	Yes	No	Bollard	A	R; S	Yes	
Leonard Street (S)	No	No	Bollard	A	R; S; W	No	
Leonard Street (N)	Yes	No	Bollard	N	I; R; W	Yes	Small trailhead, curb ramp on west side.
Cooper Street	Yes	No	Barrier/ Fence	A	R; S	Yes	
Walnut Street	Yes	No	Bollard	A	R; S	Yes	Long crosswalk skew.
Dix Ave.	Yes	Yes	Bollard	A; L	H; R; S; W	Yes	
Hunter Street	Yes	No	Bollard	A	R; S	Yes	
Ridge Street	Yes	No	Bollard	A	R; S; W	Yes	Long Crosswalk skew.
Sanford Street	Yes	No	Bollard	A	R; S; W	Yes	

Notes:

[1] A = Advanced Trail Warning; L = Local Trail Warning; N = None; S = Stop.

[2] H = Historical; I = Informational; R = Regulatory; S = Stop; W = Wayfinding.

Chart 4-1: Bikeway Crossing Evaluation (Page 2)

Road Crossing	Curb Ramp	ADA Compliant	Entrance Control	Road Signage[1]	Trail Signage[2]	Crosswalk	Comments
Lexington Ave.	Yes	No	Bollard	A	R; S	Yes	Crosswalk at skew.
Bay Road	Yes	No	Bollard	A	R; S; W	Yes	Flashing yellow traffic signals present.
Private Drive #1	Yes	No	Bollard	S	R; S	Yes	
Private Drive #2	Yes	No	None	S	N	Yes	
Private Drive #3	No	No	Bollard	S	R; S	Yes	
Glenwood Ave.	Yes	No	Barrier/ Fence	A; S	R; S; W	Yes	Crossing part of 3-leg stop intersection.
Woodvale Road	Yes	No	Bollard	A	R; S	Yes	Crossing is access to senior living facility.
Country Club Road (S)	Yes	No	Barrier/ Fence	A	R; S	Yes	Crosswalk at skew.
Sweet Road	Yes	No	Barrier/ Fence	A	H; R; S; W	Yes	
Country Club Road (N)	No	No	Barrier/ Fence	A	R; S; W	Yes	Begins on-road segment.
Round Pond Road	No	No	None	A; L	W	Yes	Crosswalk for on-road facilities.
Birdsall Road	No	No	Barrier/ Fence	N	R; S; W	No	No defined crossing.

Notes:

[1] A = Advanced Trail Warning; L = Local Trail Warning; N = None; S = Stop.

[2] H = Historical; I = Informational; N = None; R = Regulatory; S = Stop; W = Wayfinding.

Chart 4-1: Bikeway Crossing Evaluation (Page 3)

Road Crossing	Curb Ramp	ADA Compliant	Entrance Control	Road Signage[1]	Trail Signage[2]	Crosswalk	Comments
Ash Drive	Yes	No	Barrier/ Fence	N	R; S; W	Yes	Crossing at skew; on-road segment.
Glen Lake Road	Yes	No	Barrier/ Fence	A	R; S; W	Yes	
Mill/Ellsworth Road	Yes	No	None	A	S	No	Driveway to French Mountain.
Bloody Pond Road	No	No	None	S (minor leg only)	S; W	Yes	Crossing at 3-way intersection.
Private Drive (Magic Forest)	No	Yes	Bollard (north leg)	N	R; S on north leg	No	Drive has gates; crossings are long.
Old Military Road	Yes	No	Barrier/ Fence	N	H; R; S; W	No	On-road segment of trail.
Fish Hatchery Road	No	Yes	Barrier/ Fence	S	R; S	No	
Fort George Road	Yes	No	Barrier/ Fence	L	H; R; S; W	Yes	
Elizabeth Little Boulevard	Yes	Yes	Barrier/ Fence	A; L	H; R; S; W	Yes	3-way intersection with Beach Road.

Notes:

[1] A = Advanced Trail Warning; L = Local Trail Warning; N = None; S = Stop.

[2] H = Historical; I = Informational; N = None; R = Regulatory; S = Stop; W = Wayfinding.

Chart 4-2: Feeder Canal Trail Crossing Evaluation

Road Crossing	Curb Ramp	ADA Compliant	Entrance Control	Road Signage[1]	Trail Signage[2]	Crosswalk	Comments
Bush Street	No	No	Bollard	A	N	No	Bollards on northside 100' from crossing.
Murray Street	No	No	None	N	N	No	
Shermantown Rd	No	No	Bollard	N	N	No	Trail segment ends at parking lot.
Private Drive #2	No	No	Bollard	N	S	No	Bollard on westside approach only.
River Street	Yes	Yes	Bollard	A	S	Yes	RRFB has been installed.
Warren Street	No	No	Bollard	A	S	Yes	
Main Street	Yes	Yes	None	N	S	Yes	
Martindale Ave	No	No	Bollard	N	N	No	Confusing crossing; trail merges with roadways.
Maple Street	Yes	Yes	Bollard	A	S	Yes	Bollards on westside approach only.
Pearl Street	No	No	None	N	N	Yes	
Burgoyne Ave	No	No	None	A	S	Yes	

Notes:

[1] A = Advanced Trail Warning; L = Local Trail Warning; N = None; S = Stop.

[2] H = Historical; I = Informational; N = None; R = Regulatory; S = Stop; W = Wayfinding.

4.3 At-Grade Crossings Recommendations

4.3.1 Bikeway Recommendations

As previously mentioned, in Section 4.1, there are several components to establish a safe crossing of a roadway for all users. While not all of the listed components are easily implementable since the trail is already established, several critical items can be implemented to improve the overall safety of the roadway crossings. **The most critical element in need of improvement is warning approaching vehicles of a trail crossing the roadway. Nearly all of the crossings evaluated need some level of improvement for the warning signs posted at, and in advance of, the trail crossing.** Per the diagram opposite (figure 4-8), each crossing should have, at a minimum, a crosswalk (A) and pedestrian/bicycle warning signs (B) installed at the location of the trail crossing, as well as advanced pedestrian/bicycle crossing warning signs (C).

On roadways with higher vehicle volumes, or where drivers regularly fail to yield at the crossings, additional measures should be installed to increase pedestrian and cyclist safety. These measures are the in-street pedestrian crossing sign on lower speed/volume roadways, or the RRFB on higher speed/volume roadways, as detailed in Figure 4-9.

The FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* provides a table that can be used to determine what specific treatments should be considered at a roadway crossing based on the roadway volume, number of vehicle travel lanes, and the posted speed limit. Using this tool and evaluating the existing conditions found at each roadway crossing, as well as engineering judgement, recommendations for improving the roadway crossings were developed for each location on the Bikeway. A comprehensive table of recommendations can be found at the end of this section.

Another important consideration to improve safety of the roadway crossings is to make improvements from the perspective of the trail user. Currently, the trail signage installed approaching roadways is inconsistent and exceeds what is generally required by the various guidelines. The existing signs along the trail give the appearance that the trail is a roadway and not a recreational trail. Reducing the signs installed along the trail to include only those that are required is strongly encouraged. Over-signing the trail can lead to confusion and poor user compliance as they could be overwhelmed by the number of signs. Creating a consistent message for trail users at each road crossing that employs the

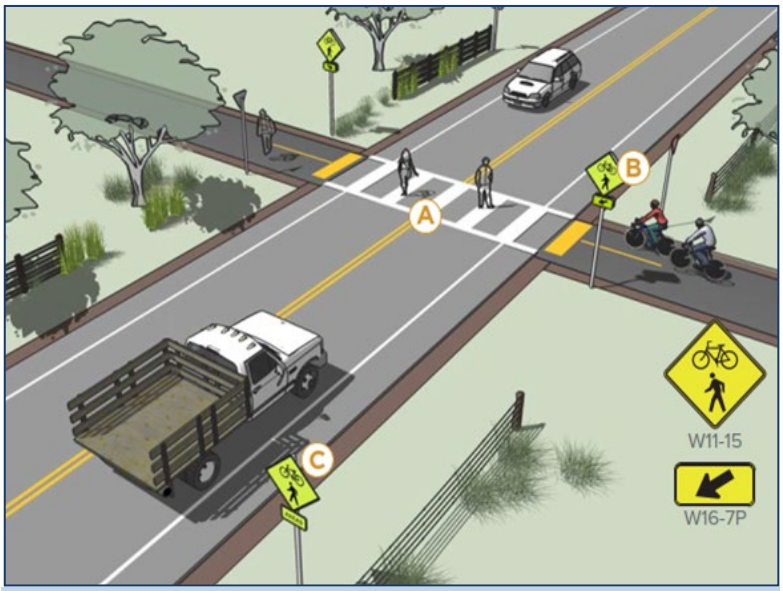


Figure 4-8: Recommended Pavement Markings and Crossing Warning Signs, from the Empire State Trail Design Guide.

Figure 4-9: Installation Detail for RRFB with Marked Crosswalk (A) and Push Buttons Poistioned for Cyclist Convenience (B).

appropriate message should be a priority. Warning of an approaching road crossing can be accomplished through changes in the trail geometry and width, along with strategically placed signs.

The Bikeway currently has an array of signage installed along the trail at each crossing, either accompanied by bollards or the barrier/fence. The Bikeway bollards and barriers provide a physical change in the character of the trail that should slow bicyclists speeds as they approach the crossing. Inconsistent trail widths adjacent to these barriers, however, can prove challenging to navigate. Signage at the crossings, such as "stop ahead," "intersection ahead," and "stop" signs, provide instructions for trail users that they are approaching a crossing. The AASHTO bicycle facility design guide notes that bicyclists typically exhibit poor compliance with stop signs and will typically yield at these crossings rather than come to a complete stop. However, since Warren County has already established the precedence of "stop" signs at the crossings, their use should be continued along the trail system to establish a consistent message. Changing the signage to a "yield" sign, as recommended by the AASHTO guide, may change the behavior of trail users and have undesirable outcomes. Bicyclists will likely continue to yield at the "stop" signs, regardless, which is an expected behavior by bicyclists at road crossings.

As discussed earlier in this Section 4.1.3, the use of bollards at trail crossings with roadways is permitted, but not necessarily recommended due to the hazards that the fixed objects can cause when positioned within or immediately adjacent to the trail. However, if installed properly, they may be used if no other alternatives are deemed appropriate and vehicle trespassing on the trail is a major concern at that location. An alternative to the use of fixed bollards is outlined in the Empire State Trail Design Guide and includes the use of a low (4") mountable curb median installed in the middle of the trail, with five foot or wider paths on either side of the median (see figure below). This provides a physical change in the trail conditions and narrows

Figure 4-10: Preferred trail entrance/access as outlined in the Empire State Trail Design Guide.

the overall width of the trail, which should produce a traffic calming effect on cyclists as they approach the intersection. Flexible delineators or bollards can be installed on this median or adjacent to the trail to deter vehicles from driving on the trail, but can still allow emergency and maintenance vehicles to access the trail without stopping to remove a bollard or barrier or unlock a gate.

Signage at the crossing from the perspective of the trail user should consist of a "stop" sign at the roadway crossing and a "no motor vehicles" sign at the entrance of the trail from the roadway, An "intersection" sign may also be installed in advance of the crossing if desired. Pavement markings such as arrows and a yellow line may also be installed at the roadway crossing approach to direct trail users around the median. The new wayfinding and trail etiquette signs, or "rules of the trail," should establish which side of the trail pedestrians and bicyclists should occupy. They should both travel on the same side of the path as to avoid any conflicts around the new entrance medians.

Figure 4-11 shows the that items to be installed at each roadway crossing. Any existing signage at the entrance should be removed to avoid confusion or overlap with recommended signage. Delivering a clear and consistent message at all entrances and crossings should be a priority.

4.3.1 Feeder Canal Trail Recommendations

As discussed in Section 4.2, the existing conditions of the Feeder Canal Trail roadway crossings are generally similar to those found on the Bikeway. A table detailing the recommended improvements is included at the end of this section. The potential improvements include standardizing trail signage, entrance treatments, and improving trail crossing signage along the roadway.

Discussions with the New York Power Authority (NYPA), the current owner of the Feeder Canal Trail, indicated that they will only maintain the trail infrastructure that is within their ROW and roadway signage that is installed within the municipalities' right-of-way will not be maintained by NYPA.

One particular roadway crossing to note, however, is at River Street/US Route 4. This roadway is a four lane Urban Minor Arterial with a posted speed limit of 40 mph in the area of the crossing and an Average Annual Daily Traffic (AADT) of 10,751 vehicles. The 85th percentile speed of the roadway is listed at approximately 45 mph according to the NYS Traffic Data Viewer. Currently, this crossing has RRFBs installed with the appropriate combination of pavement markings (crosswalk and yield lines) and warning signage (advanced crossing warning, yield to pedestrians, and pedestrian/cyclist crossing warning signs). However, the *FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* does not recommend RRFBs at a location with such roadway characteristics. The guide notes that a HAWK signal should instead be installed. An alternate crossing location is at the nearby signalized intersection with Quaker Road, but would require crossing the Feeder Canal twice, likely necessitating the installation of two new pedestrian bridges.

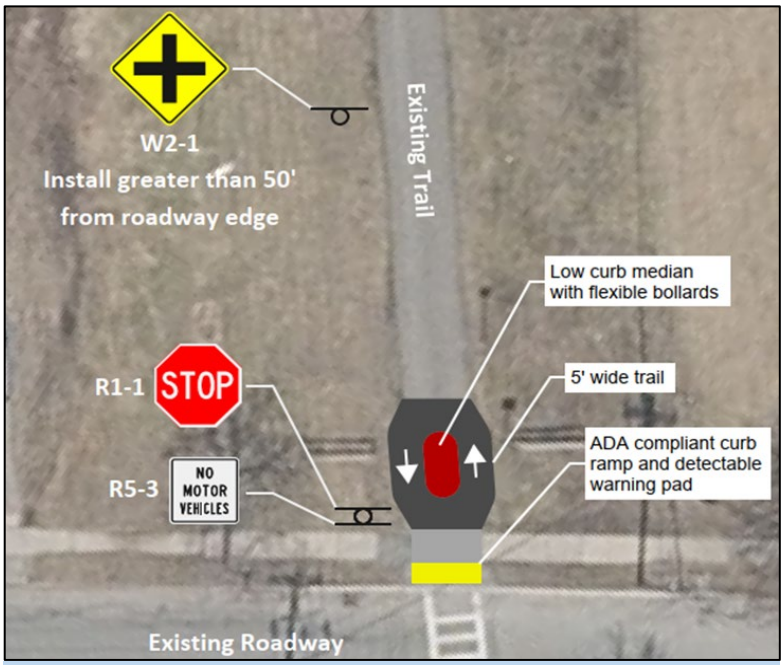


Figure 4-11: Diagram of Recommended Crossing Treatment.

Chart 4-3: Bikeway Crossing Recommendations (Page 1)

Road Crossing	Crossing Warning	Advanced Crossing Warning	Crosswalk Markings	In-Street Crossing Signs	RRFBs	HAWK Signal System	Notes
Platt Street	*Install*		*Replace*				
McDonald Street	*Install*		*Replace*				
Orchard Street	*Install*		*Replace*				
Prospect Street	*Install*		*Replace*				
Leonard Street (S)	*Install*		*Install*				
Leonard Street (N)	*Install*	*Install*	*Replace*				
Cooper Street	*Install*		*Replace*				*Replace barrier with bollards.*
Walnut Street	*Install*		*Replace*				*Realign crossing to reduce skew.*
Dix Ave.				*Install*			
Hunter Street	*Install*		*Replace*				
Ridge Street			*Replace*		*Install*		*Realign crossing to reduce skew.*
Sanford Street	*Install*		*Replace*				

Chart 4-3: Bikeway Crossing Recommendations (Page 2)

Road Crossing	Crossing Warning	Advanced Crossing Warning	Crosswalk Markings	In-Street Crossing Signs	RRFBs	HAWK Signal System	Notes
Lexington Ave	*Install*		*Replace*				*Realign crossing to reduce skew.*
Bay Street			*Replace*		*Install*		
Private Drive #1	*Install*		*Replace*				
Private Drive #2	*Install*		*Replace*				
Private Drive #3	*Install*		*Replace*				
Glenwood Ave			*Replace*				*Replace barrier with bollards.*
Woodvale Road	*Install*		*Replace*				
Country Club Road (S)			*Replace*		*Install*		*Realign crossing to reduce skew. Replace barrier with bollards.*
Sweet Road	*Install*		*Replace*				*Replace barrier with bollards.*
Country Club Road (N)			*Replace*		*Install*		*Replace barrier with bollards.*
Round Pond Road			*Replace*		*Install*		
Birdsall Road							*Replace barrier with bollards.*

Chart 4-3: Bikeway Crossing Recommendations (Page 3)

Road Crossing	Crossing Warning	Advanced Crossing Warning	Crosswalk Markings	In-Street Crossing Signs	RRFBs	HAWK Signal System	Notes
Ash Drive	*Install*	*Install*	*Replace*				*Realign crossing to reduce skew. Replace barrier with bollards.*
Glen Lake Road	*Install*		*Replace*		*Install*		*Replace barrier with bollards.*
Mill/Ellsworth Road			*Install*				
Bloody Pond Road		*Install*	*Replace*				*Move crossing adjacent to intersection w/ US9.*
Private Drive (Magic Forest)			*Install*				
Old Military Road	*Install*		*Install*				*Replace barrier with bollards.*
Fish Hatchery Road	*Install*		*Install*				*Replace barrier with bollards.*
Fort George Road		*Install*	*Replace*		*Install*		*Replace barrier with bollards.*
Elizabeth Little Blvd.							*Replace barrier with bollards.*

Chart 4-4: Feeder Canal Trail Crossing Recommendations

Road Crossing	Crossing Warning	Advanced Crossing Warning	Crosswalk Markings	In-Street Crossing Signs	RRFBs	HAWK Signal System	Notes
Bush Street	*Install*	*Install*	*Install*				*This is the Haviland Cove access.*
Murray Street	*Install*	*Install*	*Install*				
Private Drive #1	*Install*	*Install*	*Install*				*This is the Heidelberg Cement Plant access.*
River Street						*Install*	*Currently, RRFBs are installed.*
Warren Street	*Install*	*Install*	*Replace*				
Main Street							*Crossing at signal. Improve trail way-finding.*
Martindale Ave.	*Install*	*Install*	*Install*				
Maple Street		*Install*					
Pearl Street	*Install*	*Install*	*Replace*				
Burgoyne Avenue							*Crossing recently reconstructed.*

Section 5: Amenities, Parking Areas, Trailheads, & Nodal Areas

Key Takeaways

- Trailheads and parking areas are the gateways to this 16-mile trail system. These public spaces represent the first interaction visitors have with the multi-use trail and, as such, are vitally important to attracting new users and retaining current users.
- Investing in trailheads and key nodal areas will vastly improve trail users' experiences, providing them with basic amenities focused on extending visitor stay, providing comfort and convenience, and eliminating navigational and regulatory confusion.
- A lack of design standards for parking areas, trailheads, and nodes has limited Warren County's ability to promote the trail system and weakened users' expectations for this valuable and accessible recreational asset. Improving these areas will increase access and raise visibility of the trail system.

5.1 Amenities

5.1.1 Bikeway Amenity Evaluation

Amenities found within the trail corridor were benches, bike repair stations, picnic tables, interpretive signs, and bike racks. Many of the amenities such as benches and picnic tables appear to have been donated to the County in memory of an individual. The styles vary greatly throughout the trail system. Amenities are documented in greater detail below. Interpretive signs are discussed in greater detail in Section 10.

The charts on the following pages summarize the amenity locations along the Bikeway and Feeder Canal Trail.

5.1.2 Suggested Amenity Programming

The Multi-Use Trail system trailheads are the gate-ways to the system and the start of the trail user experience. Because trailheads, as well as other access points, are the first point of contact a user has with the system, these areas act as critical spaces to inform on trail etiquette and provide guide for navigation. Additionally, high quality trailheads will include convenient amenities to assure the trail user has a safe and enjoyable experience.

Similarly, key nodal areas are defined as places along the trail system that, by virtue of their setting, space, or unique attraction, encourage visitors to pause along their journey to rest, reflect, discover, or socialize. Key nodal areas are spaces that help to define a sense of place and create memorable experiences that encourage repeat visits. They are distinct from separate facilities that may be accessible from the trail system, such as neighborhood parks, in that key nodal areas are immediately adjacent to the trail corridor and function as an extension of the trail. These areas should be designed to be inviting, with appropriate amenities for prolonged interaction.

In addition to reviewing issues of accessibility, this assessment of trailheads and nodal areas provides information for the deliberate consideration of the need, benefit, and appropriateness of certain amenities when planning on a case-by-case basis:

- Universal access,
- Necessary signage (informational, regulatory, and navigational),
- Restroom facilities (permanent or seasonal),
- Shower and changing room facilities,
- Water bottle filling stations,
- Bike racks,
- Bike rentals,
- Bike repair kits,
- E-bike charging station,
- Variety of seating,
- Warming areas,
- Exercise stations,
- Letterboxing,
- Public art.

Chart 5-1: Amenity Locations along the Bikeway.

Trail Segment	Bench	Picnic Table	Bike Racks	Trash Bins	Bike Repair	Comments
Platt Street to Leonard Street	-	-	-	-	-	
Leonard Street to Dix Avenue	-	-	-	-	-	
Dix Avenue to Ridge Street	-	2	-	-	-	Picnic tables placed along trail by Cooper's Cave Ale Company.
Ridge Street to Bay Road	-	1	-	-	-	Picnic table placed on Stewart's property with spur trail.
Bay Road to Country Club Rd (S)	1	1	-	-	-	Amenities are generally well-maintained but vary in style.
Country Club Road Trailhead	1	-	1	-	-	Porta-potty available seasonally.
Trailhead to Country Club Rd (N)	1	-	-	-	-	
Country Club Rd (N) to Birdsall Road	-	-	-	-	-	On-Road segment of trail.
Birdsall Road to State Route 149	-	-	-	-	-	
State Route 149 to State Route 9	2	2	-	-	-	Amenities are in fair to good condition.
State Route 9 to Beach Road	1	-	1	-	-	Amenities are concentrated near the Village of Lake George.

Chart 5-2: Amenity Locations along the Feeder Canal Trail.

Trail Segment	Bench	Picnic Table	Bike Racks	Trash Bins	Bike Repair	Comments
Overlook Park to Bush Street	#	1	-	-	-	Several benches along trail. Picnic table located at Overlook Park.
Bush Street to Glen Street	-	-	-	-	-	
Glen Street to Shermantown Road	-	-	-	-	-	On-Road segment of trail.
Shermantown Road to Murray Park	#	-	-	-	-	Several benches along trail; many are wooden and in poor condition.
Murray Park Trailhead	#	#	-	-	-	Murray Park Trailhead amenities discussed in Section 5.2.
Murray Park to Five Combines	#	-	-	-	-	Several benches along trail; many are wooden and in poor condition.
Five Combines Trailhead	#	#	-	-	-	Five Combines Trailhead amenities discussed in Section 5.2

Figure 5-1: Memorial Bench North of State Route 149.

Figure 5-2: Moss-Covered Bench Between River and Warren streets.

5.2 Trailheads and Parking Areas

5.2.1 Bikeway Evaluation

The Bikeway has various trailheads and parking areas along its nine-mile run. Overall, these areas are highly visible and act as the prominent physical space that trail users will interact with as official access points. In addition to the identified spaces discussed in this section, the Bikeway can be accessed by foot or bicycle from any of the 31 roadway crossings. The following Bikeway trailhead and parking areas have been established and, unless otherwise noted, are maintained by the Warren County Department of Public Works:

Figure 5-3: Leonard Street Parking Area Trailhead.

- **Leonard Street Parking Lot**. This trailhead consists of a 60' by 50' asphalt parking lot that can accommodate six to eight vehicles, given space for access to the trail and ADA spaces. The parking lot runs adjacent to the trail without a barrier, buffer, or delineation. Parking stalls are also not delineated which reduces parking efficiency within the lot. Historical signs and an information board are located at the edge of the parking lot. "No Parking" signs are also located at the edge of the parking lot indicating that the area is closed from 9pm to 7am daily. Additionally, a bicycle repair station is located behind the informational signage and is somewhat hidden from view.

Figure 5-4: Country Club Road Parking Area & Trailhead.

- **Country Club Road Parking Lot**. This circular lot with an approximate diameter of 120 feet is located 300 feet north of the intersection of Woodvale Road and Country Club Road. The asphalt lot contains an undefined number of parking spaces due to its irregular shape and lack of markings. With proper delineation, this lot could accommodate 30+ parking spaces. Other amenities at the site include information boards, a port-a-potty, a CDPHP cycle-share stand, and direct access to the Bikeway.

Figure 5-5: Gravel Parking Area along Round Pond Road.

- **Round Pond Road**. This unofficial parking area is located at the intersection of Round Pond Road

and Birdsall Road. The parking mirrors the curvature of Round Pond Road, with a maximum length of 400 feet and a width of 80 feet. The lot is gravel and contains space for upwards of 40 vehicles. Because it is not officially designated as a parking lot, there is no trail-specific signage present. Access to the Bikeway requires users to travel on a short section of the on-road trail on Birdsall Road (a low volume road) to reach the off-roach section to the north. Green "bike route" signs direct trail users toward this entrance. Trail users may also access the southern portion of the Bikeway by walking or riding along the shoulders of Round Pond Road and Country Club Road.

- **Ash Drive**. There is a short section of parallel parking that exists where Ash Drive and the Bikeway briefly share the roadway. A ten-foot wide shoulder is provided for bicyclists and pedestrians to use and maintain separation from the cars traveling on the road. Parking is informally provided across the trail from the traveled way and consists of compacted sand and gravel. The parking was measured at 200' by 12', providing space for approximately ten vehicles to park. Access to the southern portion of the Bikeway consists of the barrier/fence entranceway and "Bikeway Rules" signage. Parking may also be provided on the paved shoulder of Ash Drive near the southern entrance but is not currently delineated as such. Additional signage is present in this section consisting of historical and environmental information signage.

- **Lake George Elementary School Sports Field Parking**. This gravel parking lot provides unofficial access to the Bike-way via a short walk along the wide shoulder of E. Shore Road to a crosswalk that leads to a trail-head. The unstriped parking area has space for approximately 20 vehicles and, though its primary purpose is to provide parking to the adjacent school athletic fields, it is a popular access point for trail users.

- **Lake George Battlefield State Park.** The Battlefield State Park in the Village of Lake George serves as a historic site and recreational attraction at the northern terminus of the Bikeway. Parking is available along public roadways in the general vicinity, including Beach Road, Elizabeth Little Boulevard, and Fort George Road. Bikeway access can be obtained from the Village's extensive sidewalk network. Planned improvements to this trailhead are discussed in Section 7.4.

5.2.2 Feeder Canal Trail Evaluation

The Feeder Canal Trail has a variety of trailheads and parking areas along its nine-mile span. In addition to the identified spaces discussed in this section, the Feeder Canal Trail can be accessed by foot or bicycle from any of the 11 roadway crossings. Feeder Canal trailheads and parking areas are maintained by a variety of entities, as noted:

- **Overlook Park.** This small pocket park on Haviland Ave consists of an asphalt parking lot at the western trailhead of the Feeder Canal Trail, adjacent to Haviland Ave. The lot is triangular with spots marked for 14 vehicles. However, the pavement markings are heavily worn, likely reducing the number of vehicles that can park in the lot at any given time. Overlook Park also offers several amenities such as a pavilion, picnic area and tables, trash receptacles, benches, and historical interpretation opportunities.

- **Bush Street.** An informal parking area is located at the intersection of the Feeder Canal Trail and Bush Street, complete with trash receptacles, informational signage, and a dog waste station. The area consists of gravel and dirt surfacing enough for four or five cars. The informational signage consists of a mix of information on the trail and on the Lake George region. Bush Street also provides the entrance to Haviland Cove Beach/Park where there is parking for more than 50 cars and access to a beach, bathhouse, tennis courts, and a baseball/softball field.

- **Murray Street.** This trailhead consists of a gravel parking area with space for approximately eight vehicles. The trailhead is located on the northern side of Murray Street, just east of the Feeder Canal. There are several worn informational signs at this location, including green wayfinding signs, and one sign that shows a map of the trail. The trailhead also serves as kayak access to both the Feeder Canal and the Hudson River. A pedestrian bridge over the Feeder Canal was recently installed adjacent to the Murray Street bridge and connects the Feeder Canal Trail to the western leg of Murray Street and, eventually, to Downtown Glens Falls.

Figure 5-6: Gravel Parking Lot on Murray Street.

- **Glen Street.** This paved parking lot is located off Glen Street (US Route 9) just south of Mohican Street and has parking for approximately 50 vehicles. The parking spots are delineated but are heavily worn. There are directional Feeder Canal Trail signs but they are faded and worn. The trail begins at the southwestern end of the parking lot and continues west. No continuation of the trail is signed or improved to the east of the parking lot on Glen Street, marking the beginning of the gap to Shermantown Road. Nearby Oakland Avenue, with high-volume truck traffic, is designated as a shared roadway. There is infrastructure for the lock/dam on the Hudson River at the southwestern corner of the lot. There are some amenities on site, including a bench, picnic table, and a walkway adjacent to the lock infrastructure.

Figure 5-7: Asphalt Parking Lot at Murray Park/Private Business.

- **Shermantown Road.** This trailhead is the informal starting point of the eastern half of the Feeder Canal Trail (after the approximately one-mile gap from Glen Street). It does not provide any formal space for vehicle parking, though vehicles can park on the shoulder of the road as this is a very low volume roadway. Signage is present at the trailhead including historical and regulatory information.

Figure 5-8: Gravel Parking Lot East of Burgoyne Avenue.

- **Murray Park/Main Street.** The Murray Park-Main Street trailhead consists of an asphalt parking area off Main Street in Hudson Falls, behind the Jack and Jill Ice Cream shop. The southern half of the parking lot is owned by the private business; the northern half is owned by the Feeder Canal Alliance and abuts Murray Park. The parking lot measures 90' x 55' with parking for approximately 16 vehicles. However, the parking stalls are not delineated. There are several amenities at this trailhead including historic interpretation and informational signage, a bicycle repair station, bike racks, and a dog waste station.

- **Martindale Avenue.** There is a deteriorated small gravel lot for 3-4 cars on the westside of the Feeder Canal along Martindale Avenue that is owned by the Canal Corporation. While there is no direct access to the Feeder Canal Trail, trail users can make a 250-foot connection via the Martindale Avenue sidewalk or in the roadway. There is a small boat launch for canoes and kayaks via an old wooden dock, though the dock is in need of repair. There are also amenities including picnic tables, benches, and historical interpretive signage.

- **Burgoyne Avenue/Five Combines.** Located just north of the Burgoyne Avenue and Jones Road intersection is a large gravel parking area on the eastside of Burgoyne Avenue. The gravel area serves as an access point to the five combines attraction where the Feeder Canal drops 55 feet to join the nearby Champlain Canal. There is signage indicating parking for the Feeder Canal Trail but it is very faded. There is a second parking area past a gate that is signed as reserved for individuals with disabilities. The Five Combines pocket park has amenities such as picnic tables, historical interpretive signage, a dog waste station, and bike racks.

5.3 Nodal Areas and Junctions

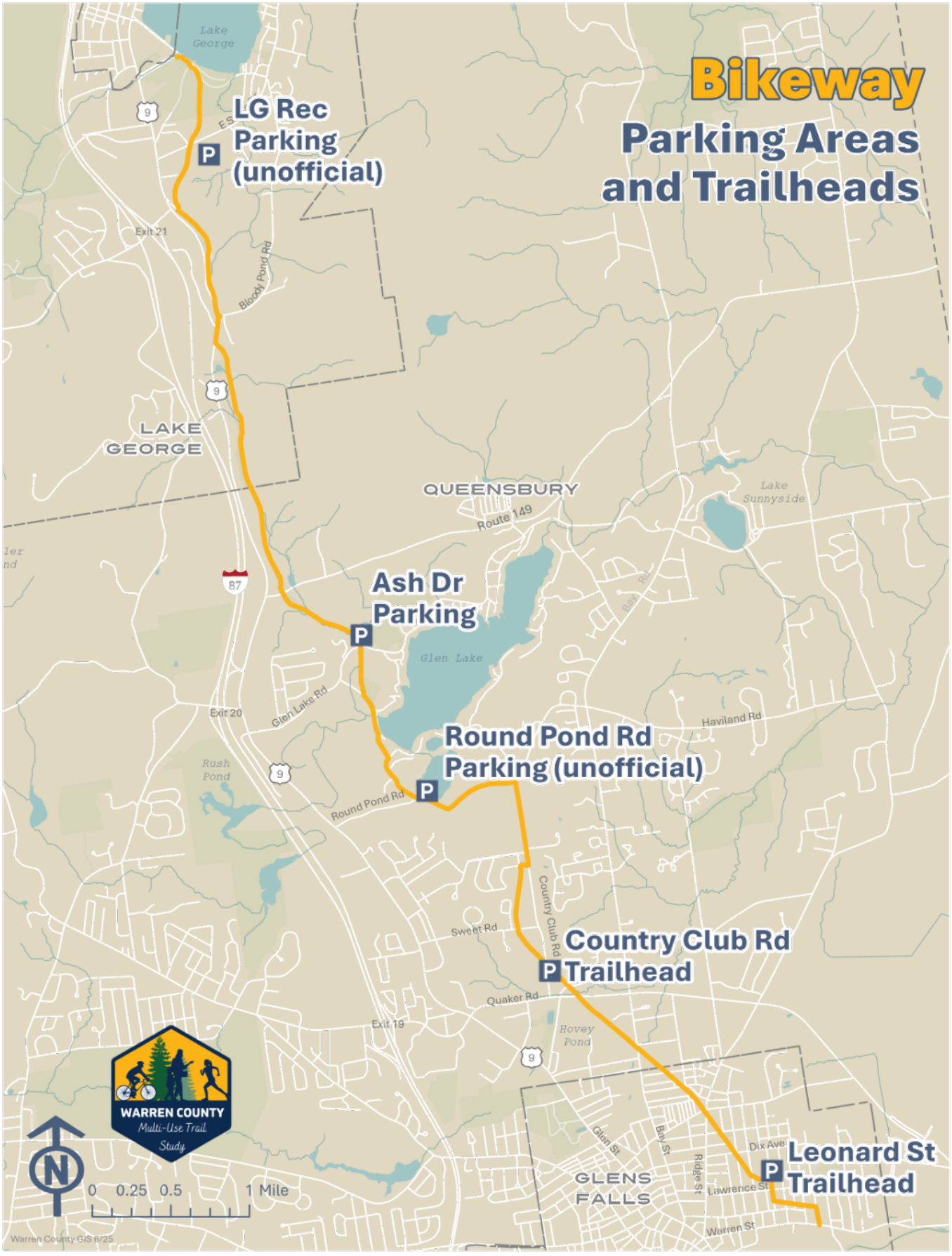
In addition to trailheads and parking areas, there are several instances along the Bikeway where spur trails have been constructed. Whether formalized as secondary trailheads or unofficial footpaths, these junctions act as the connective tissue of the trail system, providing access to various neighborhoods and commercial issues. Safe and accessible junctions that do not infringe on private property rights should be adopted into the trail system whenever and wherever possible. This may be accomplished through official means (i.e., access easement and installation of signage), or simply through recognition of their existence and a County policy that refrains from impeding safe access points that do not have a deleterious effect on the trail infrastructure and improvements, vegetation, or amenities. The following trail junctions have been identified along the Bikeway:

- Shirt Factory Spur: Continuation of asphalt trail across private property.
- Lawton Avenue: Bollards, signage, and asphalt present.
- Sagamore St. Park: Informal footpath with gate.
- Mason Street: Bollards, signage, and asphalt present.
- Baldwin Avenue: Informal footpath.
- Terra Cotta Ave: Informal footpath.
- MacArthur Drive: Informal footpath.
- Hannaford, Quaker Drive: Informal footpath.
- ImmunoTek, Quaker Drive: Informal footpath.
- The Landing at Queensbury, Woodvale Road: Crosswalk.
- Orchard Drive: Informal gravel path.
- Canterbury Drive: Narrow, steep dirt path.
- Old Military Road: Short on-road trail segment.
- Stanton Road: Bollards, signage, and asphalt present.
- Lake George Battlefield Park Campground: Narrow, steep dirt path.

The following trail junctions have been identified along the Feeder Canal Trail:

- Water Street: A steel truss bridge over the canal connects to the trail.
- Murray Street: A steel truss bridge over the canal connects to the parking area.
- Ferry Street: Informal gravel area and signage

present.


Bikeway
Parking Areas
and Trailheads
LG Rec
Parking
(unofficial)
Ash Dr
Parking
Round Pond Rd
Parking (unofficial)
Country Club Rd
Trailhead
Leonard St
Trailhead
Lake George
LAKE GEORGE
QUEENSBURY
GLENS FALLS
Exit 21
Exit 20
Exit 19
Bloody Pond Rd
Glen Lake Rd
Round Pond Rd
Haviland Rd
Route 149
Sweet Rd
Quaker Rd
Country Club Rd
Glen Lake
Lake Sunnyside
Rush Pond
Hovey Pond
Bay St
Glen St
Ridge St
Lawrence St
Dix Ave
Warren St
WARREN COUNTY
Multi-Use Trail
Study
N
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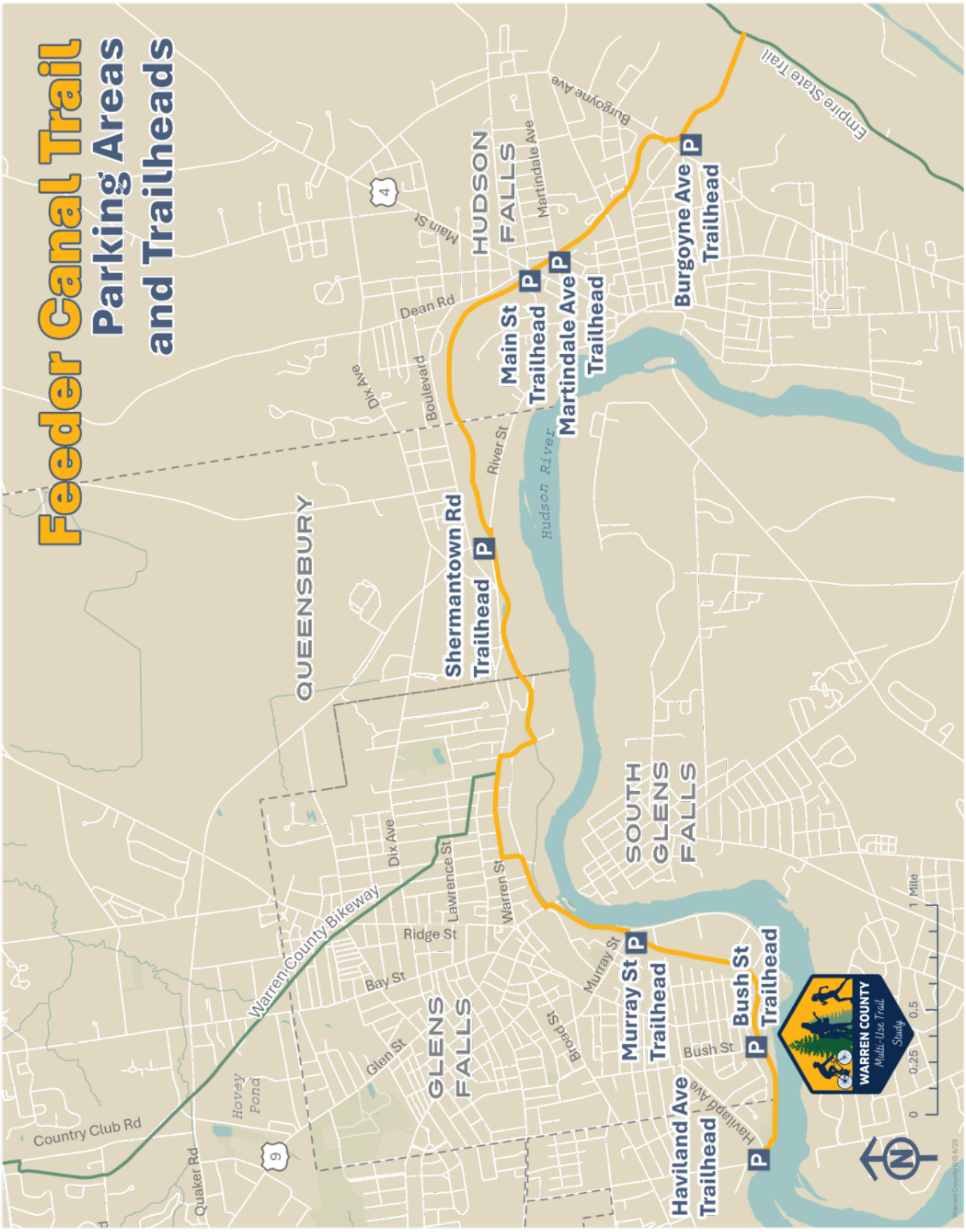
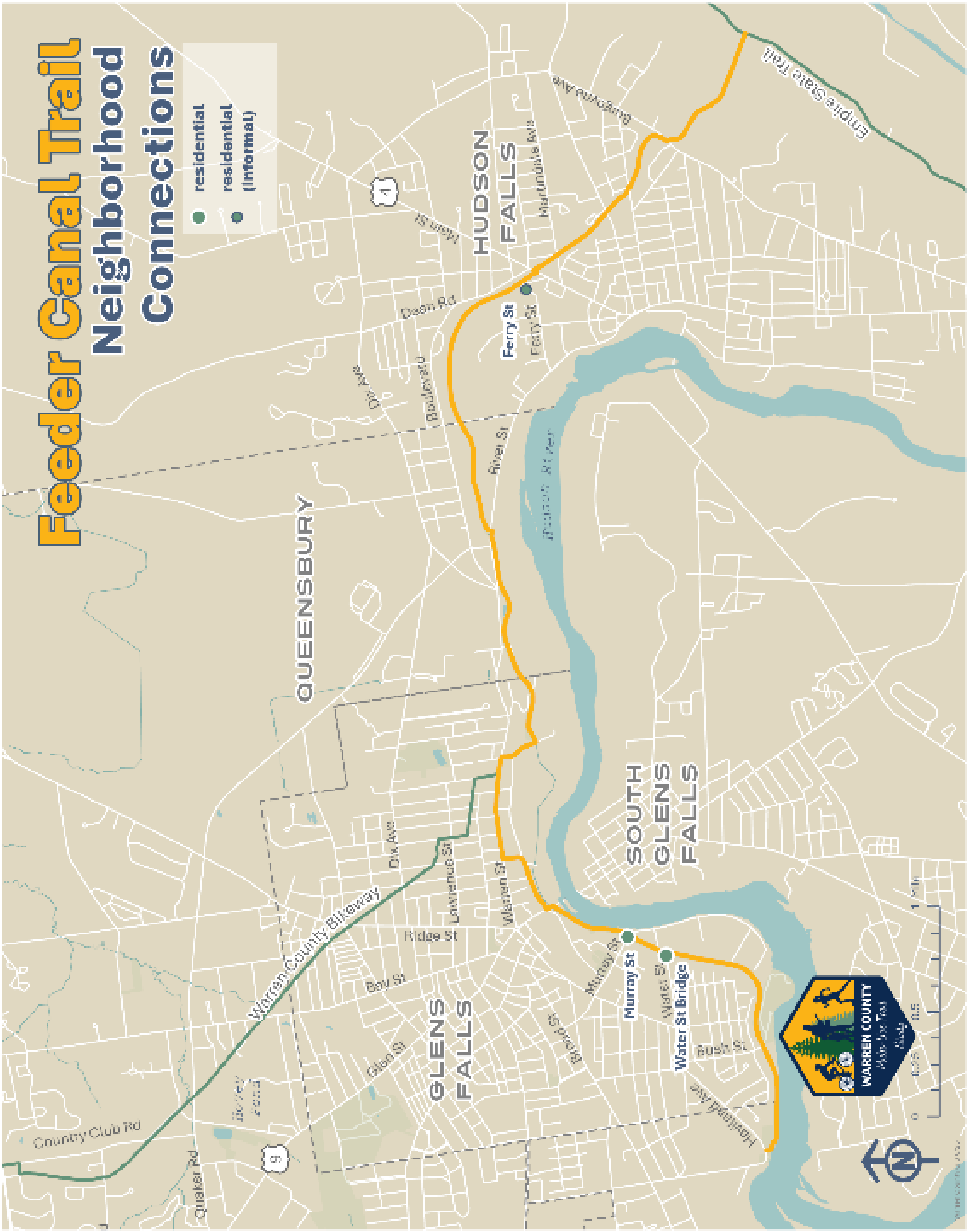
Warren County GIS 6/25


Feeder Canal Trail
Parking Areas
and Trailheads
Empire State Trail
Burgoyne Ave
Martindale Ave
HUDSON FALLS
Main St
Dean Rd
Dix Ave
Boulevard
River St
Hudson River
Main St Trailhead
Martindale Ave Trailhead
Burgoyne Ave Trailhead
Shermantown Rd Trailhead
QUEENSBURY
SOUTH GLENS FALLS
Dix Ave
Lawrence St
Warren St
Ridge St
Bay St
Glen St
Broad St
Murray St
Murray St Trailhead
Bush St
Bush St Trailhead
Haviland Ave Trailhead
Haviland Ave
Warren County Bikeway
GLENS FALLS
Country Club Rd
Quaker Rd
Hovey Pond
WARREN COUNTY Multi-Use Trail Study
0
0.25
0.5
1 Mile
N


Bikeway
Neighborhood
Connections
residential
non-residential
residential (Informal)
non-residential (Informal)
Lake George Battlefield Park Campground
French Mountain Trail
Colonel Williams Monument
Canterbury Dr
Orchard Dr
The Landing at Queensbury
ImmunoTek
Hannaford
CWI
MacArthur Dr
Terra Cotta Ave
Baldwin Ave
Mason St
Sagamore St Park
Lawton Ave
Shirt Factory Spur
LAKE GEORGE
QUEENSBURY
GLENS FALLS
WARREN COUNTY
Multi-Use Trail
Study
0 0.25 0.5 1 Mile


Feeder Canal Trail
Neighborhood
Connections
residential
residential (informal)
QUEENSBURY
HUDSON FALLS
SOUTH GLENS FALLS
GLENS FALLS
Ferry St
Murray St
Water St Bridge
Warren County Bikeway
Empire State Trail
Burgoyne Ave
Main St
Dean Rd
Dix Ave
Boulevard
River St
Warren St
Lawrence St
Ridge St
Bay St
Glen St
Broad St
Bush St
Country Club Rd
Quaker Rd
WARREN COUNTY
0
0.25
0.5
1 Mile

Section 6: New & Expanded Connections: Evaluation Criteria

Key Takeaways

- New and expanded facilities should be designed to accommodate the "Interested But Concerned" segment of trail users, which make up a majority of all trail users.
- A "Side-path," a 10'-12' wide paved pathway separated from the roadway, is the preferred facility treatment to close on-road trail gaps and make on-road downtown connections. The side-path allows for both pedestrian and bicyclist use. Therefore, it achieves a balance, providing the greatest extent of accommodation with the minimal amount of road corridor impact. The side-path also closely resembles the established off-road pathways, producing familiarity and a sense of safety to the typical trail user while reducing navigational uncertainty.
- Several connections will serve multiple purposes, in closing a gap or provided a downtown connection, access to cultural or recreational assets may also be achieved.

6.1 Comparison Criteria

In order to compare different route alternatives and trail system connections, a system to compare the benefits and detractors must first be established and presented in a way that is transparent and consistent. Identifying the typical trail users for each potential alternative is imperative. Utilizing the *FHWA Bikeway Selection Guide (2019)*, the most prevalent bicycle facility user type in the country is the **"Interested But Concerned"** cyclist who prefers off-road and separated facilities when compared to on-road bicycle accommodations. The figure below shows the breakdown of trail user types that fit into each category.

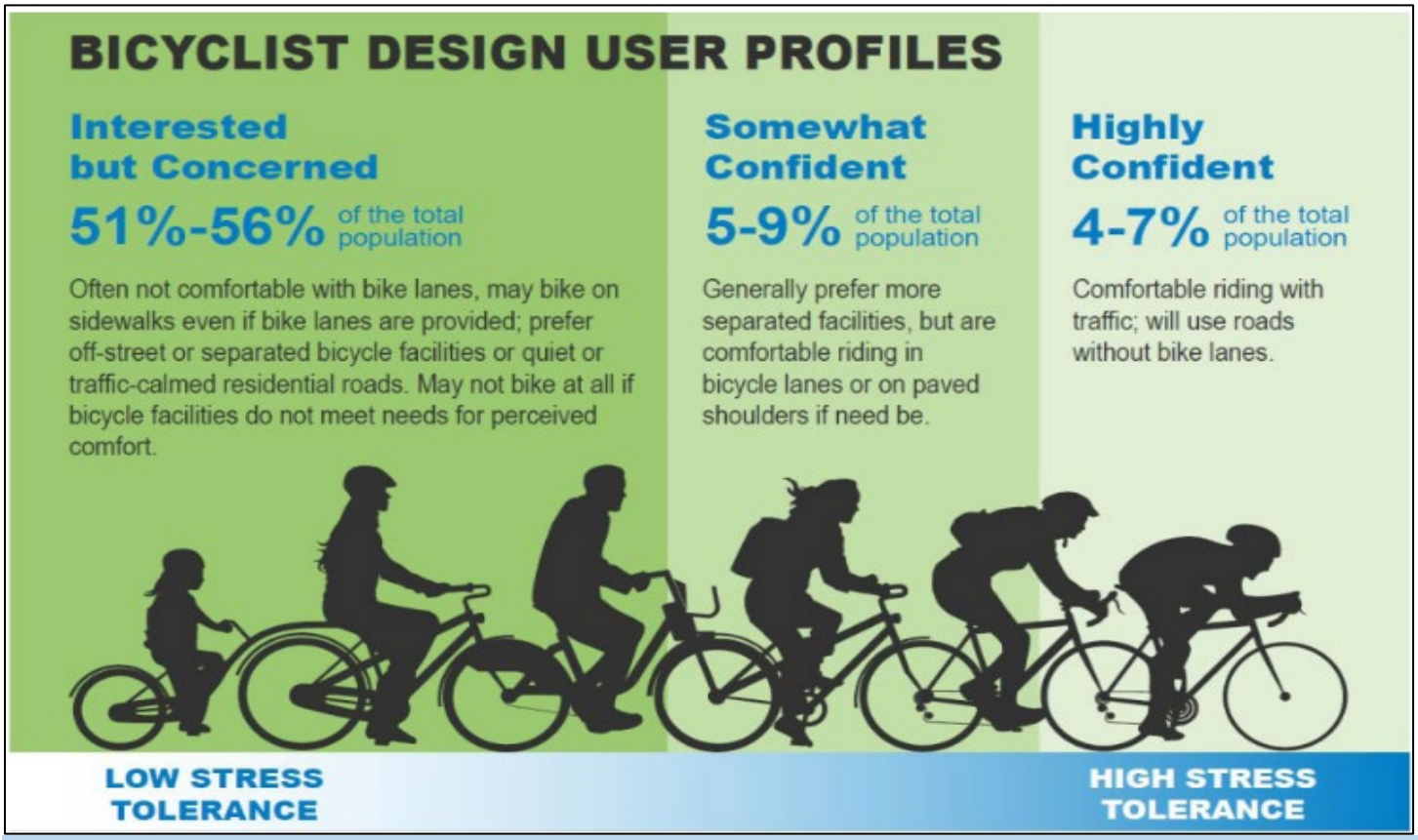


Figure 6-1: Cyclist Design User Profiles.

A low stress bicycle facility is one that is designed to be safe an appealing to all user types, age groups, and ability levels. This typically applies to separated bicycle facilities such as an off-road multi-use path, or a fully separated or buffered on-road bicycle facility, such as a cycle track or a sidepath. These options are discussed in more detail in Section 6.1.2.

As the majority of the Bikeway and Feeder Canal Trail are primarily off-road multi-use paths that deviate from the roadway network (except for crossings), the trail system generally caters to the "Interested But Concerned" user group. New segments connecting the gaps in the system and new connect-ions to downtowns and other places of interest would also ideally cater to the same user group. Choosing bicycle facilities that are considered low stress for these connections should be the priority. In order to implements a low stress bicycle facility, the requirements of the low stress types of facilities must be considered and the constructability analyzed through each segment of the proposed routes.

Similar to Section 3.1, the typical trail design standards for new bicycle facilities should utilize the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities 2012*, the NACTO Urban Bikeway Design Guide, and the NYSDOT Highway Design Manual (HDM). The *Empire State Trail Design Guide* may also be used as a guide and any practices proposed to be implemented should first be cross-referenced with these other guides prior to making a final decision.

The study area of this Section is broad, but the purpose and approach are consistent: to extend the reach and enhance the value of the trail system by making connections beyond the existing corridor. These include downtown connections, amenity and neighborhood linkages, and closing gaps along the existing corridor. As such, most if not all of the routes will be along or adjacent to roadways. The recommended facility types to serve these areas and connections are discussed on the following pages.

6.2 Recommended Facility Types

6.2.1 Overview

The ideal facility types for the various connections will cater to the "Interested But Concerned" user groups as this it the largest user profile group and it most closely matches the existing conditions of the Bikeway and Feeder Canal Trail. Facilities that best suit these needs are sidepaths or bi-directional separated bike lanes (aka cycletracks). Directional bike lanes that are often an attractive option to implement on roadway shoulders, but they typically do not cater to the "Interested But Concerned" because **bike lanes that do not include a buffer between the vehicle travel lane and the bike facility do not meet the expectations of a low stress bicycle facility and are therefore not considered preferable to this study.** In these instances, non-buffered bike lanes are typically only used by more experienced and confident cyclists. They also do not accommodate pedestrians, although most of the roadways considered in this Study already have sidewalks. The final option considered is the least attractive: the shared road-way (aka sharrow). This is typically implemented on a roadway by installing pavement markings (a bicycle symbol and two chevrons indicating the direction) and "bicycle in-lane" signage. Similar to directional bike lanes, the shared roadway typically does not cater to the "Interested But Concerned" except on low speed, low volume roadways such as a residential area with minimal through traffic. Therefore, the shared roadway should only be considered when no preferable option is feasible and only then as a temporary facility.

One challenging aspect in applying a new facility is that most the available right-of-way has already been claimed for housing or businesses, making an existing roadway corridor the most feasible option to install a bicycle facility only. Therefore, balancing the needs of the existing users of the roadway with the needs of the future trail users presents itself as the most challenging aspect. The bicycle facilities depicted on the following page were considered to make the various connections, in order of preference, for the "Interested But Concerned" trail user group.

6.2.2 Sidepath

A sidepath provides the greatest comfort and safety level for the "Interested But Concerned" cyclists as it is completely separated from an adjacent roadway. The sidepath also presents the option most similar to the majority of the off-road trail system. Sidepaths, similar to these off-road shared facilities, can accommodate both pedestrians and cyclists, among other users.

Chart 6-1: Sidepath Design Dimensions

Element	Standard
Path Width (Minimum)	10 feet
Path Width (Recommended)	11—14 feet *
Roadway Separation	Greater than 5 feet **
Pedestrian Accommodations?	Yes.

Notes:

** Paths with greater than 300 users per hour should consider this path width range.*

*** A paved shoulder or parking lane counts as separation from the roadway.*

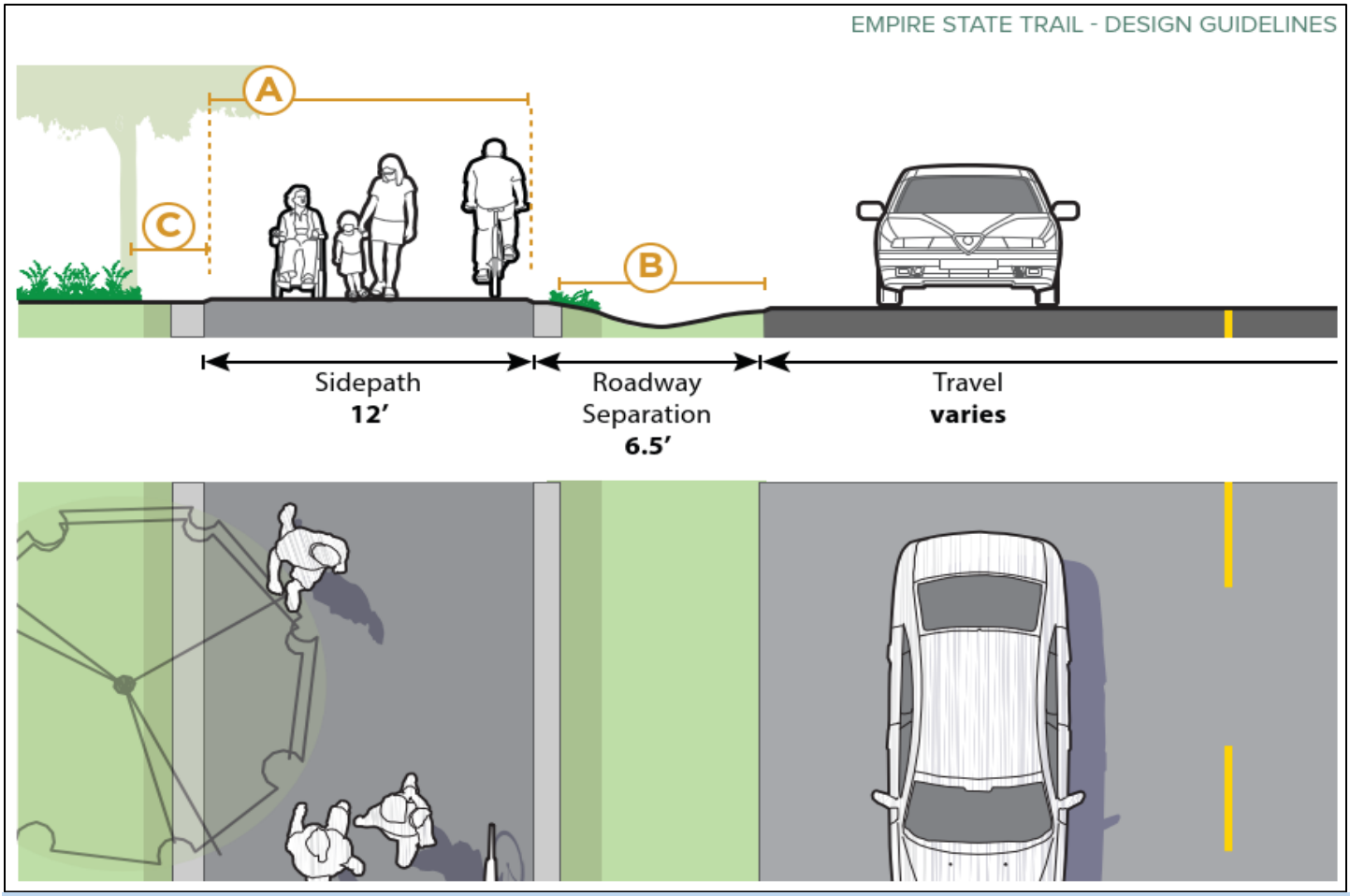


Figure 6-2: Sidepath Diagram.

6.2.3 Cycletrack

A bi-directional separated lane (aka cycletrack) is a facility that closely resembles a sidepath, but is located within the roadway pavement, and, therefore, closer to roadway traffic than a sidepath. Cycletracks also do not accommodate pedestrians, requiring a separate facility for these trail users. To this point, cycletracks can be an attractive retro-fit option is sidewalks are already present adjacent to the roadway, and if the existing pavement is of sufficient width. Cycletracks should generally be ten to 15 feet wide (five feet for each direction of travel), and a minimum of 12 feet if rush hour cyclist volumes are expected to exceed 750 per hour. The cycletrack should also be separated from the roadway with a physical buffer, such as flexible or rigid bollards, or with a curbed median. A separation of three feet should also be provided when the cycletrack is adjacent to a parking lane to provide space for cars opening their doors.

Chart 6-2: Cycletrack Design Dimensions

Element	Standard
Path Width (Minimum)*	10 feet
Path Width (Recommended)	12 feet
Roadway Separation	1.5 to 3 feet **
Pedestrian Accommodations?	**No.**

Notes:

** Acceptable width for bicycle rush hour volumes that are less than 750 per hour.*

*** Three feet recommended when adjacent to a parking lane.*

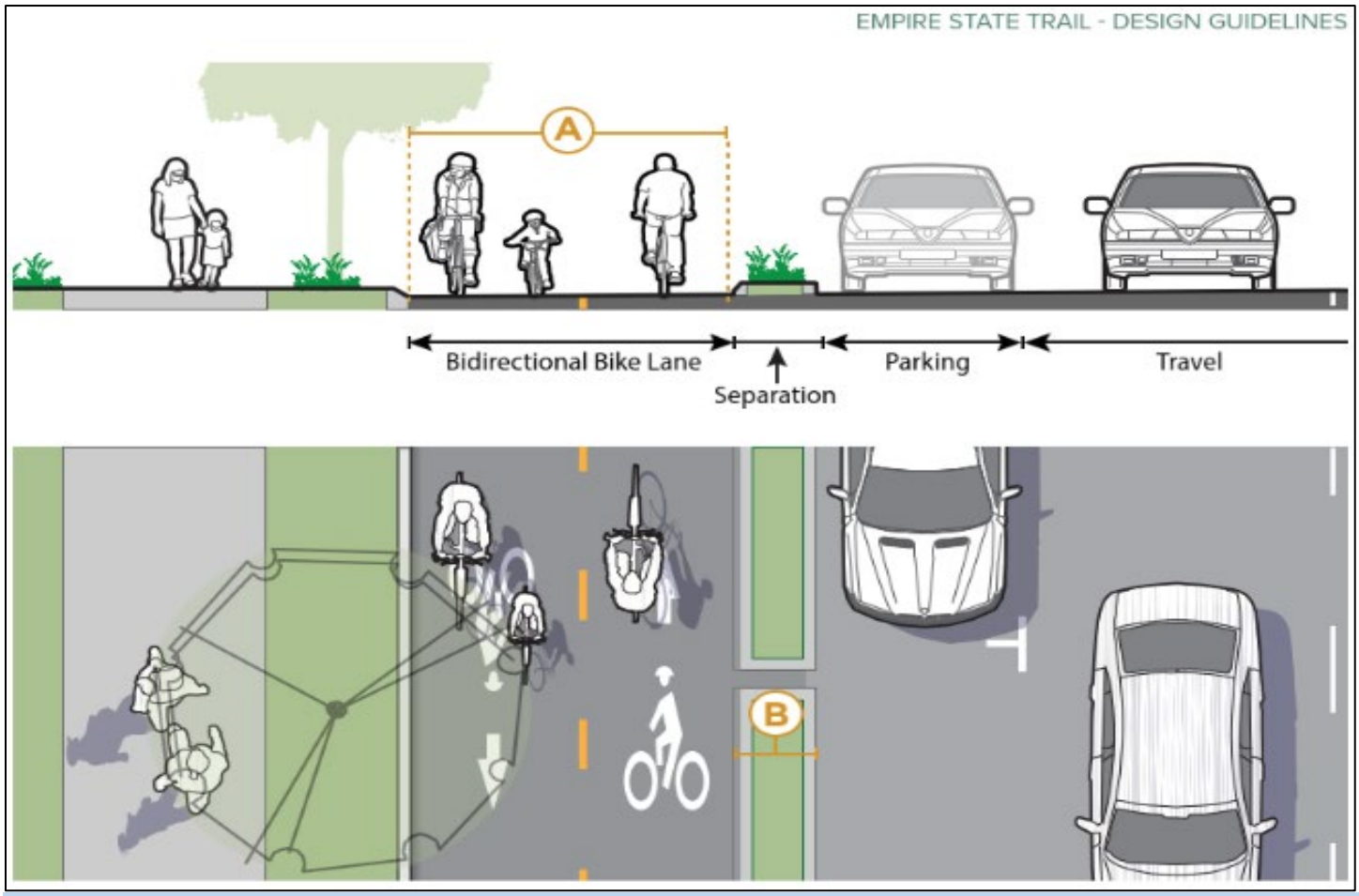


Figure 6-3: Cycletrack Diagram.

6.2.4 Directional Bike Lanes

Similar to a cycletrack, bike lanes provide dedicated on-road facilities for cyclists to utilize without pedestrians mixed in. Bike lanes should typically be five feet wide in most applications and their direction should match the adjacent traffic. A reduced width is accept-able on low speed roadways when there is no curb on the outer edge of the pavement. When the bike lane is installed adjacent to a parking lane, a width of seven feet should be provided. A minimum three-foot buffer space is also appropriate when adjacent to a parking lane, particularly in areas with high vehicle turnover.

Chart 6-3: Directional Bike Lane Design Dimensions

Element	Standard
Path Width (Minimum)	4 feet *
Path Width (Recommended)	5 to 7 feet **
Roadway Separation	1.5 to 3 feet **
Pedestrian Accommodations?	No.

Notes:

** Acceptable width when used on a low speed roadway with no curb.*

*** Suitable for most applications. .*

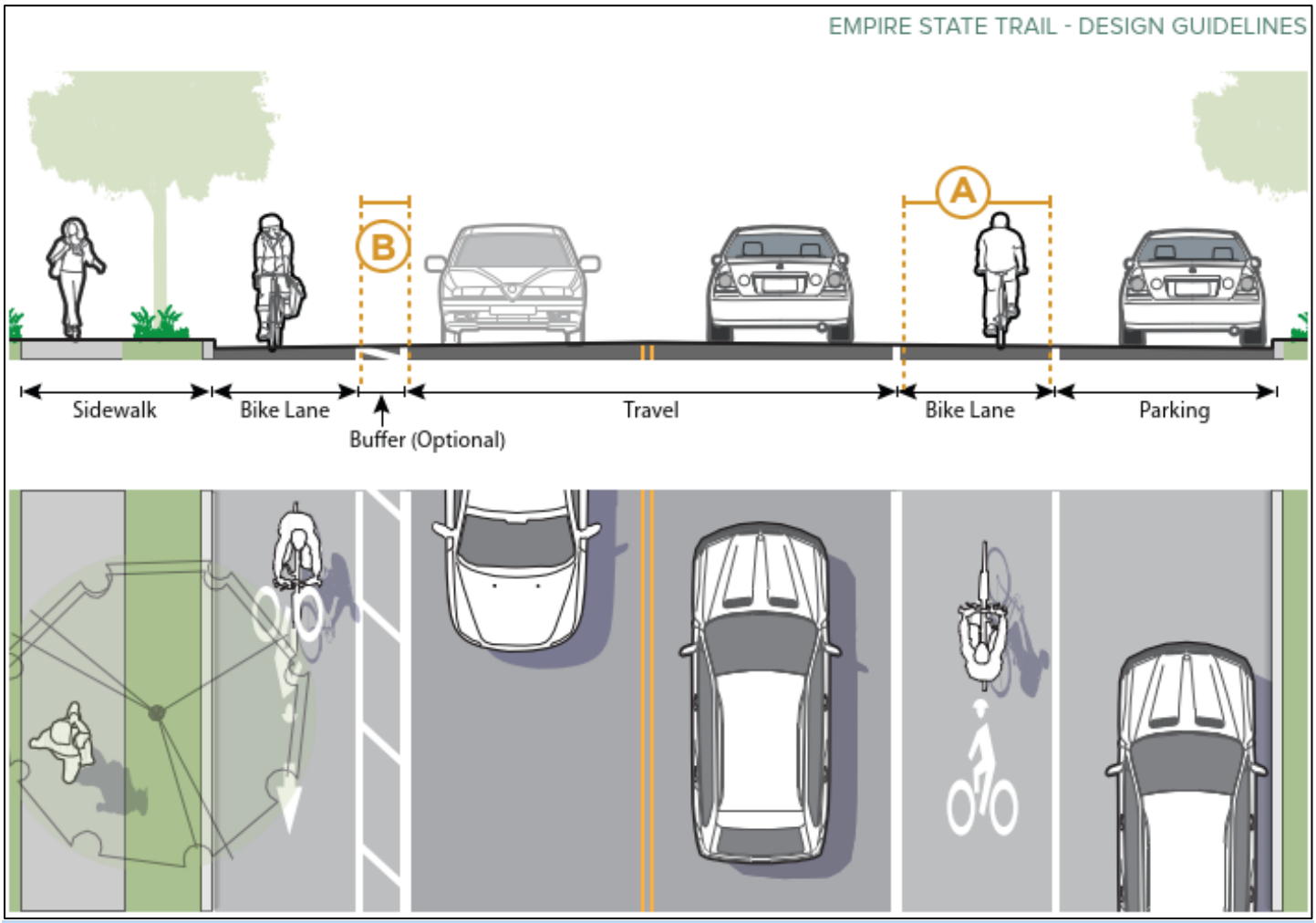


Figure 6-4: Directional Bike Lanes Diagram.

6.2.5 Shared Roadway (Sharrows)

A shared roadway is the least-preferred facility type for the 'Interested But Concerned' trail user in most situations. While some in this user group may tolerate riding on low-speed, low-volume roadways, this is not an appropriate solution for long-distance trail networks that attract families, inexperienced cyclists, or visitors unfamiliar with their surroundings. Cyclists are already permitted by New York State law to ride within the roadway, so additional markings are not required.

Shared lane markings ('sharrows') can remind motorists that bicyclists may be present, but they are not considered a bikeway under the AASHTO Guide for the Development of Bicycle Facilities (5th Edition, 2022). Their impact on bicyclist positioning and motorist behavior is modest to negligible at higher speeds and volumes, and they are only considered appropriate where volumes are below 3,000 vehicles per day and speeds are at or below 25 mph. AASHTO specifically advises against their use on roadways with speed limits above 35 mph.

As such, sharrows are not considered a modern or preferred treatment for extending or connecting off-road multi-use trails.

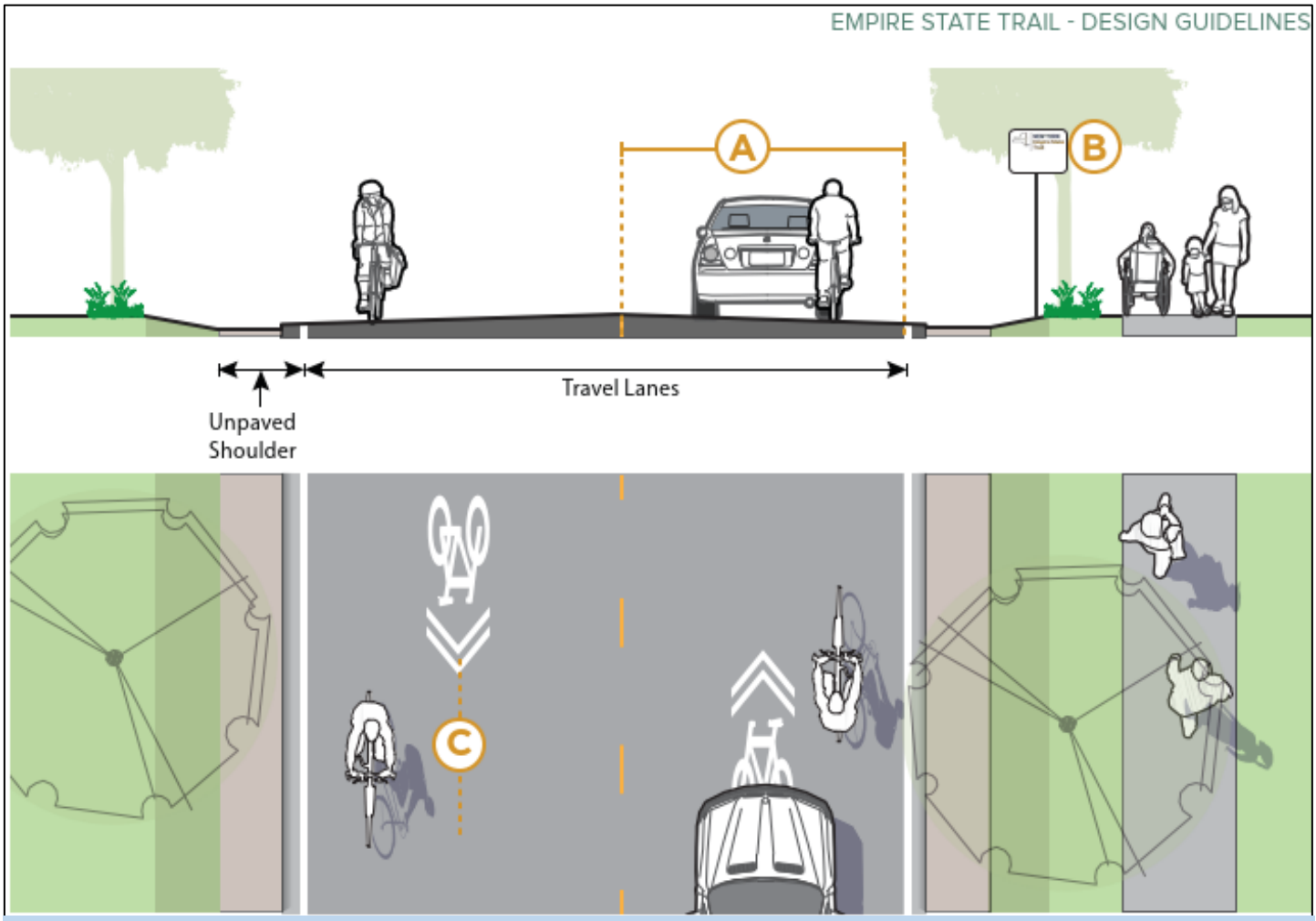


Figure 6-5: Shared Roadway Diagram.

Section 7: New & Expanded Connections: Downtowns

Key Takeaways

- Downtown connections will have a mutually beneficial impact on the trail system and our three nearby downtowns. These connections will make the Multi-Use Trail more accessible to a greater number of people while empowering the trail system to act as an economic catalyst, connecting recreationists and retail businesses, restaurants, and cultural and service resources.
- Given the density of development, downtown connections will have to parallel roadways and reside within or adjacent to the right-of-way. This presents challenges distinct from the off-road trail segments, but they are not insurmountable.
- **Glens Falls:** The recommended downtown connections are a cycletrack on either Bay Street or Ridge Street. A cycletrack along Warren Street would also be a viable alternative.
- **Hudson Falls:** The recommended downtown connections are either a cycletrack or separated bike lanes along Main Street (State Route 4).
- **Lake George:** Because the northern Bikeway trailhead is located at the Lake George Battlefield and Beach Road, which is considered part of the downtown fabric, attention was directed at enhancing this trailhead with multi-modal opportunities, along with wayfinding measures and other amenities.

7.1 Introduction

A primary goal of this Study is to create safe and comfortable connections between the trail system and the downtown business districts. These connections will also assist in encouraging visitation and tourism amongst these various entities, weaving them together as a network complete with recreation, accommodations, dining, and cultural and retail assets. A complete trail system can act as an economic catalyst to its surrounding area.

Currently, however, Glens Falls, Hudson Falls, and Lake George all lack safe, obvious, and comfortable connections between their downtowns and the trail system. The trails either abruptly terminate prior to or bypass these three downtown areas. This creates a sense of confusion when trying to navigate between the downtown and the trail system. It also breeds unawareness that vibrant commercial districts are nearby.

This Study assessed multiple different on-road options to direct the "Interested But Concerned" trail users into these downtown cores where non-motorized transportation options are prevalent. As mentioned above, utilizing the existing roadway network presented the most sensible option to direct users from the existing trail system into the downtown areas due to the density of development in the area. To make an equal comparison between the route options, the existing conditions of each roadway corridor was evaluated with the following criteria:

- Roadway classification,
- National highway system status,
- Average annual daily traffic (vehicles per day) and truck percentage,
- Posted speed limit and 85th percentile speed[3],
- Pavement width and number of vehicle travel lanes,
- Current travel lane width and minimum allowable travel lane width,
- Current shoulder width and minimum allowable shoulder width,

[3] 85th percentile speed is the speed at which 85% of vehicles are observed to travel under free-flowing conditions, regardless of the posted speed limit.

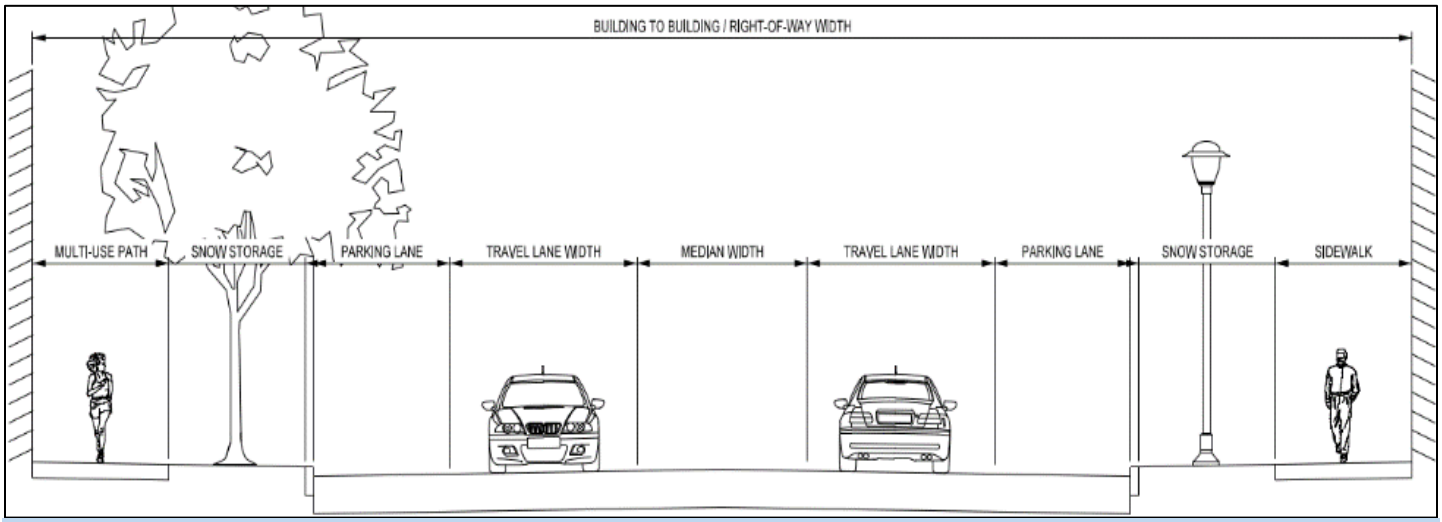


Figure 7-1: General Roadway Characteristics that were Assessed for Each Potential Route.

- On-street parking and parking lane width,
- Presence of sidewalks and sidewalk width,
- Building-to-building width,
- Right-of-way width,
- Roadway setting and adjacent land use,
- Ownership.

A review of the evaluation process is provided for each downtown.

7.2 Glens Falls

7.2.1 Overview

Both the Bikeway and the Feeder Canal Trail provide a way around the City of Glens Falls but lack direct access to the City's downtown core, identified as the five blocks that encircle the Fountain Square round-about. The southern Bikeway trailhead is located at the intersection of Warren Street and McDonald Street near the eastern boundary of the City and heads in a northwest direction toward the Town of Queensbury. The Feeder Canal Trail contains two disconnected segments with an approximately one-mile gap that includes the downtown core. The western segment terminates at Glen Street while the eastern segment terminates at Shermantown Road with no provisions for users on where to go from these locations. Multiple potential downtown connection routes, as shown on the map on the following page, were identified and investigated by the project team and reviewed in focus meetings with City officials, as noted in Section 2.4.1. **A desire of the City's is to establish the most direct connection with the least amount of impacts to City residents.** An additional goal of reducing confusion of trail users was also identified. Therefore, potential routes that included multiple roadways or neighborhood roadways were determined to not be feasible whereas the following direct connection routes merit further consideration:

- Bay Street
- Ridge Street
- Warren Street

These options are discussed on the following pages. Additionally, the City has recently installed sharrows on Maple Street in and this Study recognizes that improvement as a short-term effort, but not a long-term solution, to provide a direct downtown connection from the Bikeway (see Section 6.2.5 for more information on shared roadways).


Bikeway
Evaluated Potential Downtown Connections: Glens Falls
Existing Off-Road Trail
Existing On-Road Route
Identified/Evaluated Potential Downtown Connections
Sanford St
Warren County Bikeway
Dix Ave
Bay St
Ridge St
Walnut St
Leonard St
Maple St
McDonald St
Platt St
Warren St
Glen St
Hudson Ave
South St
Feeder Canal Trail
Murray St
WARREN COUNTY
Multi-Use Trail
Study
N
0
0.25
0.5 Mile
Warren County GIS 6/25

7.2.2 Bay Street Connection

The Bikeway crosses Bay Street just to the north of the Glens Falls-Queensbury border. The crossing location is approximately one mile from the downtown core destination area and offers a direct route via Bay Street.

While Bay Street does contain residences along the roadway, it is also considered more of a main north-south route between Glens Falls and Queensbury than a residential street. It is classified as an Urban Minor Arterial with an average of 8,528 vehicles per day and 85th percentile speed of 37 mph. There are two travel and parking lanes, and sidewalks along both sides. The featured design elements are listed to the right in Chart 7-1.

Due to the speeds and traffic volume in the corridor, the shared roadway option was eliminated from consideration. **A sidepath is the preferred facility between the Bikeway and Hope Ave**, while a cycletrack or directional bike lanes are preferred between Hope Ave and downtown due the residential setting of this area and significant impacts a sidepath would have on these residences.

Implementing these potential options would require the following:

- Remove one of the parking lanes,
- Reduce both travel lanes to 11 feet,
- Shift western curb 3 feet to the west for the cycletrack, or 3 feet east for the sidepath,
- Install 10-foot sidepath or cycletrack with 3-foot buffer from traffic,
- Relocate utility poles and remove trees,
- Mill/fill road to shift crown.

In considering which side of the road the side-path should be installed, it is important to note that while the west side of the road has fewer trees and driveways that would be impacted, the east side of the road has fewer parking spaces that would necessitate removal. The estimated cost of this preferred option for Bay Street is $3,600,000.

Chart 7-1: Bay Street Design Elements

Category	Bay Street
Road Classification	Urban Minor Arterial
National Highway System (NHS)?	No
Speed Limit	30 mph
85th Percentile Speed	37 mph
Annual Average Daily Traffic	8,528
Percentage of Trucks	3%
Pavement Width	40 feet
Vehicle Travel Lanes	2
Current Travel Lane Width	12 feet
Standard Minimum Travel Lane Width	11 feet
Current Shoulder Width	0 feet
Standard Minimum Shoulder Width	0 feet
On-Street Parking?	Yes, both sides.
Current Parking Lane Width	8 feet
Parking Spaces (In Glens Falls)	181 on west, 118 on east.
Sidewalks?	Yes, both sides.
Sidewalk Width	5 feet
Building-to-Building Width	90 feet
Right-of-Way Width	64 feet
Roadway Setting/Land Use	Commercial/ Residential
Ownership	City of Glens Falls

7.2.3 Ridge Street Connection

The Bikeway crosses Ridge Street just to the south of the signalized Ridge Street-Sanford Street intersection. Ridge Street parallels Bay Street to the east and provides a direct north-south 0.7-mile connection to the downtown core.

Ridge Street includes some residences along the corridor, although it is considered commercial, and more of a main north-south roadway between Glens Falls and Queensbury, very similar in nature to Bay Street. It is signed as NY Route 9L, although still owned and maintained by Glens Falls within the City boundary. Ridge Street is classified as an Urban Minor Arterial with an average of 8,649 vehicles per day, and 85th percentile speed of 34 mph, two travel and parking lanes, and sidewalks along both sides. Featured design elements are listed in Chart 7-2.

Due to similarities, the evaluation of Ridge Street resulted in the same recommendations as Bay Street. The shared roadway option was eliminated from consideration because of traffic speed and volume. **Implementing a cycletrack or directional bike lanes will likely be more viable based on proximity to residential properties and municipal stakeholder input, while a sidepath would be the preferred option if enhanced safety and user experience are higher priority considerations.**

Implementing this cycletrack option would require the following:

- Remove west parking lane,
- Reduce both travel lanes to 11 feet,
- Shift western curb 3 feet to the west,
- Install 10-foot cycletrack with 3-foot buffer,
- Remove turn lanes at Dix Ave intersection,
- Relocate utility poles and remove trees,
- Mill/fill road to shift crown.

The estimated cost of this facility is $2,100,000.

Chart 7-2: Ridge Street Design Elements

Category	Bay Street
Road Classification	Urban Minor Arterial
National Highway System (NHS)?	No
Speed Limit	30 mph
85th Percentile Speed	34 mph
Annual Average Daily Traffic	8,649
Percentage of Trucks	3%
Pavement Width	40-45 feet
Vehicle Travel Lanes	2
Current Travel Lane Width	12 feet
Standard Minimum Travel Lane Width	11 feet
Current Shoulder Width	0 feet
Standard Minimum Shoulder Width	0 feet
On-Street Parking?	Yes, both sides.
Current Parking Lane Width	8 feet
Parking Spaces (In Glens Falls)	77 on west, 78 on east.
Sidewalks?	Yes, both sides.
Sidewalk Width	4 feet on west, 10 feet on east.
Building-to-Building Width	62 feet
Right-of-Way Width	66 feet
Roadway Setting/Land Use	Commercial/ Residential
Ownership	City of Glens Falls

7.2.4 Warren Street Connection

The Feeder Canal Trail east segment terminates at Shermantown Road, just south of the intersection with Warren Street where there is currently a sign directing users toward Warren Street. The southern trailhead of the Bikeway is located at the McDonald-Warren Street intersection, approximately 850 feet west of the Shermantown Road intersection. Given its strategic location, the potential Warren Street downtown connection provides the opportunity to serve several functions:

1. Provide a downtown connection for both trails.
2. Provide a connection between the two trails.
3. Close the one-mile gap along the Feeder Canal Trail.

Warren Street is mainly a commercial corridor and serves as an east-west roadway between Glens Falls and Hudson Falls. It is signed as NY Route 32, although still owned and maintained by Glens Falls within the City bounds. Warren Street is classified as an Urban Principal Arterial with an average of 11,550 vehicles per day, posted speed limit of 30 mph, two travel and parking lanes, and sidewalks along both sides. The featured design elements are listed in Chart 7-3.

Due to perceived higher speeds and traffic volume in the corridor, the shared roadway was determined not to be feasible and was eliminated from consideration. **The side-path option was considered on Warren Street due to the existing segments ten-foot-wide sidewalks that could be signed or resurfaced as a side-path.** To accommodate additional cyclists on this route, the cycle-track and directional bike lanes options are also possible.

The estimated cost of a side-path facility is $1.553 million.

A map of the feasible routes and comparisons of the road sections and necessary improvements are provided on the following pages.

Chart 7-3: Warren Street Design Elements

Category	Bay Street
Road Classification	Urban Principal Arterial
National Highway System (NHS)?	Yes
Speed Limit	30 mph
85th Percentile Speed	Not available.
Annual Average Daily Traffic	11,550
Percentage of Trucks	7%
Pavement Width	40 feet
Vehicle Travel Lanes	2
Current Travel Lane Width	12 feet
Standard Minimum Travel Lane Width	11 feet
Current Shoulder Width	0 feet
Standard Minimum Shoulder Width	0 feet
On-Street Parking?	Yes, both sides.
Current Parking Lane Width	8 feet
Parking Spaces (In Glens Falls)	96 on north, 99 on south.
Sidewalks?	Yes, both sides.
Sidewalk Width	10 feet
Building-to-Building Width	62 feet
Right-of-Way Width	66 feet and varies.
Roadway Setting/Land Use	Mixed Use
Ownership	City of Glens Falls


Bikeway
Preferred/Recommended
Downtown Connections:
Glens Falls
Existing Off-Road Trail
Existing On-Road Route
Preferred Connections
Bike Lane
Side Path
Shared Roadway
Sanford St
Warren County Bikeway
Dix Ave
Bay St
Ridge St
Walnut St
Leonard St
Maple St
McDonald St
Platt St
Warren St
Glen St
Hudson Ave
Feeder Canal Trail
Murray St
WARREN COUNTY
Multi-Use Trail
Study
N
0
0.25
0.5 Mile
Warren County GIS 6/25

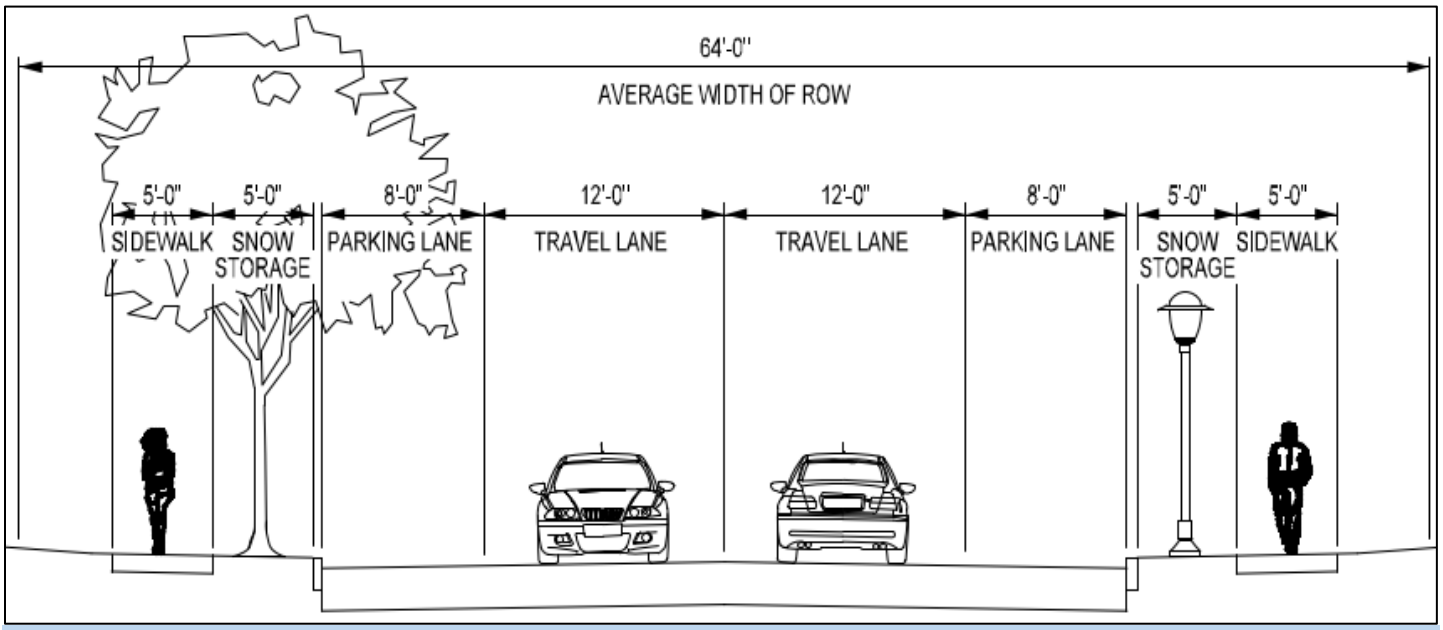


Figure 7-2: Existing Bay Street Section.

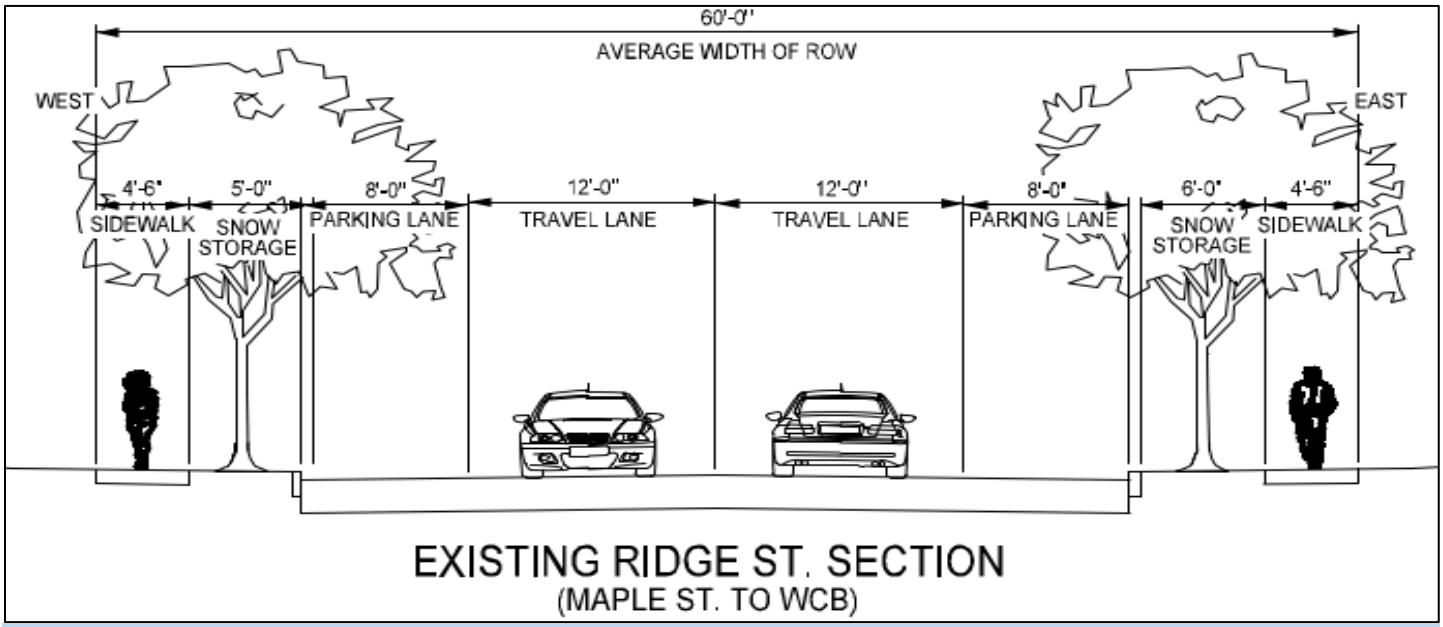


Figure 7-3: Existing Ridge Street Section.

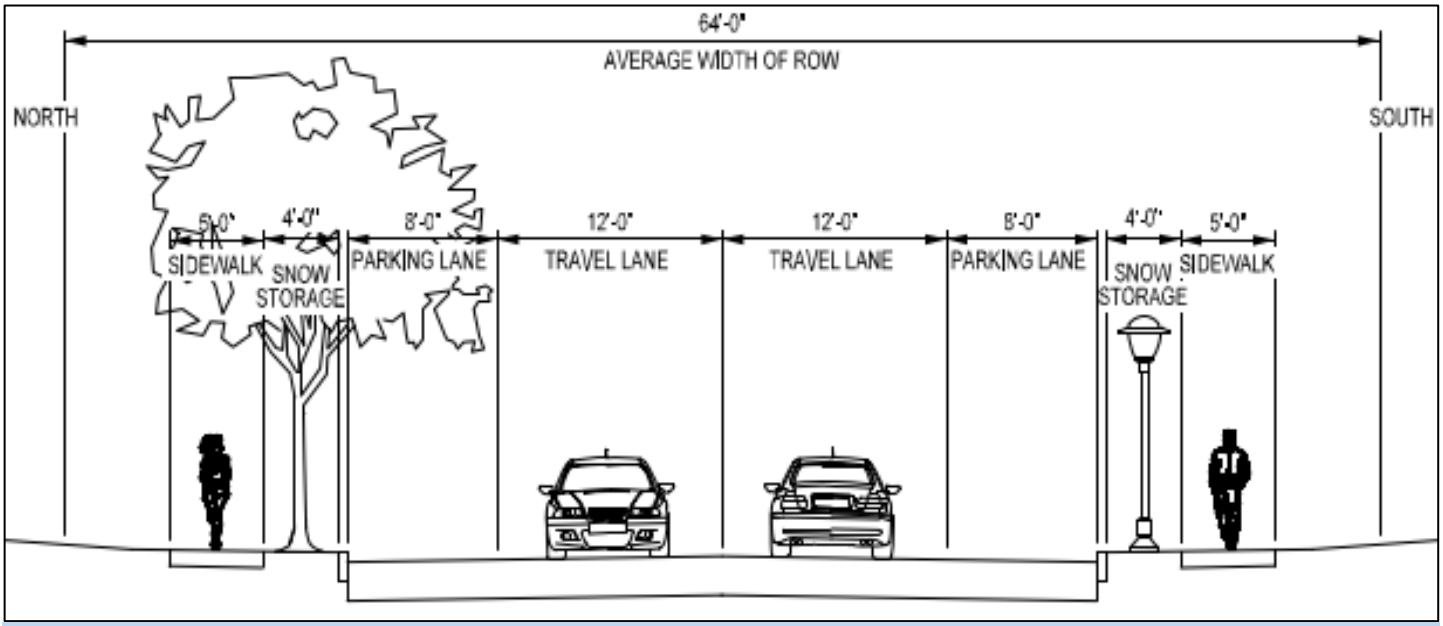


Figure 7-4: Existing Warren Street Section from McDonald Street to Oak Street.

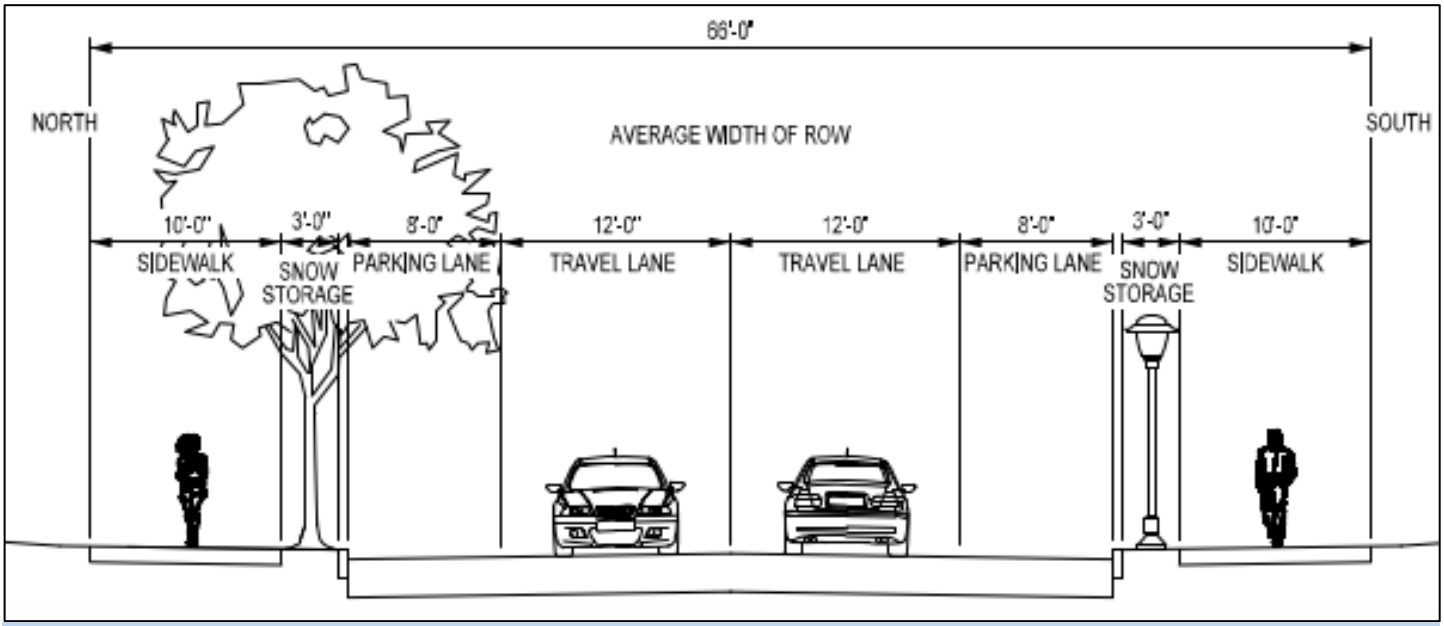


Figure 7-5: Existing Warren Street Section from Oak Street to the Downtown Roundabout.

	Cycletrack	Directional Bike Lanes
Improvements/ Actions Needed	● Remove 8 ft. west parking lane ● reduce both travel lanes to 11 ft. ● Shift curb 3 ft. west ● Install 10 ft. Cycletrack w/ 3 ft. buffer ● Relocate utility poles & remove trees ● Mill/Fill road to shift crown	● Remove east parking lane ● Reduce both travel lanes to 11 ft. ● 5 ft. bike lane on east side ● 5 ft. bike lane between travel lane and parking lane on west side ● Mill/Fill road to shift crown ● Modify striping to include bike lanes
Notes	West side of road has less trees and driveways that would be affected by the curb shift	East side parking lane has less available spaces
Parking Spaces Lost	West Side = 181	East Side = 118
Approximate Cost	$3,600,000	$800,000

Chart 7-3: Bay Street Improvements

	Cycletrack	Directional Bike Lanes
Improvements/ Actions Needed	● Reduce travel lanes to 11 ft. ● Remove 8 ft. west parking lane ● Move western curb 3 ft. west ● Install a 10 ft. cycletrack with a 3 ft. buffer ● Remove turn lanes at Dix Ave. Intersection* ● Relocate utility poles & remove trees ● Mill/Fill road to shift crown	● Remove west parking lane ● Reduce both travel lanes to 11 ft. ● 5 ft. bike lane on west side ● 5 ft. bike lane between travel lane and parking lane on east side ● Mill/Fill road to shift crown ● Modify striping to include bike lanes ● Remove turn lanes at Dix Ave. Intersection*
Notes	West side of roadway has less healthy trees	
Parking Spaces Lost	West Side = 77	East Side = 77
Approximate Cost	$2,100,000	$512,000
** A traffic study should be performed to confirm that traffic will not be negatively affected*		

Chart 7-4: Ridge Street Improvements

		Cycletrack	Sidepath	Directional Bike Lanes
Improvements/ Actions Needed	**Warren St. (Church St. to Oakland Ave.)**	● Reduce travel lanes to 11 ft. ● Remove 8 ft. south parking lane ● Move southern curb 3 ft. south ● Remove 3 ft. of existing sidewalk and add snowstorage ● Install a 10 ft. cycletrack with a 3 ft. buffer ● Relocate light poles & remove trees ● Mill/Fill road to shift crown	Use existing 10 ft. sidewalks on both sides of the roadway as sidepaths. Preferrably use south side for consistency with next section	● Remove south parking lane ● Reduce both travel lanes to 11 ft. ● 5 ft. bike lane on south side ● 5 ft. bike lane between travel lane and parking lane on north side ● Mill/Fill road to shift crown ● Modify striping to include bike lanes
	Warren St (Oakland Ave. to McDonald St.)	● Reduce travel lanes to 11 ft. ● Remove 8 ft. south parking lane ● Move southern curb 3 ft. south and eliminate snowstorage ● Install a 10 ft. cycletrack with a 3 ft. buffer ● Relocate light/utility poles & remove trees ● Mill/Fill road to shift crown	● Remove 8 ft. south parking lane ● Move southern curb 4 ft. north ● Remove existing sidewalk and install a 10 ft. shared use path and 4 ft. snowstorage ● Relocate light/utility poles & remove trees	● Remove south parking lane ● Reduce both travel lanes to 11 ft. ● 5 ft. bike lane on south side ● 5 ft. bike lane between travel lane and parking lane on north side ● Mill/Fill road to shift crown ● Modify striping to include bike lanes
Notes			Bicyclists typically prefer smooth surfaces to ride on, such as asphalt. These sidewalks have joints inbetween the concrete slabs. Use signalized crossing at McDonald St. to join WCB.	
Parking Spaces Lost		South side=99	South side=59	South side=99
Approximate Cost		Warren Street (Church - Oak.) = $1,300,000 Warren Street (Oak. - McDonald) = $1,632,000	Warren Street (Oak. - McDonald) = $1,553,000	Warren Street (Church - Oak.) = $242,000 Warren Street (Oak. - McDonald) = $245,000

Chart 7-5: Warren Street Improvements

7.3 Hudson Falls

7.3.1 Overview

The Feeder Canal Trail is routed in a northwest-southeast direction, aligned along the eastern edge of the Village, and lacks a logical connection to the Village's downtown core, defined as the blocks encircling Juckett Park, the Village's center green. Four potential downtown connection routes have been identified and investigated (depicted on the map on the following page):

- Main Street (US Route 4)
- Martindale Ave to Main Street
- Maple Street
- Pearl Street

Each of the four potential routes offered a different corridor type to be considered. A desire of the Village is to make the most direct connection with the least amount of impacts to their residents and current transportation infrastructure. Therefore, potential routes that included multiple roadways, neighborhood roadways, or large disturbances to front yards, driveways, and parking were deemed infeasible. Ultimately, the direct connection route along Main Street (US Route 4, also NY Bike Route 9) was preferred by the Village.

7.3.2 Main Street (US Route 4) Connection

Locally referred to as Main Street, this roadway is also signed as US Route 4 and NYS Bike Route 9; therefore, it is owned and maintained by NYSDOT. Main Street is classified as an Urban Principal Arterial with an average of 13,538 vehicles per day, and 85th percentile speed of 38 mph, two travel and parking lanes, and sidewalks along both sides. Main Street in the Village contains a mixture of residential and commercial properties to the south that transitions to denser commercial use approaching the downtown core. NYS Bike Route 9 is a signed on-road bicycle corridor that extends from New York City to Rouses Point. Although this is formally known as Bike Route 9, there are no other dedicated bicycle attributes other than the route signs. The featured design elements considered for evaluating Main Street are listed in Chart 7-6.

Chart 7-6: Main Street (US Route 4) Design Elements

Category	Bay Street
Road Classification	Urban Principal Arterial
National Highway System (NHS)?	Yes
Speed Limit	30 mph
85th Percentile Speed	38 mph
Annual Average Daily Traffic	13,538
Percentage of Trucks	6%
Pavement Width	44 feet
Vehicle Travel Lanes	2
Current Travel Lane Width	13 feet
Standard Minimum Travel Lane Width	12 feet
Current Shoulder Width	0 feet
Standard Minimum Shoulder Width	0 feet
On-Street Parking?	Yes, both sides.
Current Parking Lane Width	9 feet
Parking Spaces (In Hudson Falls)	NA
Sidewalks?	Yes, both sides.
Sidewalk Width	5 feet
Building-to-Building Width	78 feet
Right-of-Way Width	68 feet
Roadway Setting/Land Use	Commercial/ Residential
Ownership	NYSDOT


Feeder Canal Trail
Evaluated Potential Downtown Connections: Hudson Falls
Existing Off-Road Trail
Existing On-Road Route
Identified/Evaluated Potential Downtown Connections
4
Weston Ave
Martindale Ave
Swan St
Main St
N Oak St
East St
School St
Feeder Canal Trail
Walnut St
Clark St
Locust St
Union St
Maple Ave
Park Pl
Maple St
Court St
Pearl St
WARREN COUNTY
Multi-Use Trail
Study
N
0
0.25
0.5 Mile
Warren County GIS 6/25

Main Street, as part of NYS Bike Route 9, includes 13-foot-wide travel lanes and is appropriate for the "Highly Confident" bicycle user group. The shared roadway facility, however, would not be a feasible option for the "Interested But Concerned" user group due to the speed, traffic volume, and high percentage of truck traffic through the corridor. The side-path was also considered to not be a feasible option since the roadway already includes five-foot sidewalks to accommodate pedestrians, coupled with the fact that the residences, driveways, and commercial properties become denser as you approach the downtown core. It is the Village's preference to avoid the difficulty in implementing this facility without impacting driveways, front yards, landscaping, and other obstacles. The cycle-track and separated directional bike lane options are therefore considered feasible (and preferred in that order) to accommodate cyclists on this route.

Figure 7-6: Main Street North of the Feeder Canal Trail Crossing.

Installation of a cycle-track would necessitate the removal of one parking lane and the curb line would need to be shifted approximately three feet toward the sidewalk to create the width that is required. The directional bike lanes could be constructed with minor striping changes to the roadway and will not require any construction or changes to the roadway. The current roadway width is 44 feet between curbs, which is sufficient space to reallocate to eight-foot parking lane, five-foot bike lane, two 12-foot travel lanes, and an additional five-foot bike lane.

After reviewing these options and the available roadway width in a meeting with the Village and NYSDOT, it was determined that the directional bike lanes would be the immediate prioritized project as it could be implemented quickly with a small investment of funds. The cycle-track, however, remains the optimal solution and is considered the long-term solution when funding can be acquired in the future.

Figure 7-7: Main Street Near Downtown.

7.4 Village of Lake George

The northern terminus of the Bikeway consists of a small trailhead located next to the intersection of Elizabeth Little Boulevard and Beach Road, in the Village of Lake George. The trailhead was constructed in 2012 and includes a bike parking area, a three-sided kiosk, trash receptacles, and signage denoting the Bikeway and a wayfinding panel indicated a few nearby destinations. Near the entrance, there is also a boulder with a memorial plaque to Keith DeLarm, the former Supervisor of the Town of Hague, for whom the Bikeway is named due to his decades-long work on creating it.

The trailhead is adjacent to the Lake George Battlefield Park and, similar to its surroundings, provides exceptional views across the lake. Other than brief wayfinding signage, the abrupt trail terminus leaves users on their own to figure out where to go from the trailhead or how to access the trailhead if already in the Village.

The project team investigated four potential Lake George downtown connection routes:

- A spur trail through Lake George Battlefield Park to reach Canada Street (US Route 9)
- Elizabeth Little Boulevard
- Southside of Beach Road
- Northside of Beach Road along the waterfront

Each potential route has some merit to providing a connection, but none of the routes could effectively create a safe and direct connection. Canada Street and Beach Road are both high-volume four-lane roadways which create an intimidating scenario with an on-road facility. There are sidewalks throughout the entire Village with some in the eight to ten-foot range that would typically be considered for a side-path. However, because the Village is a tourism center for the County, the sidewalks are often busy and filled with pedestrians all summer long. Dense commercial activity along these roadways is an additional challenge. Ultimately, it was concluded that introducing bicyclists to share the space with vehicles and pedestrians within the Village is not a safe or desirable scenario.

Figure 7-7: Bike Racks at Lake George Trailhead.

Figure 7-8: Kiosk at Lake George Trailhead.

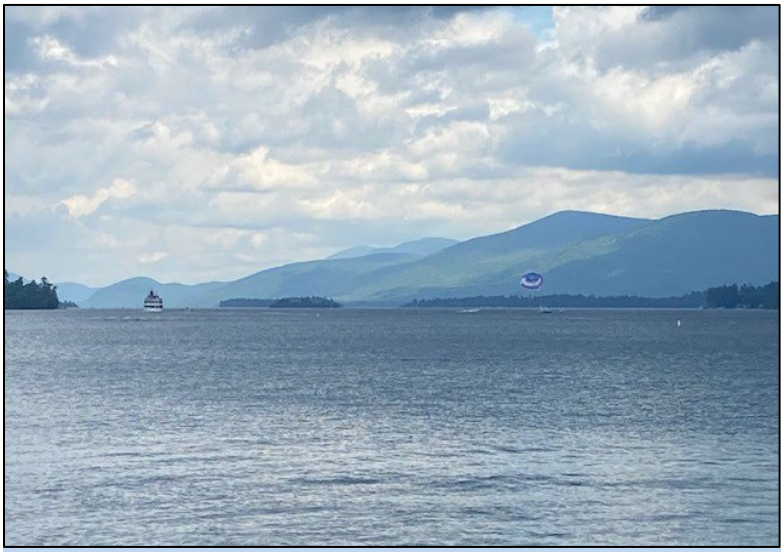


Figure 7-9: View North Near Bikeway Terminus.


Bikeway
Evaluated Potential Downtown Connections: Lake George
Existing Off-Road Trail
Existing On-Road Route
Identified/Evaluated Potential Downtown Connections
Amherst St
Ottawa St
Montcalm St
McGillis Ave
Beach Rd
Mohican St
Canada St
Dieskau St
Lake George
Charles R Wood Park
Sewell St
Elizabeth Little Blvd
Battlefield State Park
Beach Rd
Warren County Bikeway
Fort George Rd
9
WARREN COUNTY Multi-Use Trail Study
N
0
0.25
0.5 Mile
Warren County GIS 6/25

Since the Village is a walkable community and there are so many destinations within walking distance and in different directions, it was determined that creating a modern Lake George Trailhead with adequate wayfinding signage to replace the existing Bikeway trailhead would best achieve the goals of downtown connections and serve the Bikeway users and visitors to the area. The proposed Lake George Trailhead will include interpretive and wayfinding signage (further discussed in Section 10), bike parking, a bike repair station, an informational kiosk, benches, landscaping, and many other trailhead amenities to modernize and formalize this as a proper beginning or end to the Bikeway. The formalization of the space in coordination with the wayfinding signage will provide users with the confidence to utilize the bike parking area because they will know where they are walking. Additionally, space is available adjacent to the new trailhead to include a new CDTA Bus/Trolley Shelter if the current route along Beach Road is altered in the future to include a new stop on Elizabeth Little Boulevard.

This proposed project was submitted and selected as part of the Lake George Downtown Revitalization Initiative and will be implemented in the near future.

Figure 7-9: Proposed Lake George Trailhead to Assist in Downtown Connectivity.

Section 8: New & Expanded Connections: Closing Gaps

Key Takeaways

- Retaining the on-road corridor of Country Club and Round Pond roads would preferably involve the establishment of a side-path on the east side of Country Club Road and the south side of Round Pond Road. This would accomplish the goal of accommodating both cyclists and pedestrians.
- Warren Street is a key link to several objectives expressed in this Study and establishing a facility that meets the demands of the "Interested But Concerned" trail user group along this roadway would achieve the following:
  - Close the gap between the Bikeway and Feeder Canal Trail
  - Connect the Bikeway and the eastern segment of the Feeder Canal Trail to the Glens Falls downtown core
  - Partially close the gap between the two disconnected segments of the Feeder Canal Trail
- Several low-cost, short-term options exist to closing various gaps. Many of these, however, do not meet the demands of the "Interested But Concerned" trail user group. While that is an overarching goal of this Study, incremental improvements that help to establish corridors as part of the multi-use trail should also be encouraged.

8.1 Introduction

The Multi-Use Trail System is envisioned as an off-road trail that provides a peaceful, natural setting and accommodates the "Interested But Concerned" user group. But the trail system, comprised of the Bikeway and the Feeder Canal Trail, is a segmented, incomplete system, necessitating travel along roadways to access the various segments and enjoy a long-distance trail experience. There is a gap between the two trails, but there also gaps amongst them. A primary goal of this Study is to unite these segments into a fully connected regional trail that links to the Empire State Trail via the Champlain Canal Trail, creating a network that extends beyond our borders. To achieve this, the following gaps were identified and potential closures evaluated:

- Bikeway: Country Club Road to Round Pond Road
- Birdsall Road Bypass
- Bikeway to Feeder Canal
- Feeder Canal: Shermantown Road to Glen Street

8.2 Bikeway: Country Club Road to Birdsall

8.2.1 Overview

The off-road gap from Country Club Road to Birdsall Ave presents trail users with an approximately 1.2-mile travers of public roadways. While signed as a continuation of the Bikeway, the abrupt terminus of the off-road setting, the absence of existing on-road, and presence of narrow shoulders dissuade all but the "Highly Confident" user group. Additionally, the lack of pedestrian facilities in this largely residential area limits trail use along the adjacent off-road segments. This gap has been identified as a primary focus area of this Study and was routinely supported during the public survey, the public engagement sessions, and at stakeholder outreach meetings (including meetings with the Glens Falls Country Club). There are several constraints to overcome along this alignment if on-road accommodation is to be improved. These include limited right-of-way, driveways, Glens Falls Country Club property, trees, some areas of steep side slopes, and utility poles. There are also obstacles to developing an off-road alternative that would comfortably serve both pedestrians and cyclists. These options are reviewed in this Section.

8.2.2 Current Roadway Corridor Options

Country Club Road is classified as an Urban Major Collector with an approximate average of 5,000 vehicles per day, an 85th percentile speed of 46 mph, two travel lanes, and, at best, four to five-foot wide shoulders. The off-road portion of the Bikeway intersects with Country Club Road approximately 400 feet south of Wincrest Drive and the on-road segment is approximately ½ mile to Round Pond Road. An additional 0.7 mile of Round Pond Road must then be traversed to access Birdsall Road, as depicted in the map on the following page.

On the eastern side of Country Club Road, the southern half consists of residential properties with front and back yards abutting the roadway. The northern half of the eastern side includes the Glens Falls Country Club and a private property (111 Country Club Road) with a large mount of open space unused land. The open space area appears to be maintained and is enclosed with barbed-wire fencing. It appears that it could be old farmland or have an agricultural use, but it is zoned Rural Residential.

Round Pond Road is classified as an Urban Minor Arterial with an average of more than 4,300 vehicles per day, an 85th percentile speed of 30 mph, two travel lanes, and four to five-foot shoulders that are intended for bicycle use. It is noted that this speed data was collected just east of the US Route 9 intersection and includes speeds for vehicles that are slowing down as they approach the intersection or speeding up as they turn from US Route 9 onto Round Pond Road. This is outside of the project area and is not an accurate freeflow speed of this road-way corridor. Input from the PAC and public outreach noted that traffic operations of Country Club Road and Round Pond Road are similar, so it can be assumed that the operating speed is closer to the 40 to 45 mph range since the road is posted with a 40 mph speed limit.

The majority Round Pond Road in the study area bisects the Glens Falls Country Club property on the southern side and is adjacent to National Grid properties on the northern side, including a wide gravel area near Birdsall Road intersection that is frequently used for parking.

Figure 8-1: Country Club Road Crossing.

Figure 8-2: Looking North from the Off-Road Terminus.

Figure 8-3: East Shoulder of Country Club Rd, Looking South.


Bikeway
Round Pond Rd and
Country Club Rd Gap
Round
Pond
Glens Falls
Country Club
Glens Falls
Country Club
Birdsall Rd
Round Pond Rd
Round Pond Rd
Round Pond Rd
Country Club Rd
Wincrest Dr
Oakwood Dr
Wincrest Dr
Country Club Rd
WARREN COUNTY
Multi-Use Trail
Study
0
0.25
0.5 Mile

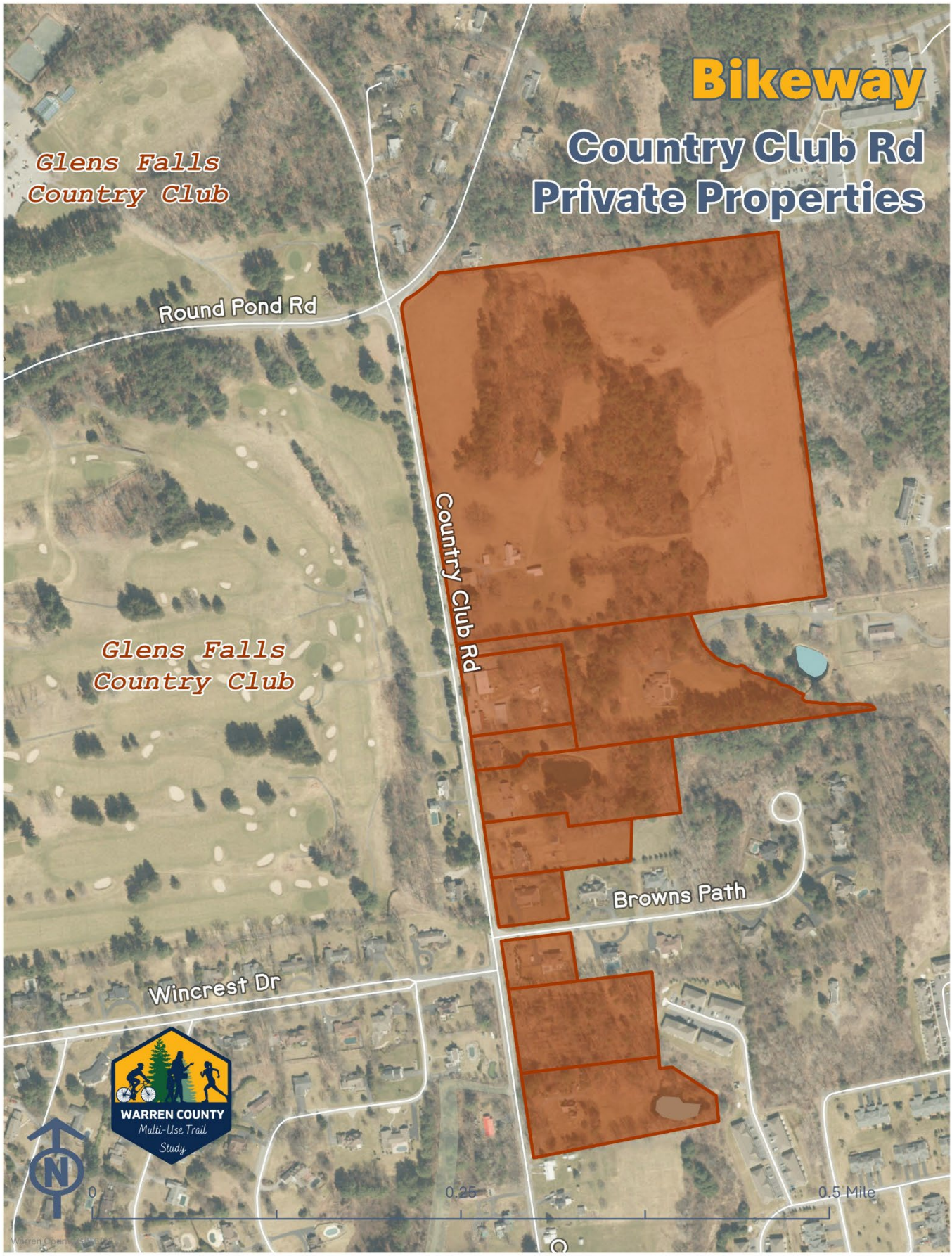

Bikeway
Country Club Rd
Private Properties
Glens Falls
Country Club
Round Pond Rd
Country Club Rd
Glens Falls
Country Club
Browns Path
Wincrest Dr
WARREN COUNTY
Multi-Use Trail
Study
N
0
0.25
0.5 Mile

Figure 8-4: Round Pond Road Looking West from Intersection.

Figure 8-5: Round Pond Road East of GFCC Entrance.

Figure 8-6: Gravel Parking Area Near Birdsall Road.

Chart 8-1: Country Club Road & Round Pond Road Design Elements

Category	Country Club Rd	Round Pond Rd
Road Classification	Urban Major Collector	Urban Minor Collector
National Highway System (NHS)?	No	No
Speed Limit	45 mph	40 mph
85th Percentile Speed	46 mph	30 mph *
Annual Average Daily Traffic	5,005	4,331
Percentage of Trucks	3%	3%
Pavement Width	30—32 feet	30—32 feet
Vehicle Travel Lanes	2	2
Current Travel Lane Width	11 feet	11 feet
Standard Minimum Travel Lane Width	10 feet	11 feet
Current Shoulder Width	4 to 5 feet	4 to 5 feet
Standard Minimum Shoulder Width	4 feet	4 feet
On-Street Parking?	No	No
Current Parking Lane Width	NA	NA
Parking Spaces (In Hudson Falls)	NA	NA
Sidewalks?	No	No
Sidewalk Width	NA	NA
Building-to-Building Width	NA	NA
Right-of-Way Width	50 feet	50 feet
Roadway Setting/Land Use	Residential	Residential
Ownership	Town of Queensbury	Warren County **

Notes:

** Speed data was collected near the intersection of US Route 9 outside of the project limits.*

*** Maintained by Warren County but the roadway is designated as a Highway By Use.*

Although the current Bikeway route utilizes Country Club Road and Round Pond Road as a shared roadway, the evaluation of the data presented in Chart 8-1 suggests that a shared roadway would not be the preferred treatment due to the traffic speeds and volumes of the two roadways. Comparing the existing site data to the recommended facility types in Section 6, the side-path and cycle-track options are considered feasible for this corridor, with the side-path the preferred option due to the lack of pedestrian accommodations along this corridor.

For the Country Club Road segment, the side-path would be best aligned along the east side of the roadway. The west side includes two homes that are close to the roadway, a drainage ditch that would require additional construction work to either close the drainage with pipes or additional earthwork to maintain the drainage flow, and it would greatly impact trees and fairway of the GFCC. Along the east side of the road, there would be ten properties that would require an easement or an area of acquisition to complete the side-path and roadway separation. Although there are more total properties impacted on the east side, two of the properties are owned by the Country Club and it appears that five of the properties would not be greatly affected (i.e., back of property, forested area, or already separated with landscaping), and the remaining three properties are set back from the roadway to provide ample space for a side-path. The east side also includes 900 feet along the frontage of the open space land at 111 Country Club Road.

On the Round Pond segment, as summarized during stakeholder meetings with GFCC representatives, the side-path would be best aligned along the south side of the road. The south side alignment provides the least impact to the GFCC property and also avoids crossing the main entrance. To evaluate the impacts to the GFCC property, a conceptual design was completed (Figure 8-7 below), which determine that a slight realignment of the roadway by flattening out the sharp curve near the hole #1

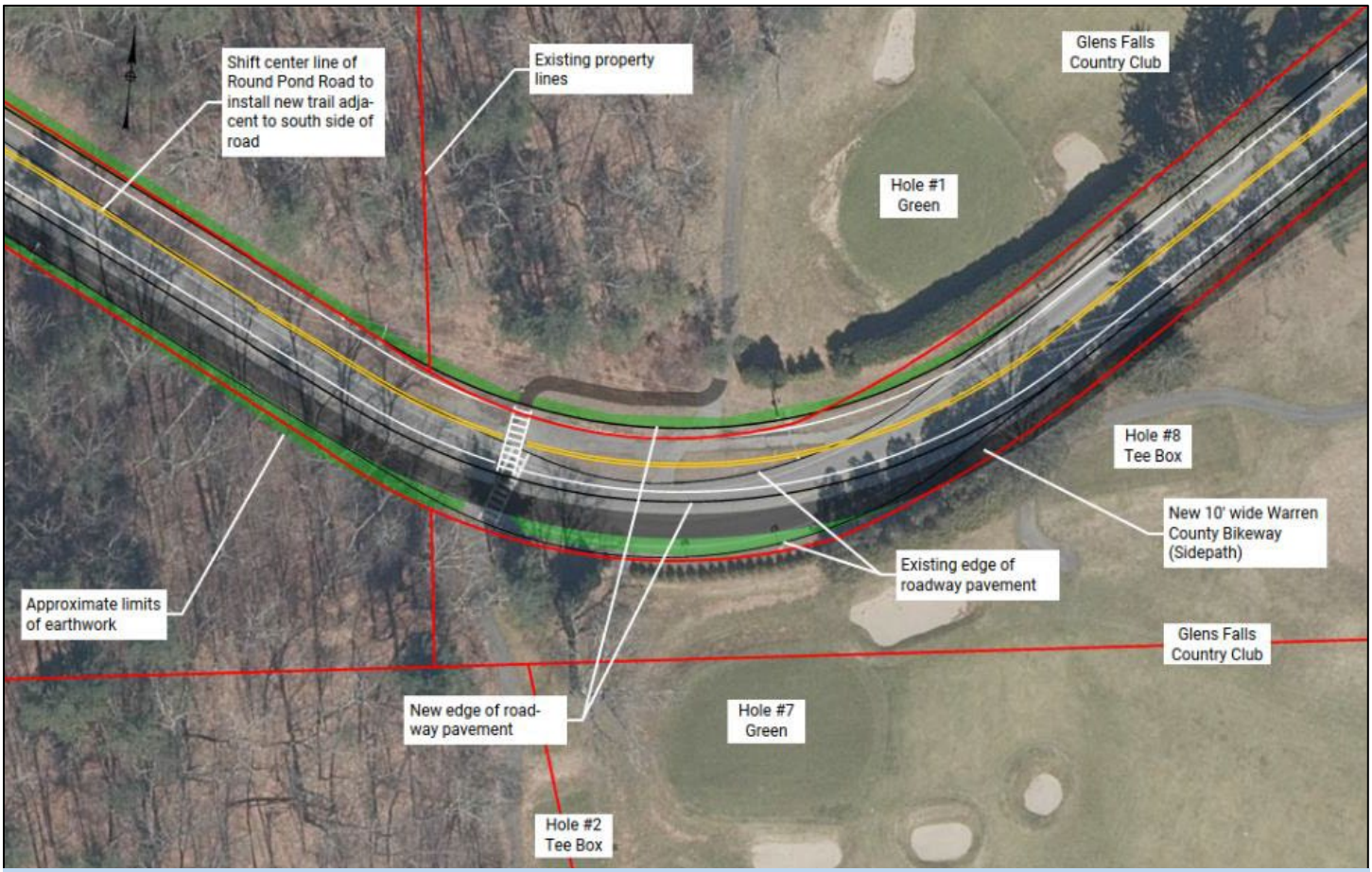


Figure 8-7: Conceptual Design to Identify Side-Path Impacts to GFCC along Round Pond Road.

green would provide the best option to continue the side-path and minimize impacts to the course (no impact to the greens or tee boxes on either side of the road). The roadway realignment would impact a paved golf cart path north of the road that, in turn, could be altered to maintain the golf cart mid-block crossing of Round Pond Road. The current curve in the roadway is a non-standard feature for road design; the flattening of the curve will not bring it up to standard but would provide an incremental improvement to the existing conditions and sight distances. It was also determined that continuing an off-set alignment of the roadway to the north, west of the roadway curve, would significantly minimize the earthwork and limits of disturbance.

Figure 8-9: National Grid Corridor Looking North at Sweet Road.

Figure 8-10: National Grid Corridor Looking North Near Devin Ct.

8.2.3 National Grid Corridor Off-Road Alignment

An off-road alignment alternative for this segment along the National Grid property between Sweet Road and Round Pond Road was also considered. The investigation of the National Grid Corridor was briefly outlined in Section 3.2.2 and the stakeholder outreach was summarized in Section 2.4.6.

The existing terrain along this route has significant challenges to overcome including steep slopes, potential wetland impacts, and private property encroachments. The design and construction of the Bikeway path following the National Grid corridor would be a difficult endeavor, but it is feasible if the appropriate amount of funding is acquired to address the grading, drainage, and environmental impacts that would be encountered. In order to address the steep grade approaching Round Pond Road from the south, an unused private property between the National Grid corridor and the Glens Falls Country Club could be utilized to create a flatter switchback alignment, as indicated on the map on the following page.

Additionally, National Grid standards for trail design, materials, and separation from their utility infrastructure would need to be followed. National Grid indicated that the transmission lines are due for an upgrade in the near future but details of that project are not available at this time.


Bikeway
Potential Off-Road Trail
Along Nat Grid Corridor
Round Pond
Birdsall Rd
Round Pond Rd
Round Pond Rd
Country Club Rd
Glens Falls
Country Club
Area of Steep Terrain
- Potential Area for
Switchback Alignment
Wincrest Dr
Several Private Property
Encroachments Over
the National Grid Property
Oakwood Dr
Wincrest Dr
Country Club Rd
Existing Off-Road Trail
Existing On-Road Route
Potential Off-Road Trail
along National Grid
Right of Way
10' Contours
Parcel Boundaries
WARREN COUNTY
Multi-Use Trail
Study
Sweet Rd
N
0
0.25
0.5 Mile

8.3 Bikeway: Birdsall Road Bypass

Birdsall Road is classified as an Urban Local Street and is a dead-end roadway that serves residences along the shore of Glen Lake. Currently, there is no traffic or speed data available for the road, but it is known as a very low volume local roadway since there is no through traffic. The pavement width varies between 24 and 27 feet, though there is no centerline or edge line striping to indicate the travel lanes and shoulders. Birdsall Road is labeled as part of the Bikeway with a Bike Route sign at the intersection with Round Pond Road. It operates as a shared roadway, but there are no signs or pavement markings in place to indicate its shared use.

An alternative to Birdsall Road, along the existing National Grid corridor was investigated. The span of this alternative runs from the gravel parking lot on Round Pond Road to the start of the off-road trail facility on Birdsall Road, as detailed in the map on the following page.

The investigation determined that the conditions between Round Pond Road and Marley Way are well suited for development of an off-road section of the Bikeway. The development of this section should be coupled with the formalization of the gravel area on Round Pond Road as a trailhead and parking area for the Bikeway. The parking area is in an ideal location and would make a welcoming trailhead as it is approximately two miles north of the Country Club Road parking lot and approximately one mile south of the parallel parking spaces on Ash Drive. Additionally, if the side-path along Country Club Road and Round Pond Road is not pursued, the parking area will provide access to the northern segment of the Bikeway that is often not utilized by most users because they avoid the on-road segment altogether. At Marley Way, the alignment would need to shift to the west to follow the utility corridor and original D&H railroad alignment in order to meet up with the off-road entrance to the Bikeway at Birdsall Road. This segment appears that it would require some vegetation clearing grading work to maintain a consistent slope.

Figure 8-11: Gravel Parking Area on Round Pond Road.

Figure 8-12: National Grid Corridor North of Round Pond Road.


Bikeway
Birdsall Rd
Bypass Location
Existing Off-Road Trail
Bypass
Marley Rd
Birdsall Rd
Round Pond Rd
P
WARREN COUNTY
Multi-Use Trail
Study
N
0
250
500 Feet

8.4 Bikeway to Feeder Canal

8.4.1 Overview

The Feeder Canal Trail trailhead at Shermantown Road and the Bikeway's southern limit at the McDonald Street-Warren Street intersection is only 0.3 miles apart but this space lacks a formalized and clear connection between the two trails. The map on the following page depicts the various paths that were considered to connect the trails. It is noted that the off-road Bikeway has been extended beyond McDonald Street to Platt Street, although Platt Street is a local residential road and does not include provisions for a bicycle facility to Warren Street other than a shared roadway. McDonald Street, on the other hand, includes an off-road side-path to Warren Street and is therefore considered the preferred location to connect the two trail systems together. Also shown on the map is an alternative extension of the Feeder Canal Trail to loop around a retired quarry property that is privately owned by Jointa Galusha.

8.4.2 Shermantown Road

All connections will need to access a portion of Shermantown Road, which is a low volume, low speed Local Urban dead-end street. Although it has low overall volume, it serves industrial properties and includes a higher volume of heavy vehicle truck traffic. The road provides access to a concrete plant, Glens Falls Water and Sewer Department, Glens Falls Wastewater Treatment Plant, National Grid properties, an alternative entrance for Finch Paper, and access to an active railroad that provides deliveries to Finch Paper. A restricting feature of Shermantown Road is that bridge that crosses the Feeder Canal is approximately 24 feet wide between the bridge railings.

Due to the low volume of traffic, Shermantown Road could be utilized as a shared roadway. However, with the higher volume of heavy vehicles on the roadway, it is suggested that centerline striping, sharrows, and Bike Route Guide signs are applied to make truck drivers aware that they are travelling on a shared use roadway.

8.4.3 McDonald Street or Prospect Street

The options of connecting the trails by utilizing Prospect Street or McDonald street to the south of Warren Street in order to avoid the higher traffic volumes of Warren Street were first considered. A direct connection to the McDonald Street signalized intersection is an ideal scenario for traffic control and crossing purposes. However, in order to access these local streets, the connecting route would need to also access a privately-owned roadway immediately north of the quarry (shown in purple on the map) that serves as access to several industrial warehouses and their loading docks.

In addition to being privately owned, the pavement on this road is in poor condition and the interaction of trail users with tractor trailers loading, unloading, and reversing is not ideal for establishing a safe trail route. If the land use of these properties and businesses change, or if the potential to develop the trail loop around the quarry is pursued, connecting via these local roadways could always be revisited in the future.

Figure 8-13: Private Road Immediately North of Quarry.


Bikeway to
Feeder Canal Trail
Potential Connections
Existing Off-Road Trail
Existing On-Road Route
Potential Connection Concepts
Peck Ave
Haskell Ave
Rogers St
Hartman Pl
Geer St
Platt St
Mcdonald St
Warren St
Orchard St
Warren County Bikeway
Prospect St
Prospect St
Leonard St
Keenan St
Feeder Canal Trail
Shermantown Rd
Former
Jointa Galusha Quarry
0.5 Mile
WARREN COUNTY
Multi-Use Trail
Study

8.4.4 Warren Street

Warren Street is an Urban Principal Arterial roadway that is signed as NY Route 32, although maintained by the City of Glens Falls. The segment of Warren Street between McDonald Street and Shermantown Road currently includes a ten-foot wide concrete sidewalk that is offset from the roadway by a utility and snow storage buffer area along the south edge of the path. With the infrastructure already in place, this segment of the Warren Street sidewalk could be signed as a part of the Bikeway and re-designated as a side-path. The concrete could also be replaced with asphalt to reinforce that this is a side-path and will be shared between pedestrians and bicyclists, since asphalt is the more common material for bicycling and concrete is associated with walking.

Warren Street is also under consideration as a Glens Falls downtown connection route and a potential route to close the Feeder Canal Trail gap (see Section 8.5 below). The establishment of this segment could be an impetus to pursuing these other connections and consolidating all of these initiatives with a singular route.

8.5 Feeder Canal Trail Gap

8.5.1 Overview

As described in Section 3, the Feeder Canal Trail's western segment ends abruptly at Glen Street (US Route 9) and the eastern segment resumes at Shermantown Road. This gap in the Feeder Canal Trail was identified by the County as a high priority objective of this Study and was echoed throughout the public engagement process. The map on the following page provides an overview of this gap area as well as the potential routes that were evaluated.

The gap in the Feeder Canal Trail was created by the Finch Paper property which occupies almost all of the land between the Glen Street, the Hudson River, Shermantown Road, and Warren Street (including the Feeder Canal itself). As noted in the Stakeholder Engagement Section, creating a trail connection through the Finch Paper property or along the canal alignment was determined to not be feasible.

8.5.2 Oakland Ave

The option of providing a connecting route along Oakland Avenue to Warren Street and then to Shermantown Road was considered, although Oakland Avenue presents several obstacles and constraints. Oakland Avenue is a primary tractor trailer route in the area as it provides access between US Route 9 and NY Route 32, allowing trucks to bypass the City's downtown area as well as directly access Finch paper's facilities and other industrial properties off of Shermantown Road.

Oakland Avenue is an Urban Major Collector street with approximately 5,700 vehicles per day, including 12% heavy vehicles. The roadway is curbed with 12-foot travel lanes and no shoulders and is constrained by the Feeder Canal, Finch Paper, and the Cool Insurance Arena in the west-to-east segment. The roadway has a sharp 90° turn to the north-south segment that intersects with Warren Street (NY Route 32). This segment includes a steep profile grade and is laterally constrained by retaining walls and private properties. The high volume of vehicles, including trucks, and with a very steep grade, installing a separated bicycle facility on Oakland Avenue would be extremely challenging. There is, however, a large amount of City-owned land between the roadway and the Feeder Canal that could be re-purposed for a trail.

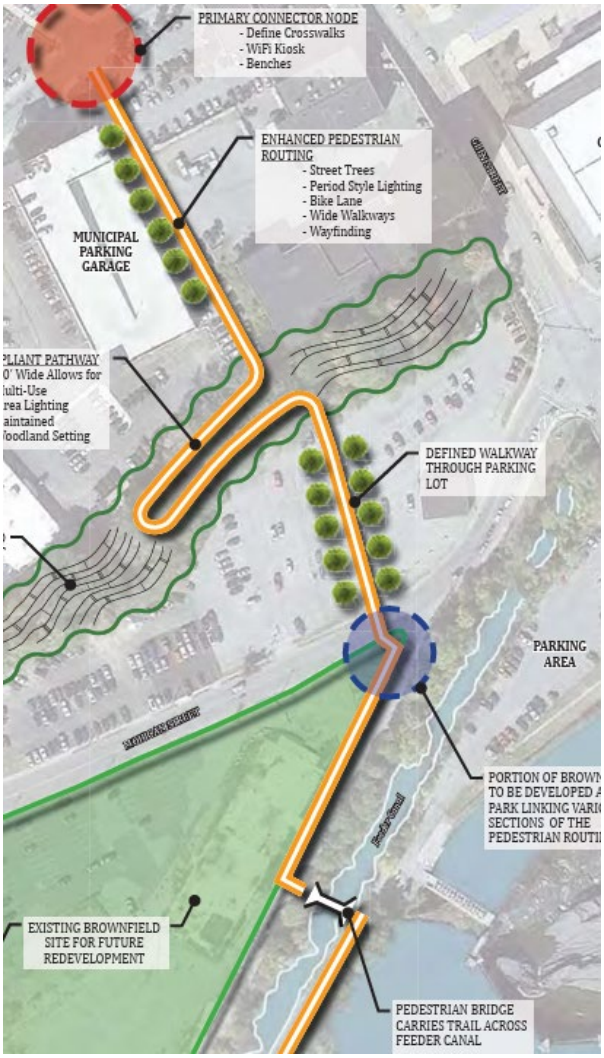
US 9 Intersection

An extremely limiting factor in the Glens Falls Feeder Canal Trail gap is the intersection of Route 9 and the western Feeder Canal Trail segment. The trail currently terminates in a gravel parking lot used for Finch employee parking. The parking lot connects to US Rt 9 at the northern edge of a bridge over the Hudson River. **Crossing US Rt 9 and connecting to points north or east would require a more comprehensive evaluation of the Oakland, Mohican, Rt 9 intersection.** Additionally, there are opportunities to bolster connections to the Betar Byway trailhead on the southern edge of the Hudson bridge. Safe connections from the Feeder

Canal Trail to the Betar Byway would provide regional connections to the expanding "Big Boom Trail" in South Glens Falls and the Town of Moreau. Previous studies suggested the construction of a pedestrian bridge from Pruyn's Island to Betar Byway.

Oakland Ave Bypass

Bypassing Oakland Ave would be possible with the implementation of a bike and pedestrian connection previously identified in the Glens Falls Downtown Revitalization Initiative (DRI) plan as "Project 2B Create Connections Between Downtown, the Hudson River, and Pruyn's Island," (p. 2-106). The proposed route would require the installation of a pedestrian bridge over Feeder Canal proximate to the National Grid property at 14 Mohican St. A pedestrian connection here (much like bridges recently installed from Pruyn's Island to Water Street and Murray Street in Glens Falls) would allow trail users to access the remarkable overview of Glens Falls from this trail segment, but avoid crossing Route 9 where the western leg of the Feeder Canal Trail currently terminates. Once over the Feeder Canal, the route would cut through an existing parking lot (in the area of 5 Mohican Street), switchback up the hill, and connect to Elm Street at the existing intersection of Park and Elm (see facing image).



8.5.3 Warren Street

Warren Street provides the most direct route to connect the two Feeder Canal segments. As mentioned above, establishing a trail segment in this location would also accomplish the goals of connecting the trail system to the Glens Falls down-town core and the Feeder Canal to the Bikeway. To connect to Warren Street, the trail would spur off at Murray Street and continue up to Hudson Street to connect to the downtown and Warren Street. Murray and Hudson streets already include signed and striped directional bike lanes that connect directly to this portion of the Feeder Canal Trail. Alternatively, connections between Feeder Canal Trail and Warren Street could be accomplished by implementing the Oakland Ave bypass.


Feeder Canal Trail
West to East
Potential Connections
Existing Off-Road Trail
Existing On-Road Route
Bikeway
Potential Connections
Feeder Canal Trail E
Shermantown Rd
Platt St
McDonald St
Warren County Bikeway
Lawrence St
Maple St
Warren St
Oakland Ave
Ridge St
Glen St
Hudson Ave
Bay Rd
Mohican St
Feeder Canal Trail W
Murray St
WARREN COUNTY
Multi-Use Trail
Study
0
0.25
0.5 Mile
N
Warren County GIS 6/25

Further evaluation is needed, however, to determine if the current bike lane facilities satisfy the desires of the "Interested But Concerned" user group, or if they are appropriate for pedestrians.

8.5.4 Preferred Short-Term Route

Considering that it will take some time to acquire the funding, design, and then construct physical infrastructure that would be required to transform all of Warren Street, there is a lower cost connecting route, depicted on the map on the following page, that could be established in a relatively short time-frame and utilized until the entire Warren Street route is achieved.

In the Spring of 2025, the City of Glens Falls established Maple Street as a signed and striped shared roadway. As described in Section 8.4, if Shermantown Road and Warren Street are developed as the Bikeway-to-Feeder Canal Trail connection, then there will be a direct connection to Maple Street that leads into downtown Glens Falls. From the downtown area, the western segment of the Feeder Canal Trail can be accessed by following the already-in-place directional bike lanes on Hudson Street and Murray Street. Again, it is noted that this nascent connection would not satisfy the desired of "Interested But Concerned" trail users.


Feeder Canal Trail
Preferred
Short-Term Connection
Existing Off-Road Trail
Preferred Short-Term Route
Bikeway
Feeder Canal Trail E
Shermantown Rd
Platt St
McDonald St
Warren County Bikeway
Lawrence St
Maple St
Warren St
Oakland Ave
Ridge St
Glen St
Hudson Ave
Bay Rd
Mohican St
Feeder Canal Trail W
Murray St
WARREN COUNTY
Multi-Use Trail
Study
0
0.25
0.5 Mile
N
Warren County GIS 6/25

Section 9: New & Expanded Connections: Cultural & Recreational

Key Takeaways

- There are several important public spaces along the two trail systems. These expand the offerings of the Multi-Use Trail and, in turn, these attractions encourage visitors to explore the trail. The mutually beneficial relationship should continue to be fostered and examined for opportunities to partner on projects with shared goals.
- There are also several cultural and recreational areas nearby the Multi-Use Trail. Connections to these attractions should be pursued to further expand the reach of the trail network.

9.1 Introduction

By nature of its fortuitous location along the D&H Lake George Spur corridor and the Feeder Canal, the Multi-Use Trail system traverses a variety of urban, natural, and historic settings. The area adjacent to the trail is rich with cultural and recreational opportunities; some of which have been formally linked to the trail system, others that have great potential to expand the offerings along the trail. This section evaluates the connections, both established and latent.

9.2 Cultural and Recreational Connections

9.2.1 Shirt Factory: Muralgarten & Hyde

Located along the Bikeway on Leonard Street in Glens Falls, the Shirt Factory is home to a vibrant mix of shops, artist studios, galleries, professional services, and events. This establishment continues to evolve from its former industrial life, looking to expand its offerings and become a world class, year-round tourist attraction that combines murals, interpretive signage, native landscaping, and sculpture. This "muralgarten" concept could be a transformational catalyst in an economically dis-advantaged section of Glens Falls.

Plans are in the works to install upwards of 30 murals on the sides of buildings, shipping containers, and other surfaces to create a piazza feel. The murals will be curated by Muralgarten board members and will be carefully selected based on the excellence of the artist's ideas and prior portfolio of work. Ideally, the installation will stretch from the Shirt Factory site to the Hyde Collection, an exceptional art Museum located on Warren Street. Supporting this project an ensuring adequate connection from the Bikeway and Feeder Canal Trail would provide trail users with a unique and high-quality cultural experience.

Figure 9-1: The Shirt Factory in Glens Falls.

9.2.2 Mullen Property

Located at the convergence of Bay Road and the Bikeway, the 1.04-acre Mullen Property is a county-owned brownfield site. It is a vacant lot with an old concrete slab covering most of the site. Some environmental remediation has occurred; it is unclear at this time if more is required.

The site, however, is an ideal location for a pocket park that would enhance Bikeway amenities and provide a key trailhead. A concept plan illustrating these improvements was developed by LaBella Group in 2022. Further study is needed to uncover its true potential and determine the costs and benefits of the County retaining the property for the benefit of the public.

Figure 9-2: A Conceptual Plan Shows the Potential for Mullen Site.

9.2.3 Hovey Pond Park

Hovey Pond Park is a ten-acre park in the middle of busy commercial area in Queensbury. The town facility has an accessible playground, picnic tables, floral gardens, accessible fishing dock, and a water quality improvement project that consists of marshland, a four-acre pond, observation decks, and interpretive signage throughout. The park is located ¼ of a mile from the Bikeway, requiring less than a ten-minute along roadways walk to access. Pedestrian facilities on these adjoining roads (Glenwood Ave and Quaker Road) however, are currently limited to crosswalks. Installing a sidepath or similar multi-use facility and Multi-Use Trail signing would elevate this community asset. The annual average daily traffic (AADT) of Quaker Road in this area is close to 20,000 so opting for a longer connection south of Quaker Road that would eliminate a crossing may be preferable.

Figure 9-3: Hovey Pond Park in Queensbury.

Figure 9-4: The Colonel Williams Monument.

9.2.4 Colonel Williams Monument

The Battle of Lake George is recognized as a decisive turning point in the French and Indian War, immortalized with several historic interpretive signs along and adjacent to the Bikeway. One of its most iconic moments was the death of Colonel Ephraim Williams, who was leading a force of New England soldiers and Mohawk warriors when they were

ambushed by French and Native American forces in a skirmish known as the "Bloody Morning Scout." Colonel Williams' body was placed on a large boulder nearby. In his will, Colonel Williams left his estate to the founding of a free school in north-western Massachusetts. The school and the town now bear his name. An obelisk monument was erected on top of the boulder by Williams College alumni in 1854. A series of historic interpretive signage and plaques adorn the area, which can be accessed by a steep ascent from the Bikeway, or a short descent from a small parking area off of US Route 9. The site also marks the death of King Hendrick, an Iroquois leader participating in the battle. There is a concerted effort to elevate the recognition and memorialization of King Hendrick at this location.

Due to its steep terrain and traverse of the National Grid corridor, the connection from the Bikeway to the monument is seldomly accessed and would greatly benefit from several improvements. Warren County worked with local trail designer and building Wilderness Property Management to conduct a trail assessment and offer recommendations to address these concerns. The recommendations suggest the installation of switchbacks to ease the 70-foot gain in elevation. The trail assessment can be reviewed in full in Appendix G.

9.2.5 French Mountain Trail

An approximately 1.2-mile hiking trail over steep terrain can be found on the eastside of the Bikeway, approximately one mile north of Route 149. The trailhead is somewhat obscure, immediately ascending a steep, rocky area, but is blazed with blue spray paint. Although completely on private property, the trail itself is well-established, also providing occasional blue blazes. The summit of French Mountain offers amazing views to south, west, and north. Formalizing this spur trail would allow the Bikeway to provide direct access to a classic Adirondack summit.

9.2.6 Bloody Pond

Bloody Pond represents the site of a gruesome battle during the French and Indian War where those slain were legendarily rolled into the water as their final resting place. The small pond, located a few feet from US Route 9 on the west and the Bikeway on the east, is identified with several historic markers and interpretive signage. A small, narrow private parcel separates the Bikeway from Bloody Pond. Providing access to and around the pond would elevate the experience of trail users looking to connect with the storied history of the Lake George region.

9.2.7 Lake George Nature Trail

Located behind the Lake George Elementary School, the Lake George Nature Trail consists of a 2.3-mile series of loops. The trails are natural-surfaced and generally wide (six to ten feet). The trail network is open to the public during daylight hours (excluding school hours) for hiking, cross-country skiing, and mountain biking. One segment of the trail network parallels the Old Military Road section of the Bikeway at a distance of less than 200 feet. School property abuts Old Military Road in this location. Furthermore, the public McPhillips Preserve, east of the School, has included a connection to the School in their master plan of mountain biking and hiking trails. Connecting to the Lake George Nature Trail would vastly expand the trail experiences of Bikeway users.

9.2.8 Lake George Battlefield Park & Campground

Located at the northern trailhead of the Bikeway, this 35-acre state park maintains open space at the southern end of Lake George, offering incredible views to the north. The park also preserves French and Indian War and Revolutionary War battle sites and commemorates these incidents with statues and interpretive signage. To the east is the Lake George Battlefield Campground with 68 tent and trailer sites that operates from May to October. The Bikeway runs between these two amenities.

9.2.8 Overlook Park

Overlook Park is home to the western trailhead of the Feeder Canal Trail. The small pocket park is located on Haviland Avenue and maintained by the Town of Queensbury. The park is less than an acre but includes amenities such as a pavilion, picnic area and tables, and interpretive signage. The park also provides a pedestrian bridge over the Feeder Canal to access the trail. The approach to the bridge is a narrow asphalt pathway that runs down a substantial decline before terminating at a perpendicular angle to the bridge. Realigning this dangerous approach, along with investing in other improvements to the aged site, would create a safe and inviting environment that would encourage more trail users to access this segment of trail.

9.2.9 Haviland Cove Park

The City of Glens Falls in the midst of what they are calling a “re-imagining” of Haviland Cove Park. The park, wedged between the Feeder Canal and the Hudson River, is accessed from Bush Street. It currently offers a beach, picnic and pavilion spaces, a softball field, and Hudson River water access.

Upgrades to the park will include an accessible play-ground, additional walking paths, observation decks over the river, and improvements to the bathhouse and pavilion. Warren County supports this effort to enhance a waterfront public park facility with direct access to the Multi-Use Trail.

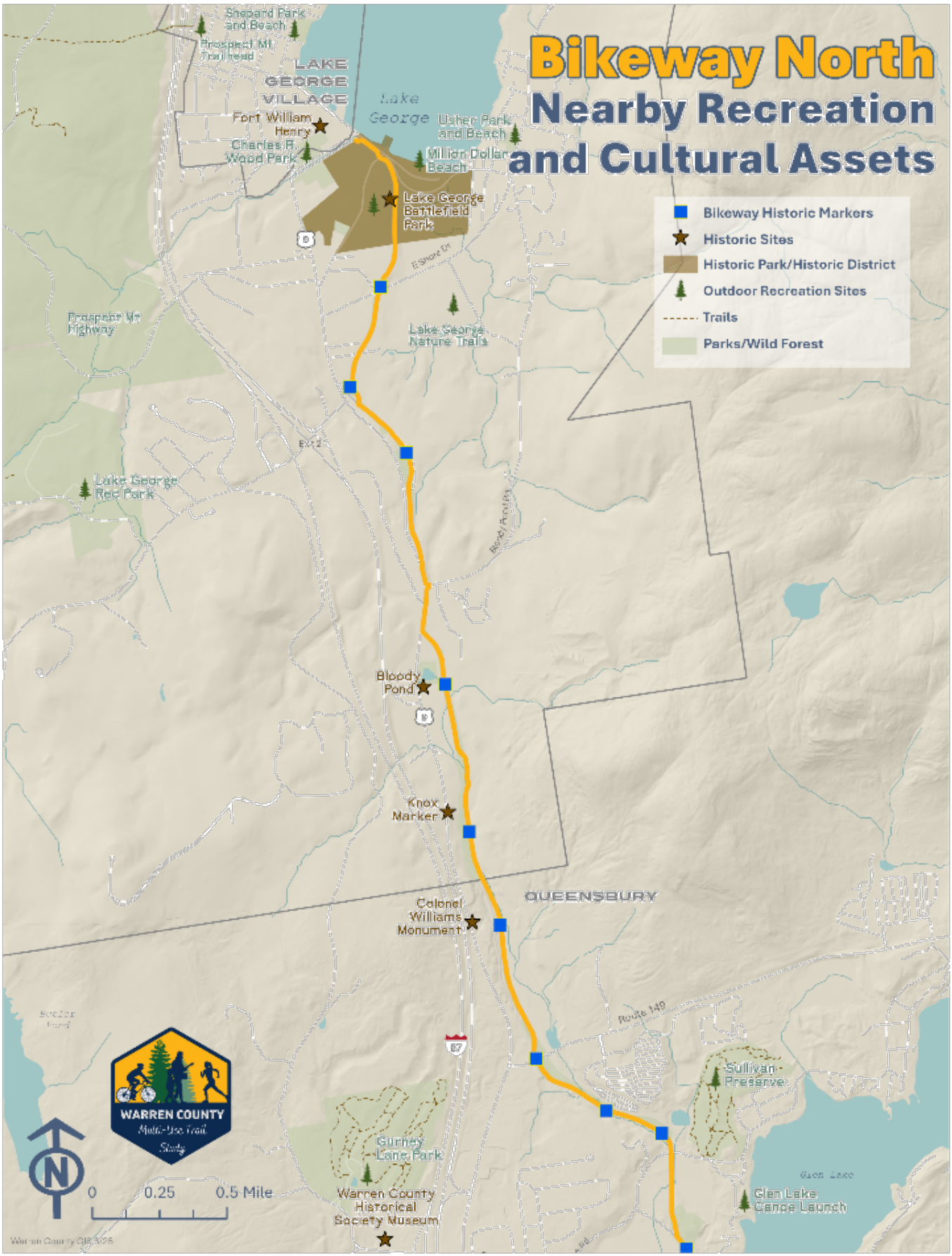
9.2.10 Murray Park

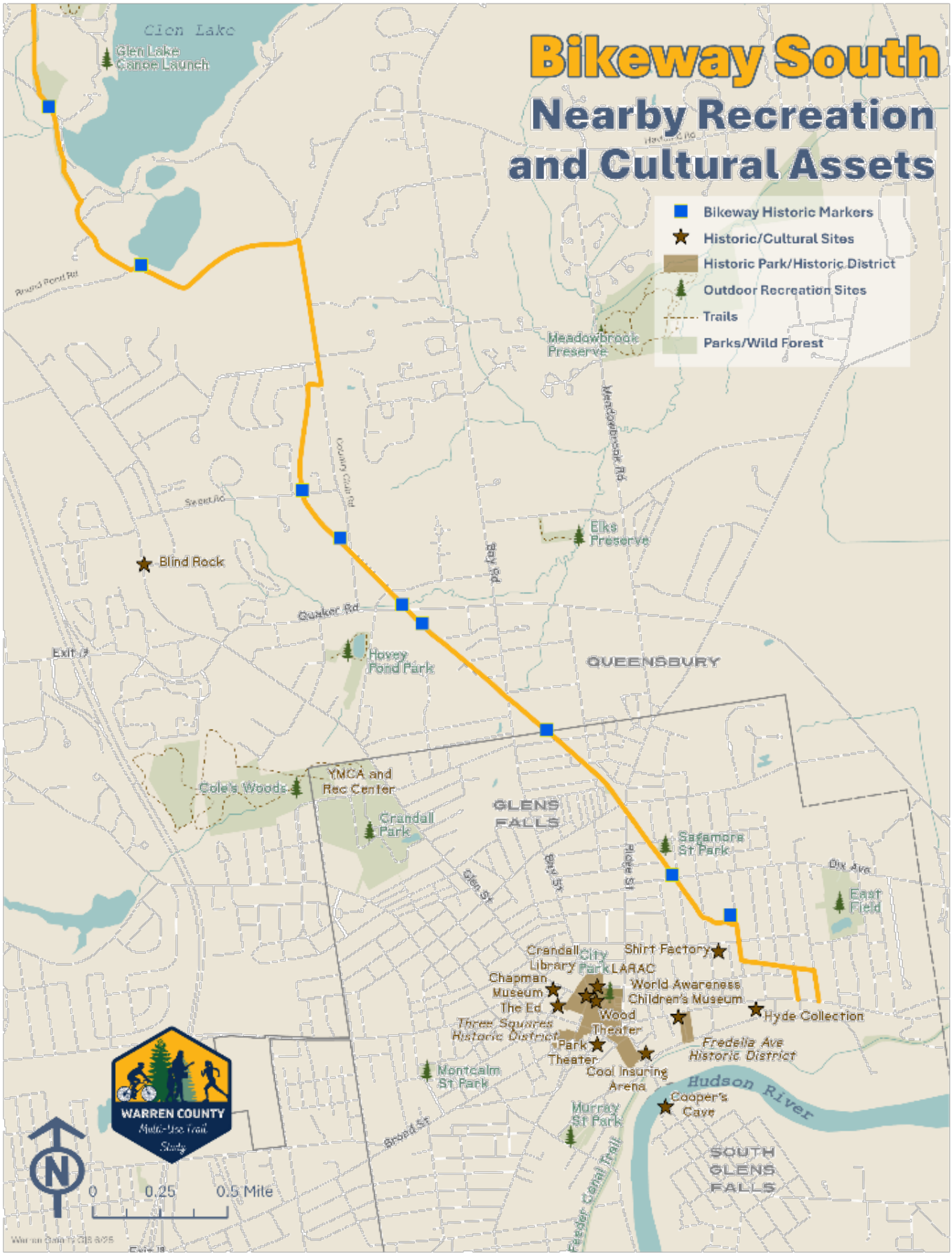
The Feeder Canal Trail passes through Murray Park, making this public space an important part of the Multi-Use Trail experience. Amenities are limited at this small park, but picnic tables and several mature trees make this a pleasant setting along the Multi-Use Trail. Two parking areas, one on Main Street and one on Ferry Street, also establishes the park as a key trailhead and access site for the trail.

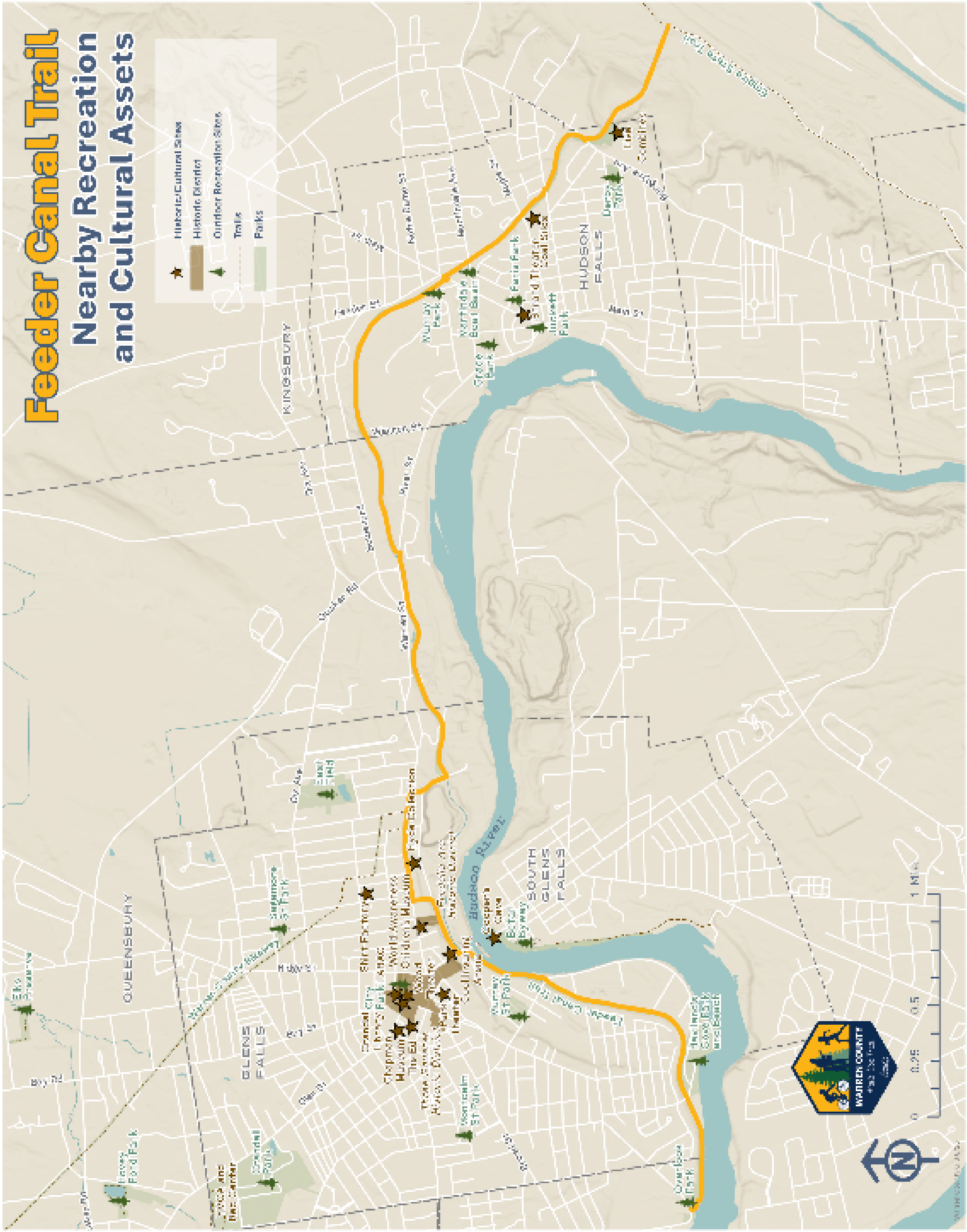
9.2.11 Five Combines

The Five Combines site, located on Burgoyne Ave in Hudson Falls, provides for a unique interpretive experience at the eastern terminus of the Feeder Canal Trail. The site consists of a series of locks that lower the canal 55 feet to place it on course to converge with the Champlain Canal. There has been interest expressed in enhancing this public space setting with improved interpretive signage, picnic areas, and trail improvements.

Figure 9-5: The Five Combines Site in Hudson Falls.


Bikeway North
Nearby Recreation and Cultural Assets
Bikeway Historic Markers
Historic Sites
Historic Park/Historic District
Outdoor Recreation Sites
Trails
Parks/Wild Forest
Shepard Park and Beach
Prospect Mt Trailhead
LAKE GEORGE VILLAGE
Lake George
Usher Park and Beach
Million Dollar Beach
Fort William Henry
Charles R. Wood Park
Lake George Battlefield Park
Prospect Mt Highway
Lake George Nature Trails
Lake George Rec Park
Bloody Pond
Knox Marker
QUEENSBURY
Colonel Williams Monument
Sullivan Preserve
Gurney Lane Park
Warren County Historical Society Museum
Glen Lake Canoe Launch
WARREN COUNTY
Multi-Use Trail Study
0
0.25
0.5 Mile


Bikeway South
Nearby Recreation and Cultural Assets
Bikeway Historic Markers
Historic/Cultural Sites
Historic Park/Historic District
Outdoor Recreation Sites
Trails
Parks/Wild Forest
Glen Lake Canoe Launch
Meadowbrook Preserve
Blind Rock
Elks Preserve
Quaker Rd
Exit 17
Hovey Pond Park
QUEENSBURY
Cole's Woods
YMCA and Rec Center
Crandall Park
GLENS FALLS
Sagamore St Park
Dix Ave
East Field
Crandall Library
City Park
LARAC
Shirt Factory
Chapman Museum
The Ed Wood Theater
World Awareness Children's Museum
Hyde Collection
Three Squares Historic District
Park Theater
Cool Insuring Arena
Fredella Ave Historic District
Montcalm St Park
Hudson River
Cooper's Cave
Murray St Park
SOUTH GLENS FALLS
Feeder Canal Trail
WARREN COUNTY Multi-Use Trail Study
N
0
0.25
0.5 Mile


Feeder Canal Trail
Nearby Recreation and Cultural Assets
Historic/Cultural Sites
Historic District
Outdoor Recreation Sites
Trails
Parks
KINGSBURY
QUEENSBURY
HUDSON FALLS
SOUTH GLENS FALLS
GLENS FALLS
Hudson River
0
0.25
0.5
1 Mile

Section 10: Signage and Wayfinding

Key Takeaways

- As demonstrated in the existing sign inventory, signage needs to be addressed through a consistent and comprehensive methodology. The piece-meal, reactionary approach applied all too often in the past has resulted in sign clutter, inconsistent or contradictory messaging, and missing or irrelevant information.
- The unified design palette, complete with color scheme, logo, sign types, and materials, will improve messaging along the trail system and provide a harmonious appearance.
- Dozens of irrelevant redundant signs have been identified along the trail system and will be removed and/or replaced as opportunities allow.
- Sign content has been divided into four categories, or themes, to better understand the intent and purpose: informational, regulatory, navigational, or organizational. These themes will help to inform sign type and location.
- Sign type has been divided into nine forms; a hierarchical approach will be applied to keep messaging consistent and predictable at trailheads, nodes, roadway crossings, and other locations of interest or importance.

10.1 Existing Signage

10.1.1 Overview

The scope of the Multi-Use Trail system's current signage lacks visual cohesion and informational clarity. The two trails (the Bikeway and the Feeder Canal Trail) each have distinct but dissimilar appearances that include different construction material, fonts, graphic styles, color schemes, sign sizes, and informational priorities. Stylistic variation also exists within each trail. Throughout the trail, directional and operational signs are missing at key roadway crossings and on-road approaches to the trail. Both trail systems have faded or obsolete maps (on signs or park kiosks). Additionally, public input has noted confusion over concrete rules regarding e-bike/e-scooter usage and the presence of dogs. The resulting wayfinding conditions thus produce visual clutter, unclear navigation, missing connectivity, and regulatory/informational confusion which reduces the safety and quality of experience of an otherwise well-liked trail system.

10.1.2 Bikeway Existing Sign Inventory

While a color scheme of umber brown and ochre yellow dominates the bikeway for directional and informational signage, the scheme is inconsistent along its length (see Figure 10-1 below).

Figure 10-1: Umber Brown and Ochre Yellow Sign Style.

In most instances, the Bikeway's directional signage opts for the green and white scheme consistent with most on-road signage. While the green and white signs indicate the trail direction, they do not call out the Bikeway itself and have no immediate visual connection to the umber and ochre signage (see Figure 10-2).

Regulatory signage sits at most trail entry/exit points. This signage also conforms to on-road white-background-with-black-text standards (Figure 10-3), with the exception of signs on foot bridges that list rules for anglers which employs the umber brown and ochre yellow style.

Shaded kiosks with trail-mounted maps appear at key entry points and trailheads. Most kiosks have a simple wood construction with a single face (Figure 10-4 on following page). The kiosk at the Lake George Battlefield Park is distinct with their three-sided metal construction (see Figure 10-5 on the following page). All kiosks show maps with signs of fading and/or outdated information.

Interpretive/Historic signage appears on distinct grey signs mounted on wood posts. This signage is the most frequent (and consistent) with its style characterized by black serif fonts, monochromatic images, and a meandros border motif (see Figure 10-6 on the following page.

There are several signs with the number of a suicide prevention hotline along the trail. These signs are identical and mounted on metal posts. The graphic style has no relationship with the trail color scheme or the standard on-road signage (see Figure 10-7 on the following page).

The limited signs communicating information about nature are framed with wood and are mounted on wood posts. These signs make use of colored photo-graphs and are a mix of serif and sans serif fonts in blue. One sign relating to pollinators is mounted on a chain line gate (Figure 10-8). This sign style is different from the other nature informational signs making use of a beige serif font and a map in addition to colored photographs (Figure 10-9).

Figure 10-2: Green and White Sign Style.

Figure 10-3: Various Regulatory Messaging.

Figure 10-4: Typical Single-Sided Wood Kiosk.

Figure 10-5: Lake George Battlefield Park Metal Kiosk.

Figure 10-6: Interpretive/Historic Signage along the Bikeway.

Figure 10-7: Examples of Suicide Prevention Hotline Signs.

Figure 10-8: Pollinator Sign Mounted on Chain Link Gate.

There are also a handful of sign types that appear only once along the trail, each with their own style. The Leatherstocking Literary Trail sign (Figure 10-10) is part of a regional series. One sign summarizing the history of the Lake George Battlefield Park (Figure 10-11), a memorial plaque for Bikeway visionary Keith DeLarm mounted on a boulder at the Lake George Trailhead (Figure 10-12), and a National Park Service sign (Figure 10-13) are also present.

Figure 10-9: Example of Typical Nature Signs along Bikeway.

Figure 10-11: Lake George Battlefield Park Sign.

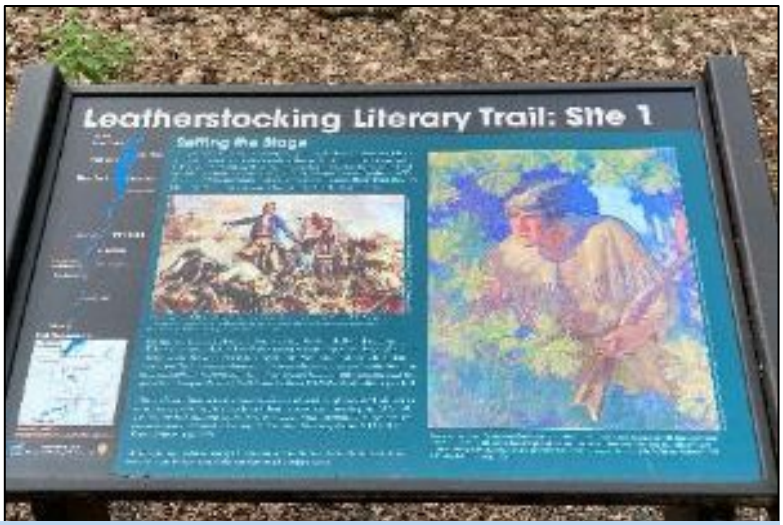


Figure 10-10: Leatherstocking Literary Trail Sign.

Figures 10-12 and 10-13: Keith DeLarm Memorial Plague; NPS Sign.

10.1.3 Feeder Canal Trail Existing Sign Inventory

The Feeder Canal Trail's dominant color scheme is empire blue and ochre yellow, owing to its presence as a state-owned facility. This scheme exists primarily on metal "welcome" signs mounted on wood posts that list the park rules (i.e., ban on alcohol, firearms, horseback riding, littering, motorized vehicles, open fires, unleashed dogs, and dog waste. These signs denote entry points at intersections between the trail and city streets. In terms of quality, they range from brand new to faded white (Figure 10-14) and there is one instance of an old sign with an obsolete brown and white color scheme (Figure 10-15). The new signs use serif fonts and feature logos for the NYS Canal Corporation and the Feeder Canal Alliance.

White metal signs mounted on wood posts are also found at these trail entrances. These feature blue serif text advertising the Feeder Canal Alliance. Some of these signs are heavily faded (Figure 10-16).

At key trailheads and access points (i.e., Haviland Avenue, Shermantown Road, and Burgoyne Ave), the trail welcome signs include a map of the trail mounted underneath them (Figure 10-17). These maps contain historical, event, trail membership, and navigational information. These maps make use of a flat graphic style that includes photographs and a casual font style.

Figure 10-15: Outdated Feeder Canal Park Welcome Sign.

Figure 10-16: Examples of Feeder Canal Alliance Welcome Signs.

Figure 10-14: Canal Corporation Welcome Signs.

Figure 10-17: Example of Trail Map and Information.

Each of these key entrances features an interpretive sign for the "Feeder Canal Heritage Trail." These signs are metal and mounted on metal posts. Their fonts echo those of the welcome signs and make use of the trail's blue and yellow color scheme for the header and footer. These signs use a limited color scheme for graphics (blue, green, and red) and a mix of monochromatic photos or diagrams for imagery. The signs also feature logos for the NYS Canal Corporation and the Feeder Canal Alliance (Figure 10-18). The Murray Street trailhead has a sign with a similar graphic style but different construction (plastic sign on wood posts) that show a map of the trail in the context of the nine municipalities it traverses.

Figure 10-18: Feeder Canal Heritage Trail Interpretive Sign.

Some of the Feeder Canal Trail's directional signage is graphically similar to that of the obsolete welcome sign, making use of the simple white text on brown metal and the Feeder Canal Alliance logo (Figure 10-19).

Figure 10-19: Obsolete White and Brown Directional Signs.

In most instances, on-road directional signage has the standard green and white scheme with no visual connection to the other Feeder Canal Trail signs (Figure 10-20).

Three signs exist outside of the trail's dominant styles. The trail at the Shermantown Road entrance has one kiosk with a mounted map with a similar construction to those on the Bikeway (Figure 10-21). Bush Street includes a sign that is a part of the "Lakes to Locks Passage." It differs in style from that of the welcome signs and Feeder Canal Heritage Trail interpretive signs, but the color scheme is similar. The Charles and Gaynelle Moore Bridge has a bronze plaque and a faded National Recreation Trail Designation sign (Figure 10-22).

Figure 10-20: Examples of On-Road Directional Signs.

A final observation along the Feeder Canal Trail was that faded signage is particularly persistent on the trail's westside, rendering some signs illegible (Figure 10-23).

Figure 10-21: Kiosk at Shermantown Road, Similar to Bikeway.

Figure 10-22: Lakes to Lacks Passage Sign & Moore Memorial Plaque.

Figure 10-23: Example of a Faded Sign on Canal's Westside.

10.1.4 Existing Sign Inventory Analysis

The Multi-Use Trail signage system lacks unity due to the pronounced style and color variations. The two trail's signage systems are stylistically separate while also lacking internal consistency. These variations in style also translate into an inconsistent communication of information.

The Bikeway's signage is the least cohesive of the two, owing to its length. The Bikeway has the most miscellaneous signs and internal graphic variations. While the interpretive/educational materials are the most comprehensive, the three signs covering the local ecology appear as afterthoughts next to the extensive historical signage. Unlike the Feeder Canal Trail, which comprehensively lists its rules in a single welcome sign at key trailheads, the Bikeway varies in how it communicates trail rules. Currently, it is the only trail that has clear rules about trail sharing.

The Feeder Canal Trail signs have the most unified appearance. However, the persistence of older sign styles and fading on new signs hampers this unity and utility. The educational signage is informative and unified (focusing on history and functionality of the Canal) but limited in quantity. The Feeder Canal Trail signage is the only one that makes use of logos to connect on-road signage to their broader linear park system.

Surveyed users of the overall trail system indicated confusion over rules relating to motorized vehicles and dogs. They also discussed the persistent issue of littering. These issues are likely connected to the varied rules and communication styles. While both trails explicitly ban vehicles, they do so with different verbiage (i.e., the Bikeway sometimes opts for symbols rather the words). The Feeder Canal Trail allows leashed dogs, but the Bikeway bans dogs altogether. Both trails also ban littering but do so with different communication techniques. The Bikeway signs merely state "no littering" while the Feeder Canal Trail has signs stating that the trails have no trash receptacles and that all trash must be carried out (this approach has proven more effective in park and trail settings as it is less confrontational and provides an explanation for the rule). The Bikeway and Feeder Canal Trail ostensibly

converge on Warren Street in Glens Falls where there is no pronounced location or signage to designate the change in rules between the trails.

The previously completed A/GFTC sign inventory (2012) also made note of missing directional signs throughout the trail system. This issue is most pronounced at trail connection points, trailheads, and key entry points. This lack of signage minimizes awareness of the trail network while also limiting its ability to bring visitors to nearby businesses, public spaces, and landmarks.

As a result of these signage variations, the trails do not read as a unified set while seeming internally haphazard. These inconsistencies also hamper navigational and regulatory communications which has led to conflict, confusion, and underutilization among trail users.

10.2 Wayfinding Program Development

10.2.1 Wayfinding Signage

Through the development of this Wayfinding Program, the Multi-Use Trail's current discordant signage system will be transformed into a cohesive and modern set of typologies which emphasize visual clarity, simplistic construction, use limited words, and are durable. Sign clutter will be eliminated and signage content consolidated along trail sections where multiple information needs to be conveyed. Signage which once promoted confusion among trail users will now do the opposite: it will promote visual unity, directional clarity, and clear instruction for the Bikeway, Feeder Canal Trail, and future expansions.

New York Power Authority (NYPA)/ New York Canal Corp in 2024 published updated signage standards applicable to trail segments owned by New York State. The guidance document "Branding and Amenity Design Standards," provides detailed specifications on an entire wayfinding scheme as well as trailside amenities. To support the implementation of the updated signage standards canal-side municipalities and the Feeder Canal Alliance (FCA) can seek state grant funding via agencies such as the Office of Parks Recreation and Historic Preservation (OPRHP). As Warren County implements the following wayfinding program, it will be essential to coordinate with the managers of the Feeder Canal Trail, including FCA and NYPA as they implement their new design standards.

Figure 10-24: Proposed Multi-Use Trail Logo.

10.2.3 Materials and Maintenance

Composite lumber, made from recycled wood and plastic, has been selected as the primary structure material for the wayfinding program due to its ease of maintenance, long life span, and sustainable initiative to recycle material (which can be incorporated into educational signage at trailhead kiosks). The signage of the wayfinding program is designed in rectangular forms to be easily constructed by in-house teams with simple cuts. Black steel mixes durability with sharp visual clarity among all signs with engraved placards, base plates, or navigational pointers. Fiberglass is proposed to be used for interchangeable structures such as educational, historical, and welcome signs to make changing or replacing sign content easy. All signage should include an asphalt or concrete apron to allow for accessibility off of the trail lanes and ease of maintenance. Vertical space below structures should also be provided for ease of maintenance access including, but not limited to, clearing, cleaning, salting, and changing sign content.

10.2.4 Accessibility

In order to make signs as physically and visually inclusive as possible, the American with Disabilities Act (ADA) standards for wayfinding signage will be adhered to. Colors selected for sign backgrounds (such as green, orange, and white) will have high contrast colored text (such as black or dark brown) so that text is most optimally legible.

Likewise, signage with dark backgrounds (such as black steel navigational posts) will have white or other brightly colored text for visual clarity. Signage text height will vary with sign typology, but remain consistent with ADA text size recommendations. Additionally, QR codes for auditory translation and braille for the visually impaired may be present as needed (particularly on educational and historical placards and at trailheads). All signs are proposed to be of a matte, eggshell, or non-glare finish (including fiberglass covers) to prevent visual disturbance or reflection. In addition to legibility, physical structures are proposed to adhere to the above listed maintenance standards.

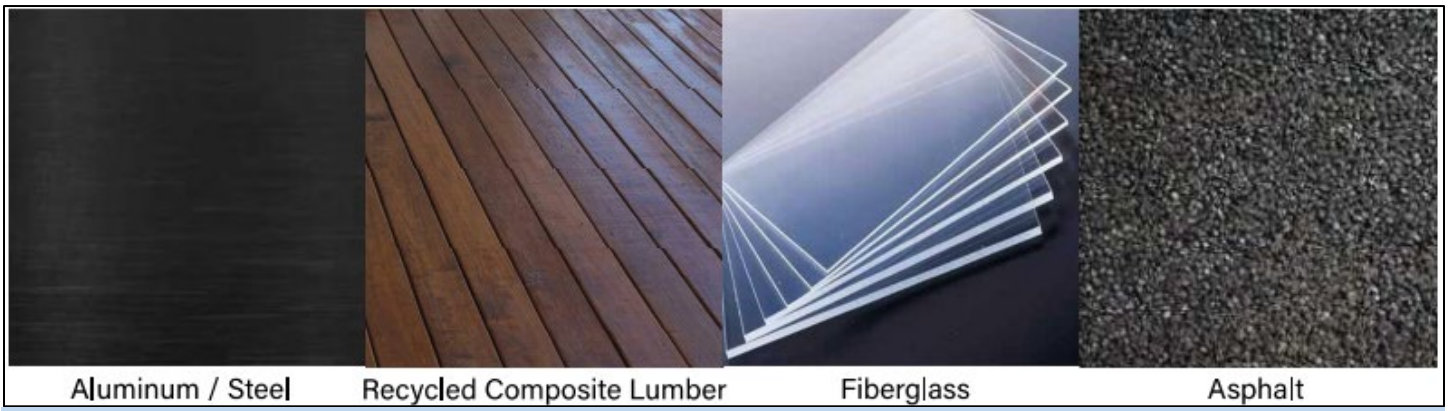


Figure 10-25: Proposed Multi-Use Trail Signage Materials.

Figure 10-26: Proposed Multi-Use Trail Signage Color Palette.

10.3 Sign Structure Typologies

10.3.1 Welcome Sign

The Welcome Sign should be placed at trailheads and nodes to highlight an entry point and provide important information. It should list the following:

- Name of trail,
- Trail map (if desired),
- Information about the trail (i.e., length, location, type, history),
- Reminder to adhere to rules, and
- Emergency contact / service.

Construction consists of an approximately 6’ x 4’ composite lumber frame with 2.5’ x 3.5’ hanging engraved wood or powder-coated steel sign. Sign posts are to be 4” x 4”. Text should be white on black background or black on orange background.

10.3.2 Three-Sided Kiosk

The Kiosk should be placed at trailheads and key nodes to comprehensively highlight important and relevant site and trail segment information. Fiberglass panels allow for sign swap out as needed for updated information. The Kiosk may include:

- Name of trail,
- Trail map,
- Information about the trail,
- Trail rules and etiquette,
- Emergency contact / service,
- Interpretive / educational information.

The kiosk measurements are 6’ x 3’ x 3’ with 4” x 4” sign posts. It should be made of composite lumber with steel fasteners placed around the fiberglass sign frames.

Figure 10-27: Multi-Use Trail Welcome Sign

Figure 10-28: Multi-Use Trail Three-Sided Kiosk.

10.3.3 Individual Rules, Mile Markers Post

The Post should be located periodically along the trail and used to emphasize and remind trail users of rules and etiquette and, to provide mile markers or change in trail direction as necessary. The Post may include:

- List of rules and etiquette,
- Directional arrows,
- Mile Markers,
- Trail specific signs such as suicide prevention or logos (Bikeway, Feeder Canal Alliance, NPS).

Measurements consist of approximately 6’ x 8” x 8” vertical lumber and powder coated steel (green and black) with contrasting faceplate mounted to trail-facing façade. Color options include white text on black aluminum face plate or black text on wooden face plate.

Figure 10-29: Multi-Use Trail Individual Rules & Mile Marker Post.

10.3.4 Historical/Educational Placard, Abbreviated

The abbreviated Historical and Educational Placard should be placed as necessary to highlight relevant, location-specific historic and educational content. Potential highlighted information may include:

- Freshwater marsh ecology,
- Flora and fauna at a key node or resting place,
- Promoting pollinators,
- Historical facts and information,
- Trail or local area facts.

The sign may include one or no images and mile markers when appropriate. Measurements consist of 5.5’ x 2.5’ composite lumber frame with a small hanging 1’ x 2’ sign. The sign may be engraved wood or steel. The sign post should be 4” x 4”. Color options include with text on black or green sign or black text on orange sign.

Figure 10-30: Multi-Use Trail Abbreviated Historical/Educational Sign

10.3.5 Historical/Educational Placard, Full

The full Historical and Educational Placard should be placed as necessary to highlight relevant, location-specific historical and educational content in a more detailed manner than the abbreviated placard. Potential highlighted information may include:

- Freshwater marsh ecology,
- Flora and fauna at a key node or resting place,
- Promoting pollinators,
- Historical facts and information,

Images and maps should be used when possible. Measurements consist of 3,5’ x 4’ x 4’ angled composite lumber frame with powder coated steel placard frame. A clear fiberglass overlay allows for an interchangeable 18” x 3.5’ sign. The steel frame is secured and removed via nuts and bolts on the top face of the frame. Color options include white text on engraved wood sign or black text on white sign.

10.3.6 Trail Navigation / Mile Markers Sign

The Trail Navigation and Mile Markers Sign should be used to highlight important trail markers, nodes, and junctions. Directional arrows should be used and should point in the direction of the destination or the continuing trail. This sign may include:

- Distance to next junction, node, or trailhead,
- Current location,
- Mile markers,
- Intersection roadway,
- Directional indicators to off-trail destinations.

Measurements consist of 5’ x 2.4’ x 6” composite wood frame with engraved lumber or powder-coated steel sign embedded on top. Sign posts are to be 4” x 4”. Color palette should be white or black text on green sign to achieve high contrast.

Figure 10-31: Multi-Use Trail Full Historical/Educational Sign.

Figure 10-32: Multi-Use Trail Navigation / Mile Marker Sign.

10.3.7 Navigational Map

The Navigational Map should be used at trailheads and nodes to comprehensively highlight trail rules and etiquette and depict site location in relation to the surrounding area and nearby trailheads, nodes, and destinations. The sign may include:

- Comprehensive wayfinding map and trail connections map,
- Resource mapping (i.e., water, restrooms, dog waste stations, etc.),
- List of rules and etiquette.

Measurements consist of a 5’ x 4’ x 6” composite lumber frame with interchangeable fiberglass sign mounted below the top slat. The sign posts should be 6” x 6”. Color options include black text on white poster, or trail standard poster style with high contrast.

10.3.8 Directional Navigation Signs

The Directional Navigation Signs should be installed at important nodes, junctions, and road-way crossings to provide directions for trail users and locate nearby destinations. Information should include:

- Name of directional locations,
- Distance of directional locations if necessary,
- Identification of nodes,
- Wayfinding queues.

Measurements consist of 6’ x 4” x 4” vertical post with black powder coated steel tabs (+/- 3” x 12”) attached at the top. Tabs face toward the direction of the item they are labeled with. Vertical sign post may also be 6” x 6”. Color options include white text on black powder coated tabs or black text on wood or green steel.

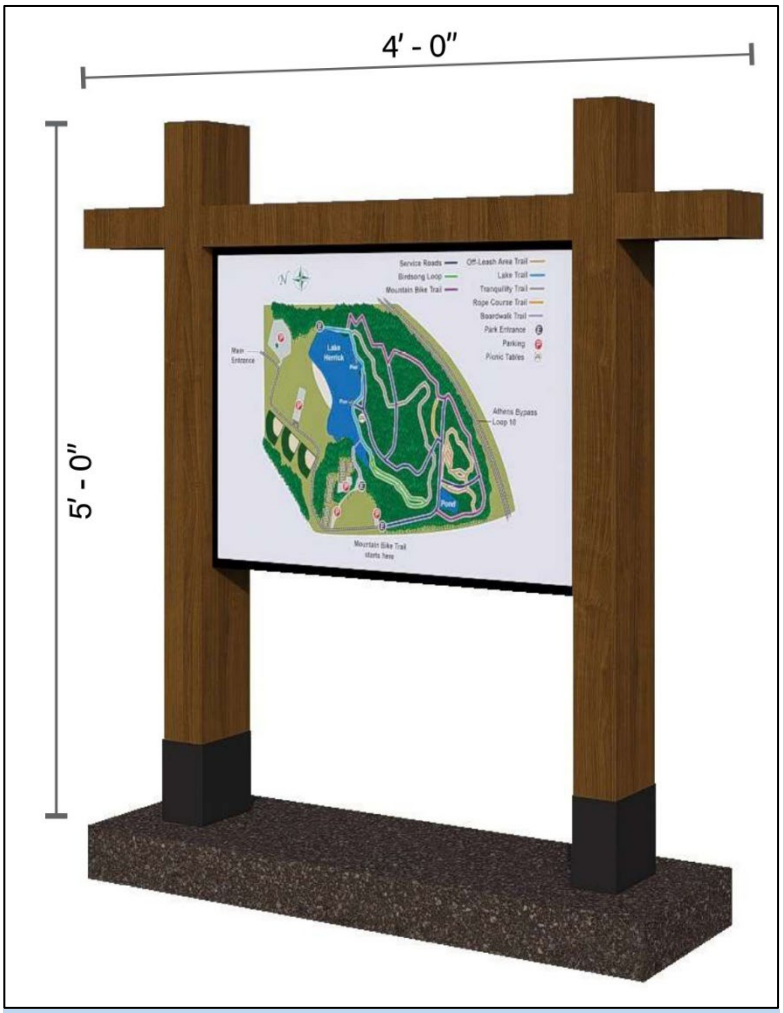


Figure 10-33: Multi-Use Trail Navigational Map.

Figure 10-34: Multi-Use Trail Directional Navigation Signs

10.3.9 Memorial Bench with Plaque

In order to have uniformly designed memorials going forward, the Memorial Bench standard should be used to showcase memorials or donations. These may include:

- Bridge memorial,
- Community member memorial,
- Donor recognition,
- Veteran memorial.

Specifications consist of a 6' x 1.5' x 1.5' bench made of composite lumber. A black powder coated steel plate with white or engraved text to be mounted to the bench front. Bench leg posts should be 4" x 4".

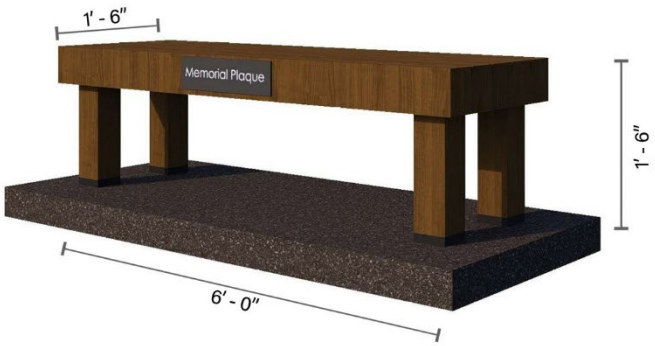


Figure 10-35: Multi-Use Trail Memorial Bench.

10.4 Sign Content

Signage along the trail network should be tailored to deliberately address four different types of sign content. Effective and succinct communication techniques for each type of content is discussed in this subsection.

10.4.1 Navigational Signage

Navigational signage should provide directional, mileage, and amenity information both along the trail network and to nearby destinations. This sign should include maps where necessary and will typically be located at key nodes and where trail continuation or connection is not intuitively clear (i.e., where on-road connectors are encountered). This sign content should reside in the following sign typologies:

- Three-Sided Kiosk (at trailheads),
- Individual Rules / Mile Marker Posts (at regular intervals),
- Trail Navigation, Mile Markers (at key nodes and junctions),
- Navigational Map (at trailheads and key nodes),
- Navigational Trail Signs – Directional (at nodes).

10.4.2 Regulatory Signage

Regulatory signage should provide rules and etiquette for the trail network. Regulatory signage should communicate information succinctly and identically wherever placed. Regulatory signage should also use positive, inviting verbiage in place of starkly negative language whenever possible. For example, regulatory signs should avoid using the word "no," with the exception being "no smoking" messaging that can be expressed with symbology. Some alternatives to negative verbiage, while still communicating activities and behaviors that are not allowed, may begin with "*trail guidelines prohibit …*" or "*please refrain from …*" In order to communicate permissible activities and encourage appropriate behavior, language such as "*you are welcome to …,*" "*please enjoy …,*" or "*please help us to …*" Topics to address include policy on dogs, carry-in-carry-out,

recreational vehicles and e-bikes, and parking and access restrictions.

Regulatory signs should reside in the following sign typologies:

- Welcome Sign,
- Three-Sided Kiosk,
- Individual Rules Post (periodically),

10.4.3 Interpretive Signage

Interpretive, or educational signage should typically provide education on historic, natural, and cultural topics, or provide memorialization or recognition. This sign content should reside in the following sign typologies:

- Three-Sided Kiosk (at trailheads),
- Historical / Educational Placard (abbreviated),
- Historical / Educational Placard (full),
- Memorial Bench with Plaque.

In preparation of the 250th anniversary of the revolutionary war, special attention should be given in the coming months to efforts to augment historic information signage and the Multi-Use trail corridor which played a pivotal role in the war.

10.4.4 Operational Signage

Operational signage provides roadway crossing warning signs (see Section 4 for standardized and uniform roadway crossing approaches). Operational signage may also periodically provide other information regarding obstructions, warnings, or emergency contact information as needed and may reside in the following sign typologies:

- Welcome Sign,
- Three-Sided Kiosk,
- Individual Rules Post.

10.5 Pavement Markings and Centerline Striping

In higher-use and conflict-prone segments of the trail system, pavement markings should be utilized as a complementary wayfinding and safety treatment. Recommended applications include centerline striping, directional arrows, and pedestrian and bicycle symbols to reinforce keep-right behavior, clarify passing zones, and reduce conflicts between trail users.

Centerline striping should be applied selectively based on observed user volumes, sight distance limitations, and documented safety concerns, particularly in areas where users commonly walk or ride side-by-side. Pavement markings should follow applicable MUTCD guidance and be coordinated with corresponding regulatory and informational signage to ensure consistent messaging across the trail system.


Bikeway and
Feeder Canal Trail
Jurisdictions
Bikeway
Feeder Canal Trail
Lake
George
Queensbury
Washington County
Warren County
Kingsbury
Glens
Falls
Hudson
Falls
Fort Edward
WARREN COUNTY
Multi-Use Trail
Study
N
0 0.25 0.5 1 1.5 Mile
Warren County GIS 6/25