

# Circulation and Transportation

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## Introduction

Located in north central Massachusetts, Sterling has good access to the regional transportation infrastructure with two interchanges on I-190 leading south to the City of Worcester and north to the cities of Leominster and Fitchburg. Other significant roadways traversing the Town include Routes 12, 62, 110 and 140, which connects Sterling to adjacent communities. While being a predominantly rural and agrarian community, the majority of circulation inter- and intra- Sterling is accomplished via private automobiles but the Town is interested in other modes of transportation and multi-modal options as well. Other considerations include taxi/livery services, public transportation in addition to the expansion of bicycling and pedestrian options. The ability to move people and goods is essential to the economic vitality, environment, and quality of life in Sterling and in the region.

The existing conditions of the roadway system are reviewed by looking at such data as traffic counts and crash incidents. Goals and recommendations will then be made taking into consideration other community and regional assets such as open space for an interconnected bicycle and pathway system within the Town and connections to other adjoining towns and the region as well as meeting the goal of circulation and transportation patterns that are safe and accessible to all users, regardless of age, ability or how one chooses to move around town.

## Baseline Conditions Analyses

### Role of the Regional Planning Agency

The Montachusett Regional Planning Commission (MRPC) acts as staff to the Montachusett Metropolitan Planning Organization (MPO) that has the responsibility of prioritizing transportation projects within the Montachusett Region. This presents municipalities with greater odds for input in setting local priorities and is intended to give municipalities a stronger role in planning transportation improvements that directly affect them. Transportation projects and plans must be included in a regional transportation plan in order to receive federal funding for implementation.

### Regional Transportation Plan

The Regional Transportation Plan (RTP) outlines and prioritizes the transportation needs and policies for the region. Before projects receive federal funding, they must be identified and incorporated into the policy goals and visions of the RTP which identifies both short- and long-range projects for local roads, highways, bridges, rail, transit, bike and pedestrian trails, freight and airports as well as priorities, goals, visions and strategies.<sup>1</sup>

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<sup>1</sup> <https://www.mrpc.org/transportation/pages/regional-transportation-plan-2016-moving-forward>

## Transportation Improvement Program

The Transportation Improvement Program (TIP) and Air Quality Conformity program are intermodal programs of transportation improvements produced annually by MRPC. To receive Federal or State funding, a transportation project must be included in the TIP.

The TIP must also be consistent with the current RTP for the Montachusett Region. The agency responsible for implementing highway projects in the TIP, unless otherwise noted, is the MassDOT Highway Division and, for transit projects, the Worcester Regional Transit Authority or Montachusett Regional Transit Authorities.

Currently the Town of Sterling has several ongoing TIP projects in both the construction and design phase, covering a range of work from resurfacing to drainage. Table 1 details each of them and includes the specific number for each project that will provide a historical summary with project completion status, milestone details, TIP funding, and any project issues.

**Table 1** Current Sterling TIP Projects

MassDOT Number	Description	Project Type	Status
<a href="#">602101</a>	STERLING- RESURFACING AND RELATED WORK ON A SECTION OF ROUTE I-190	Resurfacing	CONSTRUCTION
<a href="#">602160</a>	PRINCETON- STERLING- BRIDGE REPLACEMENTS, BR# P-16-007 ROUTE 140 OVER STILLWATER RIVER & S-25-016 ROUTE 140 OVER WACHUSETT BROOK	Bridge Replacement	CONSTRUCTION
<a href="#">602422</a>	LITTLETON- MILLBURY- OXFORD- STERLING- WESTFORD- WESTMINSTER- CONSTRUCTION OF 6 CHEMICAL STORAGE SHEDS AT DEPOTS	Chemical Storage Sheds	CONSTRUCTION
<a href="#">602893</a>	STERLING- TRAFFIC SAFETY IMPROVEMENTS INCLUDING SIGNALS, REDEMPTION ROCK TRAIL (ROUTE 140) AT DANA HILL ROAD AND LEGG ROAD	Traffic Signals	CONSTRUCTION
<a href="#">606575</a>	STERLING- INTERSTATE MAINTENANCE & RELATED WORK ON I-190	Resurfacing Interstate	CONSTRUCTION
<a href="#">607604</a>	STERLING- WEST BOYLSTON- IMPROVEMENTS ON ROUTE 140 AT I-190	Highway Reconstruction - Restoration and Rehab	DESIGN
<a href="#">610659</a>	STERLING- STORMWATER DRAINAGE IMPROVEMENTS AT WACHUSETT RESERVOIR ON ROUTE 110 (METROPOLITAN ROAD)	Drainage	DESIGN
<a href="#">611934</a>	STERLING- ROOF REPLACEMENT AT MAINTENANCE BUILDING AT CHOCKSETT STREET DEPOT	Vertical Construction (Ch 149)	DESIGN

Source: MassDOT TIP

## Roadway System

### Existing Network

The road infrastructure of Sterling is comprised of one interstate highway (I-190), four state highways (Route 12, Route 62, Route 110 and Route 140), and a network of local and connector roads serving the town center and the rural residential areas. Interstate 190 (I-190) is the major limited access highway in town offering access to the Leominster-Fitchburg area to the north and Worcester area to the south. Route 12 offers the same north-south access as I-190, although with more access to secondary roads as well as the town center. Route 140 provides access on

the west side of town from the Gardner area to the north, to commercial areas east of Worcester such as Shrewsbury to the south. Route 62 travels west-east from the Princeton town line, through Sterling center and into the Town of Clinton. A small section of Route 110 in the southeast corner of town offers access to points from Worcester in the south, through to northeastern Massachusetts.

## Functional Classification

Functional classification defines the character of services that a particular roadway is intended to provide and identifies a roadway's purpose and use as part of the highway network. Roads serve to provide mobility for vehicle access to locations.

Aside from the Interstate Highway system, streets and highways are classified into four functional highway systems: Principal Arterials, Minor Arterials, Collector Streets and Local Streets as follows: Sterling can compete for limited federal aid funding to repair their Federal-Aid eligible roads through the annual TIP process. These federal-aid eligible roadways are shown on the following map. Roads classified as "local" are not eligible for Federal-Aid and are maintained solely by the municipalities. Local roads are eligible for State Highway funds under Chapter 90.

***Principal Arterials.*** There are no roadways classified as Principal Arterial in Sterling. Multi-lane roadways that connect major activity centers, they carry the highest volumes of traffic at high speed and are often entirely or partially controlled-access facilities with interchanges or grade separations at major crossings.

***Minor Arterials.*** Feed into principal arterials and serve the dual function of carrying high traffic volumes, providing access to adjacent land uses; on-street parking is generally permitted but is heavily regulated. In Sterling, Route 12, Route 140, parts of Route 62, Chocksett Road and Pratts Junction Road are classified as Minor Arterials.

***Collector Streets.*** Collect traffic from local streets and channel it into the arterial street system with a focus more towards on land access than on mobility, providing general traffic circulation and typically having lower travel speeds and parking restrictions. Roads classified as Collectors in Sterling are Route 110, Bridge Street, Swett Hill Road, Campground Road, Gates Road, Rowley Hill Road, Justice Hill Road, Heywood Road, Boutelle Road, Muddy Pond Road and Greenland Road. Also classified as Collectors are parts of the following roads: Route 62, Kendall Hill Road, Redstone Hill Road and Maple Street

***Local Roads and Streets.*** Include all the remaining streets that are not included in one of the higher systems.

Sterling can compete for limited federal aid funding to repair their Federal-Aid eligible roads through the annual TIP process. Roads classified as "local" are not eligible for Federal Aid and are maintained solely by the municipalities. Local roads are eligible for State Highway funds under Chapter 90.



**Table 2 Functional Classification of Roadways in Sterling**

Functional Classification	Number of Roads	Mileage
Interstate (I-190)	1	13.29
Arterial	5	22.78
Collector	15	27.52
Local	184	80.52
<b>Total</b>	<b>205</b>	<b>144.11</b>

Source: MassDOT Road Inventory

### Functional Reclassification

If the town wishes to reclassify a roadway there is a process through the MPO and MassDOT to do so. Reclassification of a roadway may be necessary due to a change in use over time and could affect a roadway's eligibility for federal aid. If the town wishes to propose a reclassification it should contact the MPO.

### Adding Town Accepted Roadways to Statewide Database

It is important that the town regularly updates its accepted roads with MassDOT. This is because Chapter 90 allotment is directly related to the number of accepted miles of roads in each town. If a community has not updated its accepted road information, or has roads which have been recently accepted by the town but not submitted to MassDOT, it is probable that it is not receiving as much as it should in Chapter 90 funds as it should be.

# Sterling, MA: Roadway Classification



**Legend**

- ~ Community Boundaries
- ✈ Airports
- + Active Rail Lines

**Roadway Classification**

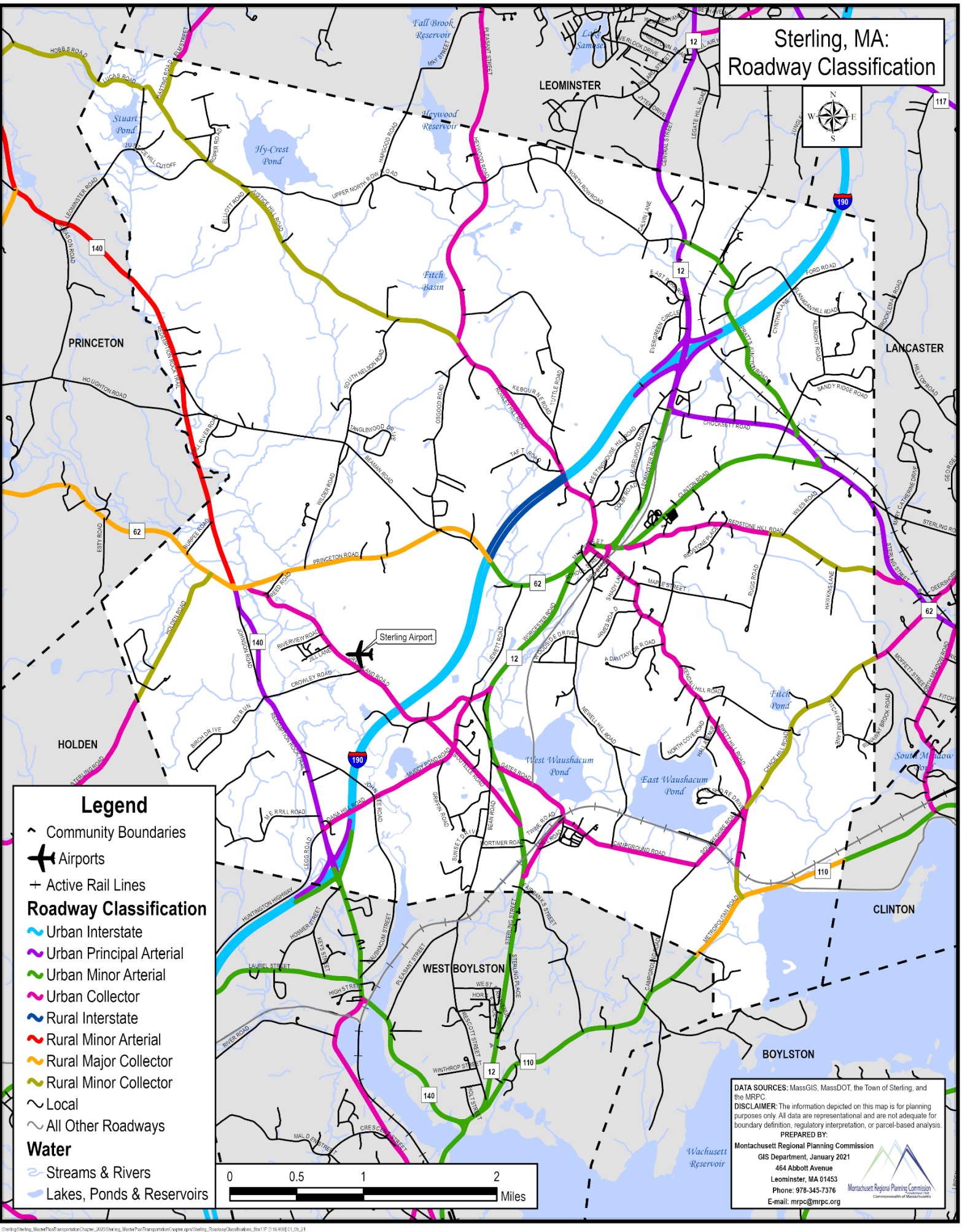
- Urban Interstate
- Urban Principal Arterial
- Urban Minor Arterial
- Urban Collector
- Rural Interstate
- Rural Minor Arterial
- Rural Major Collector
- Rural Minor Collector
- Local
- All Other Roadways

**Water**

- Streams & Rivers
- Lakes, Ponds & Reservoirs



**DATA SOURCES:** MassGIS, MassDOT, the Town of Sterling, and the MRPC  
**DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.  
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### Average Daily Traffic (ADT)

For many years the MRPC and MassDOT Highway Division have taken traffic counts at numerous locations in Sterling, as part of its regional traffic count program. Table 3 lists traffic counts that were taken along major routes over the past 10 years by location. The locations mentioned in the table are shown with larger dots on the map and have been conducted regularly for volume comparison purposes. Other locations that have been conducted less frequently are shown with smaller dots and Turning Movement Counts are shown in green.

The counts consist of data collected during a period of at least 24 weekday hours. To reflect seasonal differences in traffic volumes, MassDOT Uses Average Annual Daily Traffic (AADT) volume adjustment factors. These factors were applied to all counts listed on Table 3.

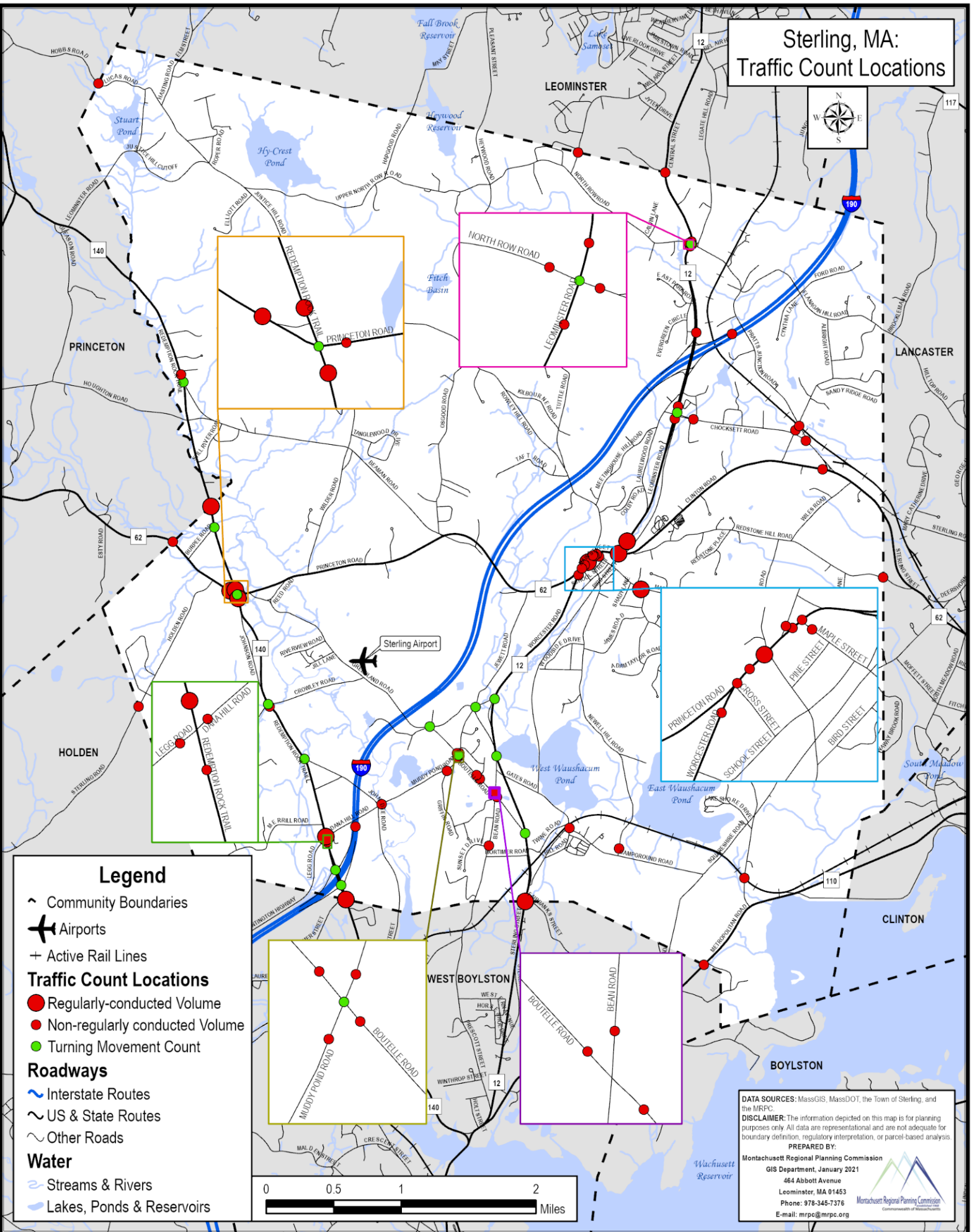
**Table 3 Traffic Volumes on Select Roadways in Sterling**

Street/Route	Count Date	Average Daily Traffic Volume
Clinton Road (Rt. 62) East of Leominster Road (Rt. 12)	2015	4200
Leominster Road (Rt. 12) North of Main St. (Rt. 62)	2015	7000
Main Street (Rt. 12/62) South of Waushacum Ave.	2015	8800
Maple Street West of Kendall Hill Road	2015	1300
Princeton Road (Rt. 62) West of Redemption Rock (Rt. 140)	2016	4200
Redemption Rock Trail (Rt. 140) At Princeton Town Line	2017	7100
Redemption Rock Trail (Rt. 140) At West Boylston Town Line	2019	5800
Redemption Rock Trail (Rt. 140) North of Dana Hill Road	2017	9500
Redemption Rock Trail (Rt. 140) North of Princeton Rd (Rt. 62)	2016	5700
Redemption Rock Trail (Rt. 140) South of Princeton Rd. (Rt. 62)	2016	8400
Worcester Road (Rt. 12) At West Boylston Town Line	2019	4500

Source: MassDOT and MRPC Traffic Count Program

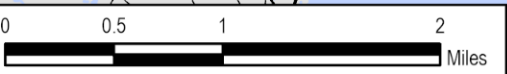
Given this limited traffic count data, it is assumed that the traffic volumes are fairly consistent community-wide. There are a few areas where there is growth and a few that show a reduction in traffic volumes.

# Sterling, MA: Traffic Count Locations



## Legend

- ~ Community Boundaries
- ✈ Airports
- + Active Rail Lines
- Traffic Count Locations**
- Regularly-conducted Volume
- Non-regularly conducted Volume
- Turning Movement Count
- Roadways**
- ~ Interstate Routes
- ~ US & State Routes
- ~ Other Roads
- Water**
- ~ Streams & Rivers
- ~ Lakes, Ponds & Reservoirs



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## Roadway Safety

Traffic crashes are unpredictable, unavoidable events. Most traffic crashes are the result of driver error; however, driver error can be magnified by poor roadway or intersection design, or by inadequate traffic control measures. When crashes occur in high numbers at a particular location, there is most likely a common reason for the crashes related to the design and/or signage of the road. Detailed study of crash records can identify these high-crash locations and lead to design improvements that will reduce the number and severity of future crashes.

The MRPC Transportation Department maintains and continually updates a crash database for the purpose of gathering crash statistics on the Region using historical and the most recent MassDOT crash tables available that currently exist from 2017 through 2019. Crash severity states the types of harm or the most serious outcome of a crash. There are essentially three possible outcomes: Fatal Injury Crash, Non-Fatal Injury Crash and Property Damage.

## Crash Statistics

From January 2017 to December 2019, Sterling experienced 495 crashes. Of the total crashes, no Fatal Injury Crashes occurred, Non-Fatal Injury Crashes accounted for 124 (25%) crashes and Property Damage Crashes accounted for 371 (75%) crashes.

Crash clusters at intersections and mid-block locations arise when two or more crashes occur in a 3-year period at those locations. Table 4 shows Intersection Crash Clusters (ICC) with a minimum of four (4) crashes and all Mid-Block Crash Clusters (MBCC). The Mid-Block Crash Clusters are also shown on the following map.

**Table 4: Crashes in Sterling 2017-2019**

	Total Crashes		Injury Crashes		PDO Crashes	
<b>Sterling</b>	<b>495</b>	<b>100%</b>	<b>124</b>	<b>25%</b>	<b>371</b>	<b>75%</b>
<b>Intersection Crash Clusters with 4+ Crashes</b>	218	76%	57	84%	161	72%
<b>Mid-Block Crash Clusters</b>	69	24%	11	16%	62	28%
<b>ICCs &amp; MBCCs Totals</b>	<b>287</b>	<b>58%</b>	<b>68</b>	<b>55%</b>	<b>223</b>	<b>60%</b>

Source: MassDOT IMPACT Crash Data Portal

## Injury Crash Analysis:

For the 3-year period of 2017 through 2019, there were a total of 23 locations that were classified as Intersection Crash Clusters and 23 as Mid-Block Crash Clusters in Sterling. The Route I-190 Intersection Crash Clusters and Mid-Block Crash Clusters are not examined in the Injury Crash analysis, and the data is provided for reference only.

- The Leominster Road / Route 12 from the Leominster City Line to Laurelwood Road corridor has experienced eight (8) ICCs and two (2) MBCCs. The corridor has experienced 13 (20%) of the Non-Fatal Injury Crash total of the combined locations. However, six (6) of the ICCs have recently been the subjects of safety improvement projects that included the construction of two (2) modern roundabouts. All the projects have been completed or are near completion. The next step for these

projects is to be evaluated to determine the effectiveness of the potential safety improvements over a period of at least three (3) years.

- The Redemption Rock Trail / Route 140 from North Oakdale Cutoff to Route I190 corridor has experienced five (5) ICCs and four (4) MBCCs. The corridor has experienced 13 (20%) of the Non-Fatal Injury Crash total of the combined locations. Three of the ICCs have experienced a total of eleven (11) Non-Fatal Injury Crashes, a minimum of three (3) Non-Fatal Injury Crashes each. The Redemption Rock Trail / Princeton Road intersection alone has experienced five (5) Non-Fatal Injury Crashes. Both the Redemption Rock Trail / Dana Hill Road / Legg Road and Redemption Rock Trail / Crowley Road / Fox Run Road ICCs experienced three (3) Non-Fatal Injury Crashes each. The MBCCs contributed one (1) Non-Fatal Injury Crash to the total.
- The Main Street from Leominster Road / Bridge Street / Clinton Road to Waushacum Avenue / Houghton Road corridor has experienced two (2) ICCs. Non-Fatal Injury Crashes have accounted for five (5) of the twelve (12) (42%) Total Crashes that occurred at the two (2) ICCs.

Further study for the following corridors is recommended to improve safety:

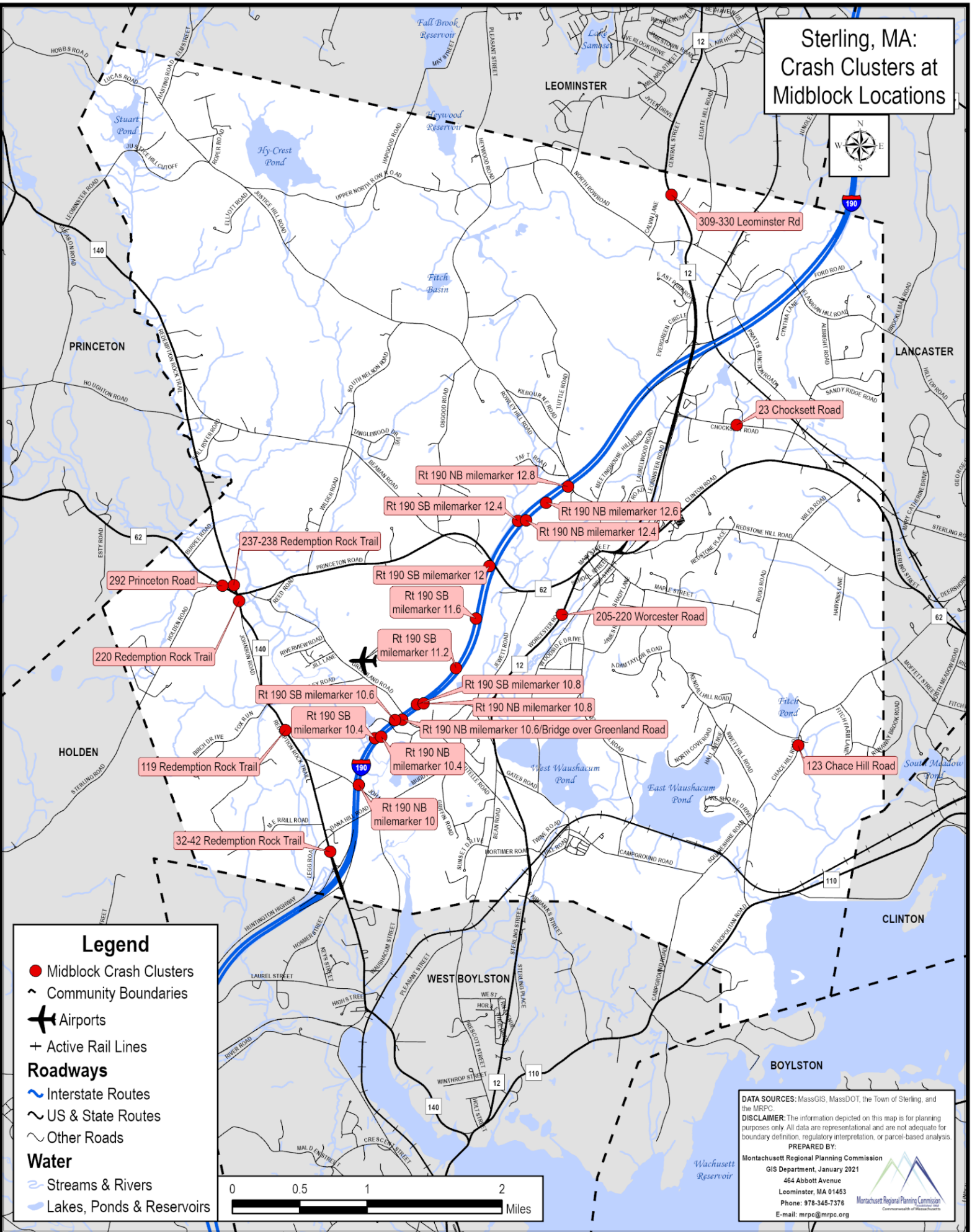
- Safety conditions on the Redemption Rock Trail / Route 140 from North Oakdale Cutoff to Route I-190 corridor need to be addressed with a focus on the Redemption Rock Trail / Princeton Road intersection followed by the Redemption Rock Trail / Dana Hill Road / Legg Road and Redemption Rock Trail / Crowley Road / Fox Run Road intersections.
- The high Non-Fatal Injury Crash percentage for the Main Street from Leominster Road / Bridge Street / Clinton Road to Waushacum Avenue / Houghton Road corridor may be of concern to Sterling. With four (4) out of five (5) resulting in Non-Fatal Injury Crashes, the Main Street from Leominster Road / Bridge Street / Clinton Road intersection may be a particular concern.
- A before and after safety performance analysis should be conducted on the completed / near completed projects of the Leominster Road / Route 12 from the Leominster City Line to Laurelwood Road corridor in approximately three (3) to four (4) years. A minimum of three (3) years of crash data is needed to determine the effectiveness of the completed projects; however additional data for at least one (1) year would improve the analysis findings.<sup>2</sup>

Within the last few years, the Massachusetts Department of Transportation installed two roundabouts; one on Route 12 by Chocksett Road and the other on Route 12 by the I-190 exit. These roundabouts have proved to be successful in reducing fatal accidents and accident severity.

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<sup>2</sup> [https://www.mrpc.org/sites/g/files/vyhlf3491/f/file/file/sterling\\_route\\_12\\_final\\_report\\_8-29-16.pdf](https://www.mrpc.org/sites/g/files/vyhlf3491/f/file/file/sterling_route_12_final_report_8-29-16.pdf)

# Sterling, MA: Crash Clusters at Midblock Locations



**Legend**

- Midblock Crash Clusters
- - - Community Boundaries
- ✈ Airports
- + Active Rail Lines

**Roadways**

- 🛣 Interstate Routes
- 🛞 US & State Routes
- 🛤 Other Roads

**Water**

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### Pavement Condition

Road and street surfaces are the largest single cost of building and maintaining a transportation system. Forty to fifty percent of public funds spent on roadway systems are for the road surface. For smaller communities such as Sterling the percentage can be much higher. The role of a pavement management system is to provide an opportunity to improve roadway conditions while making cost effective decisions on maintenance priorities and schedules.

A pavement management system relies heavily on pavement preservation early and often for the purpose of preventing an increasing deterioration of pavement structure. By maintaining an accurate database with up-to-date road conditions, the needs of a road network are better diagnosed.

### Pavement Management Systems

A well-run pavement management system is far more economical to preserve roads than to delay repairs and reconstruct roads. While it is important to preserve a pavement condition in good standing for as long as possible by implementing various preventative and routine maintenance techniques throughout its lifecycle to keep cost low, it is a reality that budgets often do not allow for this. It is encouraged that a pavement management plan be implemented to keep on track of maintenance needs and schedules to contribute to a cost-effective approach to maintaining roadways. Additionally, alternatives to current paving methods, such as using alternative materials, should be explored by the town.

Sterling currently does not have a pavement management system in place. Although a pavement management program does involve additional costs on top of maintenance budgets, many communities are realizing their potential to save money by making well informed decisions in the long run. The cost and benefit of utilizing a Pavement Management System in Sterling should be weighed and discussed with the appropriate decision makers.

### Local Conditions

The structural conditions of the majority of the Federal Aid eligible roads in Sterling are determined by MassDOT and MRPC pavement surveys. Conditions are rated as Excellent, Good, Fair and Poor. Table 5 shows a general correlation between condition, repair strategies and associated cost. The estimated repair cost was derived from conversations with a Pavement Management Users Group (PMUG) comprised of other Regional Planning Agencies, the MassDOT and the Federal Highway Administration (FHWA) and reflects the estimated cost to bring the pavement condition to "excellent."

**Table 5: General Correlation between Condition, Repair Strategies, and Associated Cost**

Condition	Associated Repair	Average Cost Per Mile (26' Wide Road)
<b>Poor</b>	Reconstruction	\$686,385
<b>Fair</b>	Rehabilitation (Mill/Overlay)	\$274,554
<b>Good</b>	Preventative Maintenance	\$129,651
<b>Excellent</b>	Routine Maintenance	\$11,440

Source: MassDOT and MRPC Pavement Surveys



The Map “*Fed-Aid Eligible Roadways*” shows all Federal Aid Eligible roads. These are all roads in Sterling which are eligible to receive federal aid, including both State and Local Jurisdiction roads. Please note that due to the time frame between data collection and report preparation, conditions of the roadways may change. Therefore, this information should be viewed in general terms regarding needs and condition. Federal Aid Eligible roads are comprised of all functionally classified as Interstate, Urban and Rural Arterial, Urban Collector and Rural Major Collector roads. These roads include State maintained (State Jurisdiction) as well as a select number of roads which are maintained by the town of Sterling (Local Jurisdiction).

Table 6 shows pavement conditions on surveyed Federal Aid Eligible roads in Sterling. Also displayed is the cost to repair all roadways to excellent condition. It should be noted that these conditions only reflect a portion of roadways in town, and do not reflect any local classification roadways.

**Table 6: Pavement Condition in Sterling**

	State Jurisdiction			Local Jurisdiction		
	Miles	Square Yards	Cost	Miles	Square Yards	Cost
<b>Excellent</b>	2.20	30965	\$23,223	4.46	62805	\$47,104
<b>Good</b>	5.03	70822	\$601,991	2.33	32824	\$279,003
<b>Fair</b>	7.81	109951	\$1,979,111	8.69	122392	\$2,264,260
<b>Poor</b>	1.43	20126	\$905,661	8.47	119248	\$5,366,168
<b>Total</b>	16.46		\$3,509,986	23.95		\$7,956,535

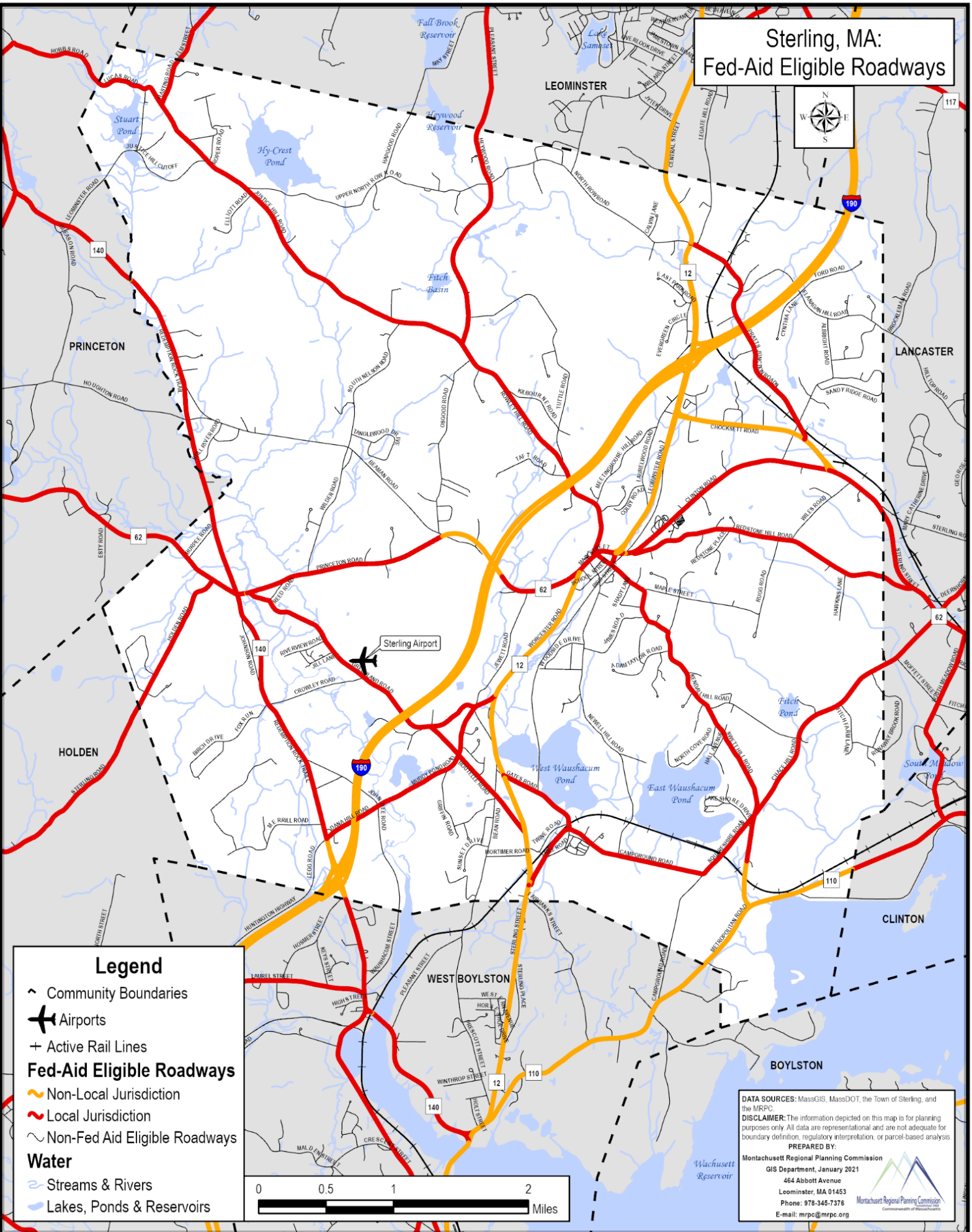
Source: MassDOT and MRPC Pavement Surveys

**Challenges**

A major concern to communities is funding available for roadway maintenance (Chapter 90) is lagging behind the rising price of such maintenance. Sterling has 68 miles of roadways identified as local jurisdiction, being Federal Aid and Non-Federal Aid eligible, and its Fiscal Year 2020 Chapter 90 apportionment is \$410,022, which is a -1.85% percentage change between the years 2016 and 2020.

Pavements are often the single largest expense in any municipal road maintenance budget. Chapter 90 allocations often do not provide sufficient funding to maintain local roads at the current condition let alone make major improvements. Due to inadequate funding, it is recommended that communities routinely target funding for federal aid eligible Local roadways through the Transportation Improvement Program (TIP). It is also encouraged that a Pavement Management Plan be implemented by communities to keep on track of maintenance needs and schedules to contribute to a cost-effective approach to maintaining roadways.

# Sterling, MA: Fed-Aid Eligible Roadways



**Legend**

- ~ Community Boundaries
- ✈ Airports
- + Active Rail Lines
- Fed-Aid Eligible Roadways**
  - 🟡 Non-Local Jurisdiction
  - 🔴 Local Jurisdiction
  - ⚪ Non-Fed Aid Eligible Roadways
- Water**
  - 🌊 Streams & Rivers
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## Bridges

As with pavements, bridges and culverts are an essential asset to the transportation infrastructure in the town. Bridge conditions are regularly rated by MassDOT as part of their inventory system. The American Association of State Highway and Transportation Officials (AASHTO) is a method of evaluating highway bridge data by calculating four separate factors to obtain a numeric value which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge. To be eligible for federal aid for repair, a bridge must have a sufficiency rating of less than 80.

According to the MassDOT Project Development and Design Guidebook (January 2006), structurally deficient is defined as “a bridge structure that has a defect requiring corrective action.” Functionally obsolete bridges are defined as “a bridge which has no structural deficiencies but does not meet standards to adequately serve current user demands.” Due to the safety hazard factor, structurally deficient bridges are deemed to be a high priority to repair. As of September 2020, there are no town owned bridges rated as structurally deficient in Sterling, however, there are four structurally deficient bridges owned by MassDOT on I-190 which are currently under repair. See Table 7.



*Photo Credit: Tyler Page*

**Table 7: Bridges Owned by Sterling**

Feature Intersected	Facility Carried	Year Built	Year Rebuilt	Structurally Deficient	Structure Category	AASHTO Rating
STILLWATER RIVER	CROWLEY RD	1910	2000	NO	Bridge (NBI)	83.7
STILLWATER RIVER	MUDDY POND	2007		NO	Bridge (NBI)	82.2
WEKEPEKE BROOK	PRATTS JUNCTION	1850	1900	UNKNOWN	Short Span Bridge	
BARTLETT POND	LUCAS RD	1850		UNKNOWN	Culvert	
STUARTS POND	JUSTICE HILL RD	1850		UNKNOWN	Culvert	
CONNELLY BROOK	GREENLAND RD	1850		UNKNOWN	Short Span Bridge	
BROOK	CAMPGROUND RD	1850		UNKNOWN	Culvert	
ROCKY BROOK	BEAMAN RD	1967		UNKNOWN	Culvert	
WEKEPEKE BROOK	RT 12/LEOMINSTER RD	1850	1900	UNKNOWN	Short Span Bridge	

MassDOT’s Bridge Inspection Management System (BIMS) and the National Bridge Inventory

It is recommended that Sterling keep an updated inventory of town owned bridges and culverts and regularly assess conditions. These actions will keep the needs and associated costs of this infrastructure up front so that the town can make the appropriate investments when needed and potentially avoid serious safety, ecological and financial problems associated with emergency repairs.

### **Journey to Work**

According to the 2018 American Community Survey (ACS) 5-Year estimates, 97.6% of Sterling's workforce worked in Massachusetts and 67.1% worked in Worcester County. Using data from the 2010 Census and 2018 ACS estimates, a comparison can also be made as to how Sterling's workforce gets to work and how its commuting patterns have changed during the past eight years.

Commuting categories such as "Worked at Home" and "Car-Pooled" increased in Sterling over the past eight years while "Drove Alone", "Public Transportation", and "Other Means" have decreased. "Walked" remained the same at 0.0%.

Sterling residents rely heavily on the use of single-driver private automobiles as their main method for commuting. In 2010, 89.7% of residents commuted alone while in 2018, that percentage decreased to 83.6% due to an increase in residents car-pooling or working from home.

These changes in how Sterling residents travel to work may have influenced the changes in mean travel time to work for said residents which decreased from 32.1 to 28.7 minutes from 2010 to 2018, a 10.6% decrease. This has brought the mean travel time to work for Sterling below that of Massachusetts, being 30.5 minutes. Although it still remains slightly higher than the national mean of 27.1 minutes.

### **Public Transit System**

#### **Montachusett Area Regional Transit (MART) Service**

There is no fixed route bus service provided in Sterling. However, the Montachusett Area Regional Transit Authority (MART) runs a bus service in the neighboring community Leominster, which connects to the wider system through the region. Individual route schedules are available online at MART's website.<sup>3</sup> MART contracts with social and human service agencies for paratransit service. The Town and MART provide service in Sterling through the Council on Aging that employs a paid coordinator funded jointly.

#### **Bus Service**

There is currently no bus service in Sterling but the Town should explore the long-term needs and desires of its residents to explore options and the demand for this service.

#### **Commuter Rail**

Sterling is located approximately equidistantly between two commuter rail lines, the Fitchburg Rail Line which runs to North Station in Boston, and the Worcester/Framingham Rail Line which runs to South Station in Boston. The nearest Fitchburg line commuter rail station to Sterling is

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<sup>3</sup> [www.mrta.us](http://www.mrta.us)

located in neighboring Leominster, allowing residents access to the Fitchburg Commuter Rail Line. Service along the Fitchburg line to North Station includes the North Leominster Commuter Rail Station in Leominster at the intersection of Route 2 & 13.

The closest Worcester/Framingham line commuter rail station to Sterling is in Worcester, allowing residents access to the Worcester/Framingham Commuter rail line. The Worcester Commuter Rail Station in Worcester at the Union Station in downtown Worcester, right off of Route I-290.

The Regional Transit Authority also provides a fixed bus route service from the commuter rail station connecting neighboring Fitchburg and the rest of the region with Public Transportation. The fixed bus route schedule is available online at MART's website.

## **Private Options**

### **Taxis**

Taxi service is currently not provided in the town of Sterling, but is available from neighboring towns such as Leominster and Clinton. This greatly affects and limits the range of options for residents and thus increases the reliance upon the use of private automobiles. Gathering information on the likelihood of residents using this type of service and preferred destinations would be valuable

### **Livery**

A shuttle van service is available three times daily on an advanced call basis with the Sterling Senior Center, being the pickup location. This service has been in operation since approximately 2019.

Private livery services such as Lyft or Uber are also not provided in Sterling but are available from neighboring towns. The cost for such services to Sterling is an expensive option if used on a regular basis, thus increasing the reliance of private automobile use.

## **Governmental/Non-Profit Options**

The town of Sterling provides rides to the Senior Center for meals, special events, medical appointments and shopping trips utilizing two MART vans and an all-electric vehicle. Meals on Wheels is also provided throughout the community.

The transportation needs for younger residents is lacking and severely limits their ability to secure employment and meet other needs, such as socializing.

## **Other Transportation Systems**

### **Freight Railroads**

Freight rail service in Sterling is serviced by two separate lines owned by CSX and CSX/PanAm. The CSX line enters Sterling in the north near and parallel to I-190 and then turns eastward near the intersection of Route 12 and I-190. It then runs into Lancaster near Sterling Road. The second line, CSX/PanAm, runs west from Clinton through the southern part of Sterling and on into Worcester.



These lines operate as a regional freight hauler. Primary commodities handled include iron, cement, steel, food products, lumber, construction debris, limestone, chemicals and plastics, scrap metal, finished automobiles and aggregates.

## Aviation

Within the Montachusett Region, there are three general aviation municipal airports, the Fitchburg Municipal Airport located in Fitchburg on the Leominster City line; the Gardner Airport in Templeton near the Gardner City Line; and the Sterling Airport in Sterling. Each of these is classified as a general aviation airport.

The Sterling Airport, in existence since approximately 1947, is a single-runway airport that is privately owned by the Monadnock Realty Corp. but open to public use. It averages approximately 135 flights per day as of August 31, 2019 and has approximately 69 aircrafts based on its field (32 single/multi-engine aircraft and 37 glider aircraft). In addition to having its own repair facility, the Sterling Airport has a flight school and is also



home to the Greater Boston Soaring Club where private glider operates several days per week, predominantly on the weekend.

*Photo Credit: R. Maki*

According to the Aviation Division of the Massachusetts Department of Transportation, the Sterling Airport is an economic and business contributor as well as an important aviation recreational facility. The airport has the potential as a future aviation distribution hub. As emerging technology develops more robust potential for electric-powered aircraft, noise and environmental concerns emanating from fossil fuels are anticipated to gradually decrease over time.

By annual agreement, Sterling uses the airport for a week each year for the preparation and hosting of the annual Sterling Fair that also provides free parking for all attendees. The town's Fair Committee seeks to secure a long-term agreement with the property owner and has asked the town to purchase the property if it should become available for sale. The town should consider its options if it should one day become available for acquisition as a municipal airport and permanent home to the Sterling Fair, which is a regional draw to the community. The town should engage in a meaningful discussion as a whole and with the property owners regarding the status of this location as the Fair's permanent home.

## Bicycles and Pedestrians

### Bicycle Travel

There has been a noticeable increase in the number of bicycles around population centers and on the highways. Bicycles have found a place on the highway network by default, as have pedestrians. Bicycles mixed with motor vehicle traffic can be dangerous and create traffic delays. Safety problems have increased as evidenced by the number of bicycle-automobile accidents. It was reported in the MassDOT crash files for the 10-year period of 2006-2016 that 266 bicycle-related crashes occurred in the Montachusett Region resulting in 204 injuries and

no fatalities. These 266 crashes involved one or more pedal cyclists (bicycle, tricycle, unicycle, pedal car). It was reported in the MassDOT crash files for the 10-year period of 2006-2016 that 807 crashes involving a non-motorist occurred in the Montachusett Region resulting in 655 injuries and 22 fatalities.

There is a strong support from the regional communities for designated bikeways for recreational and commuting traffic. Individual bikeway projects are being implemented in some towns within the region. Construction of bikeways will encourage cycle commuting by providing a direct, separate, and safe route between communities. Also, increasing concern for air quality and energy conservation is leading to renewed interest in development of adequate facilities for bicycles throughout the Montachusett region.



*Photo Credit: D. Tatasciore*

Bikeways are special routes and/or facilities established to facilitate the movement of bicycles as an energy efficient transportation and/or recreation mode of travel. There are three types of bikeways: bike paths, bike lanes, and bike routes. These have been categorized as Class I, II and III bikeways respectively. Class I bike paths are routes totally separated from automobile or pedestrian traffic. Class II bike lanes are lanes at the edge of streets marked for exclusive use of bicyclists. Class III bike routes are roadways that bikes share with cars.

Legally, a bicycle has been recognized as a vehicle in Massachusetts since 1973; subject to basically all the rights and responsibilities of an automobile. Bikeways are public rights-of-way, maintained by a responsible state or local agency, just as a municipality's streets are owned and maintained. Where the land for a proposed bike path is privately owned, an easement to permit public passage may be obtained, or the right-of-way may be purchased outright. Bikeways which parallel roads may be located within the existing publicly owned right-of-way, extending beyond the roadway itself.

Sterling may not have an abundance of bicycle facilities in town at this time but the interest and demand is growing. With the recently constructed roundabouts along Route 12 (Leominster Road) at I-190 SB and at Chocksett Road, there are a lot of opportunities to continue the bicycle infrastructure that was installed as part of that project to locations both north and south along Route 12 and abutting side streets. There is also the existing Mass Central Rail Trail that begins off Waushacum Ave and runs south to Gates Road. It then travels on-road westbound along Gates Road to Bean Road where it travels south into West Boylston where there is a gap before connecting to the trail head along Thomas Street. Wachusett Greenways have been working hard to close the gaps along the trail and create a continuous 30-mile section through the communities of Sterling, West Boylston, Holden, Rutland, Oakham and Barre. The larger picture would be a continuous trail that spans 104 miles from Northampton to Boston.

## Pedestrian Access

Pedestrian activity via sidewalks is generally limited to small areas within town (i.e. schools, libraries, senior center, town hall, parks, etc.). Some residential streets abutting these areas do not currently have sidewalks. Sidewalks should be included in new roadway construction, roadway improvements, and residential and non-residential subdivision development. Along major arterial roadways, land should be secured for sidewalks or pathways as development occurs. Pedestrian actuated signals should be in place in densely populated areas where warranted to allow safer movement of pedestrians.

There is also pedestrian activity by walking trails within town. There is an abundance of nature trails that are mostly used for recreation as opposed to transportation. Creating sidewalk connections to these trailheads would be useful to have increased access to these vital recreation locations.

## Trail Network

There are nine documented hiking trails scattered over Sterling. The Hog Hill Trail, the Pine Hill Esker Trail and the Stillwater Basin Trail are on DCR watershed protection land. Another series of connected trails, the Allenwood Trail, the Lynde Basins Trail and the Wekepeke Long Trail are located in north Sterling primarily on Town of Clinton property within Sterling. As these trails have become more and more popular, the need for explaining proper trail etiquette has become clear. Dogs, horses, donkeys and trail bikes all use these trails. Sterling has begun to plan connections between these isolated trails and to the trails in Princeton, Leominster, West Boylston, and Lancaster.

MassDOT is in the preliminary planning stage of developing the Central Mass Rail Trail with the Sterling Spur terminating in Sterling Center. The Stillwater Basin Trail will connect to the Rail Trail, which occupies an old rail line. In the future, there will be a continuation of the Sterling Spur north along Route 12 to meet up with the Twin Cities Trail (Fitchburg to Leominster) which is currently under construction.

Regarding the Sterling Rail Trail, the non-profit Wachusett Greenways is leading efforts to develop the abandoned rail bed of the Fitchburg and Worcester Railway into a pedestrian rail trail. Wachusett Greenways has completed a critical trail section between the Sterling Cider Mill across a bridge at the causeway between the Quag and West Waushacum Pond, to Gates Road. The completed trail section, comprised of compacted stone dust, is primarily under the control of DCR except for the Cider Mill section which is private property.

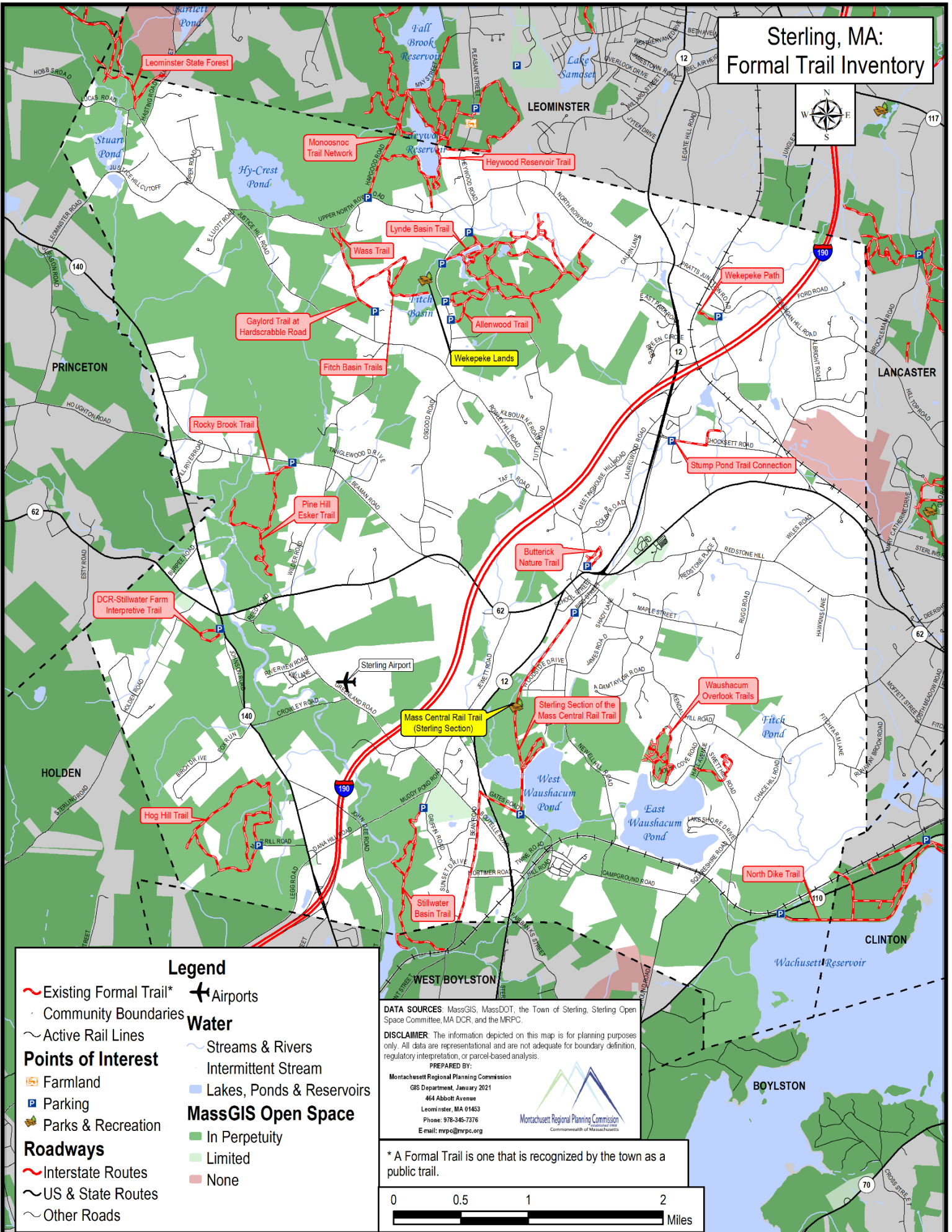


Photo Credit: D. Tatasciore



There is a plan to extend the trail northerly just east of Route 12 to the Chocksett Road vicinity through lands owned by the Town of Sterling immediately west of Oak Hill Cemetery, onto a pending Wachusett Greenways easement through industrially-zoned lands ultimately leading to Chocksett Road. The interim northern endpoint of the trail is expected to be in the vicinity of Chocksett Road just south of the Exit 6 interchange of I-190 and Route 12 and the Sterling Police Station. The trail will also diverge from the rail bed in that vicinity since the historic rail bed follows the current path of Route 12 at that point. Full trail development through the privately-owned easement is expected to take a period of 5 to 10 years and is partially dependent on the development of a proposed industrial park.

# Sterling, MA: Formal Trail Inventory



## Legend

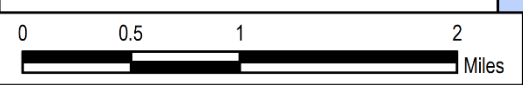
- Existing Formal Trail\*
- Community Boundaries
- Active Rail Lines
- Farmland
- Parking
- Parks & Recreation
- Interstate Routes
- US & State Routes
- Other Roads
- Airports
- Streams & Rivers
- Intermittent Stream
- Lakes, Ponds & Reservoirs
- In Perpetuity
- Limited
- None

**DATA SOURCES:** MassGIS, MassDOT, the Town of Sterling, Sterling Open Space Committee, MA DCR, and the MRPC.

**DISCLAIMER:** The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

**PREPARED BY:**  
 Montachusett Regional Planning Commission  
 GIS Department, January 2021  
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\* A Formal Trail is one that is recognized by the town as a public trail.



## Current and Future Endeavors

### Local Roadway Improvements & Protection

#### Proposed Improvements & Actions

Current plans exist to improve traffic handling in the Town Center with re-routing the traffic flow at the Conant Public Library and to realign the intersection at Meetinghouse Hill Road and Main Street. Other improvements are planned that will improve pedestrian safety via accessibility-compliant sidewalks, crosswalks and ramping in addition to the burial of utility lines within the Town Center area.

Public parking in the Town Center has improved with the paving and striping of parking spaces at the Butterick Municipal Building and its overflow lot. Currently, Town Center commercial activities are limited by several factors, principal among them is parking issues. With the opening of the 1835 Building for increased public use, additional parking will be a priority. The municipality owns a few parcels in the Town Center where additional parking can be located; these spaces should be paved, striped and placarded so that its location is apparent to all. Signage to parking lots and spaces should be used to increase awareness.

Sterling has alerted MRPC and MassDOT District 3 of the high accident frequency and difficulty navigating the intersection of Routes 140 and 62. The town is in the process of requesting an intersection study and placement on the TIP in order to maximize safe traffic flow.

#### Scenic Roads Bylaw

Pursuant to MGL Chapter 40, Section 15C, the Planning Board adopted the Scenic Roads Act in 2004 which governs the cutting and removal of trees and stone walls during repair, maintenance, reconstruction or paving of roads by any agency, for the purpose of providing protection to the environmental, aesthetic and historical values of the town's roads.

The objectives of this bylaw are: To maintain the natural beauty that exists along scenic roads in Sterling; To enhance the rural character of the Town and encourage compatibility with existing roadside features; To encourage more environmentally sensitive development along the scenic roads in the Town, and; To develop a growth of shade trees along Sterling's scenic roads to reduce the growth of underbrush and reduce the cost of roadside maintenance.

The Planning Board, the Select Board, the Conservation Commission, the Historical Commission, or by citizen petition may propose scenic road status for any road in Sterling other than a numbered route or a state or federal highway.

## State Programs

### Safe Routes to School

This program is sponsored by the Massachusetts Department of Transportation and works to increase safe biking and walking among elementary and middle school students by using a collaborative, community-focused approach that bridges the gap between health and transportation. As of December 2019, the program serves 922 partner schools in 236 communities across the Commonwealth. This equates to 63.9% of all schools in Massachusetts. Sterling is not currently enrolled in the Safe Routes to School Program but is exploring options.



*Photo Credit: D. Tatasciore*

### Complete Streets Funding Program

A Complete Street is one that provides safe and accessible options for all travel modes including walking, biking, transit and vehicles for people of all ages and abilities. To participate in the state's Complete Streets Funding Program, a municipality must pass a Complete Streets Policy and then develop a Prioritization Plan (list of projects) that will ultimately be used to apply for funding from MassDOT to begin the construction of projects on the plan. In 2020, the town of Sterling had their Complete Streets Policy approved. At the time of this report, MassDOT has approved Sterling's Tier 1 Policy Statement and the town has secured funding to complete the Tier 2 Prioritization Plan and hopes to begin infrastructure improvements as soon as possible.

### Sustainability and Technology

The transportation sector is the largest and fastest growing contributor of greenhouse gases (GHGs). The goal of the Commonwealth is to reduce overall GHG emissions 80% by 2050 and to do so, transportation must play a key role. Technology, mainly electrified autonomous vehicles and other transportation technologies have the potential to improve safety, speed and efficiency, expand mobility options; and reduce GHGs emissions if they are harnessed properly and managed prudently.

More trips are made in personal vehicles in which the driver is the only occupant. Transportation systems are generally driven by development patterns not vice versa. Addressing development and land use patterns will aid in transportation challenges. To operate more efficiently, the transportation system needs to move more people in fewer vehicles. Increasing the availability and utilization of public transit and increasing the number of vehicles with more than one passenger would assist in this effort.

New transportation infrastructure must be well-thought-out with climate change in mind and existing infrastructure will need to be retrofitted over time to withstand sea level rise, more frequent and extreme precipitation, and hotter summers.





- Improve conditions of existing roadways;
- Provide upgrades, expansion and improvements to the pedestrian network in the core center of the community as well as in and around identified service areas, i.e. medical facilities, shopping centers, etc. Safer sidewalks and pedestrian corridors will also serve other segments of the population beyond the elderly;
- The aging of the region’s population requires that several issues be addressed:
  - Expanded transit options to vital services for elderly;
  - Expansion to needed services such as medical and shopping should remain a priority;
  - Connections between communities should be examined and implemented where feasible.
- Safety improvements along the road and pedestrian/bicycle networks need to be expanded and prioritized to help deal with the aging population as well as assisting with other segments with their activities;
- Identification and prioritization are needed for projects that assist the disabled community throughout the region. This would include better sidewalks, improved access to transit options, and eliminating gaps in the network that prevent or discourage usage (ex. incomplete or non-existing sidewalks on fixed route transit lines);
- Expand multi-modal options for commuters needs to also be a priority for the region. This would also involve the region’s trail/pedestrian/bicycle networks. These systems can be improved and expanded in order to provide additional walking and biking mode options.
- Additional planning is needed to address future technological advances in transportation as they occur and become more and more feasible. This would include issues such as:
  - Autonomous vehicles. Where will they “park” when riders have reached their destinations? Is there a need for special lots or facilities? Are there potential congestion issues at the start and end of work shifts? Will “peak hours” increase because the autonomous vehicle may be making additional trips to desired locations?
  - Alternative energy vehicles. Where should charging stations be located? How many facilities exist and do they adequately serve the population now? Environmentally, are there any drawbacks associated with batteries, etc., that need to be addressed?
- Ride share options. Can these systems be expanded to address the needs of the elderly, low income and disabled populations? Can the systems expand to the more rural communities to serve these areas without viable transit options?
- The population is getting more and more diverse in terms of minority populations and language. Additional efforts are needed to draw these individuals into the transportation planning process to ensure adequate representation and service.

## Circulation/Transportation Goals & Actions

With all these comments and concerns taken into account, the following are the goals and action items:

### Infrastructure

Due to the rising cost of improvements and the declining funds for preserving existing infrastructure it is challenging to make improvements to the pavement network. Building a historical and measurable database of conditions in the town of Sterling allows for a snapshot of overall conditions which will allow the town to determine how the network changes over

time. Maintaining historical databases of bridge and pavement data paired with applying proven methods of asset management and monitoring network conditions to determine trends are recommended.

**Goal 1: Maintain a roadway management plan to achieve a maintenance-oriented network and provide a basis for establishing budget levels.**

***Action Item #1: Develop a Pavement Management System***

The Town needs to protect its investment in roads and other public facilities such as bridges and culverts; lack of routine maintenance investment results in needless deterioration and replacement resulting in reduced utility of the facility and greater long-term replacement costs. Where appropriate, the town should seek local and federal funding assistance on eligible roads. Sterling should consider working with MRPC as well as the Massachusetts Department of Transportation (MassDOT) highway division office on projects and funding opportunities.

*Responsible Entity:* Sterling MJTC Representatives working with the Department of Public Works, Police Department, and reporting to the Sterling Select Board.

***Action Item #2: Inventory and Maintain Culverts***

Proper drainage is an essential element of road maintenance. The town should conduct and maintain an inventory of culverts within the community and seek to identify a mechanism to clean, repair and update the structures as needed. The town should also diligently conduct annual road side maintenance including the removal of winter sand and any blockage. The town could also incorporate greener designs such as street trees, rain gardens, bio-swales, paving materials and permeable surfaces, with plants and soils collecting rain water to reduce flooding and pollution.

*Responsible Entity:* Sterling Department of Public Works.

***Action Item #3: Schedule Yearly Traffic Counts with MRPC***

On an annual basis MRPC, solicits from each community up to 5 traffic count locations per calendar year. Sterling has taken advantage of this program in the past. The Town should continue to work with the MRPC to establish key traffic count locations to go along with those locations that are part of the MRPC's regional traffic count program. The purpose is to monitor traffic patterns over time in order to anticipate the need for future improvements. Traffic counts are conducted by MRPC at no cost to the community.

*Responsible Entity:* The Select Board is the responsible entity for forwarding traffic count requests to the MRPC and should solicit up to five potential locations for traffic counts from Town Boards and Departments (Department of Public Works, Police Department, Planning Board, etc.) on an annual basis.

***Action Item #4: Analyze Traffic Crash Data***

Analyze traffic crash data for crashes on major roads and intersections to determine the patterns and causes. Seek potential projects to address identified issues at major crash locations. Where appropriate, state and federal funding assistance should be utilized. Consider working with MRPC as well as the Massachusetts Department of Transportation (MassDOT) highway division office on projects and funding opportunities.

*Responsible Entity:* Sterling MJTC Representatives working with the Department of Public Works, Police Department, and reporting to the Sterling Select Board.

## Circulation within the Community

It is important that movement within the town of Sterling takes into consideration numerous factors such as safety, efficiency, multi-modal options and connectivity.

**Goal 2: Balance the need to facilitate traffic flow throughout the community as a whole with desires to make the roadways more walkable and bikeable; calm vehicle traffic speeds where appropriate.**

*Action Item #1: Development of a Complete Streets approach on all active and future roadway projects to further promote walking and cycling as safe and active transportation options.*

- Review and amend the Site Plan review bylaw and the Subdivision Rules and Regulations to incorporate this new approach.
- Develop a Complete Streets checklist that is appropriate for community goals and objectives.
- Upon completion of the Complete Streets Prioritization Plan, continue to update the plan in order to remain active and eligible for future state funding grants.

*Responsible Entity:* Sterling Select Board in cooperation with the Planning Board/ Department, Department of Public Works, and Police Department.

*Action Item #2:* Upon completion of the Complete Streets Prioritization Plan, continue to update the plan in order to remain active and eligible for future state funding grants. Include Complete Streets priority projects in the Capital Improvement Plan (develop one if not already done) to be implemented with Chapter 90 funding or funding through the Town's budget allocation. And, continue to actively engage with MassDOT to pursue funding for Complete Streets priority projects.

*Responsible Entity:* Department of Public Works

*Action Item #3: Develop a Comprehensive Circulation Study/Plan*

The town may seek to establish a Comprehensive Circulation Study/Plan of non-motorized users that could identify major travel routes, crosswalks, sidewalks, appropriate pavement markings and signage, etc. This plan should include major areas of concern for the town (i.e. downtown, town hall, library, schools, recreation facilities, etc.). In addition, this plan could identify links to the town's overall trail/bike network.

The Town should communicate with MRPC to investigate the possibility of conducting such a study under MRPC's Unified Planning Work Program (UPWP) at no cost to the community. The UPWP for the Montachusett Metropolitan Planning Organization (MPO) is a financial programming tool developed annually as part of the federally certified transportation planning process. This document contains task descriptions of the transportation planning program of the MPO, with associated budget information and funding sources for the program year. The purpose of the UPWP is to ensure a comprehensive, cooperative, and continuing (3C) transportation planning process in the Leominster-Fitchburg Urbanized Area and the Montachusett Region. Other funding options to supplement a project like this might include the Safe Routes to School Program - for more information, contact MassRIDES ([www.commute.com](http://www.commute.com)).



*Responsible Entity:* Sterling Select Board in cooperation with the Planning Board/Department, Department of Public Works, and Police Department.

**Action Item #4:** Enroll in Safe Routes to School

The Massachusetts Safe Routes to School (SRTS) Program is a federally funded initiative of the Massachusetts Department of Transportation (MassDOT) that encourages elementary and middle school students to safely walk and bike to/from school by using a collaborative, community-focused approach that bridges the gap between health and transportation. Sterling will be able to prioritize the construction of sidewalks and related repairs by the schools in addition to placing signage in school pick-up and drop-off areas to discourage vehicles from idling and thus reduce pollution from automobiles. Sterling is not currently enrolled in the Safe Routes to School Program. More information about this program can be found at <https://www.mass.gov/safe-routes-to-school>.

*Responsible Entity:* Have the Sterling School Committee/Department contact Safe Routes to School Staff to designate a liaison.

**Action Item #5:** Incorporate Traffic Calming Where Appropriate

Traffic calming measures include a range of strategies to slow down traffic and deter the use of local residential roads for through traffic. Strategies might include one-way streets, neckdowns or narrow travel lanes, on-street parking, or speed bumps. These strategies include ones that may be more effective than those currently employed by the town such as the development of cul-de-sacs and dead-end streets. Traffic calming must be conducted in a comprehensive manner—not piecemeal—otherwise traffic will simply shift from one local street to another. Enforcement measures should be identified and put in place. The Town can also require developers to implement traffic calming measures in new subdivisions. Additionally, the Town should explore the adoption of a Transportation Demand Management program, which is the application of strategies and policies to help reduce or redistribute travel demand throughout town.

*Responsible Entity:* Sterling Select Board with significant input from the Department of Public Works, Police Department, and Planning Board/Planning Department.

## Sustainability, Resiliency and Technology

Climate change impacts such as global warming is expected to increase the frequency of precipitation and severity of weather events. It is important to anticipate the impact of such factors on transportation infrastructure. The protection of our environment and the efficient connectivity of people to these assets should play a prominent role in transportation decision making now and in the future. Consideration should be given for future trends by promote electric charging (and/or alternative fuel) infrastructure to support the deployment of electric and autonomous vehicles.

### Goal 3: Prioritize sustainability and resiliency objectives when evaluating new and existing infrastructure.

**Action Item #1:** Consider environmental factors when reviewing and prioritizing transportation projects and proactively monitor and assess vulnerable infrastructures.

*Responsible Entity:* Department of Public Works

**Goal 4: Wherever possible, replace older municipal fleet vehicles with energy efficient and electric models. Provide electric vehicle charging stations within the town of Sterling.**

**Action Item #1:** Replace inefficient and older municipal vehicles with energy efficient models and seek grants to assist with this.

*Responsible Entity:* Department of Public Works

**Action Item #2:** Provide electric vehicle charging stations on municipal property.

*Responsible Entity:* Sterling Municipal Light Department and Department of Public Works

**Goal 5: Promote both an environmentally sensitive, sustainable use of the public right-of-way and foster scenic streetscapes.**

**Action Item #1:** Incorporate greener designs such as street trees, rain gardens, bio-swales, paving materials and permeable surfaces, with plants and soils collecting rain water to reduce flooding and pollution.

*Responsible Entity:* Department of Public Works

**Action Item #2:** Promote smarter technology-assisted design elements by incorporating intelligent signals and electric vehicle charging for greater system efficiencies and user convenience.

*Responsible Entity:* Department of Public Works and Police Department.

**Action Item #3:** Develop scenic streetscapes and landscaping that are close to the highways or along medians that can increase driver awareness resulting in slower speeds and safer streets; replace overhead utilities with underground services in the Town Center. This includes installing period lighting in the Town Center; lighting for sidewalks needs to be pedestrian-scale, designing ADA-compliant sidewalks and crosswalks in the Town Center, and; replacing existing faded crosswalks with imprinted/textured crosswalks at intersections and mid-block locations, where necessary.

*Responsible Entity:* Department of Public Works and Police Department, Sterling Municipal Light Department and Administration.

### **Age and Dementia-Friendly Options**

As Sterling is a certified Age and Dementia-Friendly community, it is important that the town's circulation and transportation components provides a focus on creating a social and physical environment that supports all ages and all abilities for equity an inclusion.

**Goal 6: Seek opportunities to improving transportation options at an appropriate scale and in an affordable manner for residents of all ages and abilities.**

**Action Item #1:** Expand transportation options for traveling regionally into and out of Sterling and explore the potential for a fixed or flexible route public transportation service.

*Responsible Entity:* Council on Aging and the Sterling Select Board.

**Action Item #2:** Strive towards Age and Disability Friendly Transportation

For seniors, many of whom are no longer able to drive, dependable transportation is a lifeline to the world. Availability of transportation, affordability, reliability and frequency, and safety

and comfort are age and disability friendly considerations that Sterling should continue to prioritize when engaging in any transportation efforts.

*Responsible Entity:* Sterling Council on Aging and the Sterling Select Board.

**Action Item #3:** Explore Transportation Alternatives to Connect the Youth Intra-Sterling

Connect Sterling youth intra-town at destination points, whether for employment or for socialization. Those without access to their own private vehicles are left to rely upon the availability of an adult to transport them to a specific destination. Exploring alternate sources or methods of transportation is recommended.

*Responsible Entity:* Sterling Select Board would be the appropriate board to contact MART.

**Action Item #4:** Strengthen Public Transportation

Since the town of Sterling is in relatively close proximity to the Leominster commuter rail line, there is a need to get residents and visitors to and from the train station possibly via transit bus or shuttle. This would be particularly useful for those residents who are considered low income, elderly or disabled. A way to initiate some progress would be for the Sterling Select Board to open a dialogue with the Montachusett Area Regional Transit Authority (MART). Discussion between Sterling and MART could include relevant/current MART programs.

*Responsible Entity:* Sterling Select Board would be the appropriate board to contact MART.

### **Pedestrian and Trail Network & Connectivity**

The desire for more multi-modal transportation options has increased as more residents see the value in having types of transportation options and they are also advocating for the development of newer and safer bicycle and pedestrian facilities. The Commonwealth is also contributing financially to trail projects that Sterling should explore.

### **Goal 7: Expand pedestrian, bicycle and trail networks inter- and intra-Sterling.**

**Action Item #1:** Actively Pursue Grant Funding for Trail Development

- MassTrails Grant program supports recreational trail and shared use pathway projects across the Commonwealth. This grant is reviewed and recommended by the Massachusetts Recreational Trails Advisory Board and the Commonwealth's Inter-Agency Trails Team.
- Recreational Trails Program (RTP) is federally funded through the Federal Highway Administration (FHWA), administered at the State level, and provide funding for the development and maintenance of recreational trail projects, both motorized and non-motorized.
- Commonwealth Trails Grant is funded through the State's annual Capital Investment Plan (CIP) and aim to help communities design, create and maintain off-road shared-use pathway connections between where Massachusetts residents live, learn, work, shop and recreate, especially by building out the longer distance regional networks of multi-use pathways across the state and filling in critical gaps in existing networks, or overcoming current barriers to connectivity.

*Responsible Entity:* Department of Public Works, Conservation Commission, Open Space Committee

**Action Item #2:** Establish a Regional Trail Network

Work with neighboring communities and regional entities to establish a regional trail network that would ultimately link Sterling to various recreational opportunities outside of the town (i.e. Leominster/Fitchburg Rail Trail). Currently there are limited bike and pedestrian trails within the community. The town may wish to identify, prioritize and implement additional trail opportunities. Bike lanes and/or sidewalks should be incorporated into roadway projects where appropriate. Roadway projects should take into account existing and/or possible future connections for trails and other multimodal infrastructure. Sterling should also create its own Community Trail Plan. MRPC can assist and there are other communities in the area that can be used as a model.

*Responsible Entity:* Sterling Select Board with significant input from the Department of Public Works, Conservation Commission, Open Space Committee, and Planning Board/Planning Department.

**Action Item #3:** Improve pedestrian mobility on rural residential roads by exploring opportunities for interconnecting short sections of trails and connecting cul-de-sacs.

*Responsible Entity:* Planning Board and Open Space Committee

**Action Item #4:** Fill in gaps in the sidewalk network by connecting neighborhoods. A map depicting the location of current and proposed sidewalks will help determine where connection needs to occur.

*Responsible Entity:* Department of Public Works

**Action Item #5:** Explore opportunities to expand and enhance current bicycle paths within the community and education to encourage bicycling in Sterling. A map depicting the location of existing and proposed bicycle paths/lanes will assist with gaps in connectivity to destination points.

- Sterling should engage neighborhoods, conduct a series of walking audits to learn where logical, connected bicycle pathways could be implemented and integrated into the existing networks.
- Develop a short and long term Bike & Walk Action Plan that prioritizes policies, projects and programs. Specific focuses should be made on identifying traditional and non-traditional funding sources.
- Install bicycle racks at key activity points.
- Improve bicycle mobility in the Town Center and on rural residential roads by expanding bicycle-related options such as bike lanes, sharrows, etc.

*Responsible Entity:* Department of Public Works and Open Space Committee

**Action Item #6:** Rehabilitate and Expand Sidewalks

Make the neighborhoods, especially the downtown, more pedestrian friendly through the construction and rehabilitation of sidewalks. Current design standards for ADA compliance should be incorporated. This effort could, at least in part, be incorporated into a Comprehensive Circulation Study/Plan (See Recommendation #6). Financing for needed roadway and sidewalk repair for Sterling's existing local roads include Enhancement funds, public/private partnership projects, and Community Development Block Grant funds (in moderate-income neighborhoods) for potentially eligible areas.

*Responsible Entity:* Sterling Select Board with significant input from the Department of Public Works, Police Department, and Planning Board/Planning Department.

### **Access and Availability of Public Parking**

Tied into the economic development success and endeavors of the town, there is a perceived concept that there is insufficient public parking in the Town Center. Establishing the location and the amount of parking is a worthwhile project.

### **Goal 8: Address the perceived lack of parking availability in the Town Center.**

*Action Item #1:* Develop a parking management plan for the Town Center area with a goal of identifying the most efficient means of utilizing the current parking supply, identifying future supply options and wayfinding, which is the directional signage or messaging that helps people navigate to a destination.

- Create a parking plan that focuses on the current and future needs of the Town Center.
- Install signage directing drivers to public parking spaces/lots in the Town Center.

*Responsible Entity:* Department of Public Works and Planning Board/Planning Department.