

III-E. BICYCLE AND PEDESTRIAN NETWORK SYSTEM

A. INTRODUCTION

While recreation has been the primary use for bicycling and walking modes in the past, transportation officials are increasingly recognizing bicyclists and pedestrians as primary transportation modes for everyday activities. Since the early 1970s, bicycling and walking for commuting and travel purposes has been increasing and with recent pushes in combating climate change and promoting energy efficiency, cost effectiveness and health benefits, both of these modes are maintaining, and growing, their foothold as recognized daily transportation modes.

Within the CMMPO region, the existing bicycle and pedestrian infrastructure network can be classified as two types: (1) On-road Accommodations and (2) Long-Distance Bikeways/Trails/Paths.

B. ON-ROAD ACCOMMODATIONS

Much more common than “off-road” accommodations, “on-road” accommodations for bicyclists and pedestrians can be found in all of the 40 communities in the region. Because all of the communities in the region were established prior to the development of motorized vehicles, almost all of the have a Central Business District, town center or downtown that was developed around high-density land uses with a multi-purpose street network. In addition, many neighborhoods outside of the downtown or town centers were built with pedestrian accommodations that connected to other neighborhoods.

B.1 Types of Facilities

Within any given corridor, bicyclists and pedestrians might ideally be provided with more than one option to meet their travel and access. Below are common “on-road” bicycle and pedestrian facilities and accommodations that are typically found in urban and suburban areas:

B.1.1 Shared Lanes



Shared lanes are streets and highways with no special provision for bicyclists. Shared lanes typically feature 12-ft lane widths or less with no shoulders, allowing cars to safely pass bicyclists only by crossing the center line or moving into another traffic lane. In residential areas with low motor vehicle traffic volumes and average motor vehicle speeds of less than 30 mph, shared lanes work well. Where existing lane width is less than 12-ft, additional lane width or lower operating speeds are called for. With higher speeds and traffic volumes, shared lanes become less attractive routes, especially for less experienced riders. Shared lanes do not usually require any special signing for bicyclists. Exceptions to this include situations where:

- Specific destinations or potential alternate routes for bicyclists need to be shown.
- A short gap exists between special bicycle facilities, such as between two trails, and bicyclists require signing to lead them to the next facility.

B.1.2 Wide Outside Lane

Wide curb lanes, or wide outside lanes, can be defined as right-most through traffic lanes that are substantially wider than 12-ft. Most practitioners agree that 14-ft—usually measured from the lane stripe to the edge of the gutter pan, rather than the curb face—is the minimum width necessary to allow a bicyclist and motorist to share the same lane without coming into conflict, changing lanes, or potentially reducing the motor vehicle capacity of the lane. Where traffic speeds exceed 40 mph, and when annual average daily traffic exceeds 10,000 vehicles per day, 15- or 16-foot lanes are



considered desirable. Wide curb lanes have three widely accepted advantages. They can:

- Accommodate shared bicycle/motor vehicle use without reducing the roadway capacity for motor vehicle traffic.
- Minimize both the real and perceived operating conflicts between bicycles and motor vehicles.
- Increase the roadway capacity by the number of bicyclists capable of being accommodated.

B.1.3 Bike Lanes

The American Association of State Highway and Transportation Officials (AASHTO) Guide defines a bicycle lane as:



A portion of the roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes should be one-way facilities carrying traffic in the same direction as adjacent motor vehicle traffic, and they should not be placed between parking spaces and the curb. The recommended width for a bike lane is 5 ft, at least 4 ft of which should lay to the left of the gutter pan seam.

Bicycle lanes are intended to delineate the right-of-way assigned to bicyclists and motorists and to provide for more predictable movements by each. Bike lanes also help to increase the total capacity of highways carrying mixed bicycle and motor vehicle traffic. The impact of marked bike lanes is particularly important for less experienced riders. The lanes offer a designated and visible space for bicyclists and can be a significant factor in route choice. In some cases, bike lanes are painted to improve their visibility.

B.1.4 Shoulder

AASHTO's *Policy on the Geometric Design of Highways and Streets* defines a shoulder as:



“... the portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of the sub-base, base and surface courses.”

Shoulders are also useful as places for bicyclists to ride. In certain situations, adding or improving shoulders is often the best way to accommodate bicyclists—especially in rural areas. In urban areas, wide curb lanes are usually preferable to shoulders for experienced riders and bike lanes are usually preferable for less experienced riders.

B.1.5 Sidewalks

Sidewalks are the most common element of an “on-road” pedestrian network and are the preferred facility used by pedestrians. Sidewalks provide a safe walking area for pedestrians only outside of motor-vehicle traffic. Sidewalks can be constructed of various materials such as concrete, brick, asphalt and stone; however, concrete is the preferred material by many designers due to its flexibility during construction as well as durability to the elements.

Sidewalks should be constructed at a minimum of five feet in width to accommodate two adult pedestrians walking side-by-side; however, the Americans with Disabilities Act (ADA) mandates a minimum width of three feet of unobstructed sidewalk passageway.

A comprehensive pedestrian network provides safe, convenient and pleasant access to various places.

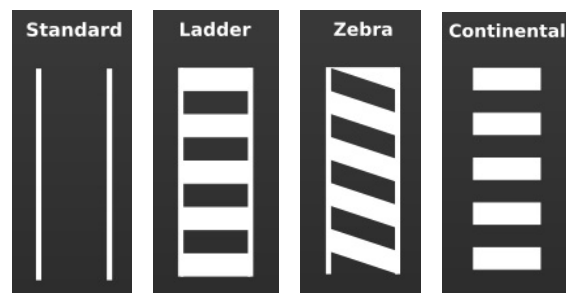
Sidewalks should be located strategically to connect centers of activity including residential and commercial areas, schools, libraries, places of worship, and recreation areas. A well-designed and maintained sidewalk can reduce crashes, as well as encourage more people to walk.



B.1.6 Crosswalks

Crosswalks are used to help designate identified pedestrians crossings to motorists and direct pedestrians to cross streets at safe locations. Factors such as the number of pedestrians likely to cross the street and area locations (e.g. downtowns, neighborhoods, etc.) determine the width and marking type of crosswalks. Markings for crosswalks are typically made as one of three types:

- Standard (parallel bar) design
- Ladder or Zebra design
- Continental design



For a crosswalk to be useful, drivers must be aware of its location and the pedestrian’s need to use the crosswalk. A driver’s sight distance must be taken into consideration when locating crosswalks, as well as set-back stop line and yield line locations. Crosswalks are typically located at corners

of intersections; however, they may also be located between intersections of large blocks (greater than 300 feet in length) to create “mid-block crossings.”

Other variations in crosswalk design include:

Raised crosswalks



Curb extensions



Off-set crosswalks

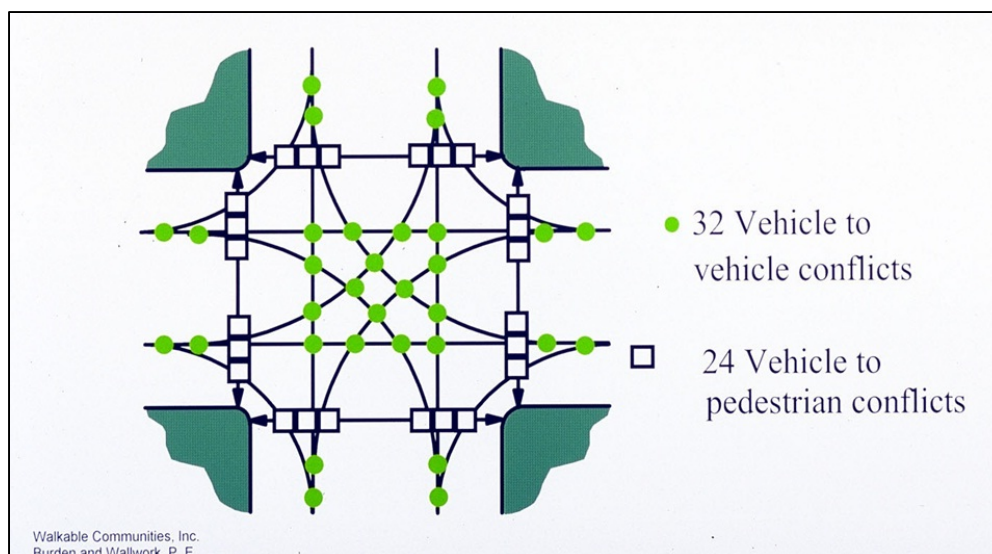


Textured crosswalks



B.1.7 Intersections

While not a type of facility, intersections are important as points of interaction between facilities and are where pedestrians and bicyclists are most vulnerable. Because of the many turning points, there are more potential conflict points at an intersection than on a standard roadway segment. The diagram on page 19 shows the potential vehicle-to-vehicle conflict points, as well as the potential vehicle-to-pedestrian conflict points, as developed by nationally renowned expert Dan Burden of Walkable Communities Inc.



B.1.8 Bicycle Parking

Parking for bicycles is typically limited to specific locations within the region; however, that is changing slowly. Bicycle parking locations, such as racks or lockers, provide a secure location for patrons to leave their bicycles while conducting other activities. Bicycle racks have various designs; however, the three most common types are:



“Dish” racks



“Ribbon” racks



“U-Shaped” racks

The most common rack used is the ribbon rack; however, studies have shown that the “U” rack provides more security and is replacing ribbon racks quickly. All of these racks are made of steel and sometimes include a protective coating of paint or plastic composite over the steel to make them more weather-proof. Lockers, on the other hand, are the most secure facilities for parking bicycles and provide all-weather protection. Most lockers in use currently hold two bicycles and are usually rented out for a fee to the user.



In addition to the standard design racks above, specialty racks that also function as street art are also found in the region. In October 2010, five racks in the shape of bicycles were installed along Chandler Street in Worcester as part of that street’s improvement and repaving project. These racks not only provide a street art component to the neighborhood, but are functional by creating

bicycle parking on along a heavily congested automobile corridor. The racks were purchased and installed by five local business owners and compliment other streetscape improvements such as public benches and planting containers.



Bicycle racks are primarily found on school grounds, some town centers, and transit stations, such as Union Station in Worcester and the commuter rail stations in Grafton and Westborough. Union Station is the only location in the region equipped with bicycle lockers.

B.2 Community Survey of Walking and Bicycling Infrastructure

In 2009, CMRPC staff conducted a visual survey of the existing walking and bicycling infrastructure and accommodations in the city and town centers of the MPO's 40-community region. The purpose of the survey was to acquire an inventory of these facilities within a high density but short distance location and to take a cursory examination of what accommodations exist within the region. Future updates of the survey may include other areas outside of city and town centers, such as dense residential areas or commercial corridors, and may be further supplemented by community meetings and Environmental Justice analyses.

Of the 40 communities in the region, 37 (92.5%) had sidewalks on both sides of the street(s) within the city or town center, two (5%) had sidewalks on one side of the street(s) and one (2.5%) had no sidewalks. Sidewalk width in each of these communities varied due to various factors such as right-of-way availability, previous roadway standards, or inferior replacement or "patching" of existing sidewalk locations. Of the communities with sidewalks, three still had no accommodations for curb ramps, curb cuts or mountable curb connections. Lastly, maintenance of the sidewalks varied from excellent to poor.

C. Long-Distance Bikeways/Trails/Shared-Use Paths

C.1 Types of Facilities

Long distance trails and shared-use paths are separated from motor vehicles and classified as "off-road" accommodations for bicyclists and pedestrians. Names such as "paths", "bikeways", or "trails" are used interchangeably in when describing these facilities. However, there are differences between them:

C.1.1 Paths

A path is a place for pedestrian traffic alone, and is typically not a well-designed place like a sidewalk or trail. Paths are usually unimproved "ways" that were created on foot, mostly for recreational purposes. Most paths follow topography and do not have at-grade or level cross-sections.

C.1.2 Trails

A trail can be used either by foot traffic, bicycles or by motorized vehicles. Trails are usually roadways that are in a primitive condition usually dirt or gravel based, and are also not limited to at-grade or level cross-sections.

C.1.3 Bikeways

A bikeway is for bicyclists only and is typically located on its own separate right-of-way with a level cross section. All bikeways are surfaced ways that must meet rigorous standards for width, grade, pavement and accessibility and typically exhibit a higher rate of speed among the cyclists.

C.1.4 Shared-Use/Multi-Use Facilities

Shared-use or multi-use facilities are where pedestrians and cyclists are expected to share the same route to provide safe, off-road access for more than one user type.

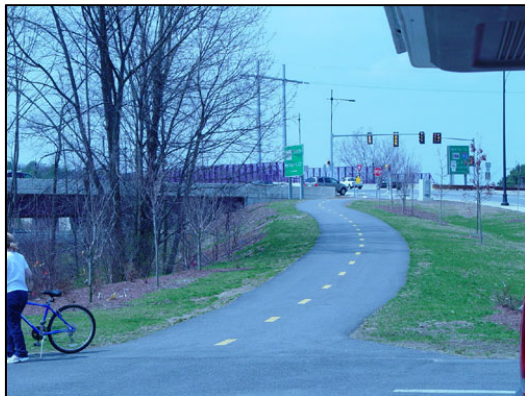
Most bicycle and pedestrian facilities constructed within the United States are shared-use facilities, and this will be the focus of discussion in this plan. The conversion of abandoned and unused rail lines into multi-use trails has been popular throughout the country for quite some time now, and in Massachusetts and the CMMPO region, this trend has been continuing over the last few years. The Northeast Region in general has been slower to develop rail trails than other parts of the nation because railroads were in use later here. Also, some Northeast freight providers have retained their ownership of inactive railroad lines in the hopes that they will become active again in the future. In New England, railroads started closing down in the late 1970s and early 1980s as mills were closed, but in the Midwest, for example, obscure rail lines that served big grain mills and farms starting closing in the late 1960s. There have been 14 rail trails built in Massachusetts and another 65 of these projects are awaiting design or funding.

The Washington D.C.-based *Rails to Trails Conservancy* is an influential body that provides technical assistance to communities and helps promote trails and multi-modal transportation. Though it has moved its Northeast district office from Worcester to Camp Hill, Pennsylvania, it remains quite active in the Central Massachusetts region. They have acted as a catalyst in building political clout for rail trails in the state. Local recreational grass roots groups, such as Wachusett Greenways in Holden, often initiate and raise funds for rail-to-trail projects. In many instances, encouraged by the relative ease of a single acquisition of land from one owner, these types of projects build significant support at the local level.

Within the CMMPO region there are several active and proposed rail-to-trail projects. Most of the trails accommodate not only bicycles but pedestrians and other non-motorized activities, such as in-line skating, cross country skiing, and, in some cases, equestrian use. Maps showing the various trails described throughout this section by subregion are included at the end of this section.

C.2 Existing Multi-Use Facilities in Central Massachusetts

C.2.1 Blackstone River Greenway (Massachusetts Portion)



The most significant bicycle and pedestrian project within the region is the Massachusetts Blackstone River Greenway. This greenway will be part of a larger effort supported by the John H. Chaffee Blackstone River Valley National Heritage Corridor Commission (JHCBRVNHCC) to establish a bicycle route traveling the entire length of the Blackstone River, from downtown Worcester to downtown Providence, Rhode Island. The Blackstone River Greenway will link many of the Valley's significant natural and historic features, which help tell the story

of the American Industrial Revolution. It will also be part of a larger *East Coast Greenway* project supported by the East Coast Greenway Alliance (ECGA), which is envisioned as a series of linked bikeways and greenways between the major eastern seaboard cities from Maine to Florida.

This project is a commuting and recreational trail originating at Worcester's Union Station. The route follows the Blackstone River and canal through the CMMPO communities of Millbury, Sutton, Grafton, Northbridge, Uxbridge, Millville and Blackstone to its southern terminus at the Rhode Island state line. It will connect to the Rhode Island Blackstone River Bikeway, the northern terminus of which is planned for North Smithfield, Rhode Island. The length of the proposed route within Massachusetts is approximately 28 miles and it has been divided into seven segments.

In early 2011, the Massachusetts Department of Conservation & Recreation (DCR) became the lead state agency for the greenway project from MassDOT and will complete the remaining sections of the Massachusetts portion. To date, a two and a half mile portion (Segment 6) of the project is already completed. This segment was constructed as part of the Route 146/Massachusetts Turnpike/Interstate 290 Connector Project. Of the 19.5 miles planned in Rhode Island, 11 miles have been completed and are in use.



As of April 2011, remaining project segments have been amended slightly and are as follows:

- Segment 1 (Massachusetts/Rhode Island Line to Central Street in Millville) – Also currently under design at \$4.8 million. This segment has 11 bridges, however a large viaduct originally included in the project has been taken out and an alternative off-road solution is being worked. This section will also include access to the Millville Canal Locks. This segment of greenway will be a paved surface with asphalt for 2.5 miles and will not be equestrian accessible. Construction will be completed by fall 2012.

- Segment 2 (Central Street in Millville to Millville Road (Route 122) in Uxbridge) – This section will be starting design in fall 2011 after consulting designer is chosen. Design of Segment 2 will be completed by fall 2012, however funding for construction has yet to be identified.
- Segment 3A (Millville Road (Route 122) to River Bend Farm in Uxbridge) – Like Segment 2, design for Segment 3 will likely begin in fall 2011 after consulting designer is chosen, however funding for construction has yet to be identified.
- Segments 3B, 4 and 5 (River Bend Farm to end of Segment 6 (Main Street) in Millbury) – Planning and design work for these remaining segments is currently unscheduled and the alignment passes through the most environmentally sensitive areas of the region. These sections will be designed to full greenway standards and will likely be constructed with a hardened earth surface rather than pavement. Further funding for these segments has not yet been identified for both design and construction.
- Segment 7 (from the end of Segment 6 (Blackstone River Road) in Worcester to Union Station) – Currently under design and will be 80% on-road and is expected to be built in fall 2011/spring 2012

When it was the lead agency for the project, MassDOT created the Blackstone River Bikeway Task Force, consisting of federal, state, local, non-profit and other stakeholders, to allow for monitoring of the project's progress and for regular exchange of information with, and input from, stakeholders. The Task Force met with varying degrees of regularity and success. It has not met in some time due to the change in the lead state agency for the project, however efforts are underway to revamp the Task Force and assist in the development of the greenway under DCR's direction.

In addition to the construction of the Greenway, federal funding has also been obtained for the construction of a new visitor's center in Worcester near Segment 7 that will orient residents and visitors to the history of Worcester and the region and be linked to bike paths, walking trails, boardwalks, and Blackstone River canoe access. The Worcester Blackstone Visitor Center will be a year-round destination for tourist information, education, and recreation. Key components of Worcester Blackstone Visitor Center include:

- Restoration of the Sherwood Diner, a diner with Worcester roots and history and the potential for a 5,000 square foot expansion for visitor services at the Center.
- A great lawn/playing field area allowing for passive recreational activities and events.
- A work yard allowing for environmental education programs and other recreational activities.
- A pedestrian footbridge across the Blackstone River.
- Incorporation of Blackstone Gateway Park and the Blackstone River Bikeway.
- An interpretive necklace abutting the Blackstone River and emphasizing the local, natural, and industrial history of the area.

C.2.2 Massachusetts Central Rail Trail



The Massachusetts Central Rail Trail (MCRT) is envisioned as a non-motorized multi-use trail that will follow the entire length of the 104-mile rail bed right-of-way between Boston and Northampton, passing through 25 communities. Currently over 25 miles of it has been completed, including the 10-mile Norwottuck trail that connects Amherst with Northampton in the western part of the state, and approximately 15 miles of trail in Sterling, West Boylston, Holden, Rutland and Oakham in the central part of the state, with

construction of a tunnel under Route 56 in Rutland planned for 2011 and a ½ mile extension of the trail into Barre planned for 2012. This trail is considered to be the most significant rail trail in southern New England according to the publication *Northeast Greenway Solutions* and is a major component of the Bay State Greenway network in the *Massachusetts Statewide Bicycle Plan*. The development of this trail is also listed as one of seven recommendations in the report, *Commonwealth Connections –A Greenway Vision for Massachusetts*, developed by DCR in partnership with the Appalachian Mountain Club, the National Park Service and a broad group of stakeholders from across Massachusetts.

A priority listed for the Central Massachusetts region in the *Massachusetts Statewide Bicycle Plan* to support this recommendation is to “Create and extend the Massachusetts Central Rail Trail”, which stretches from Ware through Hardwick, Oakham, Rutland, Holden, ending in West Boylston. Wachusett Greenways, a grass roots organization based in Holden that has been the major proponent on this central section, has plans to complete another 15 miles of trail. The total cost of the 30-mile Central Massachusetts section is estimated at approximately \$4,000,000, and to date, Wachusett Greenways has raised just under \$1,600,000.



The proposed eastern segment of the MCRT, also known as the Wayside Rail Trail, will run from the town of Berlin, within the CMMPO region, east through the towns of Hudson, Sudbury, Wayland, Weston, Waltham and Belmont, which are in the Boston MPO region. There is currently a gap between the systems, due in part to the Wachusett Reservoir.

C.2.3 The Titanic Rail Trail

The Titanic Rail Trail is an approximately 80-mile designated multi-use path that is composed of seven individual multi-use paths (five in Massachusetts; two in Connecticut) between the towns of Franklin and Palmer in Massachusetts. The name was chosen in 2008 because of the history associated with the route that many of these trails follow after Charles M. Hays, President of the Grand Trunk Railways had a plan to develop a port connection in Providence, Rhode Island with the Grand Trunk's Central Vermont Railway in Palmer. In 1912, while returning home to Canada from a meeting in London with the Grand Trunk's financial backers, Hays booked passage home on the *Titanic* and was one of the passengers who perished. After his death, work continued on

the route for a few years and the entire grade work in Massachusetts was completed, however bridges, track and ties along with the Rhode Island section were never completed.

The Titanic Rail Trail project is being spearheaded by the Grand Trunk Trailblazers, a grass roots organization based in Sturbridge that has been the major proponent, with assistance provided from the U.S. Army Corps of Engineers and local volunteers. The multiple paths are in various states of development with some portions completed and others in the process of being constructed. The following multi-use paths make up the entire Titanic Rail Trail and are identified by the towns each one passes through. For the purpose of this report, only the Massachusetts portions will be discussed in further detail below:

- The Southern New England Trunkline Trail (SNETT) – Franklin, Bellingham, Blackstone, Millville, Uxbridge, and Douglas, Massachusetts
- Airline Trail - Thompson, Connecticut
- Trolley Line Trail - Thompson, Connecticut
- Perryville Trace (Part of the French River Greenway) – Webster, Massachusetts
- Quinebaug Valley Rail Trail – Webster, Dudley, and Southbridge, Massachusetts and Thompson, Connecticut
- Heritage Trail – Southbridge, Massachusetts
- Grand Trunk Trail – Southbridge, Sturbridge, Brimfield, Monson and Palmer, Mass.

C.2.3.1 Southern New England Trunkline Trail

The Southern New England Trunkline Trail (SNETT), a former rail line, is a designated *National Recreation Trail*. Acquired by the Commonwealth in 1984, SNETT is a 21-mile long, multiple use trail that starts at Franklin State Forest in Franklin and passes through Bellingham and the CMMPO communities of Uxbridge, Millville and Blackstone before ending at the Douglas State Park. It connects to other trails that provide links to Rhode Island and Connecticut. The trail's surface is crushed stone and ballast. It is owned by DCR.

Within the towns of Blackstone and Millville, the DCR right-of-way generally follows the course of the Blackstone River. This section of the SNETT corridor has the potential to be incorporated into the Blackstone River Bikeway as well to become a linear component of the Blackstone River and Canal State Park.



C.2.3.2 Quinebaug Valley Rail Trail

In 2004, the state of Massachusetts purchased an 11-mile stretch of the Providence & Worcester (P&W) Railroad's abandoned right-of-way to be used as a recreational trail. This purchase was preceded by many years of public support led by the Grand Trunk Trail Blazers, a local bicycling club that was organized in 1992 for the sole purpose of advocating the idea of converting the railway into a bike path. The proposed Quinebaug Valley Rail Trail uses the abandoned rail corridor that stretches from Webster's business district, briefly enters Thompson, Connecticut,

then passes through Dudley and into Southbridge. Since that time, an advisory committee made up of local and state representatives has been working to develop a plan.

In October 2010, two sections of the trail were opened to the public through the efforts of that committee and volunteer labor. In Southbridge, 1,700 feet of the town's three-mile section was opened while work continues on the completion of an additional mile to the Dudley town Line. In Dudley, a 2.7-mile portion of the trail was opened to the public with a ribbon-cutting ceremony. The next phase of the project in Dudley will involve removal of railroad ties, trail grading and construction of a second parking lot on the remaining 4.6 miles to the Southbridge town line. The only remaining connection between the Massachusetts communities is the section of right-of-way in Thompson. The P&W is willing to sell that section of right-of-way; however, the state of Connecticut has yet to show interest in purchasing it.

C.2.3.3 French River Greenway Trail

This trail is proposed as a seven-mile multi-use trail which would start at the Quinebaug Rail Trail in East Dudley and extend north to Hodges Village Dam in Oxford. It would also connect to the Midstate Trail in Oxford. The *French River Connection* is a local advocacy group formed in the spring of 2005 to upgrade, protect and increase public awareness of the 26-mile French



River that flows through the communities of Leicester, Auburn, Oxford, and Dudley, and joins the Quinebaug River in Thompson, Connecticut. This group feels that the section of the waterway in Dudley, Webster, and Oxford is particularly degraded, and needs to be cleaned up and protected so that it can be enjoyed.

Funding in the amount of \$250,000 was released to the French River Connection for trail design as part of the Acts of 2006 in the Massachusetts Community Investment

Capital Program. The Connection has also received both donations from private corporations and local non-profits to complete clean-up projects along the proposed trail, as well as to work with landowners to obtain right-of-way permissions for the other portions of the trail. On July 12, 2008, the Perryville Trace portion of the trail was formally opened to the public, and on October 24, 2009, the Leovich Landing paddling access point in Dudley was opened to the public.

Finally, a Community Development Block Grant (CDBG) was awarded for the creation of the French River Park in Webster, which will anchor the Webster Riverwalk with the greenway trail.

C.2.3.4 Grand Trunk Trail

This trail, planned as a facility to provide a cross town trail through the Towns of Sturbridge, Brimfield, Monson and Palmer starts at the U.S. Army Corps of Engineers' Westville Lake area on the Sturbridge/Southbridge town line and runs westward along the abandoned Grand Trunk Railway right-of-way, ending near the center of Palmer.

Currently, a 2.25-mile segment is open to the public now from



Westville Dam to the Ed Calcutt Bridge. In January 2011, a \$51,795 contract was awarded to CME Engineering of East Hartford, Connecticut to provide engineering design and permitting for a $\frac{3}{4}$ mile portion of the Titanic Rail Trail, Grand Trunk Trail section from the Ed Calcutt Bridge to River Road. Of the \$51,795 contract, \$41,440 is being paid from a part of the larger Transportation Enhancements Act (TEA) grant awarded by MassDOT to the town, and the remaining \$10,355 is appropriation from the Betterment Fund.



With the completion of this section of the Grand Trunk Trail, $\frac{1}{2}$ of the approximately 6-mile route will be completed through Sturbridge. The Sturbridge Trail Committee is actively working on several other sections including engineering and design of the 1.2-mile River Lands portion, a grant from The Last Green Valley to complete a $\frac{1}{4}$ mile section of the Fiskdale portion, known as the Trolley Trail, and has applied for grants to complete the remaining $\frac{1}{4}$ mile section out to the East Brimfield Lake Dam. Also planned for the future is three miles of eastward expansion that would reach approximately one mile into Southbridge, resulting in a total trail length of 12 miles. This segment would link to the Quinebaug Valley Rail Trail in Southbridge. Portions of the trail in Brimfield, Monson and Palmer have been constructed, however these trails do not connect as a continuously

improved segment.

The Towns of Sturbridge and Southbridge, the Opacum Land Trust (OLT) and the Army Corps of Engineers are the major champions of this trail. OLT is a Sturbridge based non-profit organization operated by volunteers. The Grand Trunk Trail Blazers, a non-profit group that promotes bike trails and events in the Sturbridge and Southbridge area, has also been an integral part of establishing this trail.

C.3 Planned Multi-Use Trails in Central Massachusetts

C.3.1 Quinsigamond Village Bikeway Spur

This project consists of constructing a new 0.7 mile off-road multi-use path, connecting the northern end of Segment 6 of the Blackstone River Bikeway to McKeon Road Extension in Worcester. The work will include a 10 foot wide paved surface with paved shoulders and a chain link fence to separate users from the river embankment. The path will be adjacent to the Blackstone River between the new Wal-Mart Supercenter parking lot and the river embankment for the southern portion. The path will cross the Blackstone River on an existing bridge structure as an independent path, separated from traffic by concrete barriers, and then continue to McKeon Road Extension. The project is expected to be completed in 2011 at a cost of \$1.25 million.

C.4 Other Trails in the Region

C.4.1 Mid-State Trail

The Mid-State Trail is a long-distance (92-mile) hiking trail that starts in the Montachusett Region on Route 119 at the base of Mount Watatic in Ashburnham. Here the trail connects with the 20-mile long Wapack Trail in New Hampshire. The Mid-State Trail enters the CMMPO

region in Princeton and continues into Hubbardston, which is in the Montachusett MPO region. The trail then reenters the CMMPO region and continues through the towns of Barre, Rutland, Oakham, Spencer, Charlton, and Oxford, ending in Douglas in the Douglas State Forest. This trail currently serves as the central trail spine in the region with much potential for connecting to local and interstate trail networks. Unfortunately only 50% of its land is permanently protected.



The route of the Mid-State Trail links some of the most scenic open space and state parks in Central Massachusetts, providing a greenbelt between public and semi-public properties. It is close to large population centers, yet it is remarkably wild and scenic. The existence of the trail was initially documented around 1926 when maps were published of a 22-mile footpath from Mount Watatic to Mount Wachusett. By the 1950's, the trail had become neglected and overgrown. In 1972, however, the Worcester County Commissioners established an advisory committee on trails with the goal of linking as many properties owned by the State and private organizations as possible. This resulted in the rejuvenation of the Mid-State Trail and in September 1985, the blazing of 85 miles of the Mid-State Trail was completed.

This trail can be enjoyed as a series of day hikes or as a backpacking excursion, as overnight opportunities exist along the trail. Within the CMMPO region, open-faced Adirondack shelters exist at the Rutland State Forest, Moose Hill in Paxton, Buck Hill in Spencer, and at the trail's southern terminus in the Douglas State Forest. Users of the trail are advised to respect the private landowners who have granted permission for hikers to cross their property. The trail is maintained and managed by the Midstate Trail Committee under the guidance of the Worcester chapter of the Appalachian Club.

C.4.2 Ware River Rail Trail

The Ware River Rail Trail follows 15 miles of a former rail corridor that passes through the Montachusett communities of Winchendon, Templeton, Phillipston, Hubbardston and the CMMPO community of Barre. Owned by DCR, this railroad right-of-way has much potential because of two right-of-ways that extend from it into New Hampshire, making it a key link between communities in the northern part of the CMMPO region to southern New Hampshire. Currently an unpaved portion of this right of way is open on an informal basis to the public through the Montachusett towns of Winchendon and Templeton only. DCR hopes to obtain future funding that would be used for surface and intersection treatments, bridge decking and trail signage. According to DCR, local support for this project has grown as more area residents become aware of the trail's potential.

The transformation of another section of rail corridor that follows the course of the Ware River is being planned for a 3.2 mile section that stretches from Ware to Hardwick and New Braintree. This is also part of the course of the overall Massachusetts Central Rail Trail. The major proponent of this recreational trail section, the East Quabbin Land Trust,



has a vision that it will strengthen regional identity, preserve history, and enhance economic opportunities. A corporation, that was created to purchase and hold rail trail lands until local entities can raise sufficient funds, has purchased the 3.5 mile right-of way. The East Quabbin Land Trust is currently raising funds for the estimated acquisition cost of \$80,000.

C.4.3 City of Worcester Trails



In addition to the multi-community, multi-use trails described above, many communities in the region have trail systems that serve as local recreational areas and are primarily located on conservation lands. For ease of reference, communities outside of Worcester have been grouped by subregion.

Through a partnership of the Massachusetts Audubon Society's Broad Meadow Brook Sanctuary, the Greater Worcester Land Trust, and the Regional Environmental Council, with the City of Worcester's Department of Public Works and Parks and Conservation Commission, a network of hiking and walking trails have been developed within the Worcester city limits over the last decade. These trails pass through and connect a number of scenic parklands that feature abundant wildlife, pristine water bodies, and historic sites.

The Cascades, an assemblage of parks and conservation lands (including Cascades Park, Boynton Park, and Cascades West, Cascades East, and Cascading Waters), encompasses over 350 acres of open space that stretches across the city line into the adjacent communities of Paxton and Holden. This area features three miles of walking trails that loop around the cascade falls that give name to the area, vernal pool kettle ponds and a stone amphitheater. The Tetasset Hills Regional Trail, Worcester's largest and wildest network of trails, connects the Cascades Parklands with the Parson's Cider Mill Park, the location of a home that was once part of the Underground Railroad.

The 3.5-mile East Side Trail begins at Cristoforo Colombo Park on Shrewsbury Street, and passes through Bell Park, Green Hill Park, and the Coal Mine Brook conservation holdings, which includes the historic 19th century coal mine.

There are several other trails in Worcester, including the five-mile trail on the Broad Meadow Brook Wildlife Sanctuary and various other parklands. All existing trails in the City of Worcester and adjacent communities are documented on maps in the trail guide "Out-of-Doors in Worcester". It is available online at ww.recworchester.org and a hard copy is available at the Broad Meadow Brook Wildlife Sanctuary, the Ben Franklin Antiquarian Bookstore across from the Public Library, and the Greater Worcester Land Trust, all located in the City of Worcester.



C.4.4 North Subregion Community Trails

C.4.4.1 Barre

The Department of Conservation and Recreation (DCR) owns a substantial amount of land in Barre's eastern corner and many of the properties have existing trails. The Midstate Trail extends through Barre's eastern corner in a north-to-south direction, just east of Harding Hill. The Mass Central Rail Trail does have the potential to extend through South Barre in an east-to-west direction along the old railroad grade near the Ware River, however plans for this portion of the trail have yet to be defined.

C.4.4.2 Holden

There is an existing interior trail system within the Trout Brook Reservation (managed by the Town of Holden) in the town's northern corner. There is also an existing trail loop on the nearby White Oak property, managed by the Massachusetts Division of Fisheries and Wildlife (DFW). The Mass Central Rail Trail extends through the northern half of Holden in an east-to-west direction and there are several trail systems on DCR lands located just south of the Rail Trail. The following roads in Holden have wide shoulders that are suitable for bicycle use: Main Street (Route 122A) south of its intersection with Shrewsbury Street, Route 122A west of Holden Center, and Broad Street (Route 68) from its intersection with Main Street to the Rutland town line.

C.4.4.3 Oakham

There is an extensive trail network within the DCR lands located in the north (near Coldbrook Springs) and the Mass Central Rail Trail extends through this area as well. The Midstate Trail passes through the southeast corner of Oakham, providing access to the Oakham State Forest.

C.4.4.4 Paxton

There is an extensive trail system within Moore State Park, and there are two Conservation Commission properties (the Smith Land and Clarkson Land) that have small trail systems associated with them. Boynton Park in the town's southeast corner also contains a short trail. The Midstate Trail, as currently situated, straddles a section of the Paxton/Spencer town line south of Marshall Street, providing access to the Moose Hill Wildlife Management Area.

C.4.4.5 Princeton

Extensive trail systems can be found within Leominster State Park and Wachusett Mountain State Reservation, and the Midstate Trail provides access to both of these areas. There is a short trail within the Minns Wildlife Sanctuary at Little Wachusett Mountain. There is also a trail that starts at the end of Bigelow Road, crosses the Midstate Trail and extends southeast to Dowd Lane, Ridge Road in Rutland, before eventually reaching the protected lands (City of Worcester) around the Quinapoxet Reservoir. The Wachusett Greenways Guide has designated this on-road trail system as the "Ridge Road Walk." The Town has plans to create a trail through some DCR

property between Route 31 and Coalkiln Road that will eventually link to the existing Thomas Prince School nature trails.

C.4.4.6 Rutland

The Mass Central Rail Trail extends through Rutland in an east-to-west direction. The Midstate Trail extends through North Rutland in an east-to-west direction, providing a link to the extensive DCR landholdings and eventually the trail system within Rutland State Park. The following local roads provide a link from Rutland State Park to the protected lands (City of Worcester) around Pine Hill Reservoir in the town's southeast corner: Ware Road, Prospect Street, Irish Land and Emerald Road. The Wachusett Greenways Guide has designated this on-road trail system as the "Country Roads Walk."

C.4.4.7 West Boylston

The Mass Central Rail Trail extends through the northwest corner of West Boylston. This section of the Rail Trail is one of the most scenic segments and is extensively used by the public. It should be noted that the abandoned portion of Pleasant Street (west of Route 140) will eventually become part of the Rail Trail once the Town completes the necessary site work. Route 140 has recently been widened to include wide paved shoulders suitable for bicycle use. Route 110 also has wide paved shoulders that can accommodate bicycles.

C.4.5 Northeast Subregion Community Trails

C.4.5.1 Berlin

There is an off-road trail that goes around the perimeter of Gates Pond (the land is owned by the Town of Holden). There is a trail system that traverses several properties in the northern corner of town, including: Garfield Woods (owned by the Sudbury Valley Trustees), the Forty Caves property, and the Musche Woods property (both are Berlin Town Conservation Land). Other off-road trails can be found within the Mount Pisgah Conservation Area; the Douglas Conservation Area near North Brook; and the Tyler Conservation Area and Brewer Brook site located off of Pleasant Street.

C.4.5.2 Boylston

Although DCR does have numerous landholdings in Boylston, there are currently no official off-road trail systems in town. There are several access roads on DCR lands that can be used to gain access to the Wachusett Reservoir, however DCR does not publicize their availability to the general public. It should be noted that Routes 70 and 140 through Boylston both have wide paved shoulders suitable for bicycle use.

C.4.5.3 Northborough

There is an off-road trail network associated with the State-owned Northborough Forest area in the northwestern corner of town. This trail network extends through several Town-owned

conservation properties and eventually links up with the Mount Pisgah trails in Berlin. There are also some trails on the State-owned Cold Harbor Brook Dam property, as well as the Town-owned Edmond Hill property and Algonquin Regional High School. An extensive trail system can be found in the southeastern corner of town in the vicinity of Cedar Hill. This trail system is located on several State-owned parcels (DCR and DFW) and a few properties owned by the Sudbury Valley Trustees. This particular trail system extends into Westborough at no less than three locations.

C.4.5.4 Shrewsbury

Although the Town owns a number of permanently protected open space parcels, the only existing off-road trail in Shrewsbury is associated with Dean Park located near the intersection of Main Street and School Street.

C.4.5.5 Westborough

There are numerous hiking trails scattered throughout Westborough at the following locations: the Westborough Reservoir and Conservation Land property; the DCR-owned land just below the Suasco Reservoir; the Westborough Country Club property adjacent to the Suasco Reservoir; the DCR-owned Cedar Swamp property; and the Walkup Reservation owned by the Sudbury Valley Trustees. An extensive trail network can be found on the DFW-owned property to the west and south of Chauncy Lake (with an extension into Northborough), the DCR-owned and DFW-owned properties in the vicinity of Crane Swamp (once again with an extension into Northborough), and the Sawink Farm property in the northeastern corner of town owned by the Sudbury Valley Trustees (yet another extension into Northborough).

C.4.6 Southeast Subregion Community Trails

C.4.6.1 Blackstone

A portion of the Southern New England Trunkline Trail (SNETT) extends through the south of Blackstone in a west-to-east direction, traversing the center of town. There is also a small trail spur that begins in the center of town along the Blackstone River that extends into North Smithfield, Rhode Island.

C.4.6.2 Douglas

There is an extensive trail system throughout the interior of Douglas State Forest and the Douglas Woods, part of which constitutes a section of the Midstate Trail. The Midstate extends through the length of Douglas State forest in a north-to-south direction. A portion of the Southern New England Trunkline Trail (SNETT) can also be found in Douglas, beginning in Douglas State Forest and extending through the town in a west-to-east direction. The SNETT and the Midstate do connect within Douglas State Forest. Part of the SNETT parallels the Titanic Rail Trail idea being investigated by this study.

C.4.6.3 Grafton

Several properties managed by the Grafton Land Trust have trail systems within them, most notably the Brigham Hill Wildlife Area and the Gummere Wood and Marsters Preserve. There are some trails associated with the Grafton Conservation Area at Merriam Road. There is also an off-road trail that links Salisbury Street with Fargo Street in south Grafton, traversing through what is known as the Parker/Macomber Land.

C.4.6.4 Hopedale

There is an existing trail system within the town-owned Parklands conservation area, however the full extent of the trail system has never been mapped.

C.4.6.5 Mendon

There is a trail network within the Quisset Wildlife Management Area that straddles the Mendon/Blackstone town boundary however its full extent has never been mapped. There may be some interior trail systems associated with the Mendon Town Forest in the Chestnut Hill area, but once again they have never been mapped.

C.4.6.6 Millbury

There is a trail system within the Martha Deering Wildlife Management Area (WMA) on the Millbury/Grafton town line. Another trail system can be found within the protected backland of the Elmwood Street School. Trail networks can also be found in the vicinity of the Davidson Bird Sanctuary and the Stowe Meadows Conservation Area in the western part of town, and a small trail system can also be found in the vicinity of Brierly Pond. There are a few trail networks located on private unprotected land, specifically within the area between Park Hill and Howe Reservoir. The Town is currently working on creating the Millbury Branch Rail Trail that will begin along Canal Street in the center of town and extend north until stopping just shy of the Mass Turnpike (this rail-trail will also provide a connection to the trail system within the Martha Deering WMA). The Blackstone Valley Bikeway will extend through Millbury in a north-to-south direction once construction is complete. The Town hopes to forge a link between the Blackstone Valley Bikeway and the Millbury Branch Rail Trail in the future.

C.4.6.7 Millville

The SNETT extends through Millville in a west-to-east direction. There are plans to create a trail spur from the Blackstone River & Canal Heritage State Park that will link to the SNETT. There may be some interior trail networks within the Town Forest, the Elementary School, the abutting King Property and the Iyons Preserve, but they have never been mapped.

C.4.6.8 Northbridge

The Shining Rock Trail network is located in the northeast corner of town, extending out of the town-owned Shining Rocks Conservation Area. There are trails throughout the Upton State

Forest parcels located in the eastern corner of town; however, they have never been fully documented. The Town is planning to create the Northbridge Bike Route that will traverse the western corner of town with an anticipated link to the Blackstone Valley Bikeway at its southern end and a link to the Lake Manchaug Greenway & Wildlife Corridor in Sutton at its northern end. The Blackstone Valley Bikeway will extend through Northbridge in a north-to-south direction once construction is complete.

C.4.6.9 Sutton

Sutton can be seen as the fulcrum that will eventually tie together many of the region's premier trail projects. The largely completed Lake Manchaug Greenway & Wildlife Corridor begins in the vicinity of Purgatory Chasm and Sutton State Forest. The trail extends west, forging a connection with the Midstate Trail. The Midstate in turn connects to the SNETT in Douglas, that will in turn connect to the Blackstone Valley Bikeway in Uxbridge, that will in turn connect to the planned Northbridge Bike Route that will eventually connect back to the Lake Manchaug Greenway, thus completing the loop. A small section of the Blackstone Valley Bikeway extends through the northeast corner of town before extending south into Grafton and Northbridge.

C.4.6.10 Upton

Upton has an extensive series of off-road hiking trails located throughout Upton State Forest which consists of large tracts of protected land scattered throughout town. There is a small off-road trail associated with the municipally-owned Peppercorn Hill property, located north of East Street.

C.4.6.11 Uxbridge

There are several existing and planned trails within the Blackstone River & Canal Heritage State Park in the north of town. The Blackstone Valley Bikeway extends through Uxbridge in a north-to-south direction before linking to the SNETT near the southeast corner of town. The SNETT extends through Uxbridge in a west-to-east direction. There may be trails associated with the Town Forest, Hale Swamp, Legg Farm and Pout Pond, but they have never been documented.

C.4.7 Southwest Subregion Community Trails

C.4.7.1 Auburn

Although the Town contains over 716 acres of permanently protected land (town, state and federal lands), there is only one formal trail system existing on the ground in Auburn. The Conservation Commission manages the 80-acre Gilbert Stockwell property on the eastside of Town, off of Barnes Street. A trail runs through the property, part of which is a former gravel pit. Cross-country skiers have been known to make use of Packachoag Meadows and the Packachoag Park Golf Course, however, no formal trails exist at these sites.

C.4.7.2 Charlton

The Midstate Trail passes through Charlton in a north-to-southeast direction. Much of Charlton's portion of the Midstate consists of off-road trails, although several local roads are also used. An extensive trail system can be found all around the Buffumville Reservoir recreation area. The U.S. Army Corps of Engineers (ACOE) manages the 488 acres of the Buffumville Reservoir, and its trail network is extensively used for a variety of recreational activities. There is also an interior trail system within the Capen Hill Nature Sanctuary (managed by a non-profit), although the system has never been mapped.

C.4.7.3 Dudley

The Town contains roughly 1,800 acres of permanently protected open space, however most of this is farmland protected under the State's Agricultural Preservation Restriction (APR) Program and is not available for recreational purposes. There is an extensive trail system within Ardlock Acres, a 94-acre property south of Indian Road managed by the Dudley Conservation Commission. The Ardlock Acres trail system represents the Town's most extensive trail system open to the general public.

C.4.7.4 Oxford

The Midstate Trail passes through Oxford in a west-to-east direction, primarily along local roads. The Midstate Trail travels the length of Worcester County from Ashburnham near the New Hampshire line to its southern terminus at the Douglas State Forest/Rhode Island border. The Midstate Trail Committee manages the Trail and annually organizes volunteers to keep the trail clean and well marked. There is also an extensive trail system within the Hodges Village Dam property in the center of Town. The U.S. Army Corps of Engineers (ACOE) manages the 874-acre property and its trail network is used extensively for a variety of recreational activities.

C.4.7.5 Southbridge

The Town's primary trail network lies within the Westville Dam Recreation Area, a 93-acre flood control project managed by the U.S. Army Corps of Engineers. The Titanic Rail Trail is the primary trail on this property, and it extends into neighboring Sturbridge on the northern side of the Quinebaug River. The U.S. Department of the Interior designated the Titanic Rail Trail part of the National Trails Network in 2001. The Town has also completed a section of the planned Quinebaug River Heritage Nature Trail south of the Quinebaug River. This portion of the trail links downtown Southbridge with the Westville Lake Recreation Area. Plans are in the works for connecting the Grand Trunk Trail and the Heritage Nature Trail via a footbridge over the Quinebaug River in Sturbridge.

C.4.7.6 Sturbridge

As mentioned above, plans are in the works for connecting the Grand Trunk Trail (north of the River) and the Heritage Nature Trail (south of the River) via a footbridge over the Quinebaug River, just off River Road in Sturbridge. There is an extensive trail network within Wells State

Park, a 1,470-acre nature area managed by the Department of Environmental Management (DEM). There are also trails within the Streeter Point Recreation Area, located at the southern end of Long Pond. The dirt road that encircles Alum Pond is also used as a trail. There are trails within the Breakneck Brook Wildlife Management Area (managed by the Division of Fisheries & Wildlife), however, they have never been formally mapped.

C.4.7.7 Webster

Although the Town owns a number of permanently protected open space parcels, the only existing trails in Webster are associated with the Memorial Beach property at Webster Lake. The Town's Recreation Department manages the trails at this site.

C.4.8 West Subregion Community Trails

C.4.8.1 Brookfield

There are two formal trail systems in town open to the general public. The first is associated with the Quaboag Wildlife Management Area (WMA) that fronts along the Quaboag River and contains a long stretch of Burr Brook. Located in the western part of town along the boundary with West Brookfield, the WMA can be accessed from Long Hill Road. The second trail system is associated with the Wolf Swamp WMA in the south of town.

C.4.8.2 East Brookfield

Informal trail systems exist throughout East Brookfield's rural landscape to the south of Route 9 and the town center area, particularly in the vicinity of Carpenter Hill, Stone Hill, Wheelock Hill and Teneriffe Hill. Unfortunately, these informal trail systems have never been mapped.

C.4.8.3 Hardwick

An off-road trail system has been mapped within the Muddy Brook WMA, and the protected lands associated with the Quabbin Reservoir District most certainly contain trails, although they have never been mapped. A portion of Melon Road between its intersections with Breen Road and Route 32A is also used informally as a local trail, as is a long stretch of Charity Road. Hardwick's premier trail project is the yet to be constructed Central Ware River Valley Rail Trail that will make use of the former Boston & Maine Railroad bed located along the town's eastern boundary. This rail trail idea would make use of a ten-mile abandoned rail corridor between the towns of Ware and Hardwick. A feasibility study was prepared for the Hardwick portion in September 2000, and the Town is now in process of securing funds for an engineering study. Engineering work has already begun along the Ware portion of the trail. It will be a bit more difficult to get started in Hardwick, as there are several sections under private ownership, including a right-of-way owned by National Grid. Outright purchase of the trail path or easement agreements will be required before the Town can move forward with construction.

C.4.8.4 Leicester

A section of the regional Midstate Trail dips into the northwest corner of Town and there are numerous trails (mostly little-used dirt roads) located within the protected watershed lands in the northeast section of Town. The City of Worcester's Water Department owns and manages the watershed properties. Sylvester Street forms a portion of the Tatnuck Bike Trail that extends into Worcester just south of the airport. There is also a dirt road extending off of Watson Street and continuing south of Shaw Pond that is used informally as a local trail.

C.4.8.5 New Braintree

There is an informally used dirt road that extends from Davis Road, continues west crossing McKay Road, concluding at its intersection with West Road. There is another informally used dirt (more of a path at this point) road that extends south from Old Common Road until it connects with the intersection of Webb Road and Murphy Road. Another informally used dirt road extends north from Sibley Road, crosses the Ware River along Creamery Road, and eventually links to the former Boston and Maine Railroad just north of Gilbertville Village in Hardwick. There is also an abandoned railbed extending off of the former Boston and Maine Railroad (located in the northwest corner of town) that is also used informally as a trail.

C.4.8.6 North Brookfield

Informal trail systems exist throughout North Brookfield, particularly in the vicinity of the Five Mile River near the Town's eastern boundary. Unfortunately, these informal trail systems have never been mapped. There are several dirt roads within the Audubon properties located in the south of Town.

C.4.8.7 Spencer

A large stretch of the regional Midstate Trail extends through Spencer in a north-to-south direction, and there is an interior trail system associated with Spencer State Forest. However, the Town's premier trail planning project is the Depot Road/Town Center Trail, currently in progress. This trail makes use of abandoned railroad right-of-way located south of Route 9 and the downtown area. Once complete, the trail will connect O'Gara Park with Depot Road and South Spencer Road. Roughly two miles in length, the trail passes north of Spencer State Forest property and a formal connection to the Forest may be established at some point. Originally under the sponsorship of the Spencer Conservation Commission, advocates for this trail have established a non-profit entity, known as Spencer Trailways Inc., to manage this project. Remaining work includes grading in places and placement of stone dust.

C.4.8.8 Warren

Informal trail systems exist throughout the rural areas of Warren, however, the bulk of them have never been mapped. There is an interior trail system associated with the Palmer WMA, located in the northwest section of Town. There is also a series of informally used trails in the vicinity of Devil's Peak in the southwest corner of town.

C.4.8.9 West Brookfield

There is an extensive interior trail system associated with some properties under the ownership of the Trustees of Reservations (a non-profit land trust). These properties are located in the northwest corner of town, between West Main Street (Route 9) and Lyon Road. Additionally, there is a trail system associated with the Quaboag WMA in the south of Town, just south of the Quaboag River. West Brookfield also contains many dirt roads that are informally used as local trails.

D. CONNECTIONS WITH TRANSIT

The ability to connect walking and bicycling with transit service is ideal because these modes can work together in providing additional mode choice in getting to a destination without the use of an automobile. Most transit services, whether bus, rail or subway, in major eastern U.S. cities were developed around locations where walking was prevalent and development densities were high. As many of these older systems (and newer systems that have been developed in newer urban areas of the Southwestern and Western U.S.) stretched out of urban cores and into suburban areas, the ability to close distances with walking or bicycling facilities has become a focus again.

In the Central Massachusetts region, the Worcester Regional Transit Authority (WRTA) provides fixed route and paratransit bus service, and the Massachusetts Bay Transportation Authority (MBTA) provides commuter rail service between Boston and Worcester. Additionally, Peter Pan Bus Lines and Greyhound Bus Lines provide intercity bus service to many destinations throughout New England and New York, and Amtrak provides intercity rail service between Boston and Chicago through Worcester. All but the WRTA provides service to and from Union Station; however, the WRTA provides service to Union Station with seven bus routes.

D.1 WRTA

All WRTA fixed-route buses are equipped with bicycle racks that can accommodate up to two bicycles. All WRTA drivers are trained to operate the rack and provide customer service for new bus riders who may also want to use the bicycle rack. Bicycles are not allowed inside of the bus at any time.



Within the City of Worcester, the WRTA operates in densely developed neighborhoods and allows for easy walking access to Union Station from its bus stop on Foster Street. Many of the city's neighborhoods have sidewalks that provide easy walking access to the bus routes; however, some sidewalks are in poor condition. Outside of Worcester, sidewalks are less prevalent, particularly along some of the community routes in the Brookfields, Leicester and Oxford.

D.2 MBTA

Bicycles are allowed on MBTA commuter rail trains at all days and times except for weekday rush hours (morning inbound/evening outbound). Folding bicycles are allowed on trains at any time of the day. All patrons who bring their bicycles onto a commuter rail train must follow instructions by the conductor and stow their bicycles as far away from the central aisles as possible. The MBTA is currently examining a relaxation of peak hour restrictions for bicycles on commuter rail on less crowded lines. In summer 2010, the MBTA provided a bicycle coach car on its Newburyport/Rockport line and saw over 2,800 daily bike boardings.



While some commuter rail stations are located in town centers, most newer stations are located in areas designed as “park and ride” stations. In the CMRPC region, Grafton and Westborough are two examples of park and ride commuter rail stations; however, they include bicycle parking that is frequently used (see photo). These stations do have limited ability to walk or bike to them and, while they are equipped with bicycle racks, are usually too far away from residences to encourage regular commuting by bicycle.

They are also not served by bus routes, making driving a car the only option to get to them. Other stations, such as Union Station, are located in downtown areas or town centers and can be accessed by either walking, bicycling or taking transit.

D.3 Peter Pan/Greyhound

Peter Pan and Greyhound Bus Lines provide intercity bus service from Union Station throughout the six New England states and make connections with other carriers in places like New York City and Washington, DC. Pedestrian access to the bus depot of Union Station is the same as to the train platform. Bicycles are allowed on Peter Pan and Greyhound buses, unpackaged or packaged, as part of the Free Baggage Allowance, however if the number of bags with the bicycle exceeds the allowance, the customer is charged for each item exceeding the allowance at current carrier rates.

Unpackaged bicycles are only to be transported in an empty cargo bin on a space-available basis. If an empty bin is not available, the customer must wait and try the next available schedule, or purchase a bicycle box to take the current schedule. Bicycle boxes can be purchased at most Peter Pan Bus stations for \$15.00. Storage charges are waived for customers who have already paid for excess, oversize, overweight baggage or a bicycle box.

D.4 Amtrak

Amtrak provides intercity rail service from Boston through Worcester to Chicago daily with a stop at Union Station on the *Lake Shore Limited* train. Amtrak has a number of options for transporting bicycles depending upon the train service provided in the area. Options include

bicycles being stored onboard in bike racks, as checked baggage in a box or other secure container, as checked baggage secured by tie-down equipment (not in a box), or folding bicycles brought onboard as carry-on baggage.

Within this area, the *Lake Shore Limited* only allows standard bicycles as checked baggage in a box or other secure container. Patrons may either bring their own container specifically designed for transporting bicycles with handles or purchase a bicycle box at the Amtrak ticket window at Union Station for \$15 per box. An additional fee for checking a bike as baggage is \$5 and patrons must check their bicycle at least an hour before departure.