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GATES & BOLLARDS

WARREN COUNTY BIKEWAY & FEEDER CANAL TOWPATH TRAIL

NOVEMBER 12, 2022

INTRODUCTION

This document is a revision to the original report titled *Gates & Bollards on the Warren County Bikeway*, August 2022. It updates the Warren County Bikeway¹ inventory and is expanded to include a compilation of the barriers² on the Glens Falls Feeder Canal and Towpath Trail.³

The Warren County Bikeway, one of the older trails [1] in the country, was first constructed in 1978.

Much has been learned about bikeway safety and design in the intervening 40 plus years. This document describes current design guidelines for the placement of bollards and gates. It then provides an inventory of these features on the Bikeway and Feeder Canal, highlighting areas where improvements could be made for the safety and enjoyment of current users. It concludes with recommended actions.

¹ The Bikeway begins at Elizabeth Little Blvd (formerly West Brook Rd) in the Village of Lake George and continues in a southerly direction to Platt Street in Glens Falls.

² A gate is a set of posts with a crossbar. A bollard is a small post. In this document, the word barrier is used to mean bollards and gates.

³ The Glens Falls Feeder Canal Trail begins in Overlook Park at the Feeder Dam on the Hudson River on Haviland Avenue in Queensbury and proceeds in an easterly and southerly direction until it meets the Champlain Canalway Trail at the bottom of the hill at the Five Combines locks.

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REFERENCED GUIDELINES

This document refers to three sets of guidelines for bike trail design. They are:

- [American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities Fourth Edition](#) (AASHTO) [2].
- [NY State Department of Transportation, Highway Design Manual Chapter 17](#)(HDM) [3].

Chapter 17.4.3 defers to AASHTO where it says that AASHTO establishes the minimum requirements for the design and construction of bicycle facilities for NY State Department of Transportation projects. [3, p. 17.4.3]

- [Empire State Trail Design Guide](#) – NYSDOT [4].

The Empire State Trails use of barriers follow the “recommendations in the AASHTO Guide.” [4, pp. 5-46]

The Empire State Trail Design Guide is a document “primarily intended for state agencies, local governments, engineering design firms, and trail organizations charged with designing, building, and operating segments of the Empire State Trail. The Design Guide is a compilation of the latest state-of-the-art guidelines and approaches for creating shared-use trails, and as such serves as a valuable reference for design professionals working on the development of trail projects anywhere in New York State and across the nation.” [4, pp. 1-4]

These are the guidelines for the 750-mile Empire State Trail, including the local Champlain Towpath Trail segment from Fort Edward to Fort Ann.[5]

SAFETY & ACCESS

Bike paths no longer routinely use bollards or gates at every accessway, unlike that found on the Warren County Bikeway. While most intersections on the Feeder Canal have bollards, there are a few without any barriers.

- *“The routine use of bollards and other similar barriers to restrict motor vehicle traffic is not recommended. Bollards should not be used unless there is a documented history of unauthorized intrusion by motor vehicles. Barriers such as bollards, fences, or other similar devices create permanent obstacles to path users. ... Furthermore, physical barriers are often ineffective at the job they were intended for—keeping out motorized traffic. People who are determined to use the path illegally will often find a way around the physical barrier, damaging path structures and adjacent vegetation”* [2, pp. 5-46]
- *“Bollards or gates will not be used, unless local conditions warrant it.”* [4, pp. 5-17]
- *“Bollards should never be a default treatment and should not be used unless there is a documented history of intrusion by unauthorized cars, trucks, or other unauthorized vehicles.”* [4, pp. 5-32]

SAFETY RISK

- *“Bollards on pathways may be struck by bicyclists and other path users and can cause serious injury. Approaching riders may shield even a conspicuous bollard from a following rider’s view until a point where the rider lacks sufficient time to react”* [2, pp. 5-46].
- *“Even properly installed bollards constitute a serious and potentially fatal safety hazard to trail users.”* [4, pp. 5-33]

ACCESS EMERGENCY VEHICLES

- *“Barrier features can also slow access for emergency responders.” [2, pp. 5-46]*

ANECDOTAL EXPERIENCES

GLEN LAKE ROAD, NORTH SIDE, COLLAPSED LUNG

Bob Wright, Queensbury NY writes:

“Back in May of 2012 I was on a ride to Lake George via the Warren County Bike Trail. I was cycling east on Glen Lake Road to access the bike trail. As I was turning left onto the bike trail, I encountered the bollards. Unfortunately for me, part of my bike struck the post closest to the right-hand side of the trail catapulting me over the handlebars and landing on the grassy shoulder. I immediately felt pain in my chest and an inability to breathe. After several minutes, I was able to catch my breath and stand up.

The result was multiple contusions, scraped knees, two broken ribs and a collapsed right lung. Under doctors’ orders, I was not allowed to exercise until the collapsed lung reinflated about 4 weeks later. The bollard on the north side of Glen Lake Road, at the time was crooked and tilted to the right. To this day, the bollard is still in the same position. I am reminded of the event each and every time I cross Glen Lake Road heading north!”

ORCHARD STREET EAST SIDE, URGENT CHEST TRAUMA

Mary Beth Mylott, Family Nurse Practitioner, Bolton Landing writes:

“In September 2007, I was on an historical bike tour from Lake George to Rogers Islands. Ten to twelve cyclists were in the group. This was a relaxed ride with casual conversation. One member of the group was a single older man with an expensive bike wearing a matching cycling outfit.

Everything was going well as the tour leader Kyle Jenks discussed the local history. The single man, up and ahead of me, was engaged in a conversation with another cyclist as they approached an intersection. Suddenly, this man forcefully struck a wooden bollard in the middle of the bike path and fell to the ground. I heard the impact before I saw him; it was loud. When his front tire hit the bollard and he began falling, his chest landed on top of the bollard. It was a direct hit to his chest. The man laid on the ground still, eventually responding to the cyclists coming to his aid. Despite everyone’s objections, after a few minutes he insisted on sitting up. The tour leader and I were both concerned and wanted to call 911 for medical assistance. If he were bleeding internally, sitting up could change his hemodynamics, putting him in danger. The man refused assistance and asserted his will to finish the tour. I never heard if he suffered consequences either later that evening or in the coming days, but I do know he had to be in pain.

A chest impact like this can cause serious trauma and may result in rib fractures, flail chest, pneumothorax, cardiac and pulmonary contusion causing hemorrhaging and tracheal injuries. Victims can die silently hours later from swelling and blood loss.

I did not rest well that night.”

HILL FROM ROUTE 149 TO GLEN LAKE ROAD, EMT ACCESS

JP Fasano, Bolton Landing, writes:

"On two separate occasions during the summers of 2019-2020, I came upon crashes on the hill from Route 149 to Glen Lake Road where 911 was called because an ambulance was needed. For both incidents, the first responders climbed the hill on foot rather than removing the gate and driving up to the patient. In one case they brought up a stretcher/gurney with wheels. I do not know why they did not remove the gate and just drive."

NORTH END OF THE BIKEWAY AT FORT GEORGE ROAD, ASS-OVER-TEAKETTLE

Dave Wilcox, Queensbury, NY writes:

"A few years ago, my wife and I had just completed the descent from Bloody Pond Road and slowed to navigate around the gate and cross Ft. George Rd. A teenager had been following us and apparently was not as familiar with the bikeway. Without slowing, he rounded the last curve, continued down the center of the trail at full speed, and struck the gate with his front wheel. He was thrown over the handlebars and onto the pavement. Fortunately, he was able to walk away with minor injuries, and fortunately no vehicles were at that street crossing, or the results could have been catastrophic."

COUNTRY CLUB ROAD, LOSING BALANCE AVOIDING BOLLARDS

Joan McGrath writes:

"Last year while leaving the parking lot on Country Club Rd and heading south, our club bike ride attempted to cross the street. As I turned my bike to avoid the bollard I nearly fell as my tire broke free of the asphalt. Fortunately, I did not fall but this has happened too many times on the bike trail. Runners, bikers passing or coming from the opposite direction or walkers can cause one to make a split decision on where to go."

SOUTH END OF THE BIKEWAY BEHIND HANNAFORD REAR PARKING LOT AT DIRT ACCESS PATH UP TO PAVED PATH

Tony Krivitski, Glens Falls, NY writes:

"Can't help but recall the time I suggested that a SUV driver, perched on the dirt incline up to the Bikeway from Hannaford's rear parking area, that it was not a vehicular traffic "road." He backed out, but there are no barriers or signage there to stop anyone."

SOUTH END OF BIKEWAY, WARREN COUNTY BIKE PATH BETWEEN BAY ROAD & SANFORD STREET

Tony Krivitski, Glens Falls, NY writes:

"Walking south a few years back, I was startled by screeching tires & an engine's roar behind me. Spun around & saw a small, red pick-up truck also heading south bearing down on me. Jumped to the grass for my safety & watched this young man speed by while police sirens wailed in the area. I do not know which dead-end street off Bay he used to enter the Bikeway; most all are barricaded. Not sure any obstacle would have stopped his attempted flight from arrest."

BIRDSALL ROAD, CYCLIST CRASHES INTO GATE

Jim Swart, Queensbury, NY writes:

“Several years ago, I was riding south on the Warren County Bikeway coming down a hill towards Birdsall Rd, when I came across a biker who had ridden into the bollard at that intersection. He was thrown over the horizontal board when his bike hit it. He was conscious but in pain. He couldn’t remember how he did this. Fortunately, no serious injuries were apparent, but it could have been much worse.

I ride this bikeway 3-4 times a week during the summer. I’m very happy with the maintenance the County provides to keep this trail in such good condition. It gets a lot of use during the summer from walkers, runners, bikers, rollerbladers and even a unicycle and 4-wheel electric cart.

My biggest concern with the trail is the bollards at the intersections with roads. The narrow openings are choke points that are hazardous to pedestrians and cyclists. I’ve seen numerous times where families will stop and block traffic while unaware of what they are doing.

I’ve been a cyclist for over forty years and have ridden many bike trails. This trail is one of few that have a horizontal bar across the path. Most have 2 or 3 vertical posts painted yellow or white with 4-5 feet between poles. It is much safer for riders and pedestrians.”

BOLLARD DESIGN GUIDELINES

Minimum requirements have been established for the rare situations where a bollard or gate is needed.

Here are some of the design guidelines when using bollards and other barriers:

- *“Must not restrict access for people with disabilities.” [4, pp. 5-32]*
- *“Should permit passage, without dismounting, for adult tricycles, bicycles towing trailers, and tandem bicycles.” [4, pp. 5-32]*
- *“Bollards should permit passage, without dismounting, for adult tricycles, bicycles towing trailers, and tandem bicycles. Bollards should not restrict access for people with disabilities. All users legally permitted to use the facility should be accommodated; failure to do so increases the likelihood that pathway users will collide with the bollards.” [2, pp. 5-47]*

MINIMUM PASSAGE SPACE

A minimum of five feet is needed between barriers to allow safe passage. When turning is needed, a larger spacing is required to safely accommodate bicycles towing trailers, tandem bicycles, and adult tricycles.

When bollards or other barriers must be used, the guidelines list these best practices for the spacing between barriers:

- *“To allow access to paths by adult tricycles and bicycle trailers, a spacing between barriers of 1.5 m should be used.” [3, p. 17.4.10.4]*
- *“One bollard is generally sufficient to indicate that a path is not open to motorized vehicles. The post should be placed in the center of the trail tread. Where more than one post is necessary, a 5 ft (1.5 m) minimum spacing between bollards is used to permit passage of bicycle trailers, adult tricycles, and wheelchairs.” [4, pp. 5-33]*
- *“When more than one post is used, an odd number of posts spaced at 6 ft (1.8 m) is desirable.” [2, pp. 5-47]*

DISTANCE FROM ROAD

Barriers should be placed thirty feet from the edge of a road to permit the rider time to navigate the barrier without simultaneously concentrating on safely crossing the street. That distance allows the rider space to navigate past the barrier, recuperate, and then give attention to the street crossing.

- *“Bollards should be set back from the roadway edge a minimum of 30 ft (10 m).” [2, pp. 5-47]*

DISTANCE FROM SIDEWALK

A bollard or barrier should be twenty feet away from a sidewalk/intersection.

- *“Should be placed at least 20 ft (6.0 m) from the intersection.” [4, pp. 5-32]*

PATH WIDTH

The minimum path width is ten feet.

- *“The minimum paved width for a two-directional shared use path is 10 ft (3.0 m).” [2, pp. 5-3]*

- *“The Department's minimum recommended width for shared-use paths is 4m”*. [3, pp. 17-20]. Four meters is approximately thirteen feet.
- *“Standard shared use path width is 12 ft ... The minimum width of a shared use path is 10 ft (3.0 m), which is adequate for moderate use, or a low level of mixing between bicyclists and pedestrians.”* [4, pp. 5-14]

BIKEWAY AND FEEDER CANAL BOLLARD AND GATE INVENTORY

These tables list intersections on the Bikeway and Feeder Canal along with key metrics. For the Bikeway, the list is ordered with the northern barriers appearing first. The Feeder Canal barriers are listed from west to east.

COLUMN HEADINGS

1. **Barrier:**
 - a. **Name:** Textual name of the barrier based on the location of the intersection, crossing or entrance ramp. These names are linked to a photograph of the barrier found in the appendix.
 - b. **Location:** The barrier's latitude and longitude, which is hyperlinked to display the barrier's location on Google Maps.
2. **Barrier Type:**
 - a. **Bollard:** This field is the number of bollards, otherwise the field is "no." When there is an even number of bollards causing the same opening to be used in both directions and the size of this opening is less than 10' feet then the cell is shaded in red. (The minimum path width requirement for two directional traffic is 10'.)
 - b. **Gate:** This field is "yes" when the barrier includes the use of a gate, otherwise the field is "no."
 - c. **Other:** This field is "yes" when the barrier includes the use of something other than a bollard or gate. Some examples are: stones ([Old Military Road, South side](#)), fencing ([Quaker Road Overpass, South side](#)), signposts ([Route 9, Expedition Park intersection](#)), and in one case a fire hydrant ([Lawton Avenue entrance ramp](#)).
3. **Distance From:**
 - a. **Road:** If distance from the barrier to the road is less than 30' then the cell is shaded in red, otherwise green.
 - b. **Sidewalk:** If distance from the barrier to a sidewalk is less than 20' then the cell is shaded in red, otherwise green.
4. **Southbound:**
 - a. **Width:** The width of the space a southbound cyclist passes through.
 - i. If the width is less than 5', then the field is shaded red.
 - ii. If a turn is needed and the width is between 5' to 7'6", then the field is shaded in orange.
 - iii. If the width is not shaded in red or orange, then it is shaded in green.
 - b. **Turn Required:** This field is 'no' if a southbound cyclist can ride straight through the barrier. If the cyclist must turn when passing through the barrier, then this field is 'yes.'
5. **Northbound:**
 - a. **Width:** The width of the space a northbound cyclist passes through.
 - i. If the width is less than 5', then the field is shaded red.
 - ii. If a turn is needed and the width is between 5' to 7'6", then the field is shaded in orange.
 - iii. If the width is not shaded in red or orange, then it is shaded in green.
 - b. **Turn Required:** This field is 'no' if a northbound cyclist can ride straight through the barrier. If the cyclist must turn when passing through the barrier, then this field is 'yes.'

The Feeder Canal table uses Eastbound & Westbound directional references, instead of Southbound & Northbound, respectively.

CELL COLOR LEGEND

- Distances in **Green** meet the minimum referenced guidelines.
- If an intersection is barrierless, then the row of cells is **Green**.
- Distances in **Red** do not meet the guidelines.
- Distances in **Orange** are out of compliance because a turn is needed to pass between the barrier without sufficient room. If turning is needed, then 50% more room is assumed to be required.

ENTRANCE RAMP BARRIERS

Some barriers along the Bikeway occur at ramps for entry-to or exit-from the trail. The size of the gap when entering the Bikeway is listed in the table with the heading Southbound Width. The size of the gap when exiting the Bikeway is listed in the table with the heading Northbound Width.

The entrance ramp barriers are situated at Stanton Road entrance ramp, Route 149 north entrance ramp, Route 149 south entrance ramp, Country Club Road Parking Lot entrance ramp, Baldwin Avenue entrance ramp, Mason Avenue entrance ramp, Lawton Avenue entrance ramp, and Leonard Street Parking Lot entrance ramp.

The Feeder Canal has no entrance ramp barriers.

SHARED OPENINGS

If the same opening is used when riding in either direction, then this is noted with a table entry of **shared opening**.

If a shared opening is less than minimum trail width of 10' then the table cell is shaded in red.

TABLE OF BOLLARDS AND GATES

WARREN COUNTY BIKEWAY

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Elizabeth Little Blvd. intersection	43.419190, -73.708240	no	yes	no	N/A	8'6"	4'6"	yes	4'8"	yes
Fort George Road, West side	43.418343, -73.706587	no	yes	yes	19'9"	2'10"	4'3"	yes	4'0"	yes
Fort George Road, East side	43.418192, -73.706408	no	yes	yes	21'6"	1'0"	4'9"	yes	3'4"	yes
Stanton Road entrance ramp	43.411185, -73.706913	3	no	no	15'0"	N/A	5'11"	yes	5'4"	yes
Private Drive, North side	43.407715, -73.708293	no	yes	yes	18'0"	N/A	4'8"	yes	4'6"	yes
Private Drive, South side	43.407669, -73.708329	no	yes	yes	18'0"	N/A	3'10"	yes	3'10"	yes
Old Military Road, North side	43.405585, -73.709066	no	yes	yes	19'0"	N/A	3'8"	yes	4'4"	yes
Old Military Road, South side	43.404661, -73.707842	no	yes	yes	32'0"	N/A	3'9"	yes	4'2"	yes
Route 9, Expedition Park⁴ intersection	43.396082, -73.703829	1	no	yes	5'6"	N/A	4'6"	yes	3'11"	yes
Bloody Pond Road, North side	43.395258, -73.703332	no	no	no						

⁴ Formerly Magic Forest

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Bloody Pond Road, South side	43.395151, - 73.703362	no	no	no						
Route 9, Lyn Aire Motel intersection	43.392757, - 73.703828	2	yes	no	N/A	N/A	3'10"	yes	3'7"	no
Route 149 north entrance ramp	43.369924, - 73.695342	no	yes	yes	18'8"	N/A	2'0"	yes	5'10"	yes
Route 149 south entrance ramp	43.369464, - 73.695988	3	no	no	19'3"	8'11"	5'2"	no	5'1"	no
Glen Lake Road, North side	43.364666, - 73.686169	2	yes	no	26'11"	N/A	3'9"	yes	3'10"	yes
Glen Lake Road, South side	43.364453, - 73.686152	2	yes	no	31'4"	N/A	3'5"	yes	3'9"	yes
Ash Drive, North side	43.360225, - 73.685907	2	yes	no	35'5"	N/A	3'6"	no	3'2"	yes
Ash Drive, South side	43.358867, - 73.684791	2	yes	no	N/A	N/A	3'8"	no	3'6"	yes
Birdsall Road intersection	43.354189, - 73.682871	2	yes	no	22'1"	N/A	3'6"	yes	3'11"	yes
Country Club Road north intersection	43.344185, - 73.665543	2	yes	no	21'0"	N/A	3'9"	yes	3'10"	yes
Sweet Road, North side	43.338422, - 73.666899	2	yes	no	26'4"	N/A	3'7"	yes	3'9"	yes
Sweet Road, South side	43.338264, - 73.666821	2	yes	no	24'6"	N/A	3'6"	yes	3'8"	yes

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Country Club Road Parking Lot entrance ramp	43.335819, -73.664155	3	no	no	36'10" 5	29'0" ⁶	5'5"	no	4'10"	no
Country Club Road south, West side	43.335229, -73.663547	2	yes	no	26'2"	N/A	3'2"	yes	3'0"	yes
Country Club Road south, East side	43.335009, -73.663233	no	yes	yes	22'0"	N/A	3'5"	yes	4'2"	yes
Glenwood Avenue, North side	43.333098, -73.660707	1	yes	yes	20'4"	N/A	3'7"	yes	3'5"	yes
Glenwood Avenue, South side	43.332959, -73.660517	2	yes	no	5'6"	N/A	4'4"	yes	4'11"	yes
Quaker Road Overpass, North side	43.332345, -73.659721	1	no	yes	N/A	N/A	4'3"	no	5'0"	no
Quaker Road Overpass, South side	43.331857, -73.659077	1	no	yes	N/A	N/A	4'6"	no	4'11"	no
Glens Falls Cariology entrance ramp (now closed) ⁷	43.331299, -73.658368	no	no	yes	N/A	N/A	5'0"	yes	shared opening	yes
CR Bard, North side	43.329170, -73.655066	3	no	no	8'10"	N/A	5'0"	no	4'9"	no
CR Bard, South side	43.328376, -73.653846	3	no	no	5'7"	N/A	5'1"	no	6'5"	no

⁵ Distance from parking lot

⁶ Distance from bikeway

⁷ After the installation of a new split rail fence in about August 2022, this access is no longer available.

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Bay Road, West side	43.327334, -73.652221	3	no	no	N/A	N/A	4'8"	yes	4'11"	yes
Bay Road, East side	43.327080, -73.651840	3	no	no	N/A	N/A	5'3"	yes	4'8"	yes
Lexington Avenue, North side	43.323643, -73.646501	3	no	no	16'0"	3'9"	4'9"	no	5'1"	no
Lexington Avenue, South side	43.323504, -73.646302	3	no	no	17'5"	4'7"	4'10"	no	4'9"	no
Baldwin Avenue entrance ramp	43.322808, -73.645378	2	no	no	N/A	17'0" ⁸	3'8"	yes	shared opening	yes
Mason Street entrance ramp	43.322350, -73.644944	3	no	no	11'11"	N/A	5'2"	yes	5'0"	no
Sanford Street, North side	43.321439, -73.643858	3	no	no	20'10"	12'8"	4'7"	no	4'11"	no
Sanford Street, South side	43.321295, -73.643717	1	no	no	11'10"	3'11"	5'5"	no	5'8"	no
Ridge Street, West side	43.321138, -73.643573	1	no	no	16'9"	0'2"	6'1"	no	4'9"	no
Ridge Street, East side	43.320902, -73.643327	3	no	no	20'6"	2'10"	4'10"	yes	4'10"	yes
Hunter Street, North side	43.319358, -73.641843	3	no	no	17'5"	13'1"	4'10"	no	4'11"	no
Hunter Street, South side	43.319211, -73.641708	3	no	no	16'7"	11'11"	5'0"	no	4'9"	no

⁸ Distance from Bikeway

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Lawton Avenue entrance ramp	43.318265, -73.640955	2	no	yes	13'4"	N/A	5'9"	no	5'10"	no
Dix Avenue, North side	43.317457, -73.640010	3	no	no	17'0"	2'3"	4'11"	no	5'0"	no
Dix Avenue, South side	43.317275, -73.639902	1	no	no	26'0"	0'8"	5'0"	no	5'11"	no
Walnut Street, West side	43.317204, -73.639777	1	no	no	24'8"	5'5"	4'9"	yes	4'11"	yes
Walnut Street, East side	43.316931, -73.639502	2	no	yes	18'7"	3'0"	5'2"	no	4'8"	No
Cooper Street, West side	43.315203, -73.637925	2	yes	no	13'0"	N/A	4'3"	yes	4'5"	No
Cooper Street, East side	43.315190, -73.637657	2	yes	no	22'0"	14'4"	3'8"	yes	3'7"	Yes
Leonard Street Parking Lot entrance ramp	43.315356, -73.635964	1	no	no	N/A	22'4" ⁹	4'9"	no	4'10"	No
Leonard Street west intersection	43.315382, -73.635647	3	no	no	21'8"	N/A	12'3" ¹⁰	no	4'2"	no
Leonard Street east intersection	43.312746, -73.634904	1	no	yes	18'4"	N/A	5'0"	yes	5'10"	yes
Prospect Street, West side	43.312650, -73.633778	1	no	yes	19'3"	9'11"	4'8"	no	4'9"	no

⁹ Distance from parking lot

¹⁰ When measured the gate was not installed. This distance will be different when the gate is installed.

Barrier		Barrier Type			Distance From		Southbound		Northbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Prospect Street, East side	43.312627, -73.633479	1	no	yes	19'7"	N/A	5'5"	no	5'4"	no
Orchard Street, West side	43.312555, -73.632580	1	no	yes	19'1"	12'11"	4'11"	no	5'0"	no
Orchard Street, East side	43.312532, -73.632329	1	no	yes	19'1"	13'9"	5'2"	no	5'5"	no
McDonald Street, West side	43.312438, -73.631390	1	no	yes	27'9"	8'6"	5'6"	no	4'11"	no
McDonald Street, East side	43.312406, -73.631076	1	no	yes	18'11"	9'0"	5'0"	yes	5'10"	no
Platt Street intersection	43.312281, -73.629876	1	no	no	18'9"	10'11"	4'9"	no	5'3"	no

FEEDER CANAL TOWPATH

SECTION WEST OF ROUTE 9

Barrier		Barrier Type			Distance From		Eastbound		Westbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Overlook Park west entrance	43.292400, -73.665285	3	no	no	7'7"	N/A	5'11"	yes	5'8"	yes
Overlook Park east entrance	43.292331, -73.664816	1	no	yes	N/A	13'0" ¹¹	2'3"	yes	2'9"	yes
Charles & Gaynelle Moore Bridge	43.292032, -73.664524	2	no	yes	N/A	N/A	2'11"	yes	shared opening	yes
Bush Street, West side	43.292465, -73.655370	3	no	no	16'0"	N/A	5'7"	yes	5'2"	yes
Bush Street, East side	43.292765, -73.654943	3	no	no	N/A	N/A	5'1"	no	5'1"	yes
Murray Street, West side	43.301657, -73.644766	3	no	no	26'11"	N/A	4'11"	yes	5'0"	yes
Murray Street, East side	43.301747, -73.644568	no	no	no						
Cooper's Cave Bridge Parking Lot intersection	43.306054, -73.642733	6	no	no	N/A	0' ¹²	17'6"	no	shared opening	no

¹¹ Distance from parking lot

¹² Distance from parking lot

SECTION EAST OF ROUTE 9

This portion of the Feeder Canal Towpath connects the Warren County Bikeway to the Champlain Canal Towpath trail which is part of the Empire State Trail.

Barrier		Barrier Type			Distance From		Eastbound		Westbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Shermantown Road intersection	43.307970, -73.626298	no	no	no						
Lehigh Cement, West side	43.308187, -73.621951	3	no	no	54"	N/A	5'11"	no	5'8"	no
Lehigh Cement, East side	43.308212, -73.621599	no	no	no						
River Street, South side	43.310777, -73.607188	2	no	no	N/A	N/A	11'0"	no	shared opening	no
River Street, North side	43.311117, -73.606182	3	no	no	72'	65'	5'10"	no	4'8"	no
Warren Street, West side	43.312775, -73.596184	3	no	no	35'	N/A	5'8"	no	5'6"	no
Warren Street, East side Side	43.312860, -73.595902	3	no	no	34'	N/A	4'2"	no	4'2"	no
Route 4, West side	43.307733, -73.582267	3	no	no	N/A	N/A	5'3"	no	5'9"	no
Route 4, East side	43.307208, -73.581544	3	no	no	N/A	N/A	5'5"	no	5'3"	no
Martindale Avenue, North side	43.306189, -73.580569	2	no	no	37'	N/A	5'6"	yes	5'1"	yes
Martindale Avenue, South side	43.304364, -73.579008	4 ¹³	no	no	N/A	N/A	2'4"	no	2'5"	no

¹³ The center opening accommodating traffic in both directions is 5'2".

Barrier		Barrier Type			Distance From		Eastbound		Westbound	
Name	Location	Bollard	Gate	Other	Road	Sidewalk	Width	Turn Required	Width	Turn Required
Maple Street, North side	43.302552, -73.576544	4 ¹⁴	no	no	18'5"	13'5"	3'0"	no	2'5"	no
Maple Street, South side	43.302429, -73.576340	no	no	no						
Pearl Street, North side	43.301006, -73.574453	no	no	no						
Pearl Street, South side	43.300803, -73.574053	no	no	no						
Burgoyne Avenue, West side	43.298709, -73.569470	3	no	no	N/A	N/A	4'11"	yes	6'8"	no
Burgoyne Avenue, East side	43.297699, -73.569689	no	no	no						
Champlain Canal Towpath Trail intersection	43.292749, -73.560080	5	no	no	N/A	N/A	5'9"	no	4'4"	no

¹⁴ The center opening accommodating traffic in both directions is 3'4".

METHODOLOGY

DISTANCE BETWEEN BOLLARDS

The size of an opening between two bollards is measured as the distance between one bollard and another bollard or the edge of the pavement, whichever is less.

GATES THAT EXTEND INTO BIKE PATH

When a horizontal gate is not cut flush with and extends past the vertical post, then the width is measured from the end of the horizontal gate as projected onto the path to the edge of the pavement.



SIDEWALK OR ROAD NOT PERPENDICULAR TO THE BIKEWAY

When a sidewalk or road is not perpendicular to the bikeway, then the shortest distance was measured.



SUMMARY

BIKEWAY

Except for the Bloody Pond Road crossing, none of the 58 Bikeway barriers meet the referenced guidelines. Bikeway design standards have evolved in the 40 plus years since the Bikeway was completed. The Bikeway is a wonderful county asset but is showing its age and its failure to meet current design and safety standards.

Improving the Bikeway benefits both county residents and visitors. Cyclists now have many more choices for riding on multi-use trails: Champlain Canalway Trail, Zim Smith Trail, Albany Hudson Electric Trail and hopefully, the soon to be completed Adirondack Rail Trail from Lake Placid to Tupper Lake. The Bikeway is not as singular and competitive as it once was. The design of these intersections makes riding through them stressful and less safe than they could be. To maintain its competitiveness as a bikeway, upgrading to current standards is essential.

FEEDER CANAL

The section of the Feeder Canal Trail that connects the Bikeway to the Champlain Canal Towpath has 18 road connections. Six of these connectors are barrierless, which is consistent with design standard. Another six have bollards that do not meet current standard guidelines. The remaining 6 comply with the standard guidelines.

RECOMMENDATIONS

It is recommended that the current design standards be implemented at several intersections and crossings for a year to determine positive and negative outcomes. Existing barriers would be removed and replaced with conforming road crossings for a trial period of a year. The evaluation period would measure the outcomes and compare them to the current state. Unfortunately, other than anecdotal reports, little hard data exists to measure the current state. Based upon the results of the trial period a plan should be developed to evaluate the remaining intersections with the goal of bringing them all up to current standards.

There are reasons to be hopeful that the trial period will be successful because:

- The Feeder Canal has demonstrated that barrierless intersections (a significant aspect of current standards) can exist without any known issues.
- At several Bikeway intersections currently the bollards and their placement are ineffective at impeding entry by motorized vehicles. Therefore, bringing those intersections up to current standards by removing barriers will likely have no negative effect. Some of these intersections are:
 - [Sanford Street, South side](#)
 - [Ridge Street, West side](#)
 - [Walnut Street, East side](#)
 - [Leonard Street Parking Lot entrance ramp](#)
 - [Leonard Street, West side](#)
 - [Platt Street intersection](#)

There are no known issues at these entrances with motor vehicles driving on the Bikeway.

REFERENCES

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- [3] NY State Department of Transportation, "Highway Design Manual Chapter 17," 24 June 2015. [Online]. Available: https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/hdm-repository/chapt_17.pdf. [Accessed 7 July 2021].
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- [5] NY State, "Champlain Canalway Trail, Fort Edward to Fort Ann," [Online]. Available: <https://empiretrail.ny.gov/albany-whitehall/fort-edward-fort-ann>. [Accessed 27 February 2022].

APPENDICES:

APPENDIX A: WARREN COUNTY BIKEWAY PHOTOGRAPHS

These pictures were taken from the Fall 2021 to Summer of 2022.

ELIZABETH LITTLE BLVD. INTERSECTION



View looking southbound

FORT GEORGE ROAD, WEST SIDE



View looking northbound

FORT GEORGE ROAD, EAST SIDE



View looking southbound

STANTON ROAD ENTRANCE RAMP



View looking toward Bikeway. Right turn is southbound.

PRIVATE DRIVE, NORTH SIDE



View looking southbound

PRIVATE DRIVE, SOUTH SIDE



View looking southbound

OLD MILITARY ROAD NORTH INTERSECTION



View looking southbound

OLD MILITARY ROAD SOUTH INTERSECTION



View looking northbound

ROUTE 9, EXPEDITION PARK INTERSECTION



View looking northbound

BLOODY POND ROAD, NORTH SIDE



View looking southbound

BLOODY POND ROAD, SOUTH SIDE



View looking northbound

ROUTE 9, LYN AIRE MOTEL INTERSECTION



View looking northbound

ROUTE 149 NORTH SIDE ENTRANCE RAMP



View looking away from Bikeway.

ROUTE 149 SOUTH SIDE ENTRANCE RAMP



View looking toward Bikeway. Straight is southbound.

GLEN LAKE ROAD, NORTH SIDE



View looking southbound

GLEN LAKE ROAD, SOUTH SIDE



View looking southbound

ASH DRIVE NORTH SIDE INTERSECTION



View looking southbound

ASH DRIVE SOUTH SIDE INTERSECTION



View looking northbound

BIRDSALL ROAD INTERSECTION



View looking southbound

COUNTRY CLUB ROAD NORTH INTERSECTION



View looking northbound

SWEET ROAD, NORTH SIDE



View looking southbound

SWEET ROAD, SOUTH SIDE



View looking northbound

COUNTRY CLUB ROAD PARKING LOT ENTRANCE RAMP



View looking toward Bikeway. Right is northbound.

COUNTRY CLUB ROAD SOUTH, WEST SIDE



View looking southbound

COUNTRY CLUB ROAD SOUTH, EAST SIDE



View looking northbound

GLENWOOD AVENUE, NORTH SIDE



View looking southbound

GLENWOOD AVENUE, SOUTH SIDE



View looking northbound

QUAKER ROAD OVERPASS, NORTH SIDE



View looking southbound

QUAKER ROAD OVERPASS, SOUTH SIDE



View looking southbound

GLENS FALLS CARDIOLOGY ENTRANCE RAMP (NOW CLOSED)



Sometime around August 2022, this split rail fence was replaced. The replacement fencing no longer provides access to the Bikeway. Below is a picture of the new fencing.



View looking to east side of Bikeway

CR BARD, NORTH SIDE



View looking southbound

CR BARD, SOUTH SIDE



View looking northbound

BAY ROAD, WEST SIDE



View looking southbound

BAY ROAD, EAST SIDE



View looking southbound

LEXINGTON AVENUE, NORTH SIDE



View looking southbound

LEXINGTON AVENUE, SOUTH SIDE



View looking southbound

BALDWIN AVENUE ENTRANCE RAMP



View looking toward Bikeway. Right is southbound.

MASON STREET ENTRANCE RAMP



View looking to the west away from Bikeway.

SANFORD STREET, NORTH SIDE



View looking southbound

SANFORD STREET, SOUTH SIDE



View looking southbound

RIDGE STREET, WEST SIDE



View looking southbound

RIDGE STREET, EAST SIDE



View looking southbound

HUNTER STREET, NORTH SIDE



View looking southbound

HUNTER STREET, SOUTH SIDE



View looking southbound

LAWTON AVENUE ENTRANCE RAMP



View looking to the west away from Bikeway

DIX AVENUE, NORTH SIDE



View looking southbound

DIX AVENUE, SOUTH SIDE



View looking southbound

WALNUT STREET, EAST SIDE



View looking southbound

WALNUT STREET, WEST SIDE



View looking southbound

COOPER STREET, WEST SIDE



View looking southbound

COOPER STREET, EAST SIDE



View looking northbound

LEONARD STREET PARKING LOT ENTRANCE RAMP



View looking southbound

LEONARD STREET, WEST SIDE



View looking southbound

LEONARD STREET, EAST SIDE



View looking southbound



View looking southbound

PROSPECT STREET, EAST SIDE



View looking southbound

ORCHARD STREET, WEST SIDE



View looking southbound

ORCHARD STREET, EAST SIDE



View looking southbound

MCDONALD STREET, WEST SIDE



View looking southbound



View looking southbound

PLATT STREET INTERSECTION



View looking southbound

APPENDIX B: FEEDER CANAL TOWPATH TRAIL PHOTOGRAPHS

The Feeder Canal pictures were taken in August and September of 2022.

OVERLOOK PARK WEST ENTRANCE



View looking eastbound

OVERLOOK PARK EAST ENTRANCE



View looking eastbound

CHARLES & GAYNELL MOORE BRIDGE



View looking eastbound

BUSH STREET, WEST SIDE



View looking eastbound

BUSH STREET, EAST SIDE



View looking westbound

MURRAY STREET, WEST SIDE



View looking eastbound

MURRAY STREET, EAST SIDE



View looking eastbound

COOPER'S CAVE BRIDGE PARKING LOT INTERSECTION



View looking eastbound

SHERMANTOWN ROAD INTERSECTION



View looking westbound

LEHIGH CEMENT, WEST SIDE



View looking eastbound



View looking westbound

RIVER STREET, SOUTH SIDE



View looking eastbound

RIVER STREET, NORTH SIDE



View looking westbound

WARREN STREET, WEST SIDE



View looking eastbound

WARREN STREET, EAST SIDE



View looking westbound

ROUTE 4, WEST SIDE



View looking eastbound

ROUTE 4, EAST SIDE



View looking westbound

MARTINDALE AVENUE, NORTH SIDE



View looking eastbound

MARTINDALE AVENUE, SOUTH SIDE



View looking westbound. When this picture was taken, the center bollard was removed leaving a large hole in the path to replace the bollard.

MAPLE STREET, NORTH SIDE



View looking eastbound

MAPLE STREET, SOUTH SIDE



View looking westbound

PEARL STREET, NORTH SIDE



View looking eastbound

PEARL STREET, SOUTH SIDE



View looking westbound

BURGOYNE AVENUE, WEST SIDE



View looking eastbound

BURGOYNE AVENUE, EAST SIDE



View looking eastbound

CHAMPLAIN CANAL TOWPATH TRAIL INTERSECTION



View looking eastbound