

# **Albany Loop Trail Feasibility Analysis & Recommendations**

## **Technical Memorandum**



March 2023

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## Study Area Overview

This report presents potential facilities for a bicycle route for the western portion of the Albany Loop Trail identified in the Capital District Trails Plan. The area studied begins at the Albany County Hudson-Helderberg Trailhead in Voorheesville and ends at the entrance to The Crossings Park of Colonie. The route studied follows the NY Route 155 corridor and Albany Shaker Road. The proposed Albany Loop Trail is referred to as the “Loop Trail” for the purposes of this report.

## Purpose & Need

Since CDTC has started measuring usage of bicycle paths in our region there has been rapid growth of bicycling. To support this demand, the Capital District Trails Plan recommends developing a seamless network of trails that connect communities and neighborhoods throughout the region. The plan identifies the Albany Loop Trail as a core trail connecting communities, destinations, and other trails. The proposed trail connects the existing Albany County Helderberg-Hudson Rail Trail and Mohawk-Hudson Hike Bike Trail.

Transportation accounts for 28% of greenhouse gas emissions in New York according to the NYS Department of Environmental Conservation. State and local goals call for a significant reduction in greenhouse gas emissions. One of the strategies available is to reduce vehicle miles traveled (VMT) by encouraging bicycling and walking. The proposed trail will connect seven municipalities and provide a safe bicycle route through Albany County and potentially displace vehicle trips.

The purpose of this report is to identify conditions and determine the feasibility of different facility types along the study area corridor.

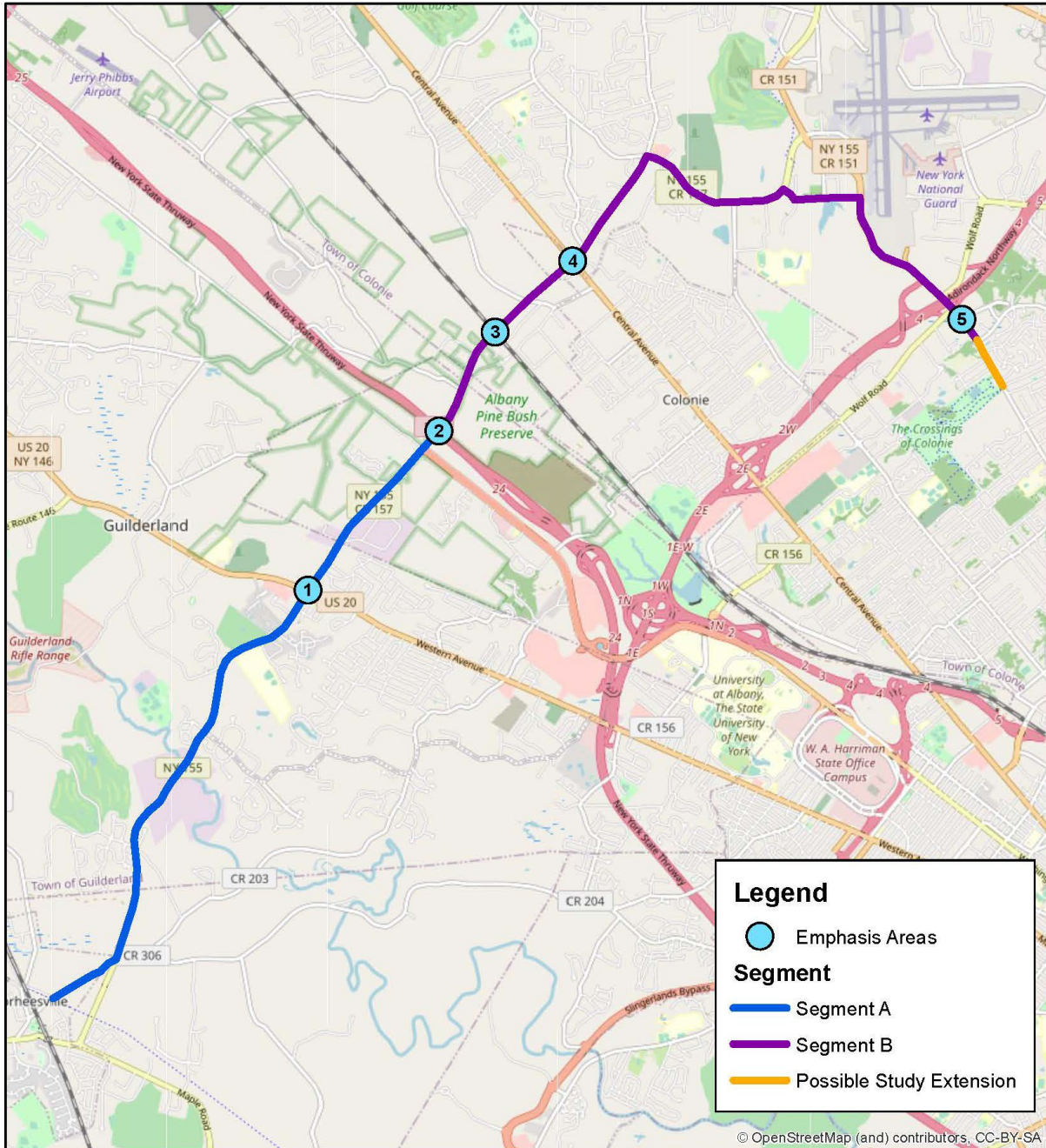
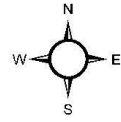
## Key Recommendations / Highlights

- Two concepts are presented in this report: (1) a sidepath (multi-use trail) adjacent to the roadway; or (2) a physically protected on-road bike lane. It is recommended to build an adjacent sidepath where feasible along the corridor. Based on this analysis it will be more feasible for this path to be on the eastern side of NY 155. On roadways with low-vehicle volumes, bike boulevards are recommended.
- In the short term the county should finalize plans for specific facilities for all sections of the trail. Several municipalities in the study area require new developments to build sidewalks or bike paths. With a facility planned, municipalities can require that new developments construct portions along their property. Additionally, after a facility type is chosen, financing plans and grant applications can be started to help fund portions of the trail.
- Long term goals should be to incorporate active transportation in redesigning bridges and other constrained areas along the corridor. Because bridges have long lifespans, it is unlikely that there will be space for the trail until the bridges are replaced. As plans are made to replace the existing bridges, it is critical that considerations for safe walking and bicycling facilities are included in the planning and design.

Figure 1: Proposed Corridor Map



## Albany County Loop Trail - Proposed Corridor



0 1 2 4 Miles

## Introduction

A multi-use trail is a paved path for the shared use and travel of bicycles, pedestrians, and other authorized users/devices. A multi-use path is a facility that is separate from the roadway. Multi-use paths that are located adjacent to roadways and often use the existing road right-of-way, are referred to as sidepaths. These types of facilities provide people of all ages and abilities an opportunity to use an active mode of transportation to get from place to place. Part of developing a modern and resilient regional transportation system includes the planning and development of a trail network that complements local roadway infrastructure and public transit systems. New Visions 2050, the Metropolitan Transportation Plan for the Capital Region, sets a goal of constructing 200 miles of new trails by 2050. The New York State Greenway Trails Plan supports expanding the greenway trails system to reach more New Yorkers in more areas – urban, suburban, and rural. There is strong support for enhancing and expanding trails at the local, regional, and statewide levels.

Supporting this growing trail network are sidewalk and on-road bike facility connections. On-road bike facilities range from traditional bike lanes to separated, or protected, bike lanes. A “protected bike lane,” has some sort of physical, stationary, vertical separation between moving motor vehicle traffic and the bike lane. The more protection a bike facility has from motor vehicle traffic, the more people it attracts to ride bikes for everyday trips. As local and state-level Complete Streets legislation and active transportation plans are implemented, new sidewalk and bike facilities are creating safe routes to trail networks and making these networks viable transportation options.

This report proposes a sidepath (multi-use path) and a separated bike lane as potential concepts for implementing the Loop Trail. The report includes recommendations for creating additional connections to nearby neighborhoods, activity generators, and regional destinations. Potential funding, design, and other resources are also provided.

## Existing Sidewalk, Trail & Bicycle Facilities

A full overview of the on-the-ground conditions of the study area can be found in the Existing Conditions Report. This section outlines the context for the proposed Loop Trail concepts. Figure 3 shows the existing trails, sidewalk segments, and bicycle facilities that are along and connect to the proposed Loop Trail corridor.

### Trails

Other than multi-use trails, there are no designated bicycle facilities along the proposed Loop Trail corridor. The NY 155 corridor provides connections to existing trails in The Crossings of Colonie, the Pine Bush Preserve, Albany County Hudson-Helderberg Trail and the Albany Shaker Trail. It also connects to State Bicycle Route 5. Below are brief descriptions of the major trails that connect with the proposed Loop Trail:

- The Albany County Helderberg-Hudson Rail Trail (HHRT) is an existing 9-mile paved path which connects Voorheesville, New Scotland, Bethlehem, and Albany. The western terminus is near Grove St which is southern end of the Loop Trail study area. The trail connects to the South End Bikeway Connector in Albany which links to the Mohawk-Hudson Bike-Hike Trail (Empire State Trail).



- The Albany Shaker Trail connects to a recently constructed trail on the east side of NY 155 that begins at I-87 Exit 3 and ends at the intersection of NY 155 and the south entrance to the Airport terminal. The Albany Shaker Trail becomes an off-road trail extending north until it ends at Cornell Road where it follows an on-road bike lane to British American Boulevard and ending at Troy Schenectady Road (NY 7). Here, there is a short gap between the Albany Shaker Trail and the Mohawk Hudson Bike-Trail Trail (Empire State Trail) along the Mohawk River.
- State Bicycle Route 5 is routed along Western Ave, crossing the proposed corridor. Bicycle Route 5 extends from the Massachusetts state border to Niagara Falls, paralleling the Erie Canal and Empire State Trail.

*Figure 2. Existing Trails in Study Area*



*Photo on Left: Albany County Helderberg-Hudson Rail Trail; Photo on Right: Albany Shaker Trail*

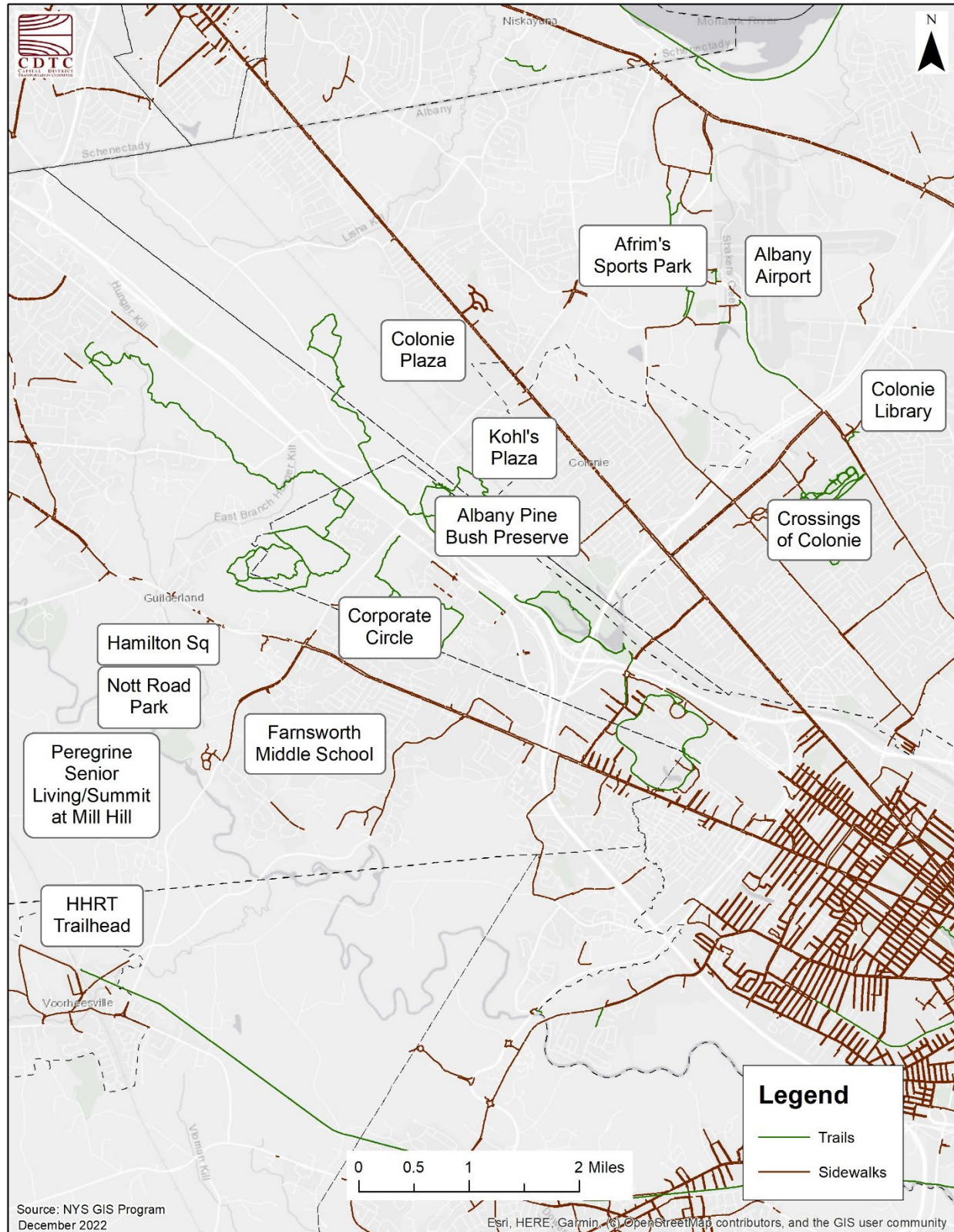
### Sidewalks

The proposed route has limited sidewalk facilities. However, the surrounding area has more sidewalks and off-road trails. There is a continuous sidewalk on the south and north sides of Albany Shaker Road from The Crossings of Colonie to the northbound I-87 on-ramp at Wolf Road and a sidewalk that continues on the south side of Albany Shaker Road to I-87 Exit 3 ramp. There is a limited, disconnected, sidewalk network in the western portion of Albany Shaker Road in the study area.

The proposed Loop Trail corridor crosses Central Avenue which has sidewalks on both sides of the roadway. The corridor also crosses Western Ave which has complete sidewalks on both sides of the roadways from NY 155 eastwards. In the southern portion of the study area sidewalks are only present in limited areas. NY 155 has sidewalks on both sides of the roadway from Western Ave south to the Farnsworth Middle School. The sidewalk continues along the eastern side of the roadway until Dr Shaw Road. There are sidewalks on the northern side of Voorheesville Avenue where the proposed Loop Trail corridor connects to the HHRT.



Figure 3. Existing Trails & Sidewalks



## Planned Trails and Bike Facilities

A “planned” trail or bike facility refers to infrastructure that has completed the design and engineering phase and funds have been obligated for their construction. Albany County is currently constructing a multi-use sidepath on Watervliet Shaker Rd between New Karner Rd and Sand Creek Rd. The 10’ wide path is being constructed on the south side of the roadway. This sidepath will complete more than half of the segment 4 (see Figure 6) sidepath.

## Proposed Trail & Bicycle Facilities (Summary of Existing Plans)

The proposed Loop Trail will connect to several existing trails and bike routes as described above. Additionally, the Loop Trail will provide a connection to several proposed trails outlined in the [Capital District Trail Plans](#), including the [Patroon Creek Greenway](#). This trail would connect to the Loop Trail at the Albany Pine Bush Preserve and follow a 9-mile east-west route to the Hudson River waterfront in Albany. The proposed Patroon Creek Greenway would terminate at the Albany Skyway and could ultimately provide a link to Rensselaer County via the planned walkway on the Livingston Avenue Bridge.

Other multi-use trails proposed in the Capital District Trails Plan that could connect to the Loop Trail include, the Consaul Road Bike Route, The Normans Kill Greenway, Albany-Colonie Connector, and The Crossings Connection trails. Below are descriptions of each proposed facilities:

- The Consaul Road Bike Route is a proposed on-road bike route which would connect the Schenectady Park Connector Trail with the Loop Trail. This bike route connects with the Loop Trail at the intersection of NY 155 and Consaul Road.
- The Normans Kill Greenway is proposed to follow the course of the Normans Kill connecting Albany, Bethlehem, New Scotland, and Guilderland. This trail would connect to the Loop Trail at the Normans Kill crossing.
- The Albany-Colonie connector is proposed to follow NY 7 from Albany to Colonie. This trail does not intersect with the current Loop Trail study area. However, it would connect with the eastern extension (past the Crossings of Colonie).
- The Crossings Connection is a proposed trail which would connect the Village of Menands with The Crossings of Colonie.

The [Guilderland Trail Connectivity Study](#) recommends an off-road bike path along NY 155 north of Nott Rd. The study also recommends bike lanes on NY 155 south of Nott Rd. Additionally, the study proposes several bike paths which would connect to NY 155:

- Bike lanes along Johnston Rd and Normanskill Rd which would connect to NY 155 at the intersection with Normanskill Rd.
- Bike boulevard along Dr Shaw Rd which would connect to Johnston Rd.
- Trail along Nott Rd connecting to Nott Rd Park. This trail would cross NY 155 and be built along an easement past Farnsworth Middle School. Trail connections from Albany Pine Bush Preserve trails to NY 155.

# Albany Loop Trail Feasibility Analysis Technical Memorandum

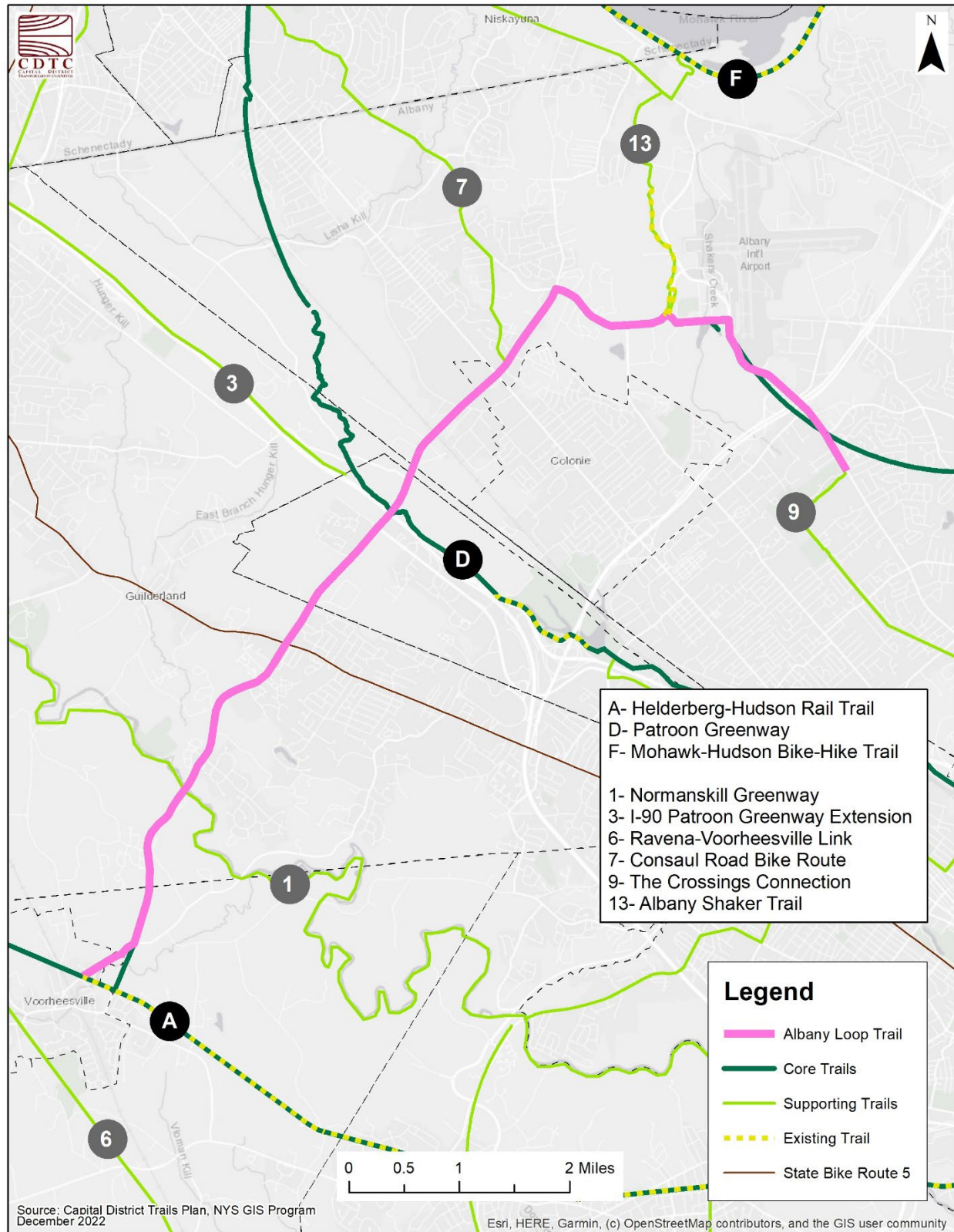
Figure 4. Study Area Photos



Clockwise: Voorheesville Ave sidewalks, Watervliet Shaker Rd sidepath plans, Albany Shaker Rd sidepath, Adjacent trail on Watervliet Shaker Rd



Figure 5. Capital District Trails Plan Recommendations



## Safety Analysis

The Existing Conditions assessment included a traffic safety data analysis. Based on the crash data pulled, there are several areas within the proposed trail corridor with a higher crash rate than the state average for similar road types. The table below (Table 1) identifies five segments within the corridor with high crash rates.

*Table 1. Local crash rate vs. statewide crash rates for similar roadways*

| Road Segment   | Crash Rate (per million VMT) | Statewide Crash Rate for similar roadways |
|--|------------------------------|---|
| 1. Voorheesville Ave from Grove St to State Farm Rd                  | 4.94                         | 3.73                                      |
| 2. State Farm Road (NY 155) from Dr Shaw Rd to Western Ave           | 4.14                         | 3.73                                      |
| 3. New Karner Road (NY 155) from Western Ave to Central Ave          | 3.84                         | 3.73                                      |
| 4. New Karner Road (NY 155) from Central Ave to Watervliet-Shaker Rd | 4.32                         | 3.73                                      |
| 5. Albany Shaker Road from I-87 to Crossings Park                    | 10.52                        | 6.41                                      |

## Recommendations

This section describes the recommended trail route for the proposed Loop Trail, improvements needed to accommodate trail users at intersections, and alternative bicycle and pedestrian facilities/treatments for implementing the Loop Trail. These are design concepts that require additional site-by-site analysis and should be designed based upon a safety engineering evaluation and existing state and federal design guidance and requirements.

### Proposed Trail Route

The proposed route starts at the terminus of the Albany County Hudson-Helderberg Trail in Voorheesville. The route follows Voorheesville Ave until NY Route 155 (State Farm Road) where it heads north. The proposed route follows NY 155, turning east on Watervliet Shaker Road. The trail then follows Airline Drive, Heritage Lane, and Meeting House Road to NY 155 (Albany Shaker Road). The trail continues east on NY 155/Albany Shaker Road until The Crossings Park of Colonie.

Table 2 includes the segment number and recommendation. Below the table, a brief description of the recommendation, by segment, can be found. A map of the segments is shown in Figure 5.

Table 2. Albany Loop Trail recommendations

| Segment | Roadway   | AADT            | Recommendation              |
|---------|---|-----------------|-----------------------------|
| 1       | Voorheesville Ave from Grove St to NY 155                               | <5,000          | Bike Boulevard              |
| 2       | NY 155 from Voorheesville Ave to Western Ave                            | 9,725           | Sidepath                    |
| 3       | NY 155 from Western Ave to Watervliet-Shaker Rd                         | 12,000-20,000   | Sidepath                    |
| 4       | NY 155 from New Karner Rd to Airline Dr                                 | 11,000-16,000   | Sidepath                    |
| 5       | Airline Dr, Heritage Ln, Meeting House Rd, NY 155                       | Unknown, 25,000 | Bike boulevard and sidepath |
| 6       | Albany Shaker Rd from Exit 3 Ramp to Crossings of Colonie Park entrance | 16,000          | Sidepath                    |

1. The first part of the trail is along Voorheesville Avenue from Grove Street to NY 155. The right-of-way is too narrow to build dedicated bike lanes or a sidepath. Therefore, bicyclists will have to share the roadway with vehicles. To reduce stress and increase comfort for trail users, Voorheesville Avenue should be considered for speed limit reduction ([A.1007-A/S.2021-A](#)). To ensure compliance, design elements such as speed humps/tables should be constructed (see Figure 11).
2. The second segment is along NY 155 (State Farm Rd) from Voorheesville Ave to Western Ave (US 20). This segment has steep slopes, low vehicle usage and is less developed. This segment connects to Albany Country Club, Nott Road Park, a senior living facility, Farnsworth Middle School, Hamilton Square shopping mall, and several residential developments. The recommendation for this segment is for a sidepath to be constructed on the eastern side of the roadway.

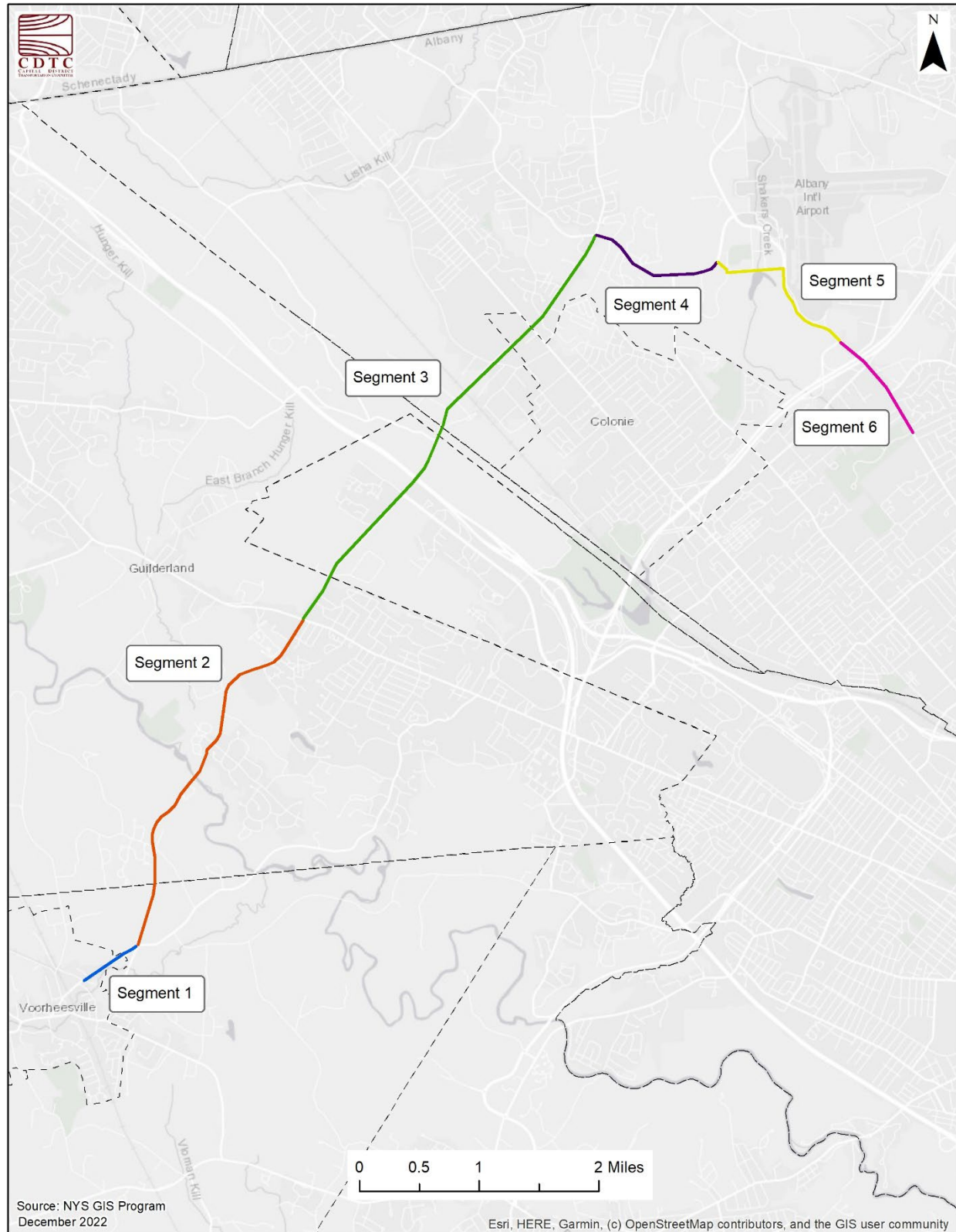


3. The third segment is along NY 155 from Western Ave to Watervliet Shaker Rd. This segment starts in a less developed area. Approaching Central Ave there is a high concentration of businesses and homes. This segment connects to Corporate Circle offices, Albany Pine Bush Preserve, businesses, and shopping centers. This segment allows for potential connections to Crossgates Mall, the UAlbany main campus, Albany Nanotech Complex, Harriman State Office complex, and Six Mile Waterworks Park. The recommendation for this segment is for a sidepath to be constructed on the eastern side of the roadway.
4. The fourth segment is along NY 155 (Watervliet Shaker Rd) from New Karner Rd to Airline Dr. There is currently a multi-use path under construction on the south side of the roadway from New Karner Rd to Sand Creek Rd. This segment connects Capital Region BOCES, and Afrim's Sports Park. The recommendation for this segment is to extend the side path along the southern side of Watervliet Shaker Rd to Airline Dr.
5. The fifth segment is along Airline Dr, Heritage Ln, and Meeting House Rd then turning onto NY 155 (Albany Shaker Rd) southbound. The segment ends at the Exit 3 (I-87) ramp. This segment connects to Shaker Place Rehabilitation and Nursing Center, Shaker Heritage Society, and Albany International Airport. There is currently a multi-use path along the western side of NY 155 on this segment. The recommendation for this segment is to continue the multi-use path from Watervliet Shaker Rd along the western side of Airline Dr. The trail would cross Airline Dr to continue along Heritage Ln. Heritage Ln and Meeting House Rd are both low volume roadways with limited shoulders. It is recommended that these roads should be upgraded to bike boulevards.
6. The final segment is along Albany Shaker Rd from the Exit 3 ramp to the Crossings of Colonie Park entrance. This segment connects to Wolf Rd, several hotels, Colonie Town Library, residential developments, and the Crossings of Colonie Park. Although right-of-way is limited on this segment the recommendation is for a side path to be constructed on the west side of the roadway. A traffic study is required to determine which vehicle lanes can be removed.

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Figure 6. Proposed Albany Loop Trail Route



## Potential Facility Types

Four types of facilities were identified as potential Loop Trail concepts. The proposed Loop Trail should include a sidepath and bicycle boulevard, but a protected bike lane and sidewalks may also be considered based on additional site-by-site analysis. In the short-term, protected bike lanes and sidewalks can also be considered. Figure 7 below outlines recommendations for different facility types based on roadway context. CDTC staff reference this tool from the National Association of City Transportation Officials for developing recommendations.

Figure 7. Contextual Guidance for Selecting All Ages & Abilities Bikeways

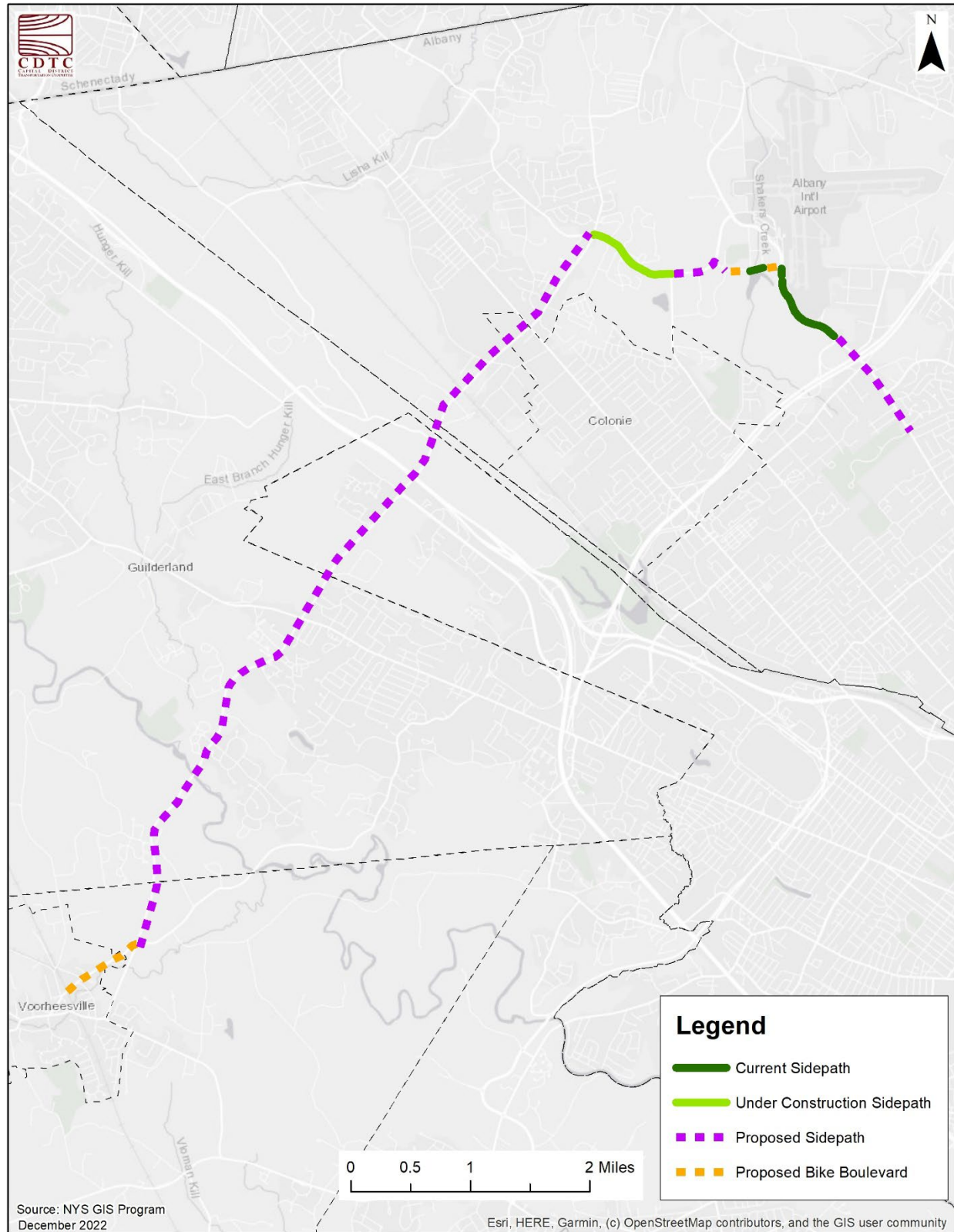
| Roadway Context   |                                   |  |   | All Ages & Abilities Bicycle Facility                            |
|---|-----------------------------------|--|---|--|
| Target Motor Vehicle Speed*   | Target Motor Vehicle Volume (ADT) | Motor Vehicle Lanes                                | Key Operational Considerations  |  |
| Any   |                                   | Any  | Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡ | Protected Bicycle Lane   |
| < 10 mph  | Less relevant                     | No centerline, or single lane one-way              | Pedestrians share the roadway   | Shared Street  |
| ≤ 20 mph  | ≤ 1,000 – 2,000                   |  | < 50 motor vehicles per hour in the peak direction at peak hour   | Bicycle Boulevard  |
| ≤ 25 mph  | ≤ 500 – 1,500                     | Single lane each direction, or single lane one-way | Low curbside activity, or low congestion pressure   | Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane |
|   | ≤ 1,500 – 3,000                   |  |   | Buffered or Protected Bicycle Lane                               |
|   | ≤ 3,000 – 6,000                   |  |   | Protected Bicycle Lane   |
|   | Greater than 6,000                |  |   | Protected Bicycle Lane   |
| Greater than 26 mph†  | ≤ 6,000                           | Single lane each direction                         | Low curbside activity, or low congestion pressure   | Protected Bicycle Lane, or Reduce Speed                          |
|   |                                   | Multiple lanes per direction                       |   | Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed  |
|   | Greater than 6,000                | Any  | Any   | Protected Bicycle Lane   |
| High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts |                                   | Any  | High pedestrian volume  | Bike Path with Separate Walkway or Protected Bicycle Lane        |
|   |                                   |  | Low pedestrian volume   | Shared-Use Path or Protected Bicycle Lane                        |

Source: [Urban Bikeway Design Guide](#), NACTO

# Albany Loop Trail Feasibility Analysis Technical Memorandum



Figure 8. Recommended Albany Loop Trail Concept



### Multi-Use Trail

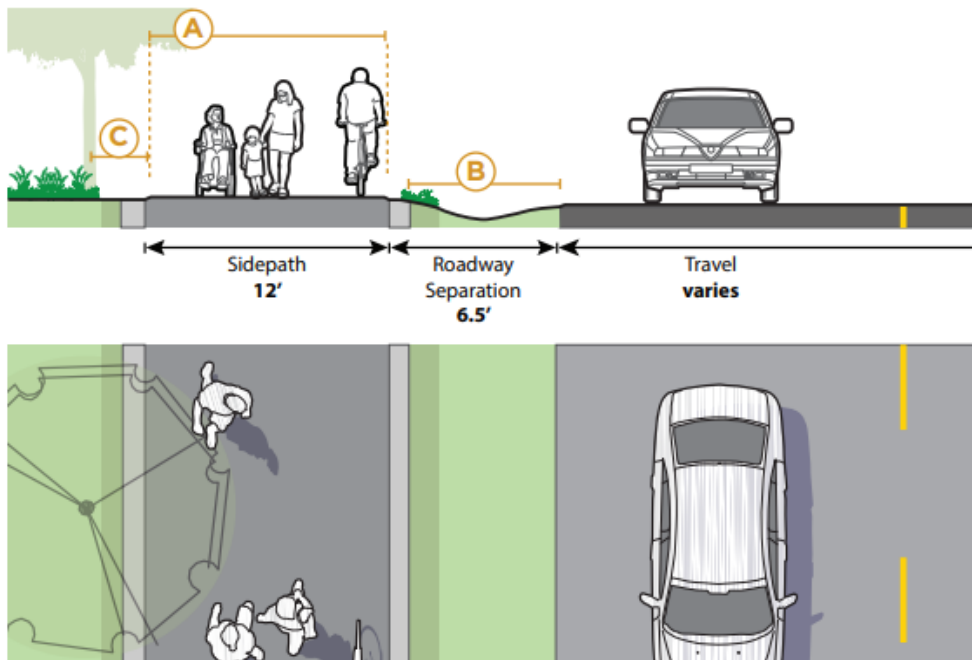
Multi-use trails are transportation facilities where bicyclists and pedestrians share the same space. They can be adjacent to roads (sidepaths) or along dedicated rights-of-way separate from vehicle infrastructure. The corridor for the Loop Trail follows existing roadways. Therefore, the recommended multi-use trail for this project is a sidepath which is adjacent to the roadway.

### Sidepath (recommended facility)

Sidepaths are routes that are distinctly separate from the roadway and are sometimes referred to as “trails” or “multi-use trails”. Located outside of the roadway, they are separated physically from motorized traffic by either open space or a barrier. Multi-use paths are designed to facilitate both utilitarian and recreational trips. Intended users may include bicyclists, pedestrians, roller skaters, skateboarders, and other micromobility users. Multi-use paths are typically designed for two-way travel. They can help provide low-stress bicycle and pedestrian accommodations in a variety of circumstances: a shortcut through residential neighborhoods and parks, a commuting route from residential to commercial centers, or as a side path along a roadway in lieu of (or in addition to) an on-road bicycle facility. Sidepaths should be built as a system of off-road transportation routes that complements and enhances the on-road bicycle network.

The Empire State Trail Design Guide compiles design guidelines for sidepaths from the AASHTO Bike Guide, FHWA MUTCD, Rural Guide, and Highway Design Manual Chapter 17. The preferred width of a sidepath is 12 feet with a minimum of 10 feet. The minimum separation from the roadway is 5 feet with 6.5 feet the preferred. In constrained areas where the path is along the roadway, physical barriers must be provided, such as a guard rail or bollards.

Figure 9: Sidepath Design Guidelines



Source: [Empire State Trail Design Guide](#) p. 5-68



The Empire State Trail Design Guide also addresses how sidepaths cross driveways and roadways (see Figure 14). Separation from parallel roadway must be at least 6.5 feet, with 16.5 feet the preferred distance. When a sidepath crosses a roadway, a raised crosswalks is preferred to ensure a level surface for the sidepath user.

Figure 10. Sidepath Crossing Treatment

Legend:

✓ = Desirable  
EJ = Engineering Judgement  
X = Not Recommended

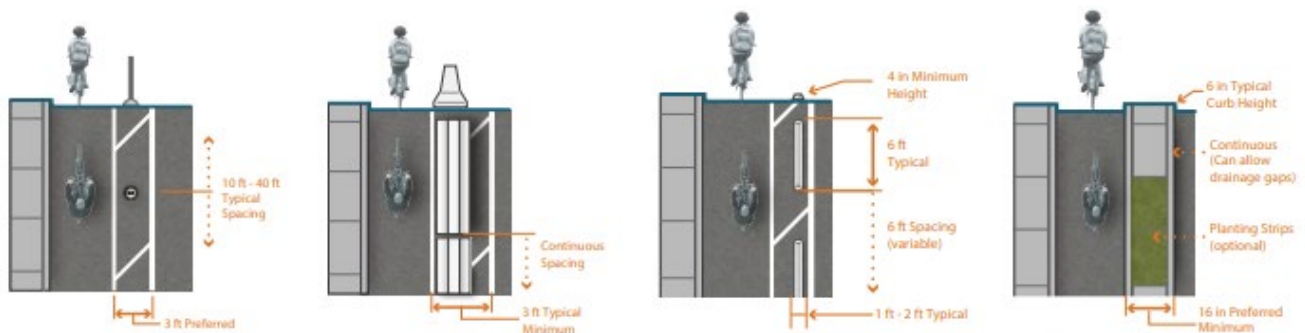
|  | ≤ 35                                  |          | ≥ 40 mph |
|--|---------------------------------------|----------|----------|
|  | Constrained ROW or limited sightlines | Wide ROW |          |
| <b>Separated Crossing (16.5 ft) (5 m)</b>                        | EJ                                    | ✓        | EJ       |
| <b>Adjacent Crossing (6.5 ft) (1.9 m)</b>                        | ✓                                     | EJ       | EJ       |
| <b>Deceleration Lane with Adjacent Crossing (6.5 ft) (1.9 m)</b> | X                                     | EJ       | ✓        |

Source: [Empire State Design Guide](#) p. 5-92

### Protected Bicycle Lanes

Protected bicycle lanes – sometimes called separated bicycle lanes – are bikeways at street level that use a variety of methods for physical separation from passing traffic. Unlike a conventional or buffered bicycle lane, a protected bicycle lane provides vertical separation to prevent vehicle encroachment, improve safety, and deter double parking. The separation of the bicycle lane from motor vehicle traffic makes the facility more attractive for bicyclists of all ages and abilities. There is no on-street parking in the proposed Loop Trail corridor and “dooring” of bicyclists is not an urgent concern, but protected bicycle lanes reduce the risk of dooring compared to conventional bicycle lanes. A protected bike lane requires a similar amount of space as a sidepath.

Figure 11: Protected Bike Lane Design Guidelines



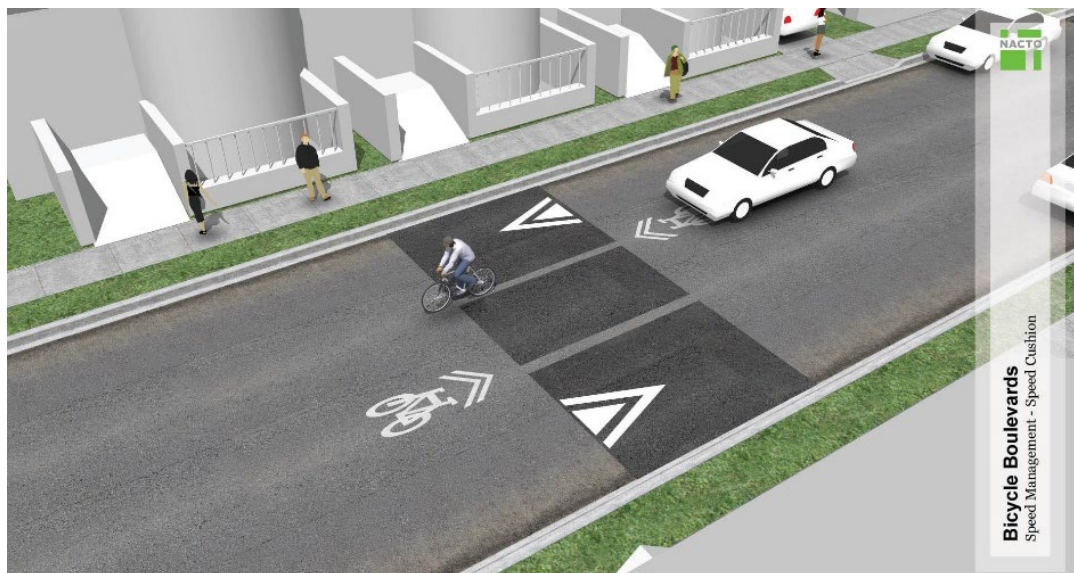
Source: [Empire State Trail Design Guide](#) p. 5-75



### Bicycle Boulevard (recommended facility)

Bicycle boulevards are corridors of interconnected, traffic-calmed streets where bicyclists are afforded an enhanced level of safety and comfort. Many local streets that have existing low motorist travel speeds and volumes create the basic components of a safe and comfortable bicycling environment. These streets should be enhanced with treatments that discourage high vehicle speeds and volumes to create a bicycle boulevard. These treatments benefit not only bicyclists, but all users of the street by creating a safe and quiet environment. A street that is not calm cannot be a bicycle boulevard. Some design elements which help calm streets include chicanes, neckdowns, speed humps, raised crosswalks, and textured road surface such as brick or cobblestone.

Figure 12: Speed Cushion on a Bicycle Boulevard



Source: [Urban Bikeway Design Guide, NACTO](#)

### Traffic Calming

The Institute of Transportation Engineers defines traffic calming as the combination of measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized streets users. Traffic calming consists of physical design and other measures put in place on existing roads to reduce vehicle speeds and improve safety for pedestrians and cyclists. There are a wide variety of traffic calming techniques that can be evaluated and applied depending on the roadway function, surrounding land uses, and target speed. Some techniques require roadway reconfiguration, like roundabouts, road diets, or medians, and others can be implemented outside the roadway width, like planting street trees to narrow a driver's visual field.

#### *Speed Humps, Cushions, & Tables*

A speed hump is a vertical speed control element. They are typically 3 to 4 inches high and 12 to 14 feet long and applied to achieve an 85<sup>th</sup> percentile speed of 25-35 mph. A speed cushion is a speed hump with cut outs for emergency vehicles to pass their wheels on either side of the raised area or for bicycle tires to fit through (see Figure 11). Speed humps are most appropriate on local streets. Similarly, a speed table is flat-topped and typically longer but may be used on collector streets and/or transit and

emergency response routes (e.g. Cohoes Boulevard). For the purposes of the proposed Loop Trail, it is recommended they be evaluated for use on Voorheesville Ave, Heritage Ln, and Meeting House Rd.

*Figure 13. Raised Crosswalks on Cohoes Blvd.*



### Sidewalk

Sidewalks are an extension of the street system. They are the primary conduit for pedestrian travel and fundamental to facilitating residential, commercial, and social activity in urban, suburban, and rural village communities. Sidewalks provide access between buildings and provide space for dynamic street life. Sidewalks, everywhere, form the foundation for a vibrant community. Sidewalks should be part of a continuous network and connected with crosswalks at all roadway intersections. They should be safe, comfortable, and attractive facilities that provide accommodation for people of all ages and abilities.

*Figure 14. Sidewalk*



Source: [CDTC Design Guide](#) p. 72

## Intersection Recommendations (Emphasis Areas)

The proposed trail crosses fifteen intersections, including five emphasis areas shown in Figure 1. The intersection locations are shown in Figure 6. Each intersection will require additional attention to ensure safety and comfort for bicyclists and pedestrians.

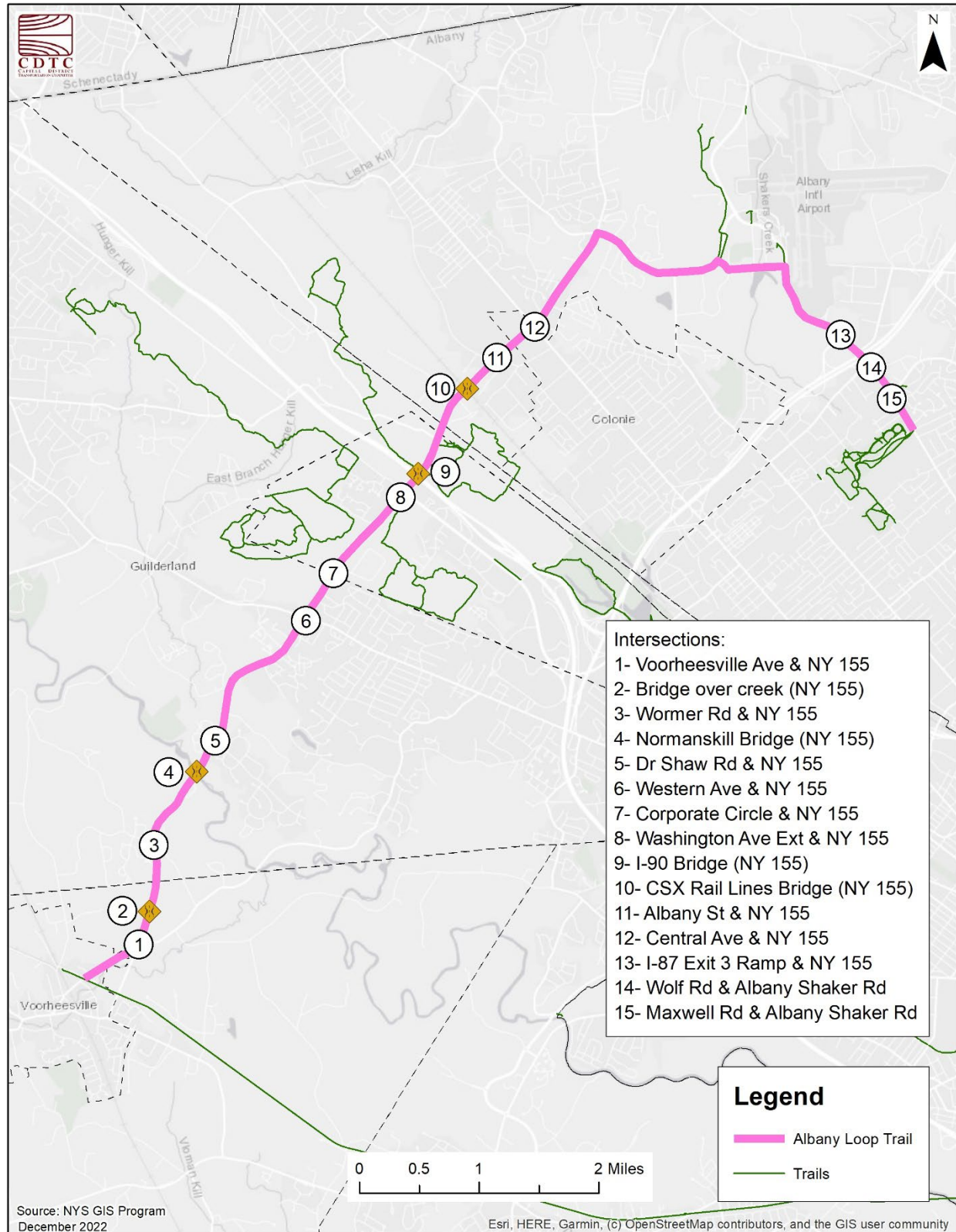
1. Voorheesville Avenue and NY 155- This intersection is skewed (streets do not meet at right angles) which reduces sightlines and makes crossing distances longer. This intersection is also where the proposed trail crosses from a bike boulevard on Voorheesville to the sidepath on the eastern side (far side) of NY 155. Space should be dedicated for bicyclists waiting at the traffic signal exiting the bike boulevard. This intersection should be evaluated for bicycle signals.
2. NY 155 over unnamed creek- NY 155 crosses over a creek just north of Voorheesville Avenue. This crossing has limited space for a shared-use path. In the short term, the path will need to use the narrow shoulder. A traffic study is required to determine how vehicle lanes can be shifted west to provide a larger shoulder for the path. The long-term goal is to widen the bridge providing space for a sidepath.
3. Wormer Road and NY 155- This is another skewed intersection which the sidepath would need to cross. Since this intersection is signalized, a potential solution would be for the path to have a dedicated traffic signal.
4. NY 155 over Normans Kill- NY 155 crosses the creek over a narrow bridge. As at intersection 2, vehicles lanes can be shifted west to provide a slightly larger shoulder for pedestrians and bicyclists. The long-term goal is to widen the bridge providing space for a sidepath.
5. Dr Shaw Road and NY 155- Signalized intersection without major constraints. A traffic study is required to remove left turn lanes which would make construction of sidepath less costly.
6. Western Avenue and NY 155- Large busy intersection with five lanes on the southern leg and six lanes on the northern leg. Available right-of-way is constrained by current roadway width. Each leg of NY 155 has two lanes exiting the intersection. A traffic study is required to determine the feasibility of removing one of these lanes.
7. Corporate Circle and NY 155- There is a large turn radius turning from NY 155 northbound onto Corporate Circle eastbound. Corporate Circle westbound turning onto NY 155 northbound has a slip lane which could be unsafe for a trail crossing. The turning radii at this intersection can be reduced or the sidepath can cross Corporate Circle east of the intersection where the roadway is narrower.
8. Washington Avenue Extension and NY 155- This is a large intersection where the sidepath would have to cross six lanes of vehicle traffic. Additionally, there is a slip lane from NY 155 northbound onto Washington Avenue Extension eastbound. This crossing would increase exposure of potential trail users to conflicts with vehicles and an engineering study is required to determine whether the slip lane can be removed to allow the proposed path to follow the roadway to the Washington Avenue Extension. Alternatively, the sidepath can cross the slip lane at some point with the addition of a traffic control device.
9. NY 155 over I-90- NY 155 crosses I-90 on a narrow bridge. Until the bridge is replaced there are limited options for pedestrian and bicycle facilities. Vehicle lanes can be shifted west providing a larger shoulder for pedestrians and bicyclists on the east side of the bridge. Speed limits should

be evaluated to determine if they are appropriate, and a physical barrier is recommended to separate trail users from vehicles. The long-term goals are the same as the previous bridges.

10. NY 155 over CSX rail lines- The bridge has similar dimensions as the one crossing I-90 and has similar recommendations.
11. Albany Street and NY 155- This signalized intersection is skewed and creates a large crossing distance. If the intersection remains skewed, a dedicated crossing signal should be evaluated for the proposed sidepath users.
12. Central Ave and NY 155- This is a busy intersection with space available on the east side of the roadway. A dedicated signal should be evaluated for the proposed sidepath users at this intersection.
13. I-87 Exit 3 ramp and NY 155- At this intersection the trail crosses five lanes of traffic. There is a dedicated pedestrian signal with a leading pedestrian interval that dedicates crossing time for bicyclists and pedestrians and protects non-vehicle users from vehicles.
14. Albany Shaker Road and Wolf Road- At this intersection the proposed sidepath would cross six lanes of traffic. Additionally, the right-of-way is constrained at this intersection. There is an opportunity to combine some of the dedicated turn/through lanes on Albany Shaker Road to provide space for the sidepath.
15. Albany Shaker Road and Maxwell Road- This intersection is a roundabout with marked crosswalks on each of the three legs. The proposed sidepath to replace the sidewalk on the west side of NY 155 would not require a designed crosswalk or improved crossing for trail users. If the southern leg of Maxwell Road is constructed, the proposed sidepath and crossing users will need to be required in design. If the southern leg of Maxwell Road is constructed, this creates an opportunity for a more direct trail connection to The Crossings of Colonie.



Figure 15. Intersections

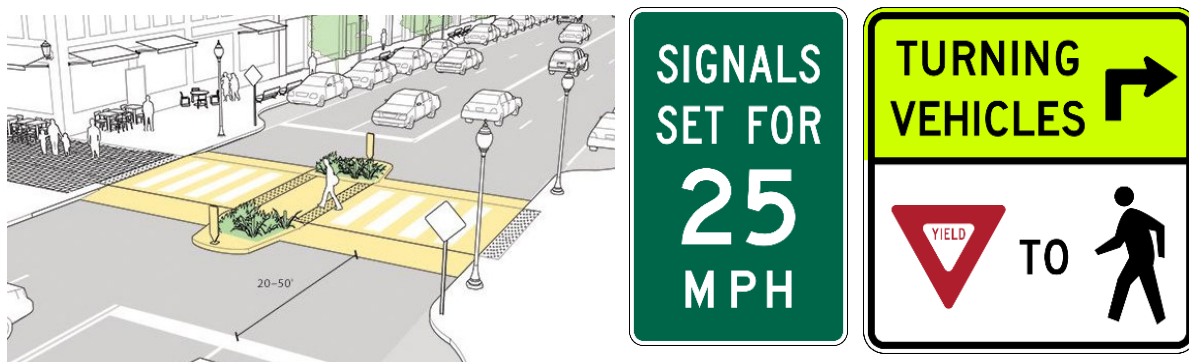


## Types of Intersection Improvements

The proposed facility alternatives require bicyclists and pedestrians to cross roadways, presenting potential conflicts with motorists. The New York State Pedestrian Safety Action Plan offers strategies for systemic improvements that can be applied to intersections in the proposed trail corridor, reducing crossings distances and improving safety. New intersection treatments require additional site-by-site analysis, but the following are low-cost intersection improvements that should be evaluated:

- Re-time signals for proper amber and red clearance intervals and proper pedestrian clearance time/intervals.
- Re-time traffic signals in Route 155 corridor for better coordination.
- Upgrade existing marked crosswalks to high visibility. Add high-visibility crosswalks at any unmarked signaled intersections.
- Consider raised crosswalks at each intersection (see Figure 17)
- Evaluate left turn phasing. Consider protected/permitted left turn phasing and protected only left turn phasing. Consider upgrading permitted phasing from green ball to flashing yellow arrow.
- Upgrade existing pedestrian signals to Leading Pedestrian Interval (LPI) and Accessible Pedestrian Signal (APS).
- Add “Turning vehicle yield to pedestrian sign”
- Add “No turn on red” signage where trail crosses side roads
- Evaluate feasibility of pedestrian refuge islands on multi-lane roadways.

Figure 16. Examples of Intersection Improvements



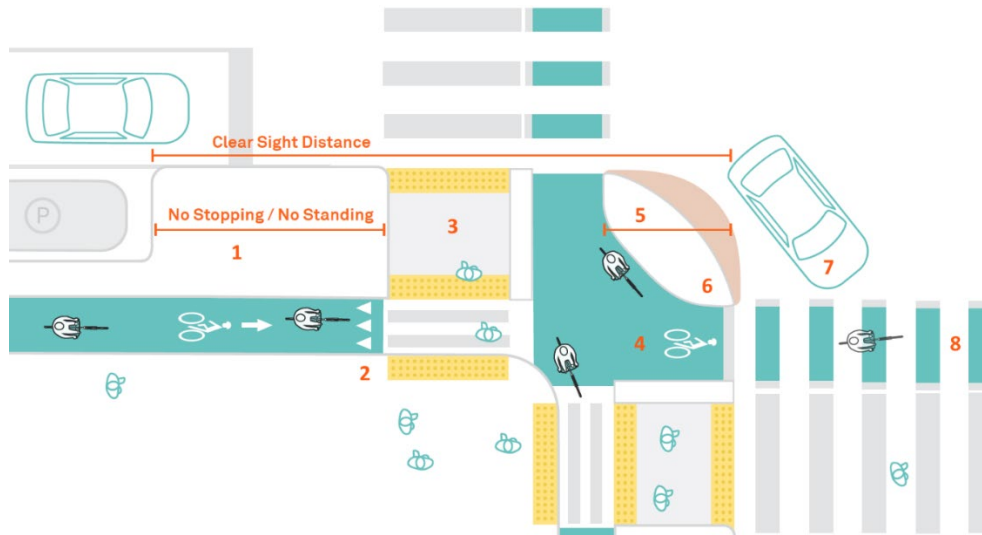
Source: From Left: Raised Crosswalk (NACTO [Urban Street Design Guide](#)); I1-1 ([Manual of Uniform Traffic Control Devices, p. 95](#)), R10-15R ([Manual of Uniform Traffic Control Devices, p. 134](#))



### Protected Intersection

At intersections with limited space, the shared-use trail can be accommodated with a “protected intersection.” Protected intersections provide dedicated space at intersections for bicyclists and protect bicyclists from turning vehicles. More information about protected intersections can be found in the Capital District [Complete Streets Design Guide](#).

Figure 17. Protected Intersection



Source: [Urban Street Design Guide](#), NACTO

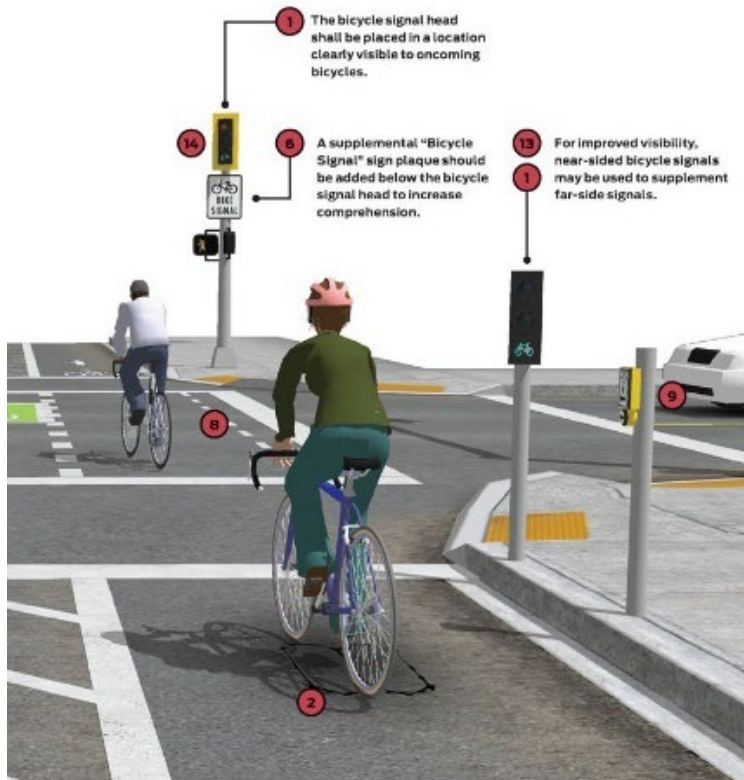
### Bicycle Signals

Bicycle signal heads and bicycle-specific timing strategies are methods of improving bicycle safety at intersections. Bicycle signals can simplify bicycle movements at complex intersections, clarify navigation of the intersection for bicyclists, separate motor vehicle and bicycle movements to reduce conflicts, and prioritize bicycle movements. Bicycle signals are often important on two-way separated bicycle lanes where an independent signal phase and signal head help resolve conflicts with other movements.

### Signage

Traffic control devices in New York on all streets, highways, bikeways, and private roads open to public travel area currently regulated by two documents: the National Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) and 17 NYCRR Chapter V (New York Supplement) as well as the design standards set forth by the Americans with Disabilities Association (ADA). The MUTCD includes sign design specifications related to size, type, and placement. Off-road signs, like shared use path wayfinding and distance markers, are not intended for vehicular visibility, but it is considered best practice to use MUTCD standards for their design and placement. There are no known additional local road signage requirements.

Figure 18. Bicycle Signal Phasing Illustration



Source: [Don't Give Up at the Intersection](#), NACTO

#### Regulatory Signs ("traffic control devices")

This type of sign is used to inform road users of selected traffic laws or regulations and indicate the applicability of legal requirements. These may include a STOP sign or speed limits. Pedestrian and bicycle signs are recommended throughout the study area to alert drivers where pedestrians and bicyclists may be using or crossing a roadway. Pedestrian warning signs should be installed at all pedestrian crossings. On roadways shared by bicyclists or other trail users, appropriate signs should be used to identify the route.

Figure 19. Regulatory Signs Examples



From Left: W11-2 ([Manual of Uniform Traffic Control Devices](#), p. 83), R1-5 ([Manual of Uniform Traffic Control Devices](#), p. 55), W11-15 ([Manual of Uniform Traffic Control Devices](#), p. 129)

### *Wayfinding & Guidance Signs*

The county may consider wayfinding and branding signage to create a cohesive look, direct trail users to preferred routes, and provide information about nearby destinations and amenities. Signage can also alert people that they are on a trail that is part of a greater trail network where they can connect to other trails. For the purposes of this study, wayfinding, bicycle route signs, and trail markers are recommended because of the proximity of bike routes, other trails, and regional shopping destinations. These signs are not necessarily intended for motorist or vehicular visibility, allowing for greater flexibility in application and style, but should conform to MUTCD standards.

In addition to the MUTCD, New York State has adopted the New York State Supplement to the MUTCD (NYS Supplement). The NYS Supplement is more restrictive and presents traffic control devices unique to New York State. Local bicycle route signs pictured in Figure 17 may be installed on shared roadways, sidepaths, or shared-use paths. Signs should contain designated bicycle route numbers or a unique route logo.

Destination and direction signs are used to lead trail users to nearby attractions, amenities and other trails. Direction signs can be branded or co-branded with trail logos or blazes to make users aware they are following a route that is part of and/or connects to a local or regional trail system. There are several examples of direction signs that could be installed along a sidepath or on-road facility, or on a shared-use path, pictured in Figure 21. When identifying locations for direction signs the county should consider proper distance and sequencing, which can be found in the MUTCD and NYS Supplement.

The 2019 Capital Districts Trails Plan introduced a brand and logo for the regional trail system. While there are many individual trails with their own names and identify that make up the system, the overall brand represents the entire trail system and the connections that it creates between communities. The purpose of introducing a brand is to create a cohesive look and make the trail system a destination that people want to experience and support. The Capital District Trails logo can be used by itself or in conjunction with other local trail logos if one is created for the Loop Trail. Logo and branding specifications and other recommendations for incorporating the Capital Districts Trails brand can be found in the [Capital District Trails Plan Design Book & Branding Guidelines](#).

Figure 20. New York State Bike Route Signs



Source: [New York State Supplement to the MUTCD](#), NYSDOT p. 258

Figure 21. Capital Trails Logo



Source: [Capital Trails Brand Book & Design Guidelines](#)

Figure 22. Capital Trails Wayfinding Sign Examples



Source: [Capital Trails Brand Book & Design Guidelines](#)

## Other Recommendations

### Transit Connections

There are eight CDTA bus routes with service directly on the proposed trail route. At the intersection of NY 155 and Central there is a stop for the Bus Rapid Transit Red Line (#905) which provides express service between Albany and Schenectady. This line is the highest ridership route in the CDTA system. It provides high quality, frequent, and fast service. Secure protected bike parking should be installed near bus stops along the trail, especially at the Bus Plus stations. Bike parking is often cited as a barrier towards using bicycles as a primary mode of transportation in surveys. Colocation of parking near bus stops allows the transit network and bicycling network to be used together for trips.

### Trailheads

Trailhead signage should be installed at all major entrances to the Albany Loop Trail. These locations include the beginning of the trail at Grove St (at the intersection with the HHRT), at the Albany Pine Bush Preserve, at the intersection of Meeting House Rd and NY 155, and at the entrance to The Crossings of Colonie. Figure 23 below shows an example of a trailhead as recommended in the Brand Book and Design Guidelines in the Capital District Trails Plan. Other examples of potential Loop Trail signage is in the previous Wayfinding and Guidance Signs section.

Figure 23. Trailhead Signage



Source: [Capital District Trails Plan Brand Book & Design Guidelines](#)

### Comfort

The proposed corridor of the Albany Loop Trail is primarily within a suburban area, and there are not many privately provided amenities. To ensure the comfort of trail users; benches, water fountains, and garbage cans should be placed along the route. Benches are especially necessary because of the steep slopes and for older pedestrians who require areas to rest while walking. Additionally, bicycle repair stations should be placed at key locations on the route. These stations generally include air pumps, and basic tools which allow bicyclists to make quick repairs.

### Green Infrastructure

In the Albany County Stormwater Management Policy, waterways are identified as having water quality impairments or risk of urban runoff. Two waterways in the study area are identified, the Normans Kill, and Ann Lee Pond which is a high priority. The proposed Loop Trail creates an opportunity to integrate green infrastructure into the design and implementation. Green infrastructure can be landscape improvements which reduce runoff, increase the permeability of the roadways, act as retention ponds, and filter contaminants from entering waterways. Green infrastructure is particularly necessary in areas with steep slopes along and next to the roadway.

The NYS Department of Environmental Conservation (DEC) [Stormwater Design Manual](#) includes guidance on a range of green infrastructure concepts. An updated draft of the design manual was released late 2022. The Capital District Regional Planning Commission (CDRPC) has created a [Green Infrastructure Toolkit](#), based on DEC's Stormwater Design Manual and tailored to the needs of communities in the Capital Region. Figure 24 illustrates examples of green infrastructure installed adjacent to a roadway in Seattle, Washington.



Figure 24: Examples of Stormwater Management



Sources: City of Seattle, Dongho Chang

### Obstacles & Barriers

It is feasible to construct the Albany Loop Trail following the NY 155 Corridor evaluated in this study. However, there are a number of obstacles that require further engineering analysis and geographic features that may impact implementation and construction costs. Below are a list of major obstacles and barriers identified by CDTC:

- Segments three and four (see Figure 5) are along roadways bordered by steep slopes. This makes any bicycle facilities adjacent to the roadway more difficult to construct. However, since this area is not heavily developed, buildings are not in the way of this construction.
- Segment five is constrained by denser development. This makes any construction separate from the roadway difficult to fit within the existing right-of-way. In such areas easements or acquisition of private property may be needed to widen the roadway where practical.
- The proposed corridor passes over four bridges. These bridges are all narrow with two lanes of traffic, narrow shoulders, and no sidewalks. The bridge spans need to be widened to accommodate a sidepath. Until the bridges are replaced, temporary measures will need to be examined.
- Funding for the proposed trail has not been secured and there is no dedicated funding source. Construction of the trail will be determined by access to funding which may require building in phases. This can cause discontinuity between phases, especially between areas with different barriers. One way to overcome this barrier is to design the entire sidepath at the onset.
- The NYS Department of Transportation (DOT) owns and maintains NY 155 south of Western Avenue. Any bicycle facility plans will require approval by the DOT.



## Implementation

The route concept presented in this study is located within the City of Albany, Towns of Colonie, New Scotland and Guilderland, and the Villages of Voorheesville and Colonie. The route is along both county and state-owned roadways. Creating bicycle- and pedestrian-friendly connections is part of state, regional, and county visions for the area. Implementation of the recommended facilities will be done mostly at the county and state level. This section provides limited information on cost estimates, maintenance recommendations, potential funding opportunities, and design references. Additional site-by-site assessments must be done to determine final design, engineering, and cost information. This study will assist the county to identify the next steps needed to implement the Loop Trail.

*Table 3. Estimated Costs of Implementation*

| Segment | Roadway   | Recommendation              | Length    | Approximate Starting Cost* |
|---------|---|-----------------------------|-----------|----------------------------|
| 1       | Voorheesville Ave from Grove St to NY 155                               | Bike Boulevard              | 0.5 miles | \$30,000                   |
| 2       | NY 155 from Voorheesville Ave to Western Ave                            | Sidepath                    | 3.3 miles | \$1,200,000                |
| 3       | NY 155 from Western Ave to Watervliet-Shaker Rd                         | Sidepath                    | 4.1 miles | \$1,500,000                |
| 4       | NY 155 from New Karner Rd to Airline Dr                                 | Sidepath                    | 1.2 miles | \$59,000                   |
| 5       | Airline Dr, Heritage Ln, Meeting House Rd, NY 155                       | Bike boulevard and sidepath | 1.4 miles | \$104,000                  |
| 6       | Albany Shaker Rd from Exit 3 Ramp to Crossings of Colonie Park entrance | Sidepath                    | 1 mile    | \$370,000                  |

*\*Approximate costs are based on the NYSDOT Quick Cost Estimator Reference Tool. Costs do not include engineering work to widen roadway. Additional cost details can be found in Table 6.*

## Process, Planning, & Design

The route of the proposed Albany Loop Trail is mostly located along roadways owned and maintained by Albany County. However, NY 155 south of Western Ave is owned and maintained by NYSDOT. A small segment of the proposed trail is routed along Airline Rd which is owned and maintained by the Town of Colonie.

The route alternatives presented in this study are located within Village of Voorheesville, Towns of New Scotland, Guilderland, and Colonie, and the City of Albany. The routes are along both county and state-owned roadways. Creating a bicycle and pedestrian-friendly connection are part of both local and county visions for the area. Implementation of the recommended facilities will be done mostly at the municipal level. This section provides limited information on cost estimates, maintenance recommendations, potential funding opportunities, and design references. Additional site-by-site assessments must be done to determine final design, engineering, and cost information. This study will assist the county to identify the next steps needed to implement the Loop Trail.

### Short-term Feasibility

Possible short-term changes include narrowing wider travel lanes, reducing speed limits, and adding physical protection between the vehicle travel lanes and shoulders. The constrained bridges have few short-term options. The recently passed speed limit legislation (A.1007-A/S.2021-A) gives municipalities more flexibility to reduce speed limits to improve safety. However, speed limit reductions often must be paired with enforcement and engineering changes to show a measurable impact on safety and traffic stress.

### Long-term Feasibility

Road facilities with narrow bridges that have long lifespans are a barrier to plans and proposed improvements which require more right-of-way. However, with long-range planning these bridges can be redesigned to provide space for all modes of transportation. The recommendations suggested here should be referenced when the bridges along the route require rehabilitation and/or replacement. The bridges requiring additional space cross over the CSX rail line, I-90, the Normans Kill, and an unnamed stream. Additional coordination with CSX and the New York State Thruway Authority is required for the bridges crossing their facilities. The roadways themselves can be redesigned at the same time as replacement. Coordinating repaving with providing space for pedestrians and bicyclists allows infrastructure funds to be spent efficiently.

### Recent, Related Initiatives

There are several construction projects and anticipated or ongoing planning studies related to the Albany Loop Trail. These are opportunities to implement the Albany Loop Trail incrementally and in phases, accelerating the timeline and saving money. Where possible, recommendations from the Albany County Loop Trail Feasibility Study should be incorporated into these ongoing and planned initiatives.

### Albany County Roadwork Schedule

Sections and elements of the proposed Albany Loop Trail can be integrated into the County's roadwork schedule. Recommended intersection improvements, signage and other features included in this memorandum should be evaluated and coordinated with planned pavement rehabilitation and replacement projects.

#### TIP A295 New Karner Rd, from US 20 to Watervliet Shaker Rd: Corridor Improvements

The 2019-24 TIP funded a pavement rehabilitation project for Route 155 between Western Ave and Watervliet Shaker Rd (segment 3 of the Loop Trail). Funding is included to build 0.7 miles of sidewalks, and pedestrian signal improvements. No bicycle infrastructure is planned. Construction is expected to take place in the 2023-24 fiscal year. Design of the project was scheduled for the 2021-22 fiscal year. Design and engineering were allocated \$650,000. Construction is budgeted to be \$6,550,000.

#### TIP A577 Voorheesville Pedestrian Connectivity

The village started construction of new sidewalks on Altamont Rd, Maple Ave, and Voorheesville Ave in 2019. A total of 5,400 feet of sidewalks were constructed. \$667,000 of funding was obligated in the 2018-19 fiscal year. The sidewalks on Voorheesville Ave are on segment 1 of the proposed Albany Loop Trail route.

#### TIP A629 Voorheesville Sidewalk Improvements

The Village of Voorheesville was awarded TAP funds to construct 2,625 feet of sidewalks. The projects will fill gaps in the village's pedestrian network. The project includes sidewalks on Main St connecting to the Albany County Rail Trail. \$190,000 is allocated for design and engineering in the 2022-2023 fiscal year. \$1,078,000 is allocated for the construction in 2023-2024.

#### Central Avenue West / NY 5 Transportation and Land Use Study (2023 Update)

The Town of Colonie has requested funding to be programmed in CDTC's 2023-2024 Unified Planning Work Program (UPWP) to examine the Central Avenue corridor from New Karner Road to the Colonie Town line. The proposed study will evaluate options for improvement access management, safety, and economic activity through Complete Streets concepts.

#### Voorheesville All Access Complete Streets Feasibility Study

The Village of Voorheesville has requested funding to be programmed in CDTC's 2023-2024 UPWP to assess Complete Streets design alternatives for streets in the village, particularly Voorheesville Ave and streets that connect to the HHRT.

#### Maintenance

The recommendations for the Albany Loop Trail are for a sidepath along most of the route and bike boulevards in some locations. Being that in many areas of the corridor this would be the only pedestrian infrastructure the trail would need to be plowed and salted in the winter. Sidewalk and trail maintenance resolutions and agreements are not prerequisites to the construction of necessary bicycle and pedestrian facilities. However, it is recommended that the municipality develop a maintenance plan for planned facilities before maintenance and repair issues arise. Some funding programs, like the Transportation Alternatives Program (TAP) and Congestion Mitigation and Air Quality (CMAQ) Program require bicycle and pedestrian facilities to be maintained, including cleared of snow, all year. Surface type, local needs, trail user types, and weather will influence maintenance needs and requirements.

Sidewalk and trail maintenance requirements are codified in local law. In the Village of Voorheesville, City of Albany, Village of Colonie property owners are required to remove snow and ice from sidewalks. In the Towns of Guilderland and Colonie, the towns are responsible for snow removal. The Town of New Scotland does not have any legislation related to snow removal.

The width of the proposed sidepath is between 10-12.5 feet. This allows for a medium-duty truck to plow snow and spread salt. Bike boulevards contain design elements which are present on most roadways and, in most cases, do not require specialized maintenance equipment. Signed speed humps and other design elements can be marked with reflective poles to guide plow drivers. In some cases, additional training for plow drivers and maintenance crews may be required.

Best practices and recommendations for trail maintenance are included in the Capital District Trails Plan. The Plan outlines various innovative strategies for trail maintenance, especially for municipalities that lack the capacity or resources to do it on their own. Below are some estimated maintenance costs that were taken from the plan's Trail Management Best Practices section.

Table 4. Equipment Costs

| Equipment Cost | Cost/Hour | Hours/Day | Days/Week | Weeks/Year | Total Equipment Cost/Year |
|----------------|-----------|-----------|-----------|------------|---------------------------|
| Mower          | \$20      | 6         | 2         | 32         | \$7,680                   |
| Weed Wacker    | \$1.65    | 6         | 3         | 32         | 950                       |
| Plow Truck     | \$40      | 1         | 1         | 20         | \$800                     |
| <b>Total</b>   |           |           |           |            | <b>\$9,430</b>            |

Table 5. Maintenance Costs (Labor)

| Labor Cost   | Cost/Hour | Hours/Day | Days/Week | Weeks/Year | Total Labor Cost/Year |
|--------------|-----------|-----------|-----------|------------|-----------------------|
| Mowing       | 3@\$20/hr | 6         | 2         | 32         | \$23,040              |
| Weed Wacking | 3@\$20/hr | 6         | 3         | 32         | \$34,560              |
| Inspection   | 1@\$20/hr | 1         | 5         | 32         | \$3,200               |
| Plowing      | 1@\$20/hr | 1         | 1         | 30         | \$400                 |
| <b>Total</b> |           |           |           |            | <b>\$61,200</b>       |

## Cost

CDTC used the NYSDOT Quick Cost Estimator Reference Tool to estimate the approximate cost for as many of the facilities and infrastructure recommendations included in this study. Cost information for all facility types is not currently available to CDTC. Available cost information relevant to the proposed Loop Trail can be found in Table 6. These cost estimates are based on cost information collected by NYSDOT for similar projects across Upstate New York in 2019. Local costs may vary and be affected by ongoing economic trends, like inflation, labor shortages, and other uncertainties. The length of the proposed route alternative segments can be found in Table 3.





Table 6. Cost Estimates by Facility Type

| Facility Type/ Item                           | Surface Material(s) | User Groups   | Cost (\$)    | Note   |
|---|---------------------|---|--------------|--|
| 5 ft sidewalk                                 | Concrete            | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 160.00 LF    | Includes excavation, disposal, subbase material, compaction, construction of sidewalk and finish work. Does not include, sawcutting driveways, excavation to additional depth for driveways, curbing, grading, or turf establishment.  |
| ADA curb ramp                                 | Concrete & steel    | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 3,900.00 EA  | Includes site survey, demolition, saw cutting, excavation, disposal, fill, subbase material, compaction, construction of ramp, landings and associated curbing, detectable warning units, repairs to affected asphalt topsoil, establishing turf (to disturbed areas), and finish work.  |
| Curbing                                       | Concrete            | <ul style="list-style-type: none"><li>• Pedestrians</li><li>• Bicyclists</li><li>• Vehicles</li><li>• Other</li></ul> | 80.00 LF     | Does not include topsoil, establishing turf, or survey   |
| Asphalt Paved Snow Storage Area               | Asphalt             | N/A   | 8.00 SF      |  |
| Ladder Crosswalk                              | Paint               | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 800.00 EA    | Assume 700 LF of 4-inch striping per crosswalk   |
| Raised Crosswalk                              | Asphalt             | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 15,000.00 EA |  |
| Pedestrian push button on existing signal     | N/A                 | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 250.00 EA    | Includes demolition, saw cutting, excavation, disposal, fill, topsoil, establishing turf (to disturbed areas), repairs to affected asphalt and/or concrete as necessary, Pedestrian Signal Systems and components, (removed and or supplied / installed), Pedestrian Signal Systems wiring (removed and or supplied / installed), furnishing electrical service, finish work, and any required adjustments to utilities. |
| New signal with ped push buttons              | N/A                 | <ul style="list-style-type: none"><li>• Pedestrians</li></ul>   | 7,100.00 EA  | Includes demolition, saw cutting, excavation, disposal, fill, topsoil, establishing turf (to disturbed areas), repairs to affected asphalt and/or concrete as necessary, Pedestrian Signal Systems and components, (removed and or supplied / installed), Pedestrian Signal Systems wiring (removed and or supplied / installed), furnishing electrical service, finish work, and any required adjustments to utilities. |
| 10 ft Sidepath or shared-use trail            | Asphalt             | <ul style="list-style-type: none"><li>• Pedestrians</li><li>• Bicyclists</li><li>• Other</li></ul>                    | 59.00 LF     | Includes all prep of subgrade, sawcutting and tack coat. Doesn't include curbing, grading or turf establishment. NOTE: Prices have been volatile over the past 3 years.  |
| Small single post-mounted sign                | N/A                 | <ul style="list-style-type: none"><li>• Pedestrians</li><li>• Bicyclists</li><li>• Vehicles</li><li>• Other</li></ul> | 520.00 EA    | Includes the cost of excavation and backfill and furnishing all labor, materials, and equipment necessary to complete the work   |
| Wooden Bollard                                | Timber              | <ul style="list-style-type: none"><li>• Pedestrians</li><li>• Bicyclists</li><li>• Vehicles</li><li>• Other</li></ul> | 250.00 EA    | Includes the cost of excavation and backfill and furnishing all labor, materials, and equipment necessary to complete the work   |
| White line to delineate bicycle lane          | Paint               | <ul style="list-style-type: none"><li>• Bicyclists</li><li>• Vehicles</li></ul>                                       | 2,750.00 MI  | Price is for one 4 in. wide line to delineate bike lane. Any widening or pavement reconstruction must be estimated separately.   |
| Hatched buffer zone to delineate bicycle lane | Paint               | <ul style="list-style-type: none"><li>• Bicyclists</li><li>• Vehicles</li></ul>                                       | 14,250.00 MI | 2 ft wide hatched buffer with 6 in wide stripe on the bicycle lane side of the buffer and 4 in wide stripe on the opposite side.   |
| Dashed yellow line to delineate bicycle lanes | Paint               | <ul style="list-style-type: none"><li>• Bicyclists</li><li>• Vehicles</li></ul>                                       | 600.00 MI    | Price is for one 4 in. wide dashed line to delineate bike lane. Any widening or pavement reconstruction must be estimated separately.  |
| Bicycle symbol pavement marking               | Paint               | <ul style="list-style-type: none"><li>• Bicyclists</li><li>• Vehicles</li></ul>                                       | 1,575.00 MI  | Bicycle symbols (and, if used, associated markings) are placed at intersections and at 250 ft. intervals.  |
| Shared lane pavement marking (“sharrow”)      | Paint               | <ul style="list-style-type: none"><li>• Bicyclists</li><li>• Vehicles</li></ul>                                       | 3,675.00 MI  | Price includes the bicycle symbol with a double strip "chevron" above. Refer to NYSDOT TSMI 13-07 - Shared Lane Marking Policy for guidance on use and placement of this pavement marking.   |

## Funding

One of the core functions of the CDTC is the development and maintenance of the Transportation Improvement Program (TIP). The TIP is the 5-year capital plan for the Capital Region that implements the products of the planning process described in New Visions 2050. The TIP is funded by a collection of transportation programs outlined in the 2021 Bipartisan Infrastructure Law (BIL). CDTC must update its TIP every four years as an integral element of a Statewide Transportation Improvement Program (STIP). CDTC is currently updating the 2022-2027 TIP so some of the funding programs outlined below may not be available until the next TIP update. Other programs are administered by New York State agencies.

Table 7 provides information on potential funding sources for some of the facility types recommended in this study. It is not an exhaustive list, and it does not include Federal Discretionary Grant Programs that are being released. The BIL created numerous federal transportation program and grant opportunities, many of which are being announced on an ongoing basis. Information regarding these discretionary funding programs can be found at [www.cdtcmpo.org/BIL](http://www.cdtcmpo.org/BIL). As development continues within the study area, there may be opportunities to include new bicycle and pedestrian friendly infrastructure or other amenities that would enhance this trail connection.

## Next Steps

The objective of this study is to identify a feasible route for the proposed Albany Loop Trail. CDTC staff has identified a feasible route for the Loop Trail based on infrastructure, mobility, and safety data collected for the study area. As indicated in the report, site-by-site engineering and site assessment is needed to determine the exact location and feasibility of recommended improvements. Coordination with other local governments and across county departments should be initiated at each step of implementation.

### Design, Engineering, & Construction Document Preparation

As noted in the recommendations, improvements included in this report require site-by-site engineering analysis. Additional engineering and design documentation are necessary to detail how the Loop Trail will be constructed. As design of trail facilities advance, public outreach and community engagement with impacted residents, businesses, and stakeholders, is critical.

### Environmental Review & Permitting

To be ready for potential federal and state funding in the future, environmental reviews pursuant to State Environmental Quality Review Act (SEQR) and the National Environmental Policy Act (NEPA) should be conducted on the full length of the proposed Loop Trail. If any federal funding is used to build the project, federal environmental review is required. The proposed Loop Trail is likely a “Type 1 Action” under SEQR. By completing environmental reviews for the proposed Loop Trail, Albany County will be better positioned to apply for grant funding and design and implementation of the trail corridor can proceed as soon as funds are secured. Additional NEPA ([www.nepa.gov](http://www.nepa.gov)) and SEQR (<https://www.dec.ny.gov/permits>) information can be found online.

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Table 7. Potential Funding Sources

| Facility Type                              | FUNDING PROGRAM                                   |  |  |   |   |   |  |
|--|---|--|--|---|---|---|--|
|  | <a href="#">Transportation Alternatives (TAP)</a> | <a href="#">Congestion Mitigation &amp; Air Quality (CMAQ)</a> | <a href="#">Recreational Trail Program (RTP)</a> | <a href="#">Surface Transportation Program (STP)*</a> | <a href="#">National Highway Performance Program (NHPP)**</a> | <a href="#">Consolidated Local Street &amp; Highway Improvement Program (CHIPS)</a> | <a href="#">Empire State Economic Development Fund Program</a> |
| ADA/504 Self Evaluation / Transition Plan  | X   |  |  | X   |   |   | X  |
| Bicycles lanes on road                     | X   | X  |  | X   | X   |   | X  |
| Crosswalks (new or retrofit)               | X   | X  |  | X   | X   |   | X  |
| Curb cuts & ramps                          | X   | X  | X  | X   | X   |   | X  |
| Landscaping, streetscaping, etc.           | X   |  | X  | X   | X   |   | X  |
| Lighting                                   | X   |  |  | X   | X   |   | X  |
| Recreational trails                        | X   |  | X  | X   |   |   | X  |
| Separated bicycle lanes                    | X   | X  |  | X   | X   |   | X  |
| Shared use paths / transportation trails   | X   | X  | X  | X   | X   |   | X  |
| Sidewalks (new or retrofit)                | X   | X  | X  | X   | X   | X   | X  |
| Signs / signals / signal improvements      | X   | X  |  | X   | X   | X   | X  |
| Traffic calming                            | X   |  |  | X   | X   |   | X  |
| Trail construction & maintenance equipment | X   |  |  | X   |   |   | X  |
| Trail / highway crossings & intersections  | X   | X  | X  | X   | X   |   | X  |
| Trailside & trailhead facilities           | X   |  | X  | X   |   |   | X  |

## Design References

There are a range of resources available to municipalities to guide engineering and design of bicycle and pedestrian infrastructure. The Highway Design Manual, MUTCD, and NYS Supplement include guidance on all facility types recommended in this study. However, that does not eliminate the need for other references. Below are additional guides that have been developed with the collective experience of transportation planners, engineers, and bicycle and pedestrian infrastructure users. Many have been recently released and may reflect a more current state of practice for creating safe and invite bicycle and pedestrian facilities. CDTC encourages municipalities to participate in bicycle and pedestrian design training opportunities as they occur.

### New York State & Local Guidelines

- [Capital District Complete Streets Design Guide](#)
- [Green Infrastructure Toolkit](#), Capital District Regional Planning Commission
- [New York State Highway Design Manual](#)
- [Manual on Uniform Traffic Control Devices](#)
- [New York State Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways](#) (2009 Edition)
- [Empire State Trail Design Guide](#), Hudson River Valley Greenway, New York State Canal Corporation, New York State Department of Transportation, and NYS Office of Parks, Recreation, and Historic Preservation

### National Guidelines & Best Practices

- [The United States Access Board's Proposed Rights-of-Way Accessibility Guidelines \(PROWAG\)](#), Federal Highway Administration, May 2012
- [Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities](#), National Association of City Transportation Officials
- [Small Town and Rural Multimodal Networks](#), U.S. Department of Transportation Federal Highway Administration
- [Urban Street Design Guide](#), National Association of City Transportation Officials
- [Urban Bikeway Design Guide](#), National Association of City Transportation Officials

### Other

- [Quick Cost Estimator Reference](#), NYSDOT
- [NYS Pedestrian Safety Action Plan](#), NYSDOT
- [NYS Pedestrian Safety Corridor Evaluation Guidelines](#), NYSDOT
- [Road and Trail Intersection Safety](#), Parks & Trails New York
- [Capital District Trails Plan](#), CDTC
- [Local Road Safety Action Plan](#)
- [New Visions 2050](#), CDTC
- [New York State Complete Streets Act](#)