Adirondack/Glens Falls Transportation Council

Regional Bicycle/Pedestrian Plan

July 2014

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References:

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INTRODUCTION

Purpose

The Adirondack/Glens Falls Transportation Council (A/GFTC) has prepared this Regional Bicycle & Pedestrian Plan with the intent to provide a framework for future improvements which will result in a more comprehensive network of bicycle and pedestrian facilities in Warren, Washington, and northern Saratoga Counties.

This plan, which updates the Bicycle and Pedestrian Plan prepared by A/GFTC in 2000, has been created in conjunction with a process which takes into account the priorities of the local municipalities and stakeholders in the A/GFTC region. This process is intended to strengthen ties so that partnerships can continue in the future implementation of the priority projects. The plan includes:

- An inventory of existing conditions at a regional scale
- A review of all available community plans and priorities for each municipality
- Identification of priority bicycle network connections and pedestrian priority areas
- Guidance to select appropriate design features
- Identification of local policies to support bicycle and pedestrian activity
- A plan for implementation

This process has resulted in a plan which identifies feasible, real-world actions that can be taken to improve biking and walking within the region. By coordinating implementation across local, county, and state levels, it is hoped that the plan will increase the efficiency and efficacy of improvements.

Benefits of Bicycle and Pedestrian Facilities

Biking and walking, whether conducted as a mode of transportation or as a recreational activity, offer a wide variety of personal, social, and environmental benefits. On a personal level, biking and walking are not only ways to become or stay physically active, but also affordable, fun transportation methods available to all ages. Socially, these activities reduce health care costs and vehicular traffic, can provide a healthy activity for families and children, and can provide an important component to the local economy in terms of tourism. In terms of the environment, biking and walking can be an effective way to reduce dependence on the automobile, and subsequently reduce carbon emissions.

With all these benefits, many communities are demonstrating a strong interest in strengthening and improving bicycle and pedestrian infrastructure, on both a local and regional level. Many of the communities within the region have been active in pursuing ways to directly and indirectly improve the biking and walking experience. This has included innovative partnerships, physical projects, and policies that encourage improvements to infrastructure. This plan underscores the ongoing commitment to encourage pedestrian and bicycle activity for the benefit of residents, business owners, and visitors alike.

BICYCLE IMPROVEMENTS

Existing Conditions

This section of the plan is intended to guide the improvement of bicycle facilities and the future designation of bicycle routes. This effort is not "starting from scratch", but is rather the continuation of many years of work by several agencies. A/GFTC, local bike groups, and individual municipalities have been active in encouraging accommodations for cyclists. It is therefore important to take stock of the conditions for cyclists as they stand today.

The A/GFTC region currently is home to a growing bicycle network, including:

- **Separated right-of-way trails:** The A/GFTC area has approximately 17 miles of trails which accommodate non-roadway travel. The most extensive network consists of the Warren County Bikeway and Feeder Canal Trails, which link the City of Glens Falls to the Villages of Fort Edward, Hudson Falls, and Lake George, and the Towns of Queensbury, Fort Edward, and Kingsbury. In addition, there are almost 5 miles of trail located in the Village and Town of Granville. This trail is located along the D&H rail bed and extends into Vermont. Finally, the Betar Byway in South Glens Falls links the downtown to the Town Beach and other destinations.
- **Designated cycling routes:** There are currently about 100 miles of on-road bicycle routes, located on State highways and local roads throughout the area. These include US Route 9 in Saratoga County, NY Route 197 in the Town of Moreau, US Route 4 and NYS 22 (both are elements of NYS Bicycle Route 9), as well as local roads in the Towns of Queensbury, Lake Luzerne and the City of Glens Falls. It is anticipated that this network of on-road bicycle routes will continue to grow as local communities adopt policies in support of the A/GFTC Bicycle and Pedestrian Plan and NYS Complete Streets legislation.

There are also other bicycle route networks and facilities surrounding the region, especially in Saratoga, Essex, and Hamilton Counties. These include networks such as the Saratoga County Heritage Trail and the "Bike the Byways" network. Creating and maintaining strong connections to these neighboring opportunities is a key aspect of this plan.

Terminology

This plan makes frequent reference to two important concepts relating to bicycle networks. These include:

- **Bike Routes:** A system or network of roads, streets, paths or ways that have been designated by the jurisdiction having authority with directional and/ or informational signage or pavement markings. It should not be implied that roadways not designated as bike routes cannot or should not be used by cyclists.
- **Bike Facilities:** The physical surface on which the cyclists ride. These may include, but are not limited to, multi-use trails, bike lanes, road shoulders, or vehicle travel lanes. A description of the different types of bicycle facilities is included in this plan. Bike facilities can also include other features designed to accommodate/encourage cycling, such as bike parking facilities.

Priority Bicycle Network

The goal of this plan is to provide a framework for future improvements which will result in a more expansive and comprehensive network of bicycle and pedestrian facilities in the A/GFTC region. Most of these facilities are likely to be located along existing roadways. However, it is not realistic to assume that every roadway will be the focus of bicycle improvement projects, especially given current funding limitations.

As such, an important component of this plan involved setting priorities to identify which roadways represent the highest priority for designation as bike routes and/or capital improvements. To set realistic and feasible actions for this plan, several factors were considered, including local priorities, the needs of the cycling community, and transportation connectivity.

- **Local Priority Routes:** Many local municipalities have addressed the need for bicycle facilities in planning documents. All available local planning documents were reviewed to determine the stated bicycle transportation priorities in each municipality. Map 1 illustrates the roads specifically mentioned within a municipal plan as being suitable for current bike use or desired for bike use in the future. This analysis highlights the fact that not every community has stated priorities concerning cycling. Some communities have identified specific on- and off-road alignments, while others include a general statement of support for bicycling issues. Still others make no mention of cycling at all; however, this should not infer that the community does not support bicycle infrastructure. Nothing in this plan is intended to prevent local municipalities from supporting the establishment of additional bicycle facilities, nor to obligate communities to engage in projects in the future.
- **Bicycle Advocate Priority Routes:** Maintaining and promoting safe, functional bicycle facilities along the roads most used by cyclists is a key goal of this plan. To facilitate this, several stakeholder groups within the region were asked to generate a list of cycling routes and desired connections, including the Warren County Safe & Quality Bicycling Organization and the Cambridge Valley Cycling Club. These roadways represent the

alignments of existing bike events, important connections to recreation destinations, and roadways which are enjoyable to ride (see Map 1). Although recreational riding is not the focus of this plan, it is important to recognize those routes which are favored by the biking community.

The maps of individual priorities provide a wide range of on– and off-road options for a potential bicycle network. From among these, a Priority Bicycle Network was selected (Map 2). This Priority Network balances the needs of the local municipalities and cycling community with A/GFTC's focus on providing transportation options throughout the region. This includes connections to destinations within the A/GFTC region, as well as bike routes in adjacent counties.

This network is intended to assist in the decision-making process for both designating bicycle routes and selecting bicycle improvement projects. However, the selection of capital projects involves other equally important factors. The following section of this plan addresses the design, feasibility, and implementation of bicycle improvement projects.

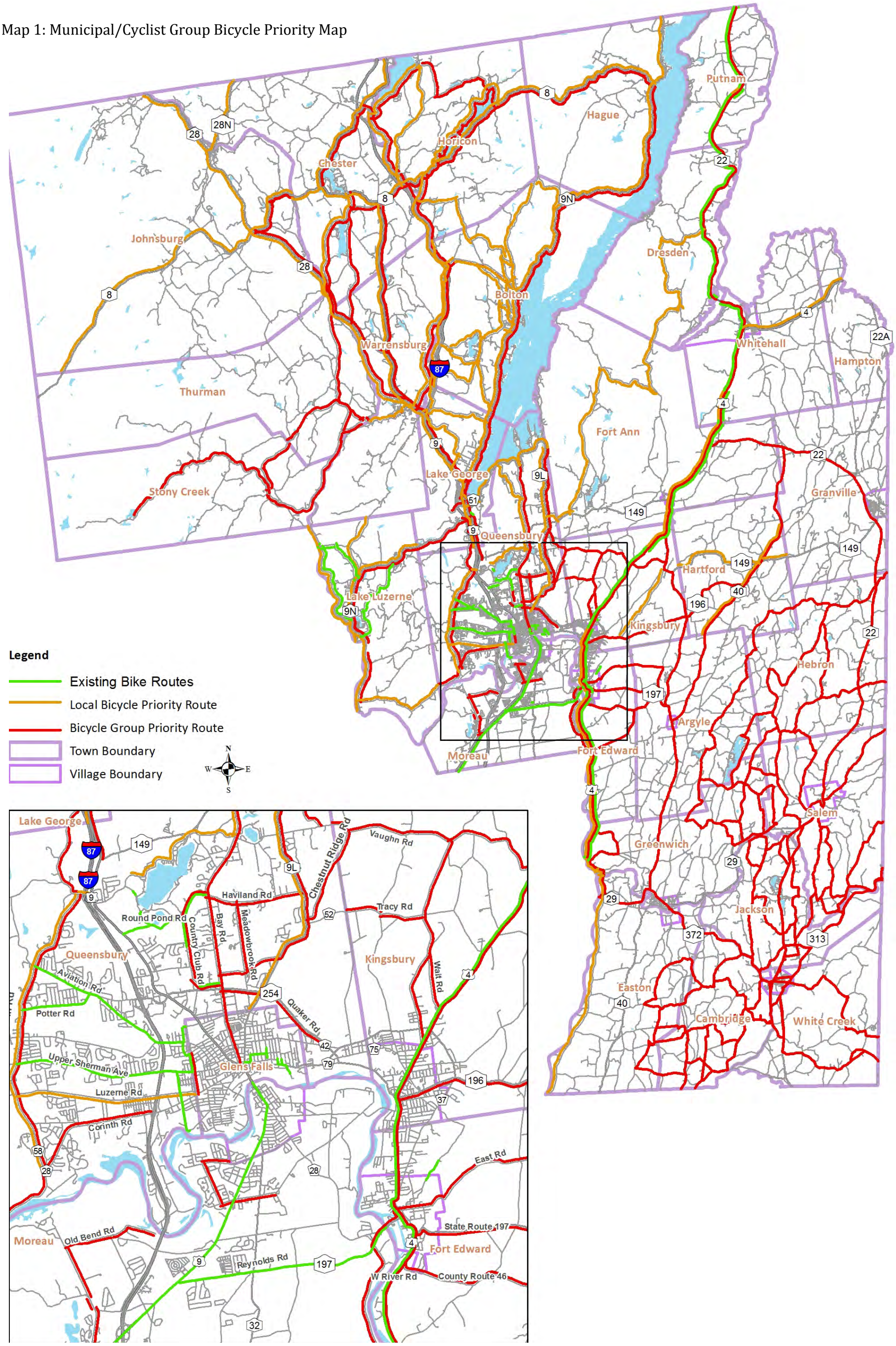
Priority Bicycle Network

This network of on- and off-road connections balances the needs of the local municipalities and cycling community with regional transportation connections.

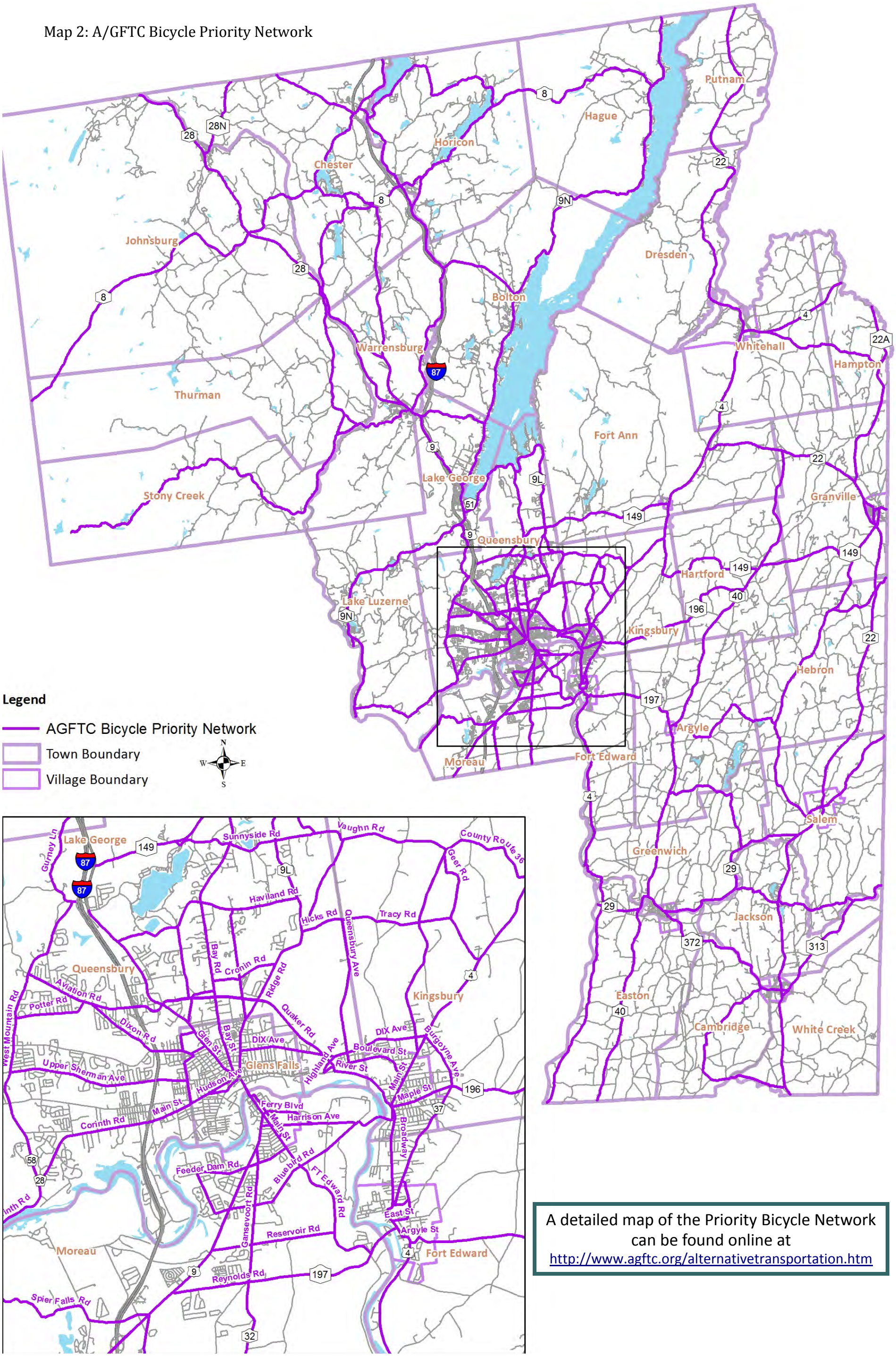
A detailed map of the Priority Bicycle Network can be found online here:

http://www.agftc.org/alternativetransportation.htm

Map 1: Municipal/Cyclist Group Bicycle Priority Map



Map 2: A/GFTC Bicycle Priority Network



A detailed map of the Priority Bicycle Network can be found online at http://www.agftc.org/alternativetransportation.htm

Guidance Documents for Bicycle Facility Design Standards:

American Association of State Highway and Transportation Officials (AASHTO): *Guide for the Development of Bicycle Facilities*, 2012

Federal Highway Administration (FHWA): *Bikesafe: Bicycle Countermeasure Selection System*, May 2006; *Selecting Roadway Design Treatments to Accommodate Bicycles*, 1992

New York State Department of Transportation: *Highway Design Manual, Chapter 17 Bicycle Facility Design,* 2006

Design Standards

Design standards for bicycle facilities can apply to the location, width, pavement, and other features such as drainage grates and protective railings. These standards may be applied to all or part of an on-road facility or an multi-use trail.

The selection of a bicycle facility depends on many variables: the type of cyclist likely to use the facility; traffic mix, volume, speed, parking, and sight distances (for on-road facilities); bicycle speed, grade, multi-use capacity, and roadway/rail crossings (for off-road facilities). Several agencies, including NYSDOT, FHWA, and AASHTO, have compiled manuals and guidance documents which can help to select the most appropriate design standards for each type of facility.

For the purposes of this document, the most commonly applicable design standards have been summarized below. This summary is intended to aid in the prioritization of improvement projects, by outlining general minimum standards for the types of facilities most likely to be proposed in the A/GFTC region. The design standards are based on those in the NYSDOT Highway Design Manual Chapter 17 (Bicycle Facility Design), and on AASHTO's 2012 Guide for the Development of Bicycle Facilities. **Please note that these standards are general; specific design of bicycle facilities must take into account any applicable requirements for the specific roadway—i.e. Federal, State, or Local regulations, as appropriate.** Standards for features such as bridges or railings have not been included; refer to the appropriate guidance document for detail concerning these facilities.

This summary is not intended to limit the range of potential bicycle facilities in the A/GFTC region. As new standards are adopted, and different types of bicycle facilities tested and deployed, it is recommended that these new techniques be reviewed to determine if they may be appropriate to conditions in the A/GFTC region.

Bike Shoulders (aka Wide Shoulders)

Above: Wide shoulder designated as a bicycle route

Most appropriate for: Rural/suburban roadways with limited sections of curbing and without on-street parking. This is a space that can be used by bicycles but is not specifically devoted to them.

Design standards: 4'-wide (min.) shoulder for non-curbed roadways with speeds under 40 MPH. Width increased to 6' for higher-speed/higher-volume roadways, roads which exceed 5% grade for 6 miles or longer, or roads with curbs or other obstacles at the edge of pavement. No special pavement markings are required.

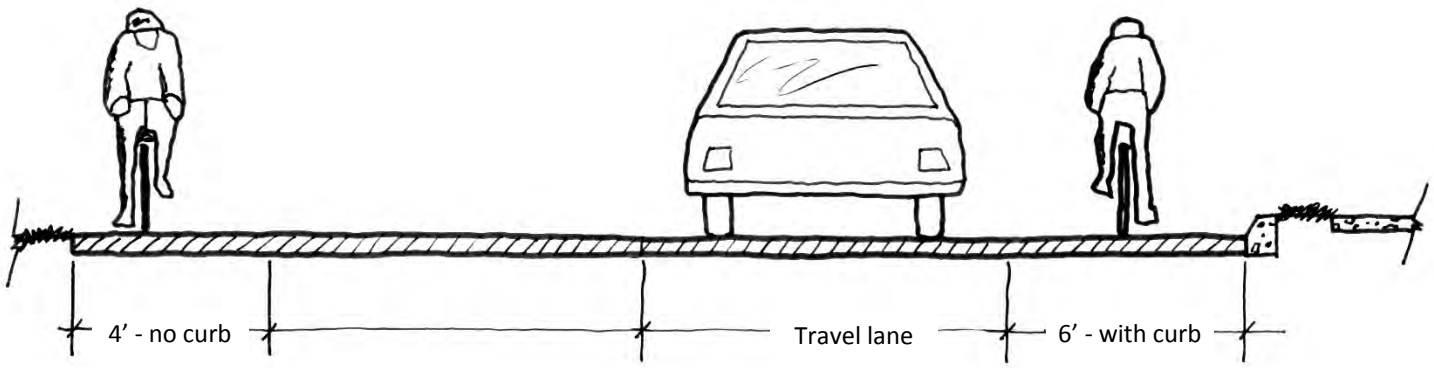
Advantages:

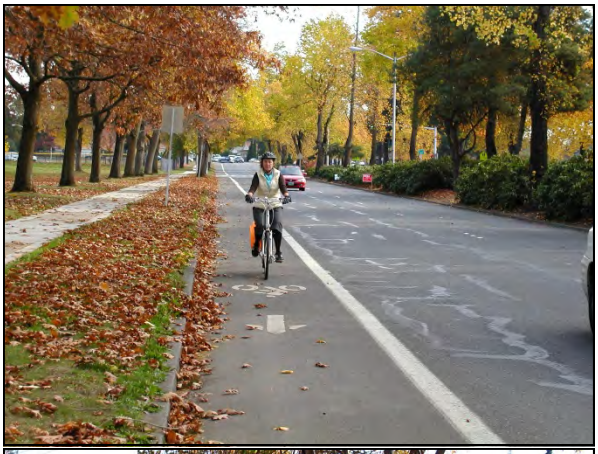
- Many bike shoulders already exist
- No additional maintenance required beyond that which is required for the roadway
- Can sometimes be accommodated via re-striping
- Appropriate for rural and suburban areas
- No additional striping at intersections

Disadvantages:

- Less comfortable for beginning/average cyclists than bike lanes
- May require additional ROW width
- Cars parked on shoulder can reduce space available in shoulder for cyclists

Diagram of typical design of wide shoulders





Top: Bike lane without on-street parking
Bottom: Bike lane with on-street parking
(photos courtesy of pedbikeimages.org)

Top: Striping for bike lanes at intersection
Bottom: Signage for bike lanes
(photos courtesy of pedbikeimages.org)

Bike Lanes

Most appropriate for: Urban roadways with curbing and on-street parking. Unlike road shoulders, bike lanes are dedicated solely to use by bicycles.

Design standards: 4'-wide (with no on-street parking/curb) or 5'-wide (with on-street parking/curb) striped lane located between travel lane and parking lane/curb. Requires pavement markings and directional signage.

Advantages:

- Higher profile/visibility for cyclists
- Channelizes bike traffic
- More comfortable for beginning/average cyclists to ride
- Minimizes cars swerving into other lane to avoid cyclists
- Can sometimes be accommodated via re-striping

Disadvantages:

- Intersections can become complicated with extra bike lane striping and signage (see images below left)
- May require additional ROW width
- Mainly an urban roadway feature
- Can pose conflict with on-street parking
- Can be blocked by illegally parked cars

Wide curb lane
(photo courtesy of pedbikeimages.org)

Shared-Use Lanes (a.k.a. Wide Curb Lanes)

Most appropriate for: Roadways which allow bicycles and vehicles to ride side-by-side, but in which other bicycle facilities cannot be accommodated. Use only if all other options are unfeasible.

Design standards: 14'-wide desired travel lane

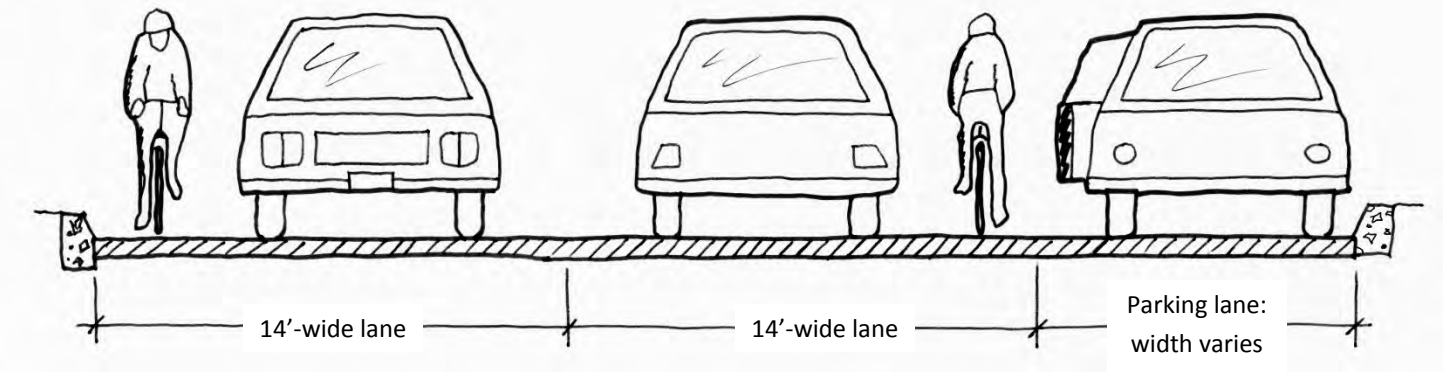
Advantages:

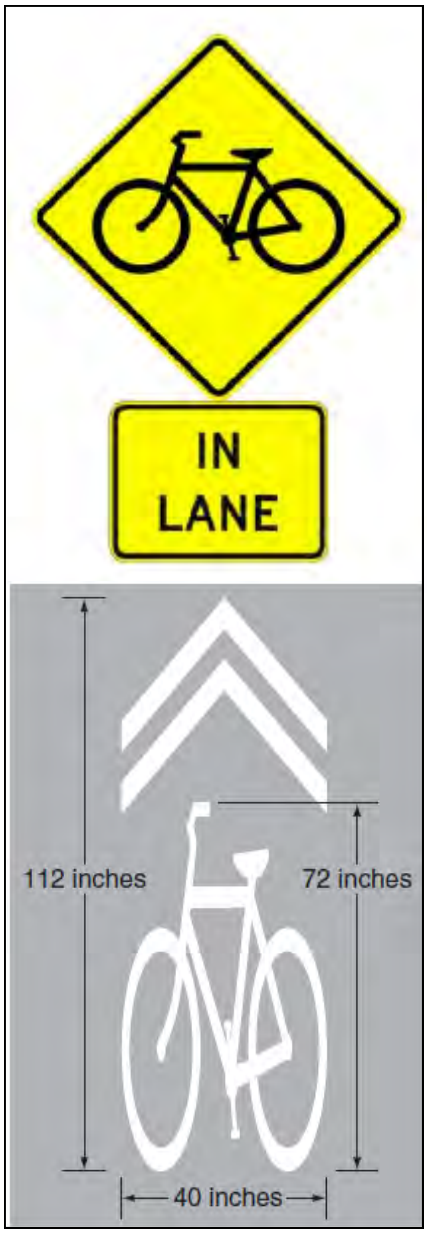
- Minimal striping or maintenance required
- Benefits to non-bicycle traffic: accommodates buses and truck turning movements/emergency maneuvers

Disadvantages:

- Least comfortable for beginning/average cyclists
- Wider travel lanes can increase traffic speeds
- Can pose conflict with on-street parking
- No visual indication that the roadway contains a bicycle facility

Typical design standard for wide curb lane





Top: Signage for shared-lane roadways
Bottom: Pavement marking for shared-lanes

Shared-Lane Markings

Most appropriate for: Roadways with lanes less than 14' and speeds under 40 mph where no other dedicated bicycle facility can be feasibly accommodated.

Design standards: Set by NYSDOT supplement of the MUTCD. Pavement markings ("sharrow") and signage deployed in conjunction.

Advantages:

- Less expensive to deploy than facilities which require road widening or construction
- No physical changes needed to roadway
- Reduces wrong-way cycling

Disadvantages:

- Initial deployment may be confusing to cyclists and motorists
- May be less comfortable for beginning/average cyclists

Multi-Use Trail/Path (aka Off-Road Trail)

Most appropriate for: Areas with existing linear ROW (rail/utility corridors, for example) which link destinations

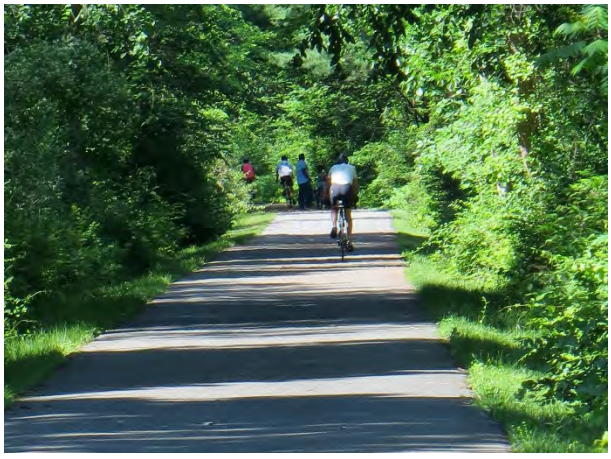
Design standards: 10'-wide recommended for a two-way path (12' preferred)

Advantages:

- Least potential for vehicle/bike conflict
- Most comfortable for beginning/average cyclists
- Potential to create direct links
- Recreation amenity

Disadvantages:

- Highest cost to implement – requires ROW acquisition, design, and construction
- Requires separate maintenance; many municipalities may be unable to provide maintenance



Multi-use trail

Right-of-Way

Throughout this document, reference is made to "right-of-way", or ROW. This refers to the land acquired for, or devoted to, transportation purposes. This could be a road (possibly including sidewalks) or a path or trail not associated with the street network.

In many cases, the ROW is owned outright by the entity which has authority over the road or trail—a local municipality, a county, or NYSDOT. The ROW is often wider than the actual road or trail, so that curbs, sidewalks, drainage, signs, and other features may be accommodated.

It must also be noted that many roadways in the A/GFTC region predate formal acquisition by the municipality. These are known as "user highways", "highways by use", or "roads by use". The public right-of-way extends only to the "extent of actual use". A recent NYS court opinion* has determined that "extent of actual use may include, in addition to the traveled portion, the shoulders and whatever land is necessary for the safety of the public and for ordinary repairs and improvements."

As such, widening these types of roads past the extent of actual use usually involves acquisition of property from adjacent landowners, which can significantly increase the cost and time frame of construction projects.

Bicycle Shoulder Physical Feasibility Analysis

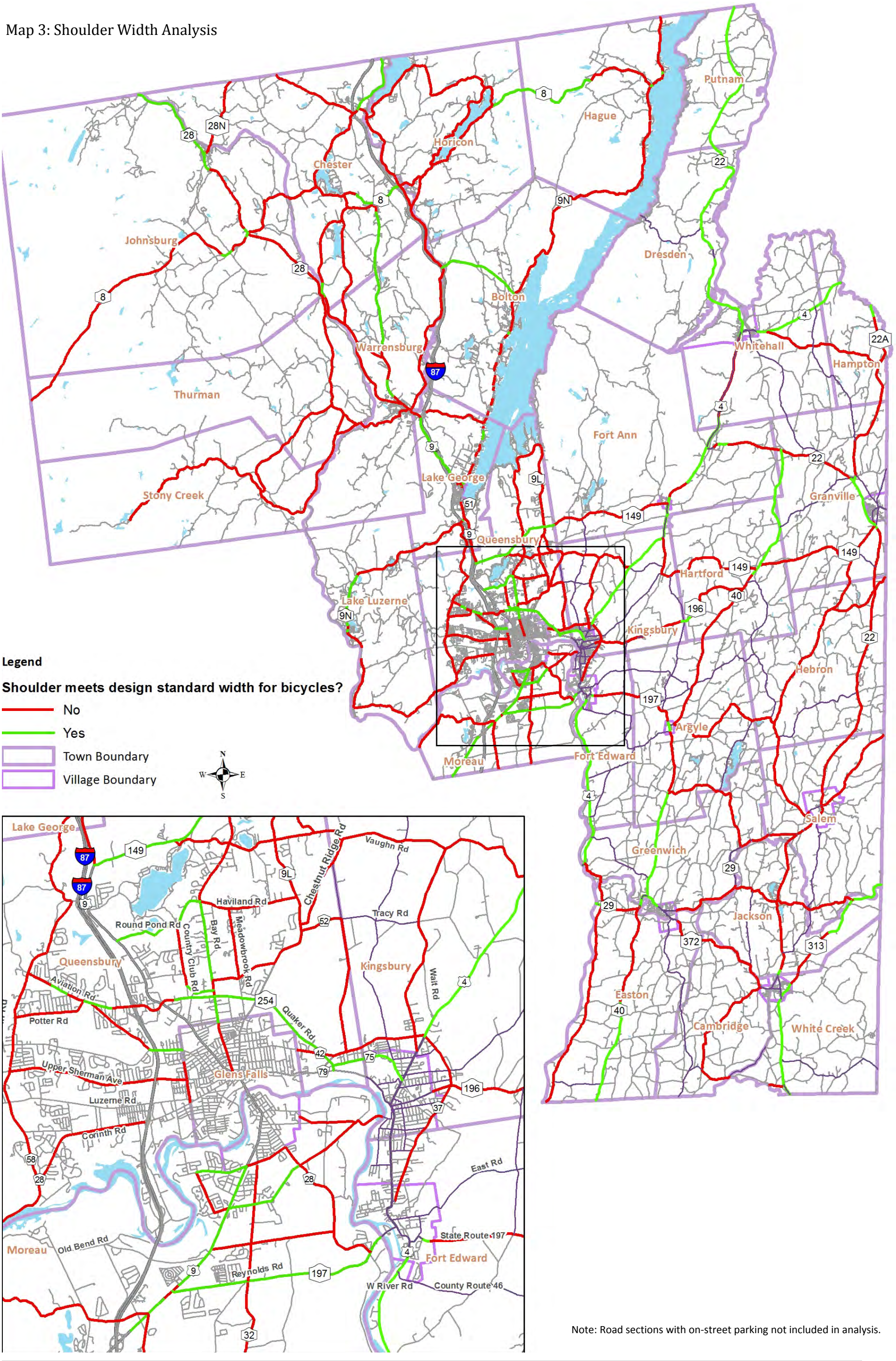
In addition to identifying the location of important bicycle connections (the Priority Network), and summarizing the applicable design standards for conditions in the A/GFTC region, this plan also analyzed whether roadways may currently have the requisite pavement width to meet the Design Standard appropriate to the context. A GIS map was prepared which compares the existing shoulder width to the bike shoulders Design Standard. This creates a conservative analysis, as the width necessary for the wide shoulder Design Standard is greater than or equal to the dimensions needed for any other type of bicycle facility. As such, it can be broadly assumed that a roadway which is wide enough to support the Design Standard for bike shoulders will likely also be wide enough for shared lanes, bike lanes, and so forth.

The existing shoulder width was based on GIS information, then verified via inspection by A/GFTC staff. For the purposes of this plan, the average paved shoulder width was measured for each section of roadway. Roads with on-street parking were not included in this analysis, nor were gravel shoulders. This analysis does not take into account the condition of the pavement. The shoulder width was then compared to the posted speed limit for the roadway. It should be noted that the posted speed limit is not the only relevant factor when determining the required width of a bike shoulder. Topography, functional classification of the roadway, traffic volume and mix, and sight distance are all other factors which can influence the appropriate bike shoulder width. Posted speed was chosen as the analysis method for this plan to facilitate the GIS analysis.

The results of this analysis are shown in Map 3, which indicates that the majority of priority roadways do not have current sufficient width to meet the wide shoulder Design Standard. It is crucial to note that lack of shoulder width does not imply that a roadway is inherently unsafe or unsuitable for use by cyclists. The intent of this mapping exercise was to determine which, if any, roadways could currently meet (or come close to meeting) this design standard. This information can be useful in helping roadway owners determine the scope of work required to create or enhance bicycle facilities in the future.

* Op Atty Gen (Informal) No. 99-19
http://www.ag.ny.gov/sites/default/files/opinion/I%2099-19%20pw.pdf

Map 3: Shoulder Width Analysis



Note: Road sections with on-street parking not included in analysis.

Bicycle Facility Improvement Process

The priority network identified in this plan is intended to serve as a guide for the location of bicycle facility improvements. However, several other factors will play an important role in the timing and selection of projects which further this plan. These are listed below.

- Funding availability. As of the date of this report, traditional A/GFTC fund sources for bicycle facilities are very limited and highly competitive. However, funding through the NYS Coordinated Funding Application process or other sources may prove to be viable for bicycle projects until such time as transportation funds through A/GFTC are increased.
- Complete Streets/Integration with other transportation projects. Given the current funding restrictions facing all aspects of transportation, combining vehicle and bicycle improvements in the same project may be the most efficient and effective course of action. Since New York State recently enacted Complete Streets legislation (see page 20), it is likely that bicycle facilities will become a more prominent element in the design and construction of roadways at the State and County level. In addition, there may be opportunities to create or improve a bicycle facility during a local roadway or bridge project in the future, regardless of the priority level assigned as a part of this plan. Local agencies should take advantage of these opportunities as they arise.
- Target Cyclist. Cyclists can span a wide range of experience levels and skill. Experienced cyclists may feel more comfortable using certain types of bicycle facilities than do children or less-experienced adults. This plan does not differentiate between types of cyclists, as the goal is to encourage cycling for everyone. However, the desire to accommodate a wide range of cyclists should be balanced with the benefits of providing a facility where none currently exists, even if the facility may not be the most comfortable for every cyclist. This balance should be informed by factors such as proximate land uses, location of the proposed facility, and physical constraints of the roadway/trail area.

Is a dedicated bicycle facility needed?

Unless prohibited by law, bicycles are allowed to travel on any public roadway. Although the focus of this plan is on providing facilities which will make bicycle travel safer and more comfortable, there are situations in which an existing roadway may represent an adequate facility for bicycles, without the need for a dedicated facility such as a bike lane.

These include:

- Minor roads with low traffic volumes (> 1,000 vehicles per day)
- Low-speed roads, such as within neighborhoods
- Rural roadways with adequate sight distance
- Roadways with no history of bicycle accidents

Off-Road Facilities

In some cases, there may be an opportunity to provide an off-road facility, such as a multi-use trail. This option usually requires acquisition of right-of-way, which drives costs up. However, given that multi-use trails can sometimes be funded through alternative grant sources (see page 33), it may sometimes be more feasible to provide an off-road connection than to improve a roadway. However, the potential for increased costs and decreased connectivity must be weighed in this decision.

To further facilitate the decision-making process, a Bicycle Facility Improvement Process has been developed. The first step in that process is to select the appropriate Design Standards for the roadway in question. Not every roadway will require a dedicated bicycle facility. Roads with very low traffic volumes, for example, may operate adequately as bicycle facilities without any physical alterations. The next step is to determine how additional improvements, if required, can be funded and constructed. The flow chart on page 17 is intended to help guide this process. Factors such as existing pavement width, the feasibility of off-road connections, and available funding programs are all considered.

This process anticipates that most roadway owners would require that bicycle facilities are largely consistent with the design standards prior to designation as a bike route; however, this is not prerequisite. The designation itself may be an internal process, or may be at the behest of a separate group. For example, the WCS&QBO recently petitioned the Town of Queensbury to designate several roadways as bike routes; the Town Board passed a resolution designating the roadways as this plan was being drafted. This process could be replicated for any town in the A/GFTC region. Similarly, this group, or any local municipality, may choose to petition roadway owners to designate their roadways as bike routes.

New York State maintains a separate system of bike routes, designed to encourage long-distance connections across the state. However, local bike route signage may be added along State roadways with appropriate permits and maintenance agreements. An example of this is the Saratoga County Heritage Trail, which is located along NYS Routes 9 and 197 in the Town of Moreau.

START: For all proposed bicycle routes, determine whether dedicated/ improved bicycle facilities are warranted and desirable*

Yes

Can the bicycle facility be created through re-striping, roadway stencils, or shared-lane markings?

No

- Designate roadway as a Bike Route; add signage

No

Pavement Width Alteration Needed

Yes

Is the roadway scheduled for re-paving or other capital improvement which involves re-striping the roadway?

Is there a demonstrated history of bicycle accidents?

Yes

- Restripe roadway as part of preservation project
- Designate roadway as a Bike Route; add signage
- Ensure facility will be maintained, if necessary

No

Yes

- Pursue funding for capital improvement through HSIP funding
- Construct HSIP project
- Designate roadway as a Bike Route; add signage

No

Could an off-road facility feasibly be substituted?*

Yes

- Pursue funding for multi-use trail through TAP, MTC, or CF funding
- Ensure facility will be maintained, if necessary
- Acquire ROW (if needed) and construct trail

No

- Pursue funding for capital improvement through TAP, STP, MTC, or CF funding
- Construct facility
- Designate roadway as a Bike Route; add signage

Note: See sidebar on page 16

Key:

TAP = Transportation Alternatives Program

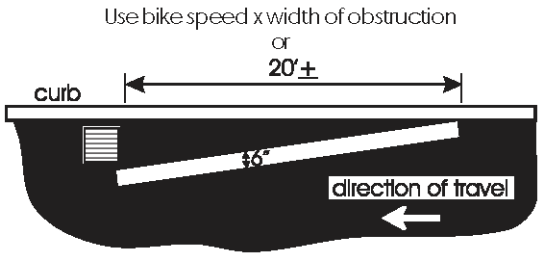
STP = Surface Transportation Program (for Beyond Preservation projects)

MTC = Make the Connection Program

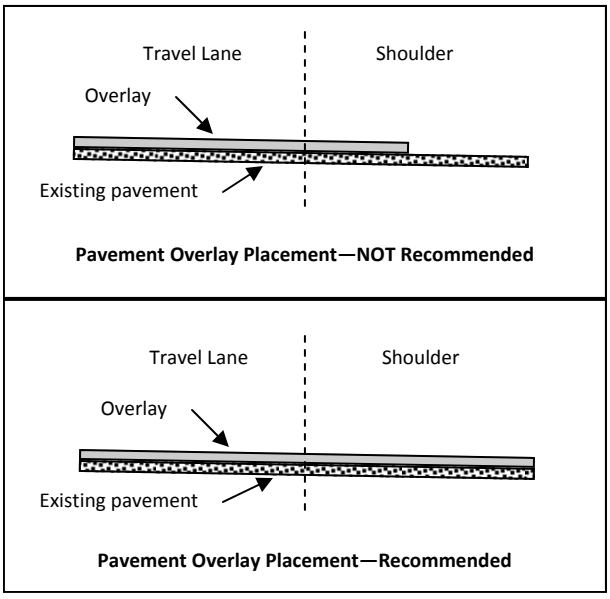
CF = NYS Consolidated Funding Solicitation

HSIP = Highway Safety Improvement Program

Top: Grate pattern not bike-friendly
Bottom: Bike-friendly grate (photos courtesy of ped-bikeimages.org)



Above: MUTCD standard for individual hazard striping



Other Bicycle Improvements

There are many opportunities to pursue small-scale improvements which could also improve the biking experience in the A/GFTC region. These "spot" improvements address issues which may not require significant funding to complete. Several examples are included below.

Drainage grate pattern

The direction of the grating pattern on storm drains is an often-overlooked detail. Grate openings which run parallel to the travel direction can cause havoc for thin bicycle tires. Ideally, grates should feature a "bike-friendly" pattern. If this is not feasible, the grate should be situated so that the pattern runs perpendicular to the travel direction.

Individual hazards

Potholes, cracks, and sudden changes in grade near utility access points and drainage grates can be difficult for cyclists to maneuver, especially at night. In the short term, pavement markings as specified in Chapter 9C of the MUTCD can help alert cyclists that a potentially hazardous condition exists. These hazards can then be eliminated or minimized as the appropriate roadway or utility project is undertaken in the future.

Pavement overlays

Even if no re-striping or widening is called for in a paving project, there may still be good opportunities to improve conditions for cyclists. Ensuring that the seam of the pavement is properly feathered and does not occur in the middle of the shoulder, will provide a smooth, regular surface for cyclists.

Roadway sweeping

Patches of gravel, especially on corners, can pose a threat to cyclists. With the help of the cycling community, it may be possible to identify areas where significant gravel accumulation is hampering safe cycling. Targeted road sweeping can help to reduce the potential hazards.

Bicycle Racks

Although some communities require provision of bicycle racks during project development approval, it can still be difficult for cyclists to find a safe place to lock their bike. Bike racks should be provided near public buildings such as schools, municipal centers, and post offices, as well as in public parking areas. Commercial businesses and employment centers can also provide bike racks as a service to their customers and employees.

PEDESTRIAN IMPROVEMENTS

Although creating and maintaining dedicated infrastructure is often the primary goal when considering pedestrian issues, reducing barriers can also make a positive impact. Typical barriers to pedestrian transportation include inadequate space, facilities that fail to connect logical termini, and the proliferation of land use patterns and street designs that emphasize motor vehicle travel. High traffic and truck volumes also can deter pedestrian mobility.

Within the A/GFTC area, there are a variety of pedestrian issues to address. The City of Glens Falls and most of the area's villages and hamlets were built prior to the automobile era. In these downtown areas, the primary emphasis should be on maintaining and preserving the sidewalk networks that already exist, particularly along major streets and near schools, parks, and commercial districts. The second priority is to consider pedestrian-motorist interaction at intersections and major destination points. Finally, where warranted, connections need to be established between existing pedestrian facilities and areas of new development.

In some of the region's suburban areas, the pedestrian provisions are not sufficient to meet demand. Commercial areas are often designed as a singular destination and do not include connections to adjacent developments. In these areas, the emphasis should be on establishing a continuous pedestrian network throughout commercial developments. New residential developments should anticipate and consider pedestrian activity. Where demand exists, improvements should be made to connect separated neighborhoods with one another.

Much of the A/GFTC region is rural. Although these areas are not often associated with heavy pedestrian activity, there is nonetheless a need to ensure safe, accessible accommodation, especially near clusters of pedestrian generators and destinations. Roadway lighting, shoulder width, crosswalks, and small-scale infrastructure improvements can all be key to making sure that, when people walk in the rural areas, they can do so safely and comfortably.

Pedestrian Facilities: Policies and Legislation

There are several federal, state, and local laws and policies which affect the provision, location, and design of pedestrian facilities.

The Americans with Disabilities Act

The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination on the basis of disability. Under ADA, buildings and facilities are to be designed and constructed to provide accessibility to people with disabilities. This law applies to State and local government facilities as well as places of public accommodations. In general, ADA focuses mainly on building facilities and on sites, such as parking lots. ADA addresses certain features common to public sidewalks, such as curb ramps. These standards are applied to construction or alteration of buildings and facilities.

Pedestrian Accessibility and Roadway Alterations

Both ADA and PROWAG are triggered by either construction or alteration projects. In transportation terms, the definition of "alteration" is an important consideration. According to joint Department of Justice/US Department of Transportation technical assistance, alteration is defined as "a change that affects or could affect the usability of all or part of a building or facility. Alterations of streets, roads, or highways **include activities such as reconstruction, rehabilitation, resurfacing, widening, and projects of similar scale and effect.**"Examples include, but are not limited to: addition of a new layer of asphalt, reconstruction, concrete pavement rehabilitation and reconstruction, open-graded surface course, micro-surfacing and thin lift overlays, cape seals, and in-place asphalt recycling. Since resurfacing of streets constitutes an alteration, it triggers the obligation to provide curb ramps if it involves work on a street or roadway spanning from one intersection to another, and includes overlays of additional material to the road surface, with or without milling.

Maintenance activities, such as filling potholes, joint crack repairs, crack filling and sealing, or pavement patching, do not constitute an alteration.

For more details concerning roadway alterations and ADA, see:

http://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta.cfm

The standards used by NYSDOT for the design and construction of all Department projects are prescribed within the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG). NYSDOT requires that all pedestrian-related improvements conform to ADAAG standards.

Transition Plans

To implement ADA, most public agencies are required to complete a transition plan. This is intended to set forth the agency's plan for bringing public facilities, including sidewalks, into compliance with federal pedestrian design standards. Transition plans can reduce liability related to ADA non-compliance claims, as long as the agency is in the process of implementing the plan. Elements of the plan include an inventory of physical conditions, the methods that will be used to make the facilities accessible; the schedule for upgrading pedestrian access; and naming the official responsible for implementation of the plan.

A/GFTC is committed to assisting municipalities with the creation and implementation of transition plans. Technical assistance is available to perform data collection, such as for the required inventory of physical obstacles, which may be difficult for a local municipality to perform on its own. In addition, funding programs such as the Make The Connection grants, can be used to bring facilities into compliance with ADA, thereby implementing transition plans in the local municipality.

Public Right-of-Way Accessibility Guidelines (PROWAG)

Sidewalks, street crossings, and other elements in the public right-of-way can pose specific challenges to accessibility, which may not be fully addressed in ADA. As such, in 2011, the Architectural and Transportation Barriers Compliance Board issued further guidance to address conditions and constraints unique to public rights-of-way. This includes access for blind pedestrians at street crossings, wheelchair access to on-street parking, and various constraints posed by space limitations, roadway design practices, slope, and terrain. The new guidelines will cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. These guidelines are anticipated to be adopted as standards in November 2014.

Complete Streets

A Complete Street is a roadway which accommodates safe, convenient access and mobility of all roadway users of all ages and abilities. This includes pedestrians, bicyclists, public transportation riders, and motorists; it includes children, the elderly, and persons with disabilities.

Complete Street design features include sidewalks, lane striping, bicycle lanes, paved shoulders suitable for use by bicyclists, signage, crosswalks, pedestrian control signals, bus pull-outs, curb cuts, raised crosswalks, ramps and traffic calming measures.

Municipalities with Complete Streets Policies

- City of Glens Falls
- Town of Warrensburg
- Village of Lake George
- Village & Town of Fort Edward
- Town of Lake Luzerne
- Town of Queensbury
- Village of Hudson Falls
- Town of Greenwich
- Town of Kingsbury
- Town of Johnsburg

Complete Streets Legislation and Policies

Governor Andrew M. Cuomo signed the Complete Streets Act (Chapter 398, Laws of New York) on August 15, 2011, requiring state, county and local agencies to consider the convenience and mobility of all users when developing transportation projects that receive state and federal funding. The New York State Department of Transportation (NYSDOT) is working to ensure that its policies and procedures meet the new standards. The initiative presents an opportunity to expand upon existing programs and collaborate with bicyclists, pedestrians, people with disabilities and others to identify best practices and designs for transportation facilities.

It is important to note that the Complete Streets legislation applies to planning, design, construction, reconstruction, and rehabilitation projects. Resurfacing, maintenance, or pavement recycling projects are exempt from the law. In addition, the law only requires that Complete Street elements be *considered* during project development; the law does not guarantee that design elements will be included in the finished project. Specifically, the law does not apply when the any of the following conditions are met:

- use by bicyclists and pedestrians is prohibited by law, such as within interstate highway corridors;
- the cost would be disproportionate to the need as determined by factors including, but not limited to, the following: land use context, current and projected traffic volumes, and population density (Typically, excessively disproportionate is defined as exceeding 20% of the cost of the larger transportation project, but it should be determined on a project-by-project basis);
- demonstrated lack of need as determined by factors, including, but not limited to, land use, current and projected traffic volumes, including population density, or demonstrated lack of community support;
- use of the design features would have an adverse impact on, or be contrary to, public safety.

Local Complete Streets Policies

In addition to the New York State legislation, a number of local municipalities have passed Complete Streets policies. These policies range in applicability from statements which support Complete Streets principles, to revisions in local land use codes which mandate Complete Street design features. The current list of local Complete Streets policies is shown at left.

Pedestrian Design Features

The presence of an adequate and interconnected pedestrian network can reduce the number of trips that need to be made with a vehicle, thus reducing traffic congestion, noise, and pollution. As with bicycle facilities, there are a number of design features intended to promote the safety and comfort of pedestrians. New innovations and design features continue to be developed as communities seek ways to make the pedestrian environment safer and more inviting.

Sidewalks

As the key component of urban pedestrian circulation systems, functional and accessible sidewalks enrich the quality of life in a community. Besides providing a transportation function, sidewalks can also serve as a desirable design element, contributing to the character and strengthening the identity of a community.

Sidewalks are the most common form of pedestrian facility in urbanized areas. Although most people are familiar with the concrete walkways found in city and village settings, there are a number of design considerations which should be taken into account for sidewalk projects. These include:

Above: Traditional concrete sidewalk with wide landscaped buffer. Photo courtesy of pedbikeimages.org

- **Sidewalk width.** The mandated minimum width for sidewalks can, in certain limited circumstances, be as narrow as 4', although 5-6' sidewalks are more common and appropriate for neighborhood environments. Sidewalks of 8-12' in width may be desirable in certain environments, especially busy commercial areas. This extra width can accommodate the heavier pedestrian traffic. A wider sidewalk can also contribute to an active, vibrant community setting, by serving as outdoor seating/retail display area.

- **Landscaping/buffer area.** To increase the feeling of security, a buffer area is often included between the walkway and street. This strip can be landscaped or paved, and also provides space for street lights, utility poles, trees, and other amenities like benches, signage, and mailboxes. If this area is to contain landscaping, it is crucial that enough soil volume is provided to maintain the health of plant material as well as to prevent pavement buckling. For sidewalk buffers that are to contain street trees, a minimum width of 6' is recommended. The planting area can be finished with turf, gravel or mulch, or pavement types which allow water to percolate into the soil,

such as permeable pavement or concrete bricks. Solid, non-permeable pavement is not recommended for use over street tree buffers unless structural soil or other methods are used to promote tree root health and prevent pavement buckling.

- **Paving material.** Concrete is the most common material used for sidewalks, and is generally recommended for urbanized environments. However, other materials can also be used, provided the pavement meets PROWAG standards for a stable, firm, and slip-resistant surface. Highly textured pavement, such as stamped concrete, is recommended only as an accent material and should not be used as a primary material on pedestrian access routes, since it can cause difficulties for some wheelchair users. Asphalt is not generally recommended for urbanized environments, especially in situations in which the asphalt walkway will adjoin concrete walkways or curbs, as this combination can increase maintenance due to settling of the pavement material. However, in more suburban or rural areas, especially adjacent to non-curbed roads, asphalt may be an adequate alternative sidewalk material.
- **Sidewalk replacement.** In many cases, a project involves replacing an existing sidewalk. It is important to consider that the new sidewalks will need to meet ADAAG and other applicable standards. This may result in wider sidewalks or a different paving material than was used previously. Existing vegetation, signage, and utilities will also have to be taken into account.
- **Sidewalk retrofits.** When new sidewalks are added to an existing roadway, which commonly occurs in suburban and rural environments, other factors come into play. The available right-of-way is usually the most important consideration, as this affects the sidewalk width and location. In addition, the roadway may have curbs or open drainage, which affect the placement of sidewalks. In suburban and rural areas, curbs are not typically used, and stormwater runs freely to the side of the road, often collected in ditches or swales. These stormwater features can take up a large portion of the available right of way, which reduces the space available for sidewalks. In addition, it can be costly to alter the slope, width, and surface/sub-surface material of swales, adding to the potential cost of sidewalk projects. Finally, it is important to consider that installing new sidewalks along existing roadways may be a controversial topic for adjacent landowners.

What is Structural Soil?

Structural or gap-graded soil is a mixture of sized gravel and soil, which meets both engineering requirements for load-bearing as well as providing soil volume for tree root growth. This mixture can be used under pavement to provide more useable space for trees in urban environments.

Why use Structural Soil?

Trees in urban environments are subject to a number of environmental stressors, including deicing salts, soil and air pollution, heat loads, and drought. However, the most significant issue is inadequate or compacted soil. In addition to severely limiting the health of the tree by inhibiting root growth, this can lead to shallow root penetration, which causes pavement buckling.

Using structural soil can alleviate these conditions by providing adequate soil for tree roots to penetrate. In turn, this creates a healthier tree and reduces maintenance needs for adjacent sidewalks or other pavement.

Pedestrian Crossings

Many pedestrian trips involve a street crossing at some point, whether at an intersection, a midblock location, or a commercial drive or parking area. Unlike sidewalks, crossings are spaces shared by vehicles and pedestrians. As such, the potential for pedestrian/vehicle conflicts is much higher than in strictly pedestrian facilities.

There are a number of criteria to consider when addressing the need for pedestrians to cross vehicular travel lanes. These include volumes of pedestrian and vehicle traffic, vehicular speed, intersection configuration and sight distances, school zones, facilities and services for the elderly, and surrounding land use. Although most crossings are located at intersections, midblock crossings are also sometimes called for. (Details concerning the specifics of crossing warrants are discussed in the subsections below.) In some cases, such as low volume roadway intersections, there may be no need to provide a formal pedestrian crossing treatment at all. However, in many urban or commercial environments, formal crossings are beneficial or necessary. Safety is also a crucial consideration. Crossings should never be located in places where sight distance or other physical conditions would put pedestrians at risk.

Once the need for a crossing is determined, there are factors which influence the design of a crossing. Again, in very general terms, the main consideration is to allow pedestrians to cross the street safely. There are many options which affect this issue, discussed in greater detail below. In some cases, it is beneficial or necessary to combine two or more of the potential crossing treatments. Relevant regulatory guidance is noted where applicable.

Above: Marked crosswalk. Stripes have been located to avoid wheel paths, which reduces maintenance. Photo courtesy of pedbikeimages.org

Marked Crosswalks

The pedestrian right-of-way across vehicular travel lanes is known as a crosswalk. According to AASHTO, "An intersection crosswalk is defined as the extension of a sidewalk or shoulder across an intersection, whether it is marked or not.... It is legal for a pedestrian to cross the street at any intersection, even if no crosswalk is marked, unless crossing is specifically prohibited." (AASHTO, July 2004) Pedestrians and vehicles must follow applicable right-of-way requirements in these locations, regardless of whether a crosswalk is defined by pavement markings.

Detectable Warnings

Detectable warning surfaces consist of small truncated domes built in or applied to a walking surface that are detectable underfoot, and are intended for pedestrians who are blind or have low vision. On pedestrian access routes, detectable warning surfaces indicate the boundary between a pedestrian route and a vehicular route where there is a flush rather than a curbed connection. As such, under PROWAG, they are required to be installed at the following locations on pedestrian access routes:

1. Curb ramps and blended transitions at pedestrian street crossings;

2. Pedestrian refuge islands;

3. Pedestrian at-grade rail crossings not located within a street or highway;

There are also requirements for detectable warnings at transit boarding stations (See PROWAG for more details).

In addition to providing a tactile cue, detectable warning surfaces must have a color contrast from the surrounding pavement (light-on-dark or dark-on-light). Dark Gray is the default color, as it provides good contrast with portland cement concrete sidewalks and is widely available. White or Safety Yellow are recommended colors for use on asphalt concrete or other dark surfaces. For more information on appropriate colors for detectable warning surfaces, see NYSDOT Highway Design Manual, chapter 18.

In many cases, it is beneficial or necessary to provide pavement markings or other treatments which designate the crosswalk boundaries, with a visual and/or tactile pavement treatment. Marked crosswalks can help channel pedestrians to specific locations and improve pedestrian access and safety at night, while serving to warn motorists of the potential for interaction with pedestrians. However, marked crossings can also create a false sense of security for pedestrians, who may assume that the crosswalk markings guarantees motorist compliance with right of way regulations.

A number of factors must be considered, prior to installing a marked crosswalk, including volumes of pedestrian and vehicle traffic, vehicular speed, intersection configuration and sight distances, school zones, facilities and services for the elderly, and surrounding land use. NYSDOT sets guidelines for state-owned roads, and notes that marked crosswalks should be considered at the following: (NYSDOT, 2013)

- Locations that feature pedestrian-actuated traffic signals
- Established school crossings
- Traffic signals located within central business districts or other areas where crossing pedestrian volumes are significant
- Areas that feature development on both sides of a highway, resulting in concentrated pedestrian volumes crossing the highway where no intersection exists
- Signal-controlled entrances to commercial properties

Curb Ramps and Blended Transitions

According to the most recent guidelines for pedestrian facilities in the ROW, curb ramps, blended transitions, or a combination of curb ramps and blended transitions must connect the pedestrian access routes at each pedestrian street crossing. Typically, two curb ramps are provided at each street corner—one for each crosswalk. In places where existing physical constraints prevent two curb ramps from being installed, a single diagonal curb ramp is permitted. However, single diagonal ramps can be confusing for the visually impaired, as the curb ramp is not entirely aligned to the crosswalk. This lack of directionality could create a situation where pedestrians walk diagonally into the intersection, rather than into the crosswalk. As such, diagonal ramps should be used only where no other option is feasible. Detectable warnings are to be employed as required (see sidebar).

Midblock Crosswalks

Where there is significant pedestrian crossing demand, crosswalks can also be marked at midblock locations. AASHTO has included a checklist of criteria for considering a midblock crossing: (AASHTO, July 2004)

- The location is already a source of a substantial number of midblock crossings.
- Where a new development is anticipated to generate midblock crossings.
- The lane use is such that pedestrians are highly unlikely to cross the street at the next intersection.
- The safety and capacity of adjacent intersections or large turning volumes create a situation where it is difficult to cross the street.
- Spacing between adjacent intersections exceeds 200m (600ft).
- The vehicular capacity of the roadway may not be substantially reduced by the midblock crossing.
- Adequate sight distance for both pedestrians and motorists.

Above: Midblock crossing with refuge island and signage. Photo courtesy of ped-bikeimages.org

Since motorists are more likely to expect pedestrians at intersections, midblock crossings require special considerations above and beyond pavement markings. Midblock crossings should always be used in conjunction with pavement markings and warning signs that concur with the standards of the MUTCD. Additional treatments such as raised crosswalks and HAWK signals are discussed in greater detail below.

Care must be taken when locating midblock crossings. Defining too many locations where pedestrians are encouraged to cross roadways can cause unwanted motor vehicle circulation delays and be counterproductive to the aim of channeling pedestrian traffic. Overuse of pavement markings also may lead to a general disrespect of intended crossing facilities by motorists.

It is also important to consider pedestrian behavior. Many pedestrians will cross the street mid-block whether a formal crosswalk is provided or not, if the perception of convenience and safety is sufficient. In certain cases, it may be necessary to install features that discourage pedestrians from crossing mid-block , such as areas with inadequate sight distance or other safety concerns. Although rarely needed, vegetation, fencing, or other barriers may be installed to channel pedestrians to appropriate crossing locations.

Minimizing winter maintenance conflicts

One common objection to curb extensions is the perception of increased burden on winter maintenance crews. In addition to careful design of the width and geometry of the bulbout, the potential for conflicts with snowplows can be minimized through a variety of methods, including:

- Flush curbs and /or pavement
- Tapered front ends
- Vertical delineators to alert snowplow operators to lift their blades if needed

In addition to conscientious design, additional training for maintenance crews may be beneficial.

Above: Landscaped refuge island. Photo courtesy of pedbikeimages.org

Curb Extensions

Curb extensions, also known as neck-downs or bulbouts, are designed to minimize pedestrian exposure to traffic by creating shorter crossing distances. Curb extensions can also increase the likelihood that a pedestrian wanting to cross will be seen in addition to improving visibility of traffic for the pedestrian by allowing the pedestrian to safely move beyond a row of parked cars before crossing. These features also serve to calm traffic, by reducing visual width of the street (for midblock crossings) or tightening the turning radii of the intersection. The Highway Design Manual recommends that curb extensions be used only on low-speed streets that feature parking lanes. (NYSDOT, 2013) Used in absence of parking lanes, curb extensions can create conflict with motor vehicle traffic and bicyclists, and also can complicate transit operations.

Curb extensions are associated with certain infrastructure and maintenance issues. The drainage patterns of a roadway can be changed by creating curb extensions, which may require additional stormwater infrastructure. This is especially important to consider in cases where the extensions are installed independently of a larger roadway reconstruction. Curb extensions are also sometimes controversial because of a perceived conflict with snow removal. Although curb extensions do require some accommodation on the part of maintenance crews, the impacts can be minimized through careful design.

Refuge Islands

Another way to reduce crossing distances is to incorporate pedestrian refuge islands. Refuge islands are appropriate where it may be difficult for pedestrians to cross the entire roadway all at once. Refuge islands allow pedestrians to cross one segment of the roadway at a time by providing a safe location (removed from travel lanes) at an intermediate point within the roadway crossing. Islands may be defined by paint, curbs, guideposts, and other devices. These facilities are appropriate in environments that feature 50 ft (15m) or wider crossings or more than four travel lanes. At unsignalized crossing locations, refuge islands can actually reduce pedestrian crossing times by allowing for one direction of traffic to be negotiated at a time, potentially shortening the time between gaps in traffic. Refuge islands must be accessible to all pedestrians, and are ideally designed with an at -grade crosswalk passage (as opposed to a ramp) to aid those users with disabilities.

Above: Raised crosswalk. Photo courtesy of pedbikeimages.org

Pedestrian Hybrid Beacons

The pedestrian hybrid beacon (also known as the High intensity Activated crossWalK (or HAWK)) is a pedestrian-activated warning device which can be used at midblock pedestrian crossings. The pedestrian hybrid beacon is an intermediate option between the operational requirements and effects of a rectangular rapid flash beacon and a full pedestrian signal. It provides a positive stop control in areas without the high pedestrian traffic volumes that typically warrant the installation of a signal.

Pedestrian hybrid beacons should only be used in conjunction with a marked crosswalk. In general, they are appropriate for locations in which gaps in traffic are not adequate to permit pedestrians to cross, if vehicle speeds on the major street are too high to permit pedestrians to cross, or if pedestrian delay is excessive.

Currently, pedestrian hybrid beacons are not widely deployed in New York State. Since this is a still-unfamiliar traffic control device to many, extensive educational outreach to the public is needed prior to implementation, to reduce confusion for drivers and pedestrians.

Raised Crosswalks

In certain locations, raised crosswalks can serve to slow traffic and increase pedestrian visibility. By extending the crossing at the same grade as the adjacent sidewalks, the raised crosswalk acts as a speed hump. This type of facility must be installed in conjunction with a marked crosswalk and is suitable only for low-speed local streets which are not emergency routes. In addition, if the raised crosswalk is installed independently of a larger roadway project, drainage and stormwater collection may be impacted.

Traffic Signals

Pedestrian signals are traffic signals which indicate when it is appropriate to cross the street. There are two main types of pedestrian signals: fixed-time and pedestrian actuated. In fixed-time signals, the pedestrian phasing is pre-timed and runs concurrently with the vehicular signal. The pedestrian walk/don't walk signal indications are therefore automatically displayed in conjunction with the green signal for vehicles. These types of signals are appropriate at intersections where the existing signal phasing provides ample opportunity for pedestrians to cross the street.

Pedestrian-actuated signals alter the timing of the traffic light to accommodate pedestrian activity, either by advancing the signal phase cycle, increasing the green time of the light, or providing brief all-red phases to reduce conflicts with vehicle turning movements. Actuation of these signals is most commonly achieved through a pushbutton. However, research indicates that many pedestrians ignore the button or believe that the button is malfunctioning if there is a significant delay (Hughes, 2001). AASHTO notes that pushbutton usage can be as low as 25-33%. Automated pedestrian detection devices use microwave or infrared technology to sense waiting pedestrians and then send a signal to switch to a pedestrian WALK phase automatically. These devices have been shown to significantly reduce the number of vehicle-pedestrian conflicts at intersections. (Hughes, 2001)

It is also important to consider the needs of the vision-impaired. Accessible pedestrian signals use audible or tactile methods to transmit the WALK signal to vision-impaired pedestrians. These are most helpful in locations where the sounds of parallel or perpendicular traffic do not provide sufficient audible cues, such as midblock crossings or other locations.

Multi-Use Paths

The discussion for pedestrian facilities is usually focused on sidewalks and pedestrian crossings. However, in some environments, the most appropriate pedestrian facility is a multi-use path. These facilities can provide travel options for cyclists and pedestrians and are not necessarily dependent on the road network. This can be useful in rural and suburban environments where the roads do not lend themselves to a traditional curb and sidewalk treatment. (See page 12 for discussion about the design of multi-use paths.) Multi-use paths are also desirable to many cyclists and pedestrians because vehicle use is restricted.

Pedestrian Facilities in Suburban and Rural Environments

Sidewalks and other pedestrian facilities are often provided as a matter of course in an urbanized area, such as a traditional downtown or city/village neighborhood. But there are many "gray areas" in the A/GFTC region which may also benefit from the provision of some pedestrian accommodation. These include:

Isolated suburban neighborhoods. Many communities have residential developments which are not adjacent to pedestrian generators such as commercial areas or schools. However, that doesn't mean people stop walking, either for exercise, as a social activity, or to and from bus stops. Providing sidewalks in these areas confers several benefits. Some suburban developments have streets with pavement widths exceeding 30'. This can lead to higher vehicle speeds, increased stormwater runoff, and increased municipal maintenance cost. In areas in which all homes have double-wide driveways, on-street parking is not utilized on a consistent basis, and extra roadway width is not always necessary. Providing two 11' lanes and sidewalks with tree buffers minimizes all of these impacts, in addition to creating an attractive and safe place to walk.

Hamlet areas. Much of the A/GFTC planning area is rural. In these areas, there are often small pockets of commercial or residential uses clustered together. Since these places can act as a focal point for the community, pedestrian activity should be accommodated. AASHTO recommends that these rural clusters or hamlets may receive the same consideration for pedestrian facilities as more urban areas (AASHTO, July 2004). Even if sidewalks are not warranted, pedestrian crossings should be considered.

Pedestrian Priority Map

This map can be used to determine where pedestrian facilities are more likely to be used

A detailed version of the map can be found online here:

http://www.agftc.org/alternativetransportation.htm

Who should use the Pedestrian Priority Map?

- **Planning Boards,** when reviewing development proposals which may or may not call for pedestrian features
- **Departments of Public Works**, when planning capital improvements
- **Elected Officials**, when deciding whether to appropriate funds for pedestrian improvements and when completing local planning efforts, such as comprehensive plans, downtown plans, and transportation plans
- **A/GFTC Policy and Technical Advisory Committees**, when reviewing applicable pedestrian planning efforts and project proposals
- **NYSDOT staff**, when completing the pedestrian generator checklist

Pedestrian Priority Map

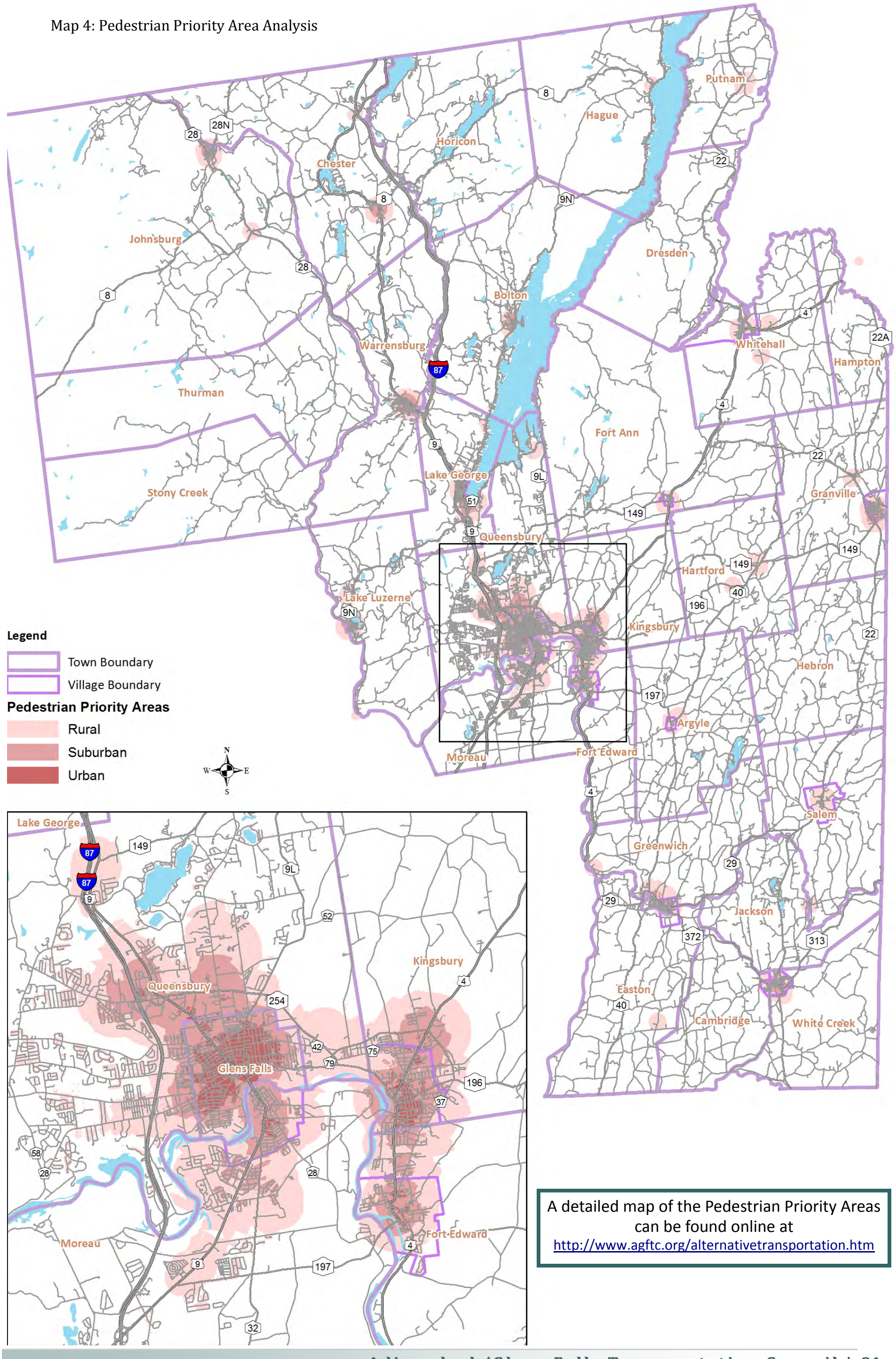
One of the biggest challenges in planning for pedestrian facilities is to know where they should be located within the community. In cases where the infrastructure already exists, the question becomes a matter of priority for maintenance and repair. Many agencies have issued criteria and thresholds for the placement of pedestrian facilities for new development. For example, NYSDOT uses a Pedestrian Generator Checklist to determine if a specific project warrants inclusion of pedestrian facilities. These checklists are useful on a project-by-project basis, but do not address larger pedestrian needs outside of the project site. In addition, these checklists can sometimes provide a narrow picture of the surrounding environment, due to their limited scope.

Communities with limited resources struggle to determine where their pedestrian improvement efforts are most needed. In addition, development patterns often drift across municipal boundaries, creating situations where a portion of a neighborhood or commercial area has sidewalks and the rest does not. A/GFTC has therefore created a Pedestrian Priority Map. This map is not intended to indicate precise locations for pedestrian facilities, but rather to show the general areas in which pedestrian activity would be likely, if facilities existed. This takes into account proximity to community features such as schools, bus lines, pharmacies, groceries, convenience stores, libraries, and municipal centers; housing unit density; and "community core" areas, such as downtowns and hamlet centers, which have a high density of commercial uses.

Each of these factors was weighted to account for relative importance in terms of pedestrian activity. For example, proximity to schools received more weight than proximity to convenience stores, since schools traditionally have higher rates of pedestrian activity among children, considered "at-risk" pedestrians.

This map can be used to determine where pedestrian facilities are more likely to be used. This can be helpful in areas of more recent growth as well as along the thresholds between urban, suburban, and rural areas. The intent is not to mandate that sidewalks be installed in all areas of high demand.

Map 4: Pedestrian Priority Area Analysis



A detailed map of the Pedestrian Priority Areas can be found online at http://www.agftc.org/alternativetransportation.htm

IMPLEMENTATION

Partnerships

The improvements outlined in this plan are extensive, and will take a significant and focused effort to accomplish. In addition, implementation will be at the hands of many different agencies. For on-road facilities, the implementation lead is likely to be the roadway owner. For off-road facilities, a wider variety of lead agencies is possible, such as local municipalities or recreation and open space groups. Any projects which involve acquisition of easements or rights-of-way will also involve the landowners as a key stakeholder.

In terms of maintenance, it can be assumed that on-road bicycle and pedestrian facilities will be the responsibility of whichever agency currently maintains the roadway itself, unless other specific provisions are made. For multi-use trails, there may be partnership opportunities to provide some or all maintenance services. This can take the forms of occasional volunteer events, such as trail-cleaning days, or a more formal maintenance agreement between agencies and groups to perform maintenance.

In addition, local not-for-profit organizations, such as the Feeder Canal Alliance, WCS&QBO, or Creating Healthy Places to Live, Work, and Play may be able to assist in identifying and implementing some of the spot improvements listed in this plan. For example, creating and maintaining an inventory of individual bicycle and pedestrian hazards may be useful. It may also be possible to partner to perform events such as targeted road sweepings or trail maintenance, with help from the local and county DPWs. Sponsored community events would also raise the profile of the organizations and provide an important community education benefit.

Funding Sources

The following funding sources have historically been available for projects which involve bicycle and pedestrian facilities. Not all of these programs are currently active; conversely, new programs may arise which could be applied towards bicycle and pedestrian facilities. In seeking funding sources, it is important to keep in mind the stipulations and requirements of the funding agency. For instance, projects funded under NYSDOT's Transportation Alternatives Program must follow the State's design, bidding, and grant reporting process, which can be very involved.

Program	Granting Agency	On- / Off-Road	Eligible Activities	Local Match
Surface Transportation Program/National Highway Performance Program* (STP/NHPP)	FHWA/NYSDOT	On-Road	Provision of Facilities for Bicycles and Pedestrians (as part of concurrent construction of roadway or bridge	Yes
Transportation Alternatives Program	NYS Department of Transportation (NYSDOT)	Both	Provision of Facilities for Bicycles and Pedestrians (on- or off-road)	Yes
Make the Connection	A/GFTC	Both	Small-scale projects that improve the region's bicycle and pedestrian travel network	Yes
Highway Safety Improvement Projects (HSIP)	FHWA/NYSDOT	Both	Safety improvement projects on any public road or publically owned bicycle or pedestrian pathway or trail.	Yes
National Scenic Byways Discretionary Grants	Federal Highway Administration (FHWA)	On-Road	Construction along a scenic byway of a facility for pedestrians and bicyclists; safety improvements for deficiencies resulting from designation as a Byway	Yes
Consolidated Local Street and Highway Improvement Program (CHIPS)	NYSDOT	On-Road	Local highway projects which can include elements such as: Bike lanes and wide curb lanes; shared use paths, and bike paths within the highway ROW	No
Recreational Trails Program	NYS Office of Parks, Recreation, and Historic Preservation (NYS OPRHP)	Off-Road	Acquisition, development, rehabilitation and maintenance of multi-use trails	Yes
Local Waterfront Revitalization Program	NYS Department of State (NYSDOS)	Both	Implementation of projects listed in a locally adopted Waterfront Revitalization Plan; communities without this type of plan are not eligible to apply	Yes
Adirondack Smart Growth Grants	NYS Department of Environmental Conservation (NYSDEC)	Both	Focused on planning and design projects including: Efficient transportation systems; Main streets, including bicycle and pedestrian access; Public access improvements, including trails	No
Creating Healthy Places to Live, Work, and Play	NYS Department of Health	Both	Small grants available to municipalities to pursue Complete Streets projects or purchase bicycle racks, if community has passed Complete Streets policy	No
Cleaner Greener Communities	NYSERDA	Both	Implementation of regional sustainability projects, including bicycle and pedestrian activities	Yes

*Note: STP/NHPP funding currently constrained by preservation funding targets set by NYSDOT