

October, 2001



THE CITY OF SCHENECTADY

URBAN BIKE ROUTE MASTER PLAN



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CITY OF SCHENECTADY URBAN BIKE ROUTE MASTER PLAN

Executive Summary

1.0 PLAN OBJECTIVES

Schenectady has the opportunity to establish a bicycle friendly environment for its residents by creating bicycle route connections throughout the City. The importance of the Master Plan is further enhanced by the development of the Canalway Trail System by the New York State Canal Corporation. Ultimately, the Canalway Trail will cover 500 miles primarily along the Erie and Champlain Canal corridors. Schenectady is strategically located and has been identified as a critical link in the system. In addition to attracting local users, the city is positioned to be a destination for out of town visitors.

The study was initiated with financial support from the Capital District Transportation Committee (CDTC). A steering committee representing a number of stakeholders was created to guide the project and provide input in the preparation of the Master Plan. The City of Schenectady Urban Bike Route Master Plan has three primary objectives:

- Identify preferred routes through the core study area of downtown and adjacent neighborhoods connecting the Mohawk-Hudson Bike-Hike Trail at North Jay Street to the trailhead at the Western Gateway Bridge adjacent to Schenectady County Community College.
- Identify destinations within and near downtown and define preferred routes linking these features.
- Establish Capital District urban bike path design standards and guidelines to be piloted in Schenectady and distributed to other municipalities in the Capital Region for use in similar bike route related projects.

2.0 PLAN RECOMMENDATIONS

It is recommended that a hierarchy of bicycle routes linking streets and destinations be established in the City. These include the Mohawk-Hudson Bike-Hike Trail as the main line trail, the CDTC Regional Priority Bicycle/Pedestrian Network and New York Bike Route 5, four bike route loop systems and local

connector streets. Recommended improvements and cost estimates have been prepared for each route. Each of the proposed routes are delineated on Maps 1 and 2 in the report.

2.1 MOHAWK-HUDSON BIKE HIKE TRAIL

There are two recommended routes regarding the existing trail. In the short and intermediate term, the trail should retain its existing alignment with some modifications to accommodate the City's redevelopment efforts. In the long term, if future conditions warrant, a second alternative trail route could be aligned along the Mohawk River through the Nott Street Industrial Park to Riverside Park in the Stockade neighborhood. In both cases, the trail should be locally designated the 'Canalway Trail' through the city.

2.2 LOOP SYSTEMS

To serve as connections, four loop systems are proposed to feed off the Mohawk-Hudson Bike-Hike Trail. These are the Scotia/Glenville, Downtown/Stockade, Park Loop, and Outer Park Loop routes. For each route, a thematic tour can be established providing residents and visitors with a unique way to tour Schenectady's heritage.

The Scotia/Glenville loop would be routed along Freemans Bridge Road to the existing shared use path that runs parallel to the Mohawk River in Glenville. The loop would continue across the Western Gateway Bridge via the existing shoulder/bike lanes to Washington Avenue connecting with the Mohawk-Hudson Bike-Hike Trail.

The Downtown/Stockade loop would take cyclists through the Stockade neighborhood to Riverside Park. Two alternative connections are recommended. Those who enter the Stockade via Union Street can follow a signed shared roadway route to Riverside Park along College Avenue. An alternative route along Nott Street from the mid-block trail head to Front Street through the East Front Street neighborhood is also recommended.

The Park Loop route is designed to connect Vale Park with Vale and St. Agnes cemeteries, Central Park, Upper Union Street, the Union Street and GE Realty Plot historic districts, and the Union College Campus. The route would take bicyclists through Vale Park at the Nott Terrace entrance along the park's lower trail and then connect to the upland cemetery. The trail through the cemeteries would be from the entrance at Brandywine Avenue.

The bike route would proceed along Brandywine Avenue to Bradley Boulevard, which is a primary entrance to Central Park. The designated bike route would proceed along Monument Hill and Iroquois Way in Central Park to the Wright Avenue entrance. The route would then proceed along Wright Avenue to its intersection with Union Street. The alley opposite Wright Avenue serves as the terminus point for Rugby Road. The bike route would proceed into the alley and along Rugby Road through the GE Realty Plot to Wendell Avenue. From Wendell Avenue, the route would continue to Union Avenue adjacent to Union College. It would then follow Union Street until it intersects with the Mohawk-Hudson Bike-Hike Trail at Jay Street.

Beginning at the intersection of State Street and Erie Boulevard, the Outer Park Loop route would proceed along State Street to Fehr Avenue. A multi use trail along the west side of Fehr Avenue would connect State Street to Central Park. The route would continue along Fehr Avenue through Central Park to Ashmore Avenue. A trail would be created through the corner of the park connecting Ashmore Avenue with Central Parkway opposite Dean Road. The route would proceed along Dean Road into Niskayuna to Grand Boulevard. The route would follow Grand Boulevard to Nott Street to Erie Boulevard.

2.3 REGIONAL ROUTES

It is recommended that the following streets in Schenectady be designated as regional routes leading into the city and connecting to the local network of designated bike routes through the city: Albany Street, Kings Road, Route 146, Broadway, Route 5/Mohawk Avenue, Freemans Bridge Road, Maple Avenue, and Nott Street.

2.4 LOCAL CONNECTOR STREETS

A series of local connector streets should be designated as bike routes providing connections to the Mohawk-Hudson Bike-Hike Trail, the four loop system routes and the regional routes. With few exceptions, the routes would be signed shared roadway bike routes.

3.0 DESIGN GUIDELINES

The purpose of design guidelines is to assist in selecting effective design elements for bicycle safety and mobility. Providing a consistent set of design guidelines for the trail system encourages trail use and enhances safety. For

bicycling purposes, recommendations are classified into the following types of facilities: Shared Roadway/Wide Curb Lane, Signed Shared Roadway, Bike Lane, Paved Shoulders and Shared Use Paths.

Perhaps the single most important action the city can take is to integrate bicycle friendly policies and improvements into routine capital projects. Every capital project offers the opportunity to include appropriate facilities for bicycling. As part of creating improvements for bicyclists, it is important that the City addresses fundamental conditions such as a smooth pavement surface, maintenance of roadway markings, appropriate drainage grates and compatibility of traffic signals and signage.

4.0 MANAGEMENT GUIDELINES

A level of service inventory was completed for several of the streets recommended as priority bicycle routes. Portions of Nott Street, Union Street and the Western Gateway Bridge were determined to have a level of service 'E', or poor bicycle riding conditions. This corresponded to field observations at these locations that indicated a number of issues and concerns including curb cuts, sewer grates, potholes, confusing signage and the lack of pavement markings.

Maintenance of the Mohawk-Hudson Bike-Hike Trail is lagging at certain locations along the trail. The City of Schenectady does not have the resources to adequately address all these concerns and could establish partnerships with Schenectady County and non-profit groups such as the Friends of the Mohawk-Hudson Canalway Trail. A management plan should be prepared to address issues associated with trail management, the identification of the responsible parties, and the roles of each of the partners. A consistent set of trail amenities including benches and bike racks and their preferred location along the selected routes should be identified. Marketing and promotional materials, including trail maps identifying the alternative routes should also be prepared.

An excellent resource for the city is the Canalway Trails Association of New York (CTANY), an organization under the umbrella of the New York Parks and Conservation Association (NYPCA) that has developed draft design, maintenance and management guidelines for the Canalway Trail system. Another resource is a sample "Adopt a Trail" agreement developed by the NYS Canal Corporation, which is intended to be used as a guideline for municipalities and counties.

As a starting point, the city should create a Bikeway Advisory Committee to provide input, support and oversight in the implementation of the Master Plan and the development of a Management Plan. Representatives should include city residents, business representatives, trail users and advocates, and city officials.

5.0 FINANCIAL RESOURCES

A successful method of funding trail design, development, and management is to combine private sector funds with funds from local, state, and federal sources. Creating funding partnerships can result in stronger constituencies that can leverage budgets and services in implementing capital and maintenance programs. Partnering with the local business community can have the added benefit of a ready pool of volunteers to help maintain the trails as part of an “Adopt the Trails” program.

At the federal level, the Transportation Equity Act for the 21st Century (TEA-21) provides funds for trail related projects for several programs. At the state level, financial support for the development of trail systems have been included in previous budgets. Funding support has also been included in the proposed budget for the Canalway Trail.

Private foundation support provides opportunity for innovations in developing, improving, and maintaining trail systems. In addition, there are numerous examples where utility and railroad companies (Rails with Trails) have cooperated by providing access to utility owned lands for trail systems providing insurance and other related issues can be resolved.

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1.0 INTRODUCTION

There are several redevelopment initiatives in the City of Schenectady that either directly or indirectly impact the existing Mohawk-Hudson Bike-Hike Trail. In addition, there is a critical 1.25 mile gap in the Bike-Hike Trail in the City that needs to be connected. In addressing these issues, Schenectady has the opportunity to establish a bicycle friendly environment by creating bicycle route connections throughout the City. To achieve this vision, the City received funding from the Capital District Transportation Committee (CDTC), the regional Metropolitan Planning Organization, to evaluate trail route options.

A steering committee was created to guide the project and provide input in the preparation of the Master Plan. The committee included representatives from the City of Schenectady, Schenectady County, the New York State Departments of 'Transportation', 'Health' and 'Parks, Recreation and Historic Preservation', the CDTC Bicycle and Pedestrian Task Force, Capital District Transportation Authority (CDTA), New York Parks and Conservation Association, New York Bicycling Coalition, Friends of the Mohawk-Hudson Canalway Trail, Union College, Schenectady County Chamber of Commerce, and the YMCA.

There are three primary objectives of the City of Schenectady Urban Bike Route Master Plan:

- Identify preferred routes through the core study area of downtown and adjacent neighborhoods connecting the Mohawk-Hudson Bike-Hike Trail at North Jay Street to the trailhead at the Western Gateway Bridge adjacent to Schenectady County Community College.
- Identify destinations within and near downtown and define preferred routes linking these features.
- Establish Capital District urban bike path design standards and guidelines to be piloted in Schenectady and distributed to other municipalities in the Capital Region for use in similar bike route related projects.

The importance of the Master Plan is further enhanced by the New York State Canal Corporation's objective to revitalize the canal system. Financial resources have been committed to improve canal infrastructure, enhance recreational opportunities on both land and water, and to foster economic development throughout the corridor. The development of a New York State Canalway Trail System covering nearly 500 miles between Albany and Buffalo and north to Lake Champlain is one of several elements of the revitalization program. The

Mohawk-Hudson Bike-Hike Trail through Schenectady represents a critical link in the system as shown below. The financial support and the marketing plan to enhance tourism and recreational use of the Canalway Trail System by the Canal Corporation will help foster Schenectady as a destination for trail users.



New York State Canalway Trail System

2.0 HIEARCHY OF ROUTES

It is recommended that a hierarchy of routes linking streets and destinations be established in Schenectady. The hierarchy includes the Mohawk-Hudson Bike-Hike Trail as the main line trail, the CDTC Regional Priority Bicycle/Pedestrian Network and New York Bike Route 5, four bike route loop systems and local connector streets. The proposed systems are designed to support and complement the city's redevelopment and quality of life initiatives. Each of the proposed routes are delineated on Maps 1 and 2. In addition to the proposed routes, the Master Plan identifies recommended improvements and cost estimates for each route.

The cost estimates represent minimum costs and do not include amenities or special materials. They also do not take into account costs associated with land acquisition, embankment stabilization, grade improvements, bridges and culverts, remediation or other special features, unless otherwise noted. Actual costs will vary based on pre-existing conditions. The standard cost per mile for asphalt surfacing a ten foot wide trail used by the New York State Canal Corporation is \$125,000 while the current industry standard is \$200,000 to \$300,000. For purposes of this report, a range of \$200,000 to \$250,000 was applied for new trail construction, depending upon existing conditions. These are base costs and exclude landscaping and ornamental treatments that significantly increase the overall cost of a project. For example, the Mohawk Riverwalk along Riverside Park in the Stockade is estimated to cost \$900,000 excluding the bulkhead that is required to stabilize the riverbank.

MAP 1

City of Schenectady

Urban Bike Route Master Plan

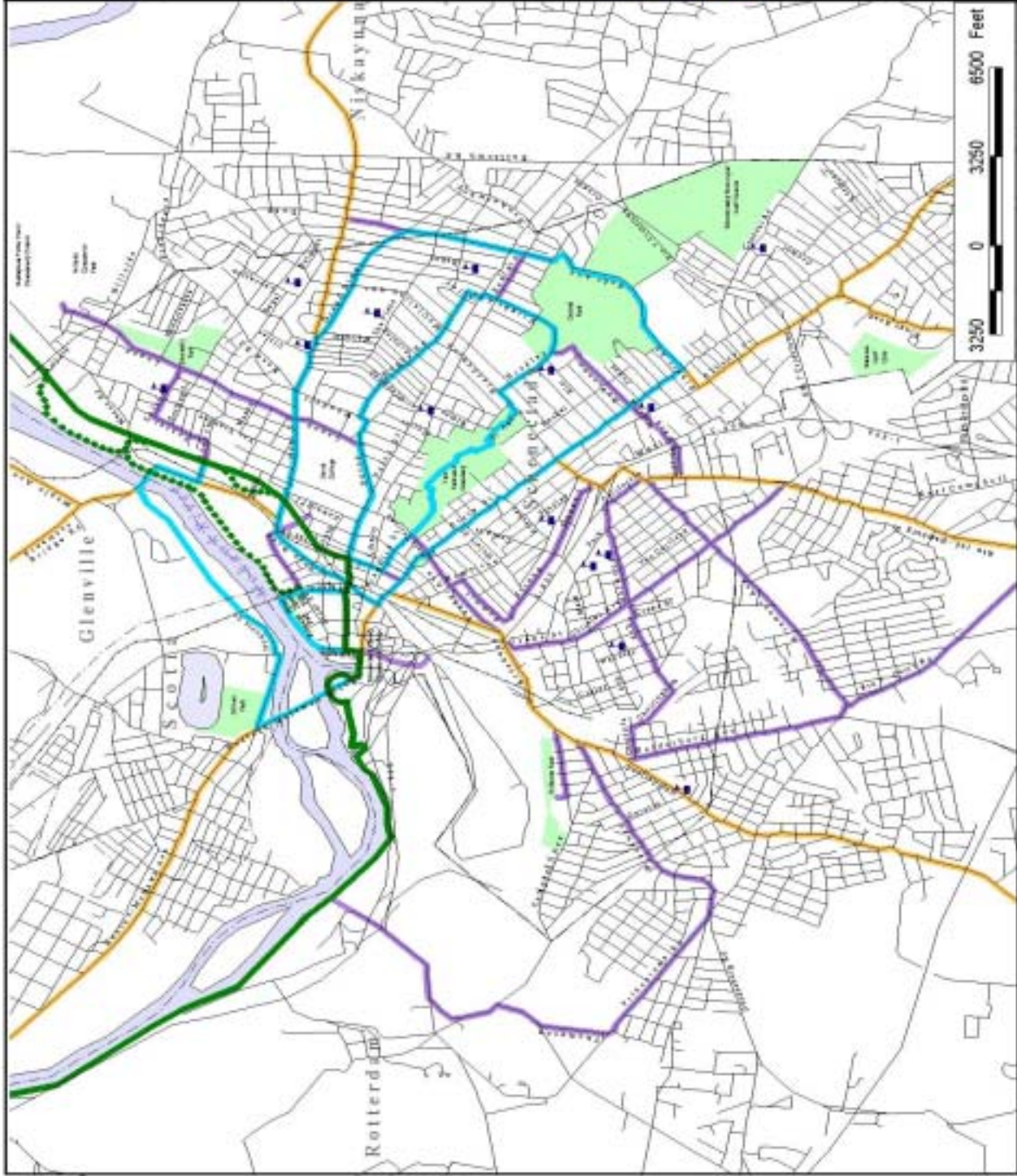
Priority Bicycle/ Pedestrian Network



- Major Creek Drainage
- Roads
- Railroad Line
- Schenectady City Public Schools
- Existing Proposed Bike Route Systems
- Highway Business Subsidized
- Feasible Future Alignment
- Loops
- Regional Connections
- Local Connections



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MAP 2

City of Schenectady Urban Bike Route Master Plan

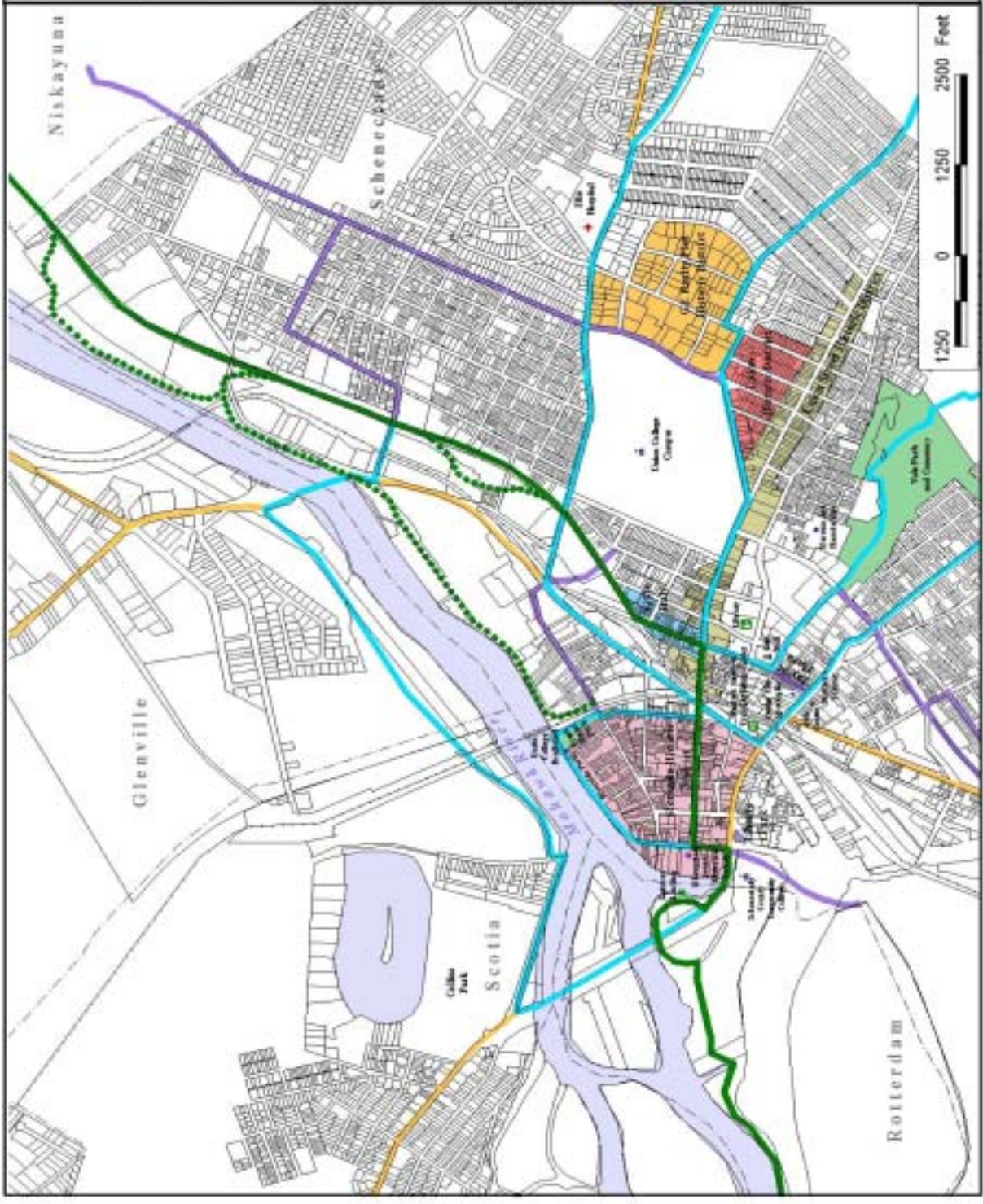
Priority Bicycle/
Pedestrian Network
Primary Focus Area



- Major Civil Districts
- Existing Proposed Bike Route System
- Highway/Interstate/State/Local Road
- Possible Future Alignment
- Local Connections
- Regional Connections
- Leaps



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3.0 MOHAWK-HUDSON BIKE-HIKE TRAIL

The Mohawk-Hudson Bike-Hike Trail runs through a wide range of settings from sparsely populated rural areas to heavily developed urban areas. It spans over 35 miles from the Corning Riverfront Preserve in Downtown Albany west through the Village of Menands, City of Watervliet, Village of Green Island, City of Cohoes, the towns of Colonie and Niskayuna, and into the City of Schenectady before heading into the Town of Rotterdam. In Schenectady County the trail is about 19 miles long and completely contiguous except for a 1.25-mile gap within

the City of Schenectady. Constructed in the late 1970's and early 1980's, most of the off-road trail is either built directly on the old Erie Canal towpath or former railroad grades.



The Bike-Hike Trail is a part of the developing Canalway Trail, which will ultimately cover more than 325 miles across the state along the route of the Erie Canal. This is a significant opportunity for Schenectady, since the Canalway Trail passes directly through the City's downtown – one of only a few locations where this happens along the entire Erie Canal.

3.1 Economic Benefits

The Mohawk-Hudson Bike-Hike Trail provides a multitude of health, transportation, environmental, quality of life, and economic benefits to the residents of the city and region. In an attempt to estimate the number of trail users and the economic benefits of the trail, the Schenectady County Planning Department prepared a report in 1998 entitled *Mohawk-Hudson Bike Hike Trail, Analysis of Trail Use, Regional Benefits, and Economic Impact*. The study concluded there are approximately 458,000 trail visits a year by an estimated 29,000 distinct users. Based on the survey results by user type, the report estimated that direct spending by trail users totaled over \$533,000. In part due to current conditions, trail usage within the City of Schenectady is significantly less than along other portions of the trail, thus the economic impact is much less. The study suggests that the trail can attract greater usage and expenditures by users "if trail connections through the City of Schenectady" are improved and additional opportunities for trail visitors to spend money become available.

In addition to physical improvements, regional efforts to promote the trail presently underway by the Canal Corporation and the Mohawk Valley Heritage Corridor Commission will substantially heighten one's awareness of the trail as a destination. A number of communities across the country have recognized the recreational value and economic attractiveness of trails and have actively pursued their development. Specific studies quantifying the number of visitors and direct recreation related spending on several trails across the country support this observation, as noted on Table 1.

Table 1: Trail Usage And Expenditures

TRAIL NAME & LOCATION	LENGTH (Miles)	ANNUAL VISITORS	TOTAL EXPEND. BY USERS	EXPEND. PER VISITOR	PAVEMENT TYPE
Heritage Trail Dubuque, Iowa	26	135,000	\$1,571,400	\$11.64	Compacted Limestone
St. Mark's Trail Tallahassee, Florida	16	170,000	\$2,368,100	\$13.93	Paved
Lafayette/Moraga Trail Berkeley Hills, CA.	7.6	400,000	\$2,008,000	\$5.02	Paved
Little Miami Warren County, OH	27	162,000	\$2,268,000	\$14.00	Paved
Northern Central Rail Trail Baltimore Co., MD.	20	450,000	\$4,027,930	\$8.95	Crushed Stone
Elroy-Sparta Trail Western Wisconsin	32	60,000	\$2,183,432	\$36.39	Crushed Stone
Katy Trail East-West across Missouri	225	250,000	\$3,575,087	\$14.30	Crushed Stone

NOTE: All Expenditures in Constant 2000 Dollars

Since the Mohawk-Hudson Bike-Hike trail attracts primarily local visitors, expenditures per visitor are less than along other trail systems.

There are several market niches associated with the bicycle tourist. In all cases, to increase the opportunity for bicycle tourism, routes need to be created that ensure a positive experience and return visits. If the Mohawk-Hudson Bike-Hike Trail can successfully attract overnight visitors, total expenditures would increase dramatically from present levels of activity.

3.2 Existing Alignment

Until recently, the trail through Schenectady was located along a berm its entire length from Niskayuna to North Jay Street with surface street crossings at Maxon Road and Seneca Street and bridge crossings at Peek Street and Nott Street. However, in 1999, the bridge crossing at Nott Street was replaced with a surface

crossing directing trail users to the lighted intersection where Park Place and Seward Place intersect with Nott Street.

At North Jay Street the separated trail system ends and bicyclists are directed onto a shared roadway south on North Jay for one block to Union Street. The bike route heads west on Union Street across Erie Boulevard into the Stockade neighborhood to North Church Street. The primary route then heads south on North Church for one block to State Street. On State Street, the route heads west toward the Western Gateway Bridge and follows the access road to Schenectady



County Community College (SCCC) where the trailhead leading to Rotterdam and points west is located. The on road system between North Jay Street and the SCCC trailhead is approximately 1.25 miles long.

Since the Mohawk-Hudson trail is owned by the New York State Office of Parks, Recreation, & Historic Preservation (OPRHP) and was

constructed using federal funds, any future realignment to the trail system must have the concurrence of OPRHP and the National Park Service (NPS). OPRHP and NPS are willing to consider creative solutions to accommodate community objectives as long as any proposed realignment does not reduce the attractiveness of the system as a community asset. Any replacement of land must be of equal or better value, utility, and acreage to satisfy the requirements of the NPS. Unless there are unusual circumstances neither agency is likely to support a solution that calls for replacement of an off road trail facility with a shared roadway arrangement. Any realignment will require maintaining existing trail qualities including grades, safety of road crossings, horizontal and vertical curvature and quality of the trail experience.

3.3 Proposed Routes

There are two recommended routes regarding the existing trail. In the short and intermediate term, the trail should retain its existing alignment with some modifications to accommodate the City's redevelopment efforts. In the long term, if future conditions warrant, a second alternative trail route could be

aligned along the Mohawk River through the Nott Street Industrial Park to Riverside Park in the Stockade neighborhood. In both cases, the trail should be locally designated the 'Canalway Trail' through the city.

The trail offers a number of interpretive opportunities including the history of the Erie Canal and local landmarks such as the Stockade Historic District, Little Italy, City Hall, Proctors, and Union College. These interpretative opportunities would provide further incentive for trail use.

The shared use path portions of the trail should be a minimum 10 foot wide firm surface with 2 foot graded shoulders on each side. Mile markers connected to the Canalway Trail and signage consistent with CDTC's proposed guidelines should be provided. Trail amenities including wayfinding signage, benches, and bike racks could also be provided at locations along the trail.

The following is a description of the two alternative alignments for the main line trail: *Modified Existing Alignment* and a *Riverfront Alignment*.

3.3.1 Modified Existing Alignment

For this alternative, there are two options for the portion of the trail through the Riverside Technology Park between Anthony Street and Maxon Road. The first option would retain the existing alignment through the Technology Park to Maxon Road.

The second option, to accommodate future land assembly within the Technology Park, would be to realign the trail parallel to the Mohawk River. At the trail's intersection with Anthony Street, a new off road trail could be constructed parallel to Anthony Street and along the southern boundary of the water pollution treatment plant to the Mohawk River. The trail would run along the embankment of the Mohawk River through the Riverside Technology Park to the parcel owned by Canadian Pacific. The trail would parallel the railroad property to Maxon Road. The mid-block crossing at Maxon Road would be relocated to the west of the Riverside Technology Park entrance road and then reconnect with the existing trail alignment south of Maxon Road.

Though the realignment of the trail along the Mohawk River through the Tech Park has aesthetic appeal, any alternative routing must not reduce the trail's attractiveness to the user. Alternatively, it may be more cost effective to incorporate the existing trail alignment into the site plan of the parcel(s) slated for redevelopment within or adjacent to the Tech Park.

Between Maxon Road and Seneca Street, for both options, the trail will remain along the existing alignment. South of Seneca Street, the trail will continue adjacent to the Niagara Mohawk property. However at the point where the trail runs parallel to the IDA owned property, it can be realigned as a Class I trail to the northwest if the vacant parcels on either side of the trail are consolidated and redeveloped. There would be a mid-block crossing at Peek Street where the elevation of the adjacent properties are the same as the street. The trail would then reconnect with the existing alignment just to the south of Arnold's Auto Body shop. The existing alignment, including the elevated Peek Street Bridge trail crossing, will be retained until an alternative site plan to realign the existing trail at this location has been approved by the OPRHP and NPS. Issues such as property ownership, topography and costs, along with maintaining existing trail qualities, need to be addressed to accommodate any proposed realignment at this location.

Since the removal of the former railroad bridge over Nott Street, the trail user is directed to the signalized intersection of Nott Street and Park Place. The existing configuration of switchbacks has been considered a temporary solution. The city is planning a \$1.4 million reconstruction of Nott Street. The improvements include an elevation adjustment to the roadway where the former railroad bridge crossed Nott Street.

There are several possible options to improve the existing safety of bicyclists and motorists at this location. One is to regrade and realign the trail to establish a mid-block crossing at Nott Street with a raised refuge island and a pedestrian activated light. However, the City has safety and maintenance concerns about implementing this option. Another alternative is to redesign the sidewalk as a multi-use trail for the segment between the signalized intersection and the trail at mid-block. This can be incorporated as part of the proposed reconstruction of Nott Street. The design would have to address a number of issues including the contra flow of bike traffic on Nott Street between Park Place and the trail at mid-block, the possible interference between pedestrian and other trail users, and elevation related concerns. A third alternative is to put in an aesthetically appealing trail bridge over Nott Street with approaches on either side.

The preferred alternative is based upon cost and safety concerns as well as the proposed site improvements at the former site of the American Locomotive Company Plant (ALCO) and adjacent properties on North Jay Street. The redesign of Nott Street should include an evaluation of each of these options.

The trail would continue to follow the existing elevated alignment to its intersection with North Jay Street. Any realignment of the trail to accommodate

the redevelopment of the ALCO plant and adjacent parcels to the southeast and northwest of the trail between Nott Street and North Jay Street requires approval by OPRHP and NPS. A shared use path could be integrated into the site plan and should include an off-road shared use path connection between Huron Street and the intersection of Erie Boulevard and Nott Street.

The redevelopment of the area in the vicinity of North Jay Street into “Little Italy” could also incorporate the trail into the redesign of the street. The trail would then proceed onto Union Street and cross the intersection with Erie Boulevard into the Stockade neighborhood as an on-street trail connector.

The connector will follow Union Street as a shared roadway to Washington Avenue. The connector will then turn south onto Washington between Union and State Street as a contra-flow bike lane on the west side of Washington Avenue. At State Street and Washington Avenue, the connector will be part of a shared use path along the north side of the Western Gateway Bridge to and along the access road leading to the trailhead at the Schenectady County Community College.

► Improvements

Proposed improvements for both options one and two include the following:

- Improve the existing at-grade mid-block crossing at the Maxon Road intersection. Examples of mid-block crossings are illustrated in Figure 6 in the Design Guidelines section.
- Design an approved at-grade, realigned 10 foot wide trail with 2 foot shoulders beginning south of Seneca Street adjacent to the IDA property connecting back to the existing trail just south of Arnold’s Auto Body shop.
- Provide an at-grade mid-block crossing at Peek Street for trail users if the Peek Street Bridge is removed as part of the trail re-alignment.
- Re-configure the existing ramps at Nott Street to improve grades and accessibility.
- Realign the trail segments on either side of Nott Street to accommodate either 1. A mid-block crossing with a raised refuge island and a push button activated yellow flashing beacon or 2. A multi-use trail parallel to Nott Street between Park Place and the trailhead at mid-block. Examples of refuge islands are found in Figure 9 of the Design Guidelines section. A

more detailed engineering analysis is required to evaluate the feasibility of activating the traffic signals at Seward Place and Old Maxon Road by trail users at the mid-block crossing. Alternatively, and in part depending upon the long-term redevelopment plans for the ALCO parcels, consideration should be given to construct a new trail bridge across Nott Street as a gateway to the City and Union College.

- Incorporate the trail in the redesign of North Jay Street.
- Add center line striping and edgeline striping to define travel lanes and curbside parking along with “shared roadway” signage for bicyclists and motorists on the Union Street shared roadway.
- Incorporate intersection improvements at the intersection of Erie Boulevard and Union Street as illustrated in Figure 7 of the Design Guidelines for Signalized Intersections.
- Include a refuge island in any planned reconstruction of the Erie Boulevard and Union Street intersection.
- Establish a 5 foot contra-flow bike lane adjacent to the west curb of Washington Avenue as illustrated in Figure 3 of the Design Guidelines. Relocate the on-street parking on Washington Avenue to the east side.
- Design a shared use path between State Street and Washington Avenue to the trailhead along the access road to Schenectady County Community College. This particular project has been approved for funding through a TEA –21 grant with matching funds provided by Schenectady County. The project, in the design and engineering phase, includes intersection improvements, a 12 foot wide multi use path, a new parking lot, and landscaping and streetscape features.

Additional improvements for option two include the following:

- Construct a 10 foot wide trail with 2 foot shoulders along Anthony Street to the Mohawk River and along the Mohawk River embankment between Anthony Street and Maxon Road.
- Install secure fencing adjacent to the railroad between the Mohawk River and Maxon Road.

► Cost Estimates

Cost estimates for the modified existing alignment improvements are on Table 2. These figures represent minimum costs for trail improvements. Actual costs may be higher due to site specific issues and features proposed as part of the improvements. The estimated cost of \$1.4 million to reconstruct Nott Street and the proposed renovations to North Jay Street are not included in the estimates. Also, the cost to reconstruct the Nott Street Bridge is not included.

Table 2: Modified Alignment Cost Estimates

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Options 1 and 2:				
Trail construction (asphalt surface)	\$250,000	0.75	mile	\$187,500
Raised refuge island	\$50,000	2	each	\$100,000
Nott Street regrading/realignment	\$135,000	1	each	\$135,000
Pavement markings	\$5,000	1	mile	\$5,000
Signage	\$7,000	3	mile	\$21,000
Bike/pedestrian activated signal	\$15,000	1	each	\$15,000
State St. & Washington Ave. improvements*	\$500,000			\$500,000
Total				\$963,500
Additional costs for Option 2:				
Trail construction (asphalt surface)	\$250,000	0.75	mile	\$187,500
Fencing (2-rail wood, chain link)	\$25	2,000	L.F.	\$50,000

*Approved for funding (Tea-21 Grant and County monies)

3.3.2 Riverfront Alignment

For the long term, consideration should be given to create a new off road trail to run parallel to the Mohawk River. A shared use path can be developed along Maxon Road from where the trail intersects Maxon Road to Freemans Bridge. A new Industrial Heritage Trail can be constructed through the Nott Street Industrial Park along the abandoned rail spur. The trail would enter the Industrial Park from an existing access road to the Rensselaer Polytechnic Institute David Walthousen Lab that connects with the existing path that goes under Freemans Bridge. This trail would showcase the industrial accomplishments of Schenectady,



Photo courtesy of Steve Strichman

including steel fabrication and railroad equipment manufacturing.

The trail would exit at the Conrail tracks toward Front Street onto the existing 10 foot wide sidewalk. Once under the tracks, the trail would return toward the river through the Union College Boathouse parking lot. The path can be connected from the Union College Boathouse at Front Street Park to Riverside Park via city owned property at 28 Ingersoll or adjacent riverfront properties if an agreement for their purchase can be negotiated. The trail would be routed through Riverside Park to its terminus at Washington Avenue. The route would proceed along Washington Avenue to State Street.

Riverside Park is slated to undergo a number of improvements including the renovation of the North Ferry Street Pump Station, reconstruction of the existing parking lot, and the creation of a bosque and river overlook. New landscaping, period lighting, and pavement treatments are also included as part of the scheduled improvements.

Though this proposed route is conceptually possible, there are several access related concerns that preclude its consideration at this time, in particular through the Nott Street Industrial Park and adjacent properties. If future conditions warrant, Schenectady has the opportunity to create a continuous public access trail along the waterfront, following the model of Burlington, Vermont, Pittsburgh, Pennsylvania and Poughkeepsie, New York, all of which have redeveloped similar waterfront areas with trails.

► Improvements

Riverfront alignment improvements include the following:

- Add a new trail segment between Freemans Bridge Road and the existing trail at its intersection with Maxon Road.
- Improve the railroad crossing on Maxon Road to accommodate the trail crossing.
- Construct a 10 foot wide trail with 2 foot shoulders through the Nott Industrial Park connecting with the Freemans Bridge Road trail underpass.
- Use secure fencing through the Industrial Park and to separate the trail and active Conrail railroad tracks.

- Mark the trail as a bike route through the Union College Boathouse parking lot and under the bridge along Front Street.
- Incorporate a multi use path in the site improvements slated for Riverside Park and at the North Ferry Street Pump Station. An alternative would be to establish two separate parallel trails through the park, one for bicyclists and one for pedestrians.

► Cost Estimates

Cost estimates for the riverfront alignment improvements are on Table 3. These represent minimum costs for trail improvements. Actual costs may be higher due to site specific issues and features proposed as part of the improvements.

Table 3: Riverfront Alignment Cost Estimates

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Trail construction	\$250,000	2	mile	\$500,000
Signage	\$7,000	2	mile	\$14,000
Pavement markings	\$5,000	.5	mile	\$2,500
Fencing (2-rail wood, chain link)	\$25	5,000	linear ft	\$125,000
Total				\$641,500

Note: These costs do not include proposed improvements to Riverside Park and the Pump Station.

4.0 LOOP SYSTEMS

To serve as connections, four loop systems are proposed to feed off the Mohawk-Hudson Bike- Hike Trail. These are the Scotia/Glenville, Downtown/Stockade, Park Loop, and Outer Park Loop routes. For each route, a thematic tour can be established providing residents and visitors with a unique way to tour Schenectady's heritage.

4.1 Scotia/Glenville Loop

The Scotia/Glenville Loop would be routed along Freemans Bridge Road to the existing shared use path that runs parallel to the Mohawk River in Glenville. The loop would continue across the Western Gateway Bridge via the existing shoulder/bike lanes to Washington Avenue connecting with the Mohawk-Hudson Bike-Hike Trail.

► Improvements

The Scotia/Glenville Loop improvements include the following:

- Grading and drainage improvements along the existing shared use path between Freemans Bridge Road and Washington Avenue.
- Widen the existing path between the Mohawk River and Schonowee Avenue to 10 feet as a shared use path and extend the path to Washington Avenue.
- Extend trail markings parallel to the driveway/parking area of "Jumping Jacks" restaurant.
- Incorporate intersection improvements at Schonowee Avenue and Mohawk Avenue as illustrated in Figure 7 of the Design Guidelines for Signalized Intersections, including an at-grade refuge island.
- Consider more extensive physical improvements including the narrowing of Mohawk Avenue as part of the future reconstruction of the approaches to the bridge.
- Improve the intersection of Washington Avenue and State Street.

► Cost Estimates

Cost estimates for the Scotia/Glenville Loop improvements are on Table 4. Actual costs may be higher due to site specific issues and features proposed as part of the improvements. They also do not include the more extensive physical improvements to narrow Mohawk Avenue.

Table 4: Scotia/Glenville Loop Cost Estimates*

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Trail reconstruction & improvements	\$125,000		3 mile	\$375,000
At-grade refuge island	\$15,000		1 each	\$15,000
Pavement markings	\$5,000		3 mile	\$15,000
Signage	\$7,000		3 mile	\$21,000
Bike/pedestrian activated signal	\$15,000		1 each	\$15,000
Total				\$441,000

*Excludes previously identified cost estimates to improve overlapping segments of the Mohawk-Hudson Bike-Hike Trail

4.2 Downtown/Stockade Loop

The Downtown/Stockade Loop would take cyclists through the Stockade neighborhood to Riverside Park. Two alternative connections are recommended. Those who enter the Stockade via Union Street can follow a signed shared roadway route to Riverside Park along College Avenue. An alternative route along Nott Street from the mid-block trail head to Front Street through the East Front Street neighborhood is also recommended.



Photo courtesy of Steve Strichman

► Improvements

The Downtown/Stockade Loop improvements include the following:

- Improve the intersection of Nott Street, Erie Street and Front Street with appropriate markings and signage.
- Apply shared roadway design guidelines to East Front Street and College Avenue.
- Incorporate improvements to the Union College Boathouse and Riverside Park as indicated in the Main Line Riverfront Alignment improvements.
- Add center-line and edge-line striping to define travel lines and curbside parking along with “shared roadway” signage for bicyclists and motorists on the Union Street shared roadway.
- Incorporate a bike lane as part of the proposed improvements along Nott Street from the trail head to Erie Blvd. Place trail route directional signs directing bicyclists to the Stockade via Front Street or to Little Italy and Downtown via North Jay Street.

► Cost Estimates

Cost estimates for the Downtown/Stockade Loop improvements are located on Table 5. Actual costs may be higher due to site specific issues and features proposed as part of the improvements. The proposed improvements to Nott Street are not included in the estimates.

Table 5: Downtown/Stockade Loop Cost Estimates*

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Pavement markings	\$5,000	0.75	mile	\$3,750
Signage	\$7,000	0.75	mile	\$5,250
Total				\$9,000

*Excludes previously identified cost estimates to improve overlapping segments of the Mohawk-Hudson Bike-Hike Trail

4.3 Park Loop

The Park Loop route is designed to connect Vale Park with Vale and St. Agnes cemeteries, Central Park, Upper Union Street, the Union Street and GE Realty

Plot historic districts, and the Union College Campus. The route would take the bicyclist through Vale Park at the Nott Terrace entrance along the park's lower trail and then connect to the upland cemetery. The trail through the cemeteries would be via the entrance at Brandywine Avenue.

The bike route would proceed along Brandywine Avenue to Bradley Boulevard, which is a primary entrance to Central Park. The designated bike route would proceed along Monument Hill and Iroquois Way in Central Park to the Wright Avenue entrance. The route would then follow along Wright Avenue to its intersection with Union Street. The alley opposite Wright Avenue serves as the terminus point for Rugby Road. The bike route would proceed from the alley and along Rugby Road through the GE Realty Plot to Wendell Avenue. From Wendell Avenue the route would continue to Union Avenue adjacent to Union College. It would then follow Union Street until it intersects with the Mohawk-Hudson Bike-Hike Trail at Jay Street.

► Improvements

Park Loop improvements include the following:

- Install signs warning bicyclists of the steep grade placed along that portion of the route going from the park to the upland cemetery.
- Upgrade the existing road through the park and cemetery to a firm surfaced shared use path to accommodate bicyclists and other users.
- Improve the intersections of Brandywine Avenue/Bradley Boulevard and McClellan Avenue/Bradley Boulevard as suggested in the Design Guidelines.
- Add shared roadway signage along Brandywine Avenue.
- Establish a crossing at the intersections of Wright Avenue/Union Street and the alley (Rugby Road)/Union Street, with appropriate directional signage directing bicyclists at these intersections. Add warning signage notifying motorists traveling Union Street about the two crossings.
- Create a signed, shared roadway along Rugby Road, Wendell Avenue and Union or a separate bike lane where conditions warrant. Design intersection improvements, as appropriate, in accordance with the Design Guidelines.

► Cost Estimates

Cost estimates for the Park Loop improvements are on Table 6. Actual costs may be higher due to site specific issues and features proposed as part of the improvements:

Table 6: Park Loop Cost Estimates

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Trail improvements	\$200,000	1	mile	\$200,000
Pavement markings	\$5,000	4	mile	\$20,000
Signage	\$7,000	4	mile	\$28,000
Total				\$258,000

4.4 Outer Park Loop

Beginning at State Street and Erie Boulevard, the designated Outer Park Loop route would proceed along State Street to Fehr Avenue. A multi use trail along the west side of Fehr Avenue would connect State Street to Central Park. The route would continue along Fehr Avenue through Central Park to Ashmore Avenue. A trail would be created through the corner of the park connecting Ashmore Avenue with Central Parkway opposite Dean Road. The route would proceed along Dean Road into Niskayuna to Grand Boulevard. The route would follow Grand Boulevard to Nott Street and then back to Erie Boulevard.

► Improvements

Outer Park Loop improvements would consist of:

- Construct a 10 foot wide path with 2 foot shoulders connecting the ¼ mile section of the trail in Central Park between Fehr Avenue and Central Parkway.
- Construct a 10 to 12 foot wide trail on the west side of Fehr Avenue between State Street and Central Park. The city is submitting an application for financial support for a multi use trail as part of proposed streetscape improvements to Fehr Avenue to complement the improvements to State Street.
- Design intersection improvements, as appropriate, in accordance with the Design Guidelines.

- Apply shared roadway design guidelines to State Street, Fehr Avenue, Grand Boulevard and Nott Street.

► Cost Estimates

Cost estimates for the Outer Park Loop improvements are on Table 7. These costs do not include the proposed streetscape improvements to State Street. Actual costs may be higher due to site specific issues and features proposed as part of the improvements:

Table 7: Outer Park Loop Cost Estimates

ITEM	COST	AMOUNT	UNIT	SUB TOTAL
Trail construction	\$250,000	0.1	mile	\$25,000
Fehr Avenue improvements	\$600,000			\$600,000
Pavement markings	\$5,000	6.25	mile	\$31,250
Signage	\$7,000	6.25	mile	\$43,750
Total				\$700,000

5.0 REGIONAL ROUTES

It is recommended that the following streets in Schenectady be designated as regional routes leading into the city and connecting to the local network of designated bike routes:

- Albany Street beginning at its intersection with Elbert Street to Albany County
- Kings Road to Albany County
- Route 146 to Albany County
- Broadway beginning at State Street to Guilderland Avenue continuing through Rotterdam
- Route 5/Mohawk Avenue through Scotia and Glenville
- Freemans Bridge Road and Maple Avenue through Glenville
- Nott Street through Niskayuna to River Road and the Mohawk-Hudson Bike-Hike Trail



6.0 LOCAL CONNECTOR STREETS

A series of local connector streets should be designated as bike routes providing connections to the Mohawk-Hudson Bike-Hike Trail, the four loop system routes and the regional routes. With few exceptions, the routes would be signed shared roadway bike routes. Two notable exceptions are the tunnel going under I-890 at Amsterdam Street to Watt Street and the bridge/tunnel crossing I-890 to the General Electric complex located adjacent to the Schenectady County Community College. Each of the proposed connector routes and endpoints are identified on Table 8.

Table 8: Local Connector Streets

STREET	ENDPOINTS
Seneca/Foster/Salina	Mohawk-Hudson Bike-Hike Trail to Steinmetz Park
Front/Nott	Mohawk-Hudson Bike-Hike Trail to Front St. Park
Lenox Rd.	Union Ave. to Hillside Ave.
Brandywine Ave.	State St. to Rugby Rd.
Eastern Ave.	Wright Ave. to Fehr Ave.
North Robinson St.	State St. to Bradley Blvd.
Amsterdam/Berg/Winston/South Robinson	Hamburg St. (Route 146) to State St.
Altamont Ave.	Curry Rd. (Route 7) to Hamburg St. (Route 146)
Osterlitz/Cheltingham/Oak/8 th /Ostrander/Norwood/California	Helderburg Ave. to Hamburg St.
Veeder /Millard	State St. to Broadway
Hamilton/Summit/Strong/Duane	Veeder Ave. to Brandywine Ave. (Route 146)
Crane/Chrisler	Broadway to Hamburg (Route 146)
Nott Terrace	State St. to Franklin St.
Helderburg Ave.	Guilderland Ave. to Curry Rd. (Route 7)
Curry Road (Route 7, Rotterdam)	Altamont Ave. to Hamburg St. (Route 146)
Campbell/6th	Broadway to Hillhurst Park
Broadway/Princetown/Thompson/Campbell	Mohawk-Hudson Bike-Hike Trail to Guilderland Ave.
Washington/Bridge Tunnel	State St. to General Electric facility

7.0 DESIGN GUIDELINES

The purpose of design guidelines is to assist in selecting effective design elements for bicycle safety and mobility. Providing a consistent set of design guidelines for the trail system encourages trail use and enhances safety. For bicycling purposes, recommendations are classified into the following types of facilities: Shared Roadway/Wide Curb Lane, Signed Shared Roadway, Bike Lane, Paved Shoulders and Shared Use Paths.

Perhaps the single most important action the city can take is to integrate bicycle friendly policies and improvements into routine capital projects. Every capital project offers the opportunity to include appropriate facilities for bicycling. As part of creating improvements for bicyclists, it is important that the city addresses fundamental conditions such as smooth pavement surfaces, maintenance of roadway markings, appropriate drainage grates and compatibility of traffic signals and signage.

7.1 Shared Roadway / Wide Curb Lane

Bicycles are used on all roads except where they are legally prohibited. On most city streets in Schenectady, this means that all streets will include some level of bicycle travel. Shared roadways involve both motor vehicles and bicyclists sharing the same travel lanes without special markings to separate traffic. This condition works best on slow-speed local streets where speeds are less than 25mph. With higher speeds and traffic volumes, wide curb lanes of 4.2m (14 feet) is recommended. Design features that can make shared roadways more compatible for bicycle travel include bicycle-safe drainage grates, expansion joints at railroad crossings, smooth pavements, adequate sight distances and traffic signals which are timed for and capable of detecting bicyclists.

Potential locations: neighborhood streets not specifically designated as bike routes

7.2 Signed Shared Roadway / Bike Route

Signed shared roadways are those that have been identified by signing as preferred bike routes. These roadways meet or exceed the minimum features of typical shared roadways. Signed shared roadways have signage and other enhancements to support higher levels of bicycle traffic. Increased curb lane

widths, route maintenance, and appropriate traffic control devices (signal actuation and timing) assist in providing direct travel in bicycle demand corridors. In urban areas, signs typically would be placed every 400m (1/4 mile), at all turns and at all major signalized intersections.

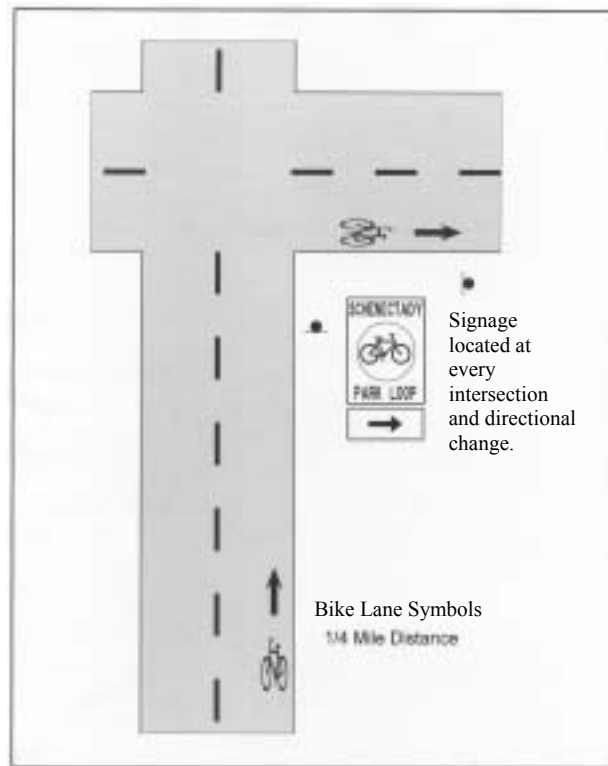


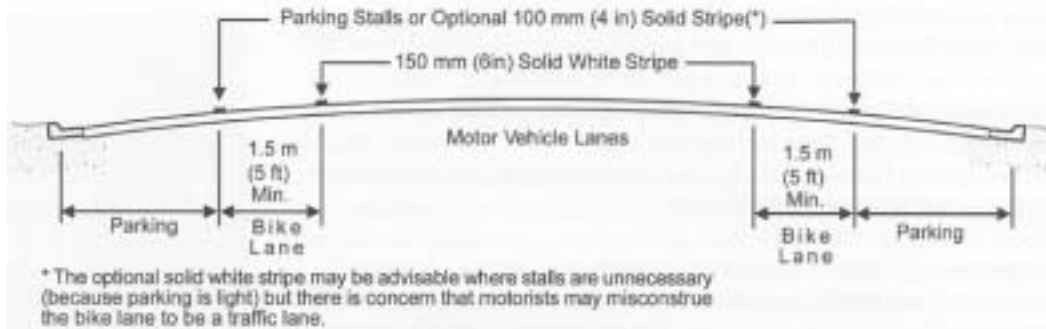
Figure 1: Typical Shared Route Signage

Potential Locations: Selected loop system routes and designated priority network regional and local connector streets to the loop system and the Canalway Trail/Mohawk-Hudson Bike-Hike Trail.

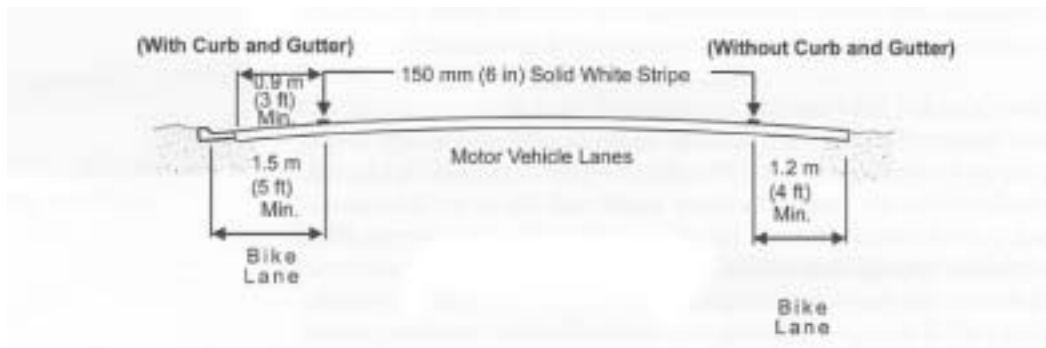
7.3 Bike Lanes

Bike lanes are incorporated into a roadway when it is desirable to delineate available road space for preferential use by cyclists and motorists, and to provide more predictable movements by each. The minimum width for bike lanes can

vary slightly depending on street conditions such as parking, but in general bike lanes should be 1.5m (5 feet) wide. Where excess lane width exists on local streets, bike lanes help channelize motor traffic and can help reduce speeding. It is important to pay particular attention to detailing bike lane markings at intersections, particularly in relationship to turning movements by both motorists and cyclists. In locations where bike lanes and on-street parking co-exist, careful consideration must be given to balance the needs of both through movements and parking.



On-Street Parking



Parking Prohibited

Figure 2: Bike Lane Cross Sections

Potential Locations: Selected loop system routes and designated priority network and local connector streets with excess available lane width, such as State Street, Erie Boulevard, Broadway, and Fehr Avenue. In the short term these streets can be enhanced with striped 5 foot shoulders and bike lane symbols can be added as these facilities become part of the developing system. A contra-flow bike lane is proposed on the west side of Washington Avenue with the on-street parking relocated to the east side.

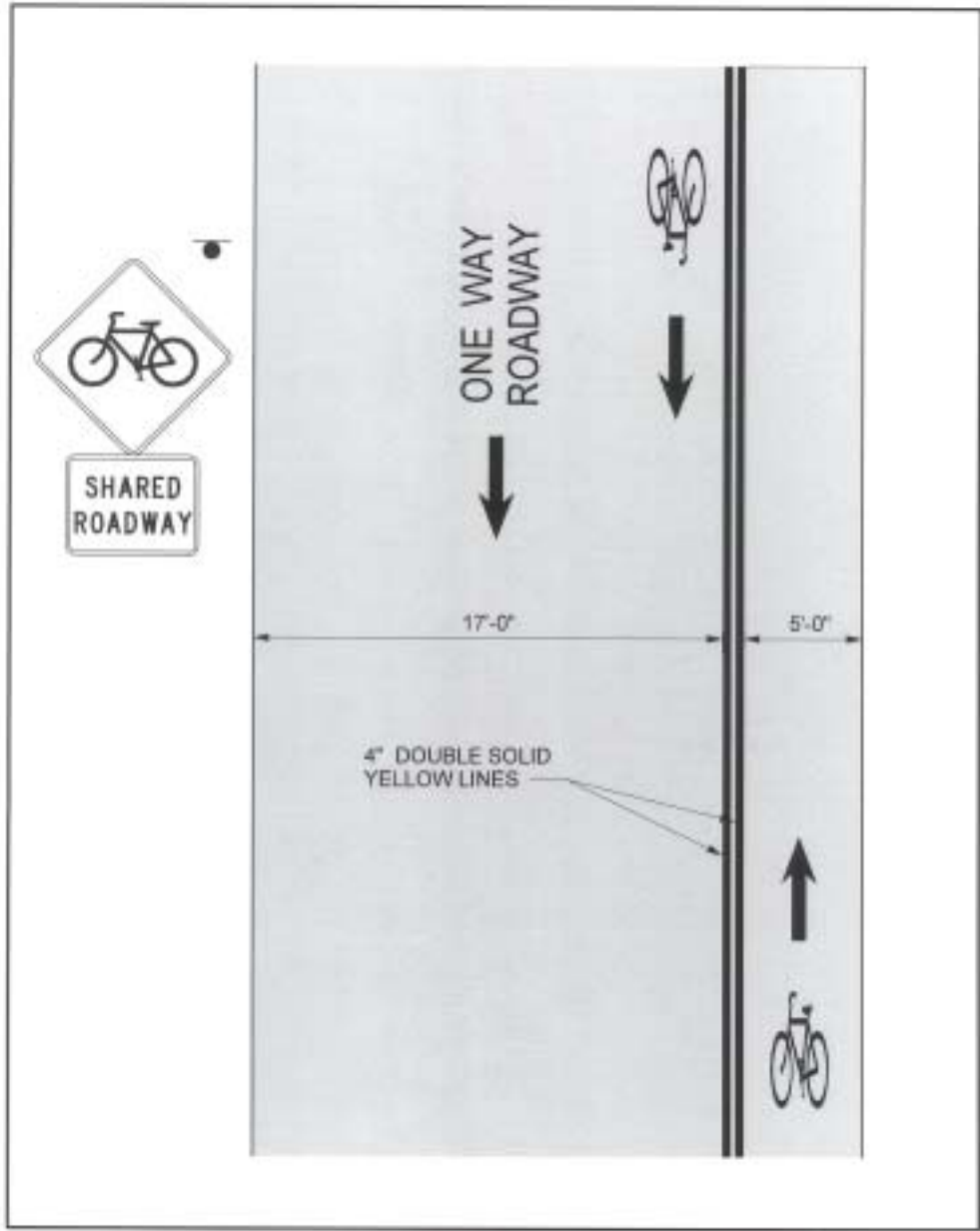


Figure 3: Washington Avenue Contra Flow Bike Lane

7.4 Paved Shoulders



Paved shoulders can provide benefits to bicyclists, pedestrians and motorists. In rural and suburban locations, shoulders can provide roadway space that is used by both pedestrians and bicyclists. Although they are generally provided as an element of highway design for safety and maintenance purposes, shoulders can be used as an alternative to bicycle lanes, paths or sidewalks in appropriate locations.

Paved shoulders should be a minimum of 1.2m (4 ft) wide to accommodate bicycle travel, but increased widths are encouraged particularly in locations with higher traffic volumes and speeds.

Potential Locations: Priority Network Routes in suburban and rural locations and on bridges.

7.5 Shared Use Paths

Shared use paths are facilities on exclusive rights-of-way and with minimal cross flow by motor vehicles. They are often called “bike paths” or “trails” but the term shared use path has been adopted in most guidelines because users of these facilities may include bicyclists, in-line skaters, pedestrians, joggers and others. Generally these facilities are developed along rivers, abandoned railroads, canals, utility corridors and other rights of way which provide access to destinations not served by the roadway network. Shared use paths should be considered complementary to the roadway system, but should not be used to preclude on road bicycle facilities. Typical cross sections provide a minimum of 3.0m (10 ft) wide firm surface with 2 foot wide graded shoulders on both sides of the trail. Grades exceeding 5% should conform to the American with Disabilities Act and American Association of State Highway and Transportation Officials (AASHTO) Guide.

Potential Locations: Mohawk River waterfront, local connectors within parks and schools.

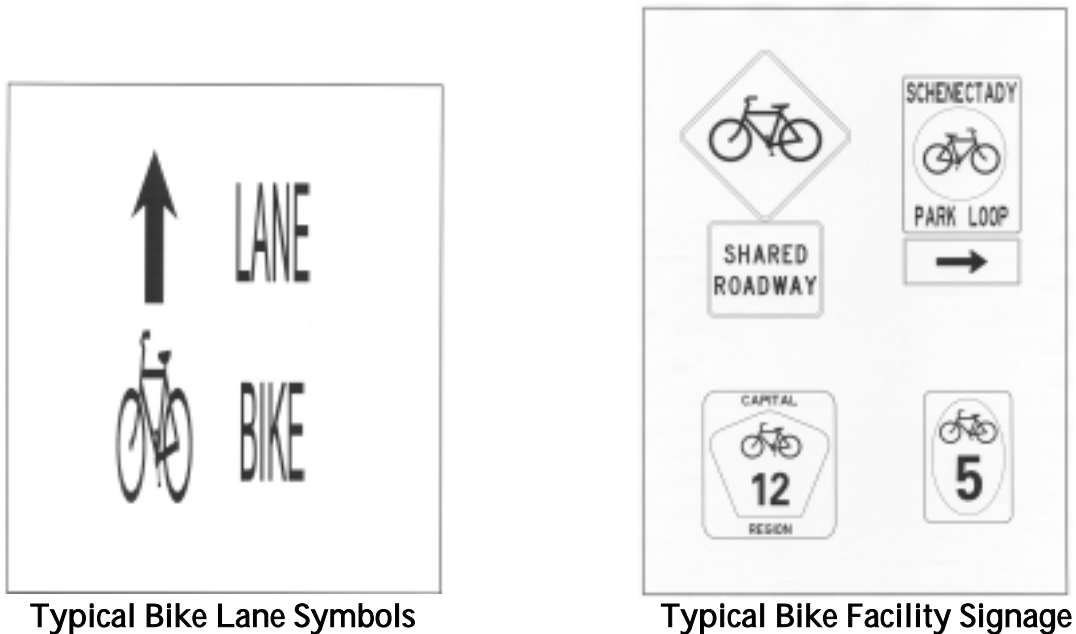
- Bike lockers are preferred at train and bus stations and other locations where commuters and tourists need secure, longer term storage.

Table 9: Recommended Bicycle Parking Spaces

LAND USE CATEGORY	MINIMUM REQUIRED BICYCLE PARKING SPACES
Residential	
Multi-family residential, general	1 space per unit
Multi-family residential, seniors or with physical disabilities	4, or 1 space per 5 units, whichever is greater
Institutional	
Schools – Elementary	4 spaces per classroom
Schools – Jr. Hi or Middle School	4 spaces per classroom
Schools – Sr. High	8 spaces per classroom
College	1 space per 4 students <i>(plus 1 space per student housing room/unit)</i>
Transit Centers/Park & Ride Lots	5% of auto spaces <i>(or 100% of demand depending on accessibility to bicyclists)</i>
Religious Institutions	1 space per 40 seat capacity
Hospitals	1 space per 5 beds
Doctor, Dentist Offices	2, or 1 space per 1000 ft ² , whichever is greater
Libraries, Museums, etc.	2, or 1 space per 1000 ft ² , whichever is greater
Commercial	
Retail Sales	0.33 space per 1000 ft ²
Auto-oriented Services	2, or 0.33 space per 1000 ft ² , whichever is greater
Groceries/Supermarkets	0.33 space per 1000 ft ²
Office	2, or 1 space per 1000 ft ² , whichever is greater
Restaurant	1 space per 1000 ft ²
Drive-in Restaurant	1 space per 1000 ft ²
Shopping Center	0.33 space per 1000 ft ²
Financial Institutions	2, or 0.33 space per 1000 ft ² , whichever is greater
Theaters, Auditoriums, etc.	1 space per 30 seats
Industrial	
Industrial Park	2, or 0.1 space per 1000 ft ² , whichever is greater
Warehouse	2, or 0.1 space per 1000 ft ² , whichever is greater
Manufacturing, etc.	2, or 0.15 space per 1000 ft ² , whichever is greater
*Source: 1995 Oregon Bicycle and Pedestrian Plan	
<i>Notes: Each individual use needs to be evaluated for bicycle parking – e.g. a commercial accessory in an industrial district may have different requirements than the industrial uses around it. Similarly, in mixed-used developments, the amount of each use and required bicycle parking needs evaluation. Finally, within each use category one needs to consider the different user categories – residents, employees, customers, etc. – and parking requirements for each..</i>	

7.7 Signing and Marking

Signing and pavement marking must be consistent and uniform. The purpose of signage and markings is to regulate usage, direct bicyclists along routes and warn of hazards. Regulatory and warning signs should be used conservatively so as to not degrade their effectiveness. Guide signs can be used more frequently. It is recommended that signage and pavement markings follow the standards set in the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD). Examples of signing and pavement marking are shown on the following figures.



Canalway Trail Signage

Figure 5: Typical Bike Lane Symbols and Signage

7.8 Intersection Treatments

The majority of roadway conflicts occur at intersections. Intersection treatments should clearly indicate to the user what path to follow. Designing an intersection that is compact and avoids free flowing traffic will help to avoid conflict. A typical intersection might include most, if not all of the following intersection treatments:

- directional signage
- pavement markings
- bike lanes
- signal activation
- advanced stop lines

Figure 6 illustrates a typical mid-block crossing while Figure 7 illustrates how these elements work to create a safe and convenient environment for bicyclists and motorists.

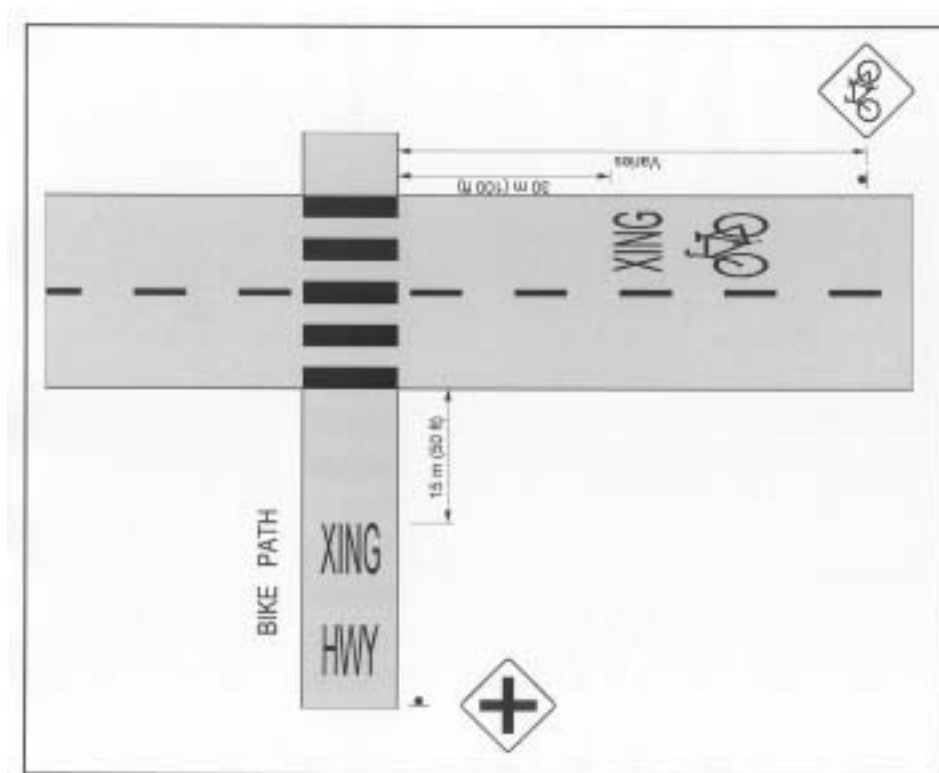


Figure 6: Mid-Block Crossing

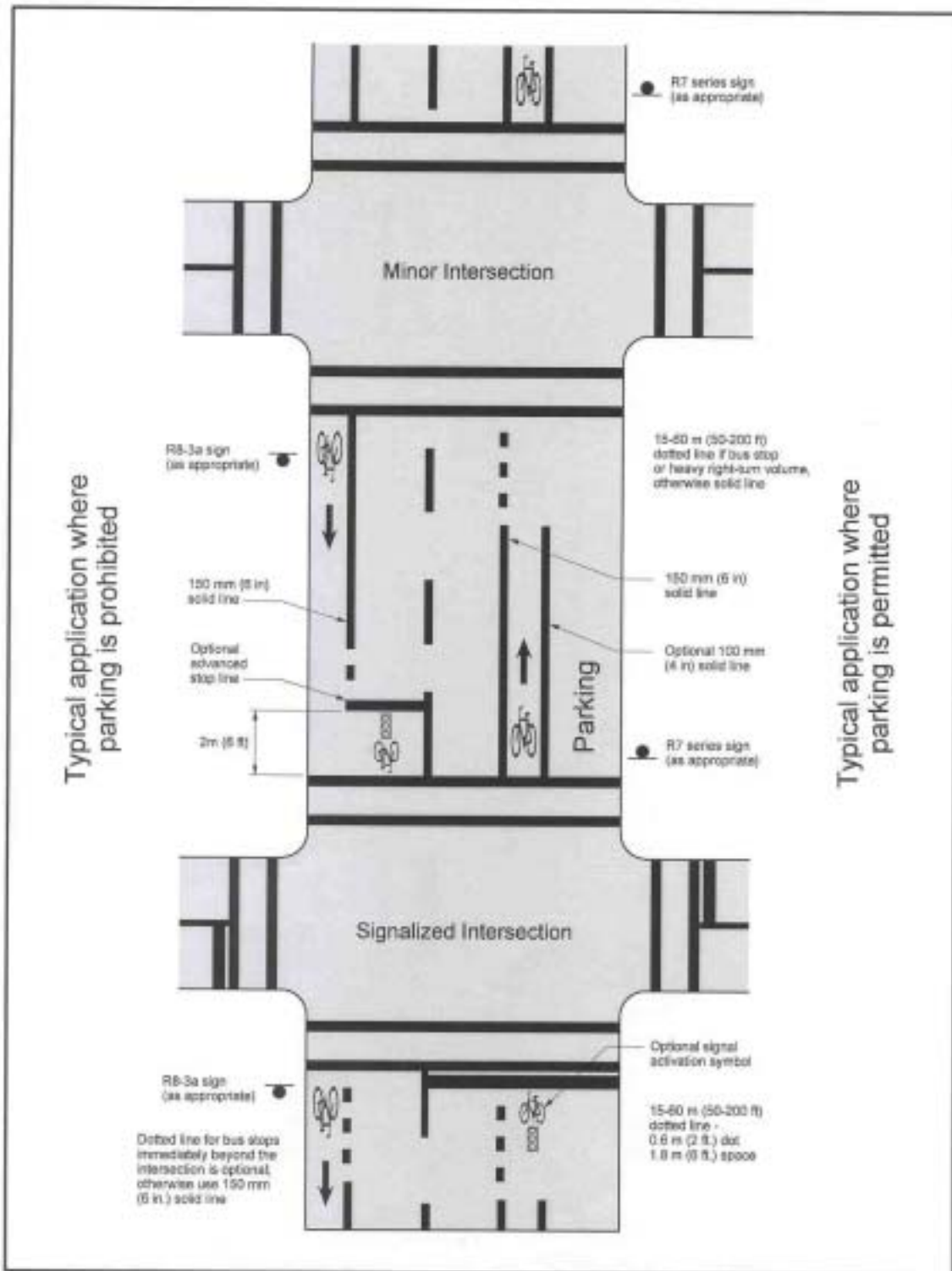


Figure 7: Typical Pavement Markings For Bike Lane On Two-Way Street

7.9 Railroad Crossings

Railroad crossings can be difficult for bicyclists to negotiate. At-grade crossings at right angles to the railroad tracks is ideal. It is important that proper markings and signage are in place to enhance bicycle safety. Signs and pavement marking should be placed prior to the crossing and in conformance to the Manual of Uniform Traffic Control Devices (MUTCD) standards.

The adjacent figure is taken from the Oregon Bicycle and Pedestrian Plan. It clearly illustrates a typical railroad crossing design. A railroad crossing similar to this can be instituted at Maxon Road.

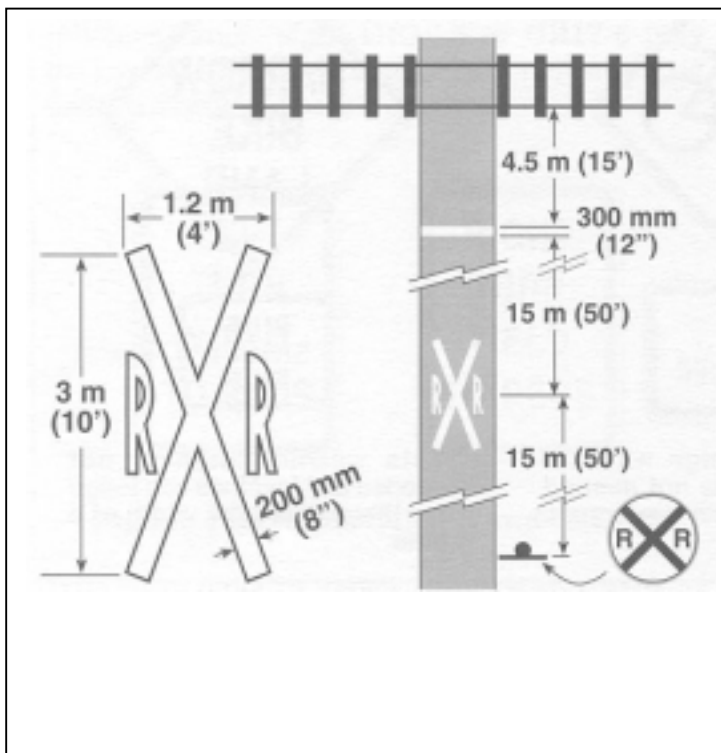


Figure 8: Railroad Crossing

7.10 Refuge Islands

Refuge islands help to reduce the total distance and number of lanes to be crossed. Refuge islands also provide an opportunity for slower bicyclists and pedestrians to wait for a break in the traffic. Figure 9 illustrates refuge area specifications. Refuge islands are suggested at the following locations:

- Nott Street mid-block crossing
- Erie Boulevard and Union Street
- Schonowee Avenue and Mohawk Avenue

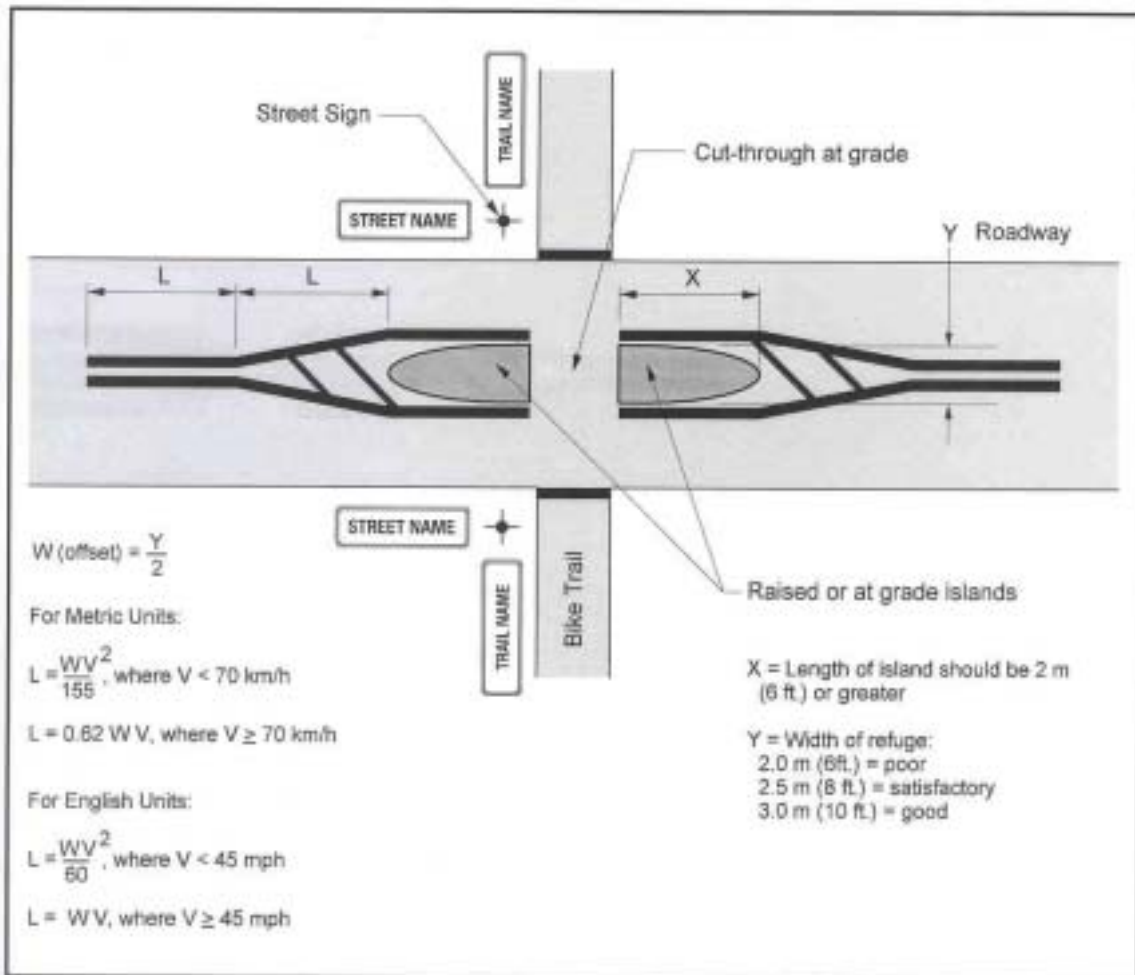


Figure 9: Typical Refuge Area Specifications

7.11 Intermodal Connections

In addition to facilities to ride and park, bicyclists need connections to other forms of transport, including cars, buses and trains. Bicycle racks are provided on selected CDTA bus routes and AMTRAK trains serving Schenectady. In Schenectady, CDTA has Bikeable Buses on Route 52: Crane Street, Route 63: Albany-Schenectady and Route 70: Troy-Schenectady. Public input supports expanding this innovative service to all buses serving Schenectady.



Photo Courtesy of CDTA

8.0 MANAGEMENT GUIDELINES

A level of service inventory was completed for several of the streets recommended as priority bicycle routes. Data was collected on the number of lanes, pavement condition, speed limit, on-street parking accommodations, number of parking spots, number of curb cuts and sewer grates, and percentage of commercial land uses for each block. The data was input into a model to determine level of service based on these characteristics. Portions of Nott Street, Union Street and the Western Gateway Bridge were determined to have a level of service 'E', or poor bicycle riding conditions. This corresponded to field observations at these locations that indicated a number of issues and concerns including curb cuts, sewer grates, potholes, confusing signage and the lack of pavement markings.

Maintenance of the Mohawk-Hudson Bike-Hike Trail is also lagging at certain locations along the trail. The City of Schenectady does not have the resources to adequately address all these concerns and could establish partnerships with Schenectady County and non-profit groups such as the Friends of the Mohawk-Hudson Canalway Trail. A management plan should be prepared to address issues associated with the trail's management, the identification of the responsible parties, and the roles of each of the partners. A consistent set of trail amenities including benches and bike racks and their preferred location along the selected routes should be identified. Marketing and promotional materials, including trail maps identifying the alternative routes should also be prepared.

An excellent resource for the city is the Canalway Trails Association of New York (CTANY), an organization under the umbrella of the New York Parks and Conservation Association (NYPCA) that has developed draft design, maintenance and management guidelines for the Canalway Trail system. Another resource is a sample "Adopt a Trail" agreement developed by the NYS Canal Corporation, which is intended to be used as a guideline for municipalities and counties.

The City could also reinforce its SPOT improvement program for low cost improvements such as bike racks, sign repairs and glass removal by providing mail-in post cards and phone response systems. This concept was originally developed in Seattle, Washington. Bike shops distribute cards to customers, who in turn call or mail in requests for small scale improvements to the city engineering department. The department prioritizes improvements that are paid for via a dedicated maintenance fund. Other communities, such as Ithaca, New York, have used similar programs successfully.

The City could also support existing safety education and promotional programs including bike rodeos, bike to work day, the annual Canalway Trail ride, the Healthy Heart program and other initiatives provided by local partner organizations.

As a starting point, the city should create a Bikeway Advisory Committee to provide input, support and oversight in the implementation of the Master Plan and the development of a Management Plan. Representatives should include city residents, business representatives, trail users and advocates, and city officials.

There are a number of low cost short term improvements that should be given immediate attention by the Advisory Committee. These include:

- Identify roadway hazards to bicyclists along each of the proposed routes and undertake improvements that can be achieved via regular maintenance and from the set aside funding available through the SPOT Improvement program.
- Inventory existing signage along designated routes and replace them with the appropriate signage as described in the Design Guidelines.
- Add appropriate striping along designated routes, including mid-block crossings, as described in the Design Guidelines.
- Establish a contra-flow lane on Washington Avenue in conjunction with the trail improvements underway in the vicinity of Schenectady County Community College.
- Prioritize mid and long term capital improvements for each of the proposed designated loop routes, regional routes, and local connector streets identified in the Master Plan.
- Incorporate the Master Plan recommendations into the engineering design for transportation projects listed on the CDTC Transportation Improvement Program that are part of the designated routing systems.
- Prepare a final design and undertake the necessary improvements to eliminate existing safety concerns at the Nott Street mid block crossing.

9.0 FINANCIAL RESOURCES

A successful method of funding trail design, development, and management is to combine private sector funds with funds from local, state, and federal sources. Creating funding partnerships can result in stronger constituencies that can leverage budgets and services in implementing capital and maintenance programs. Partnering with the local business community can have the added benefit of a ready pool of volunteers to help maintain the trails as part of an "Adopt the Trails" program.

The following list of federal, state, and charitable foundations represent some of the funding sources that have provided funding support for trail systems. At the federal level, the Transportation Equity Act for the 21st Century (TEA-21) provides funds for trail related projects for several programs, the major ones applicable to Schenectady are listed below. The programs under TEA-21 are authorized through 2003. At the state level, financial support for the development of trail systems have been included in previous budgets. Funding support has also been included in the proposed budget for the Canalway Trail.

Private foundation support provides opportunity for innovations in developing, improving, and maintaining trail systems. In addition, there are numerous examples where utility and railroad companies (Rails-with-Trails) have cooperated by providing access to utility owned lands for trail systems providing insurance and other related issues can be resolved.

9.1 Federal Sources

Recreational Trails Program

<http://www.fhwa.dot.gov/environment/rectrail.htm>

This program was authorized by TEA-21 and provides funding to States for the development, maintenance and improvement of recreational trails. It funds both motorized and non-motorized recreational trail development. The maximum federal contribution is generally 80% and award amounts can range from \$5,000 to \$100,000. The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) administers this program. Contact the state trail coordinator for more information at the OPRHP website <http://www.nysparks.state.ny.us>.

State and Metropolitan Area Planning

<http://www.cdtcmpo.org>

This program provides for the development and management of transportation systems and facilities. The Transportation Enhancement Program (TEP), authorized by TEA-21, allows improvements for bicycle and pedestrian facilities and the conversion of abandoned railways to trails. Most projects are required to be in the Metropolitan Planning Organization's (MPO) Transportation Improvement Program (TIP). The Capital District's MPO is the Capital District Transportation Committee (CDTC). CDTC has developed a list of evaluating criteria and a methodology for evaluating bicycle and pedestrian projects to receive this funding. The CDTC Spot Improvement program is another possible funding source with another round of funding tentatively scheduled for the Spring of 2002. CDTC can be contacted at (518) 458-2161.

National Scenic Byways

<http://www.byways.org>

This program provides technical assistance and grants to develop scenic byways. The intent of the program is to recognize and enhance roads that have outstanding scenic, historical, cultural, natural, recreational, and archaeological qualities. The program provides 80% of an eligible project and covers activities such as planning, design, development, resource protection, and other improvements.

A scenic byway to promote tourism is being proposed along the Mohawk River and Erie Barge Canal corridor from Waterford to Schenectady. The Byway is a regional partnership under the direction of the Mohawk Valley Heritage Corridor Commission. A web site has been created and can be visited at the following address: <http://www.mohawktowpath.homestead.com>.

Contact the state scenic byway coordinator for more information. The New York State Department of Transportation (NYSDOT) can be contacted at (518) 457-4460.

Land & Water Conservation Fund

<http://www.ncrc.nps.gov/lwcf>

This program provides grants for funding of federal, state, and local parks and conservation areas. The "federal" portion of the fund buys land in new forests, parks, wildlife refuges and other recreation areas owned by the federal government. "State" side funding provides 50% match monies to states and localities for the acquisition and development or redevelopment of parks and recreational facilities. Despite budgetary constraints, the life of the program was extended in 1989 by an additional 25 years to 2015. In FY 2001, \$88.8 million was

appropriated to fund projects during the year. The program in New York is administered by the Office of Parks, Recreation, and Historic Preservation which can be contacted at (518) 474-4113

9.2 State Sources

New York State Office of Parks, Recreation and Historic Preservation (OPRHP)

<http://www.nysparks.state.ny.us/grants/>

Provides information about grant programs in New York State. The State Clean Water/Clean Air Bond Act and the Environmental Protection Fund (EPF) are potential funding sources. Eligible projects must be within a NYS Designated Heritage Area and funding can be utilized for parks related projects including recreational activities. OPRHP also administers the Recreational Trails Program and Land & Water Conservation Fund as noted previously.

New York State Department of State

<http://www.dos.state.ny.us>

Provides technical, planning, and financial assistance to local governments. Encourages waterfront communities to prepare Local Waterfront Revitalization Plans. Financial assistance for both their preparation and implementation is available through the Environmental Protection Fund. Schenectady County is presently preparing a Local Waterfront Revitalization Plan for the areas adjacent to the Mohawk River.

The recently completed report *State and Local Governments Partnering for a Better New York* prepared under the direction of the Quality Communities Task Force recommends a series a of strategies designed to implement community development plans that best meet a community's needs and are sensitive to the needs of the environment and surrounding communities. Demonstration monies have been made available to support multi-jurisdictional initiatives.

New York State Assembly

<http://www.assembly.state.ny.us>

The Grant Action News located at this web site identifies what grant opportunities are available. This is a free monthly newsletter. There is a Grant Action News hotline at 1-800-356-8486. Also available is the Catalog of State and Federal Programs Aiding New York's Local Governments.

9.3 Foundations, Private and Non-Profit Sources

Greenways and Rail-Trails New York Program

<http://www.nypca.org>

The New York Parks & Conservation Association provides assistance to communities developing greenways and rail-trails. This site has links to various funding sources. Funding sources listed include Community Development Block Grants (CDBG), the Environment Grantmakers Association (EGA), a directory of foundations, and several opportunities from the OPRHP such as the Environmental Protection Fund Matching Grant Program. Private funding sources are also listed. Those sources include the American Greenways Kodak Award and grants from the Conservation Alliance.

New York State Foundations: A Comprehensive Directory

<http://www.fdncenter.org>

Provides a source for all foundations in the state that have provided funding for the most recent year. This directory can be found at a public library or at university and college libraries. You can also access a directory of larger foundations at the Foundation Center website listed above.

<http://www.fundsnetsservices.com>

Lists foundations offering environmental grants and financial support to communities for a variety of projects.

<http://www.americantrails.org>

American Trails has a "Resources and Library" section that lists a number of potential funding sources.

<http://www.americanhiking.org>

Provides guides to funding and links to the National Trails Endowment and the Conservation Alliance.

<http://www.mott.org>

The Charles Stewart Mott grant database provides assistance for grant writing and grant programs.

9.4 Fundraising

<http://www.grantscape.com>

This is a resource describing the grantseeking process and how to apply for grants.

<http://www.findworks.com>

This site offers a variety of ideas for fundraising and grants.

<http://www.fundraiser.com>

This is a free on-line magazine discussing fundraising ideas.