

7

Transportation

Introduction

Positioned at the junction of two major Interstate highways, I-84 and I-90, Sturbridge has excellent regional access to major urban areas. This regional interstate proximity brings benefits in terms of convenient access but also brings high traffic volumes and speeds, which compromises pedestrian, bicyclist and driver safety. For this reason, the location of Sturbridge at the junction of I-84 and I-90 is considered to be both a strength and weakness in terms of transportation and land use balance. In addition, Sturbridge's Main Street, Route 20, is a state-owned roadway.

The 1988 Sturbridge Master Plan identified traffic as one of Sturbridge's most pressing issues. During the public outreach efforts for this Master Plan, Sturbridge residents reiterated similar transportation-related themes from the 1988 Master Plan including:

- Develop an identity and sense of arrival into Sturbridge through the creation of distinct gateways and streetscaping, especially given the number of tourists coming to the area;
- Balance the need to facilitate traffic flow with desires to make the roadways more walkable and bikeable; calm vehicle traffic speeds where appropriate (especially through the Commercial Tourist District (CTD) along Route 20);
- Eliminate sign clutter and improve wayfinding to the key destinations;
- Ensure that paratransit service meets the expanding needs for elderly and disabled residents; and
- Make public transportation more available.

Over the last 30 years, Sturbridge has experienced rapid residential growth. The population is expected to continue to increase due to the availability of land, the relatively low cost of house lots, and the proximity and access to major highways.

Looking forward, the added demands on Sturbridge's transportation system from residential growth, tourism, and economic development could counter the transportation, driver and pedestrian/bicyclist safety, aesthetic, and community visions of the Town unless land use decisions and transportation infrastructure enhancements are made in a coordinated, multimodal, and sustainable manner.

This Transportation Element of the Sturbridge Master Plan identifies the range of transportation issues, needs, and deficiencies over the near and long-term and establishes goals and recommendations for physical enhancements and policy.

Key recommendations include:

- Seek to create distinct gateways in appropriate locations, develop scenic streetscapes, consider traffic calming measures, and consider access management strategies.
- Several key intersections were reviewed and potential recommendations include signage improvements, geometric improvements, installation of flashing or fully operational traffic signals, and installation of roundabouts.¹
- Pedestrian accommodation improvements focused on sidewalks and crosswalks, especially in the CTD area of Route 20/Main Street.
- Bicycle recommendations focused on exploring opportunities for bike lanes, commissioning a Bicycle Master Plan, and education to encourage bicycling in Sturbridge.
- Public transportation recommendations focused on working with local and regional transit providers and area businesses to evaluate the potential for new transit routes and the expansion of the paratransit service.
- Parking supply in the CTD on Route 20 was noted as limited and potential locations for parking areas are recommended.
- Signage recommendations include removing signage clutter, modifying and improving the consistency of existing signage, and considering modifications to the existing "Signs" chapter in the Sturbridge Zoning Bylaws.

Transportation Goals

As the Master Plan process progressed and input from community members was received, the following were common goals and needs for transportation in Sturbridge:



¹ Roundabouts differ from rotaries in several ways. The circle radius is six to seven times smaller than a typical rotary. Its design ensures that the travel speed within a roundabout is significantly slower than a rotary (15 mph versus 40 mph). Designated pedestrian crossings are usually provided in roundabout.

- Develop an identity and sense of arrival into Sturbridge through the creation of distinct gateways and streetscaping - especially given the number of tourists coming to the area; prioritize Route 20 through the CTD.
 - Balance the need to facilitate traffic flow with desires to make the roadways more walkable and bikeable; calm vehicle traffic speeds where appropriate (especially through the Commercial Tourist District along Route 20).
 - Eliminate sign clutter and improve wayfinding to the key destinations.
 - Make public transportation more available and increase opportunities for residents to walk and bicycle safely around Sturbridge.
 - Develop access management and traffic impact study guidelines.
 - Establish a collaborative working relationship with MassDOT.
- Develop a transportation plan that emphasizes safety and compliance with ADA requirements for sidewalks, crosswalks, and intersection infrastructure

Regional Context

Regionally, Sturbridge is positioned very close to major employment centers easily accessed by I-90 and I-84. Sturbridge is approximately 60 miles southwest of Boston, 20 miles southwest of Worcester, and 45 miles northeast of Hartford. While positioned close to these urban centers, Sturbridge has retained the character of a low-density, rural area.



Regional Planning

For the development of a Master Plan, it is important to acknowledge and understand the transportation planning and land use efforts of the adjacent communities to ensure that recommendations are consistent and complimentary across municipal bounds. Regional planning agencies (RPAs) play a key role in the development and execution of a municipality's Master Plan. As overseers of a larger area, RPAs help ensure that adjacent communities' plans are complementary. CMRPC is the RPA for Sturbridge.

These plans include:

- **Southbridge** – Southbridge's Long Term Plan recommends attracting new business and industry to the town and planning for a new access road to the Airport Industrial Park. A long term goal involves working with the Central Massachusetts Regional Planning Commission (CMRPC) to evaluate the potential of a new I-90 interchange with Route 169.

- **Charlton** – Charlton’s Master Plan recommends clustering heavy traffic generators where they can be served by existing major roadways, such as Route 20; and consideration of an east-west connector in the southern part of town. Charlton’s land use planning goals include: encouraging the use of Flexible Development Zoning to help preserve the rural character; locating industrial and regional office and commercial development along Route 20 and certain areas of Route 169 and certain areas of Route 31; and revising and upgrading zoning bylaws and subdivision regulations.
- **East Brookfield** – East Brookfield’s transportation recommendations include enhancing public transportation alternatives, including the development of a Park & Ride facility near the town center and extension of the Worcester branch of the MBTA commuter rail. The availability (and potential impact) of these facilities to Sturbridge residents should be explored further.

East Brookfield has also developed land use planning goals including conducting a feasibility study for a business/industrial park within a portion of the Route 49 Commercial District and expanding zoning bylaws to enhance economic development options.

- **Brimfield** – Brimfield’s Community Development Plan has outlined several key strategies including prioritizing the maintenance of Route 20, increasing the Town’s limited commercial tax base, and focusing on well-managed development along Route 20.
- **Holland** –Holland’s Community Development Plan identifies the goal of enhancing the potential for small-scale economic development through zoning and other regulatory strategies.



Statewide Transportation Improvement Program (TIP)

The Transportation Improvement Program (TIP) and Air Quality Conformity Determination is an intermodal program of transportation improvements produced annually by the Central Massachusetts Metropolitan Planning Organization (CMMPO). The TIP serves as the implementation arm of the CMMPO’s 25-year Regional Transportation Plan by incrementally programming funding for improvements over the next four-year period. It programs federal-aid funds for transit projects and state and federal aid funds for roadway projects.

The following two projects in Sturbridge are noted in the 2011-2014 TIP:

- **Grand Trunk Trail** – Construction of a 0.75 mile bikeway (design of the bikeway was included in the 2010 TIP); and
- **I-84** – Pavement rehabilitation and maintenance.

Reconstruction of Route 148 (Fiskdale Road) in Brookfield from Molasses Hill Road to the Sturbridge town line, including Webber Road is included in the TIP.

Existing Conditions

Mobility in and around Sturbridge is the central theme of the Transportation Element of the Master Plan. The sections below discuss the components that comprise the existing transportation network in Sturbridge.



Roadway Jurisdiction/Functional Classification

The jurisdiction of roadways in Sturbridge is depicted on Figure 7.1 and summarized on Table 7.1. The jurisdiction of a roadway indicates the ownership and responsibility for maintenance, enhancements, and repairs.

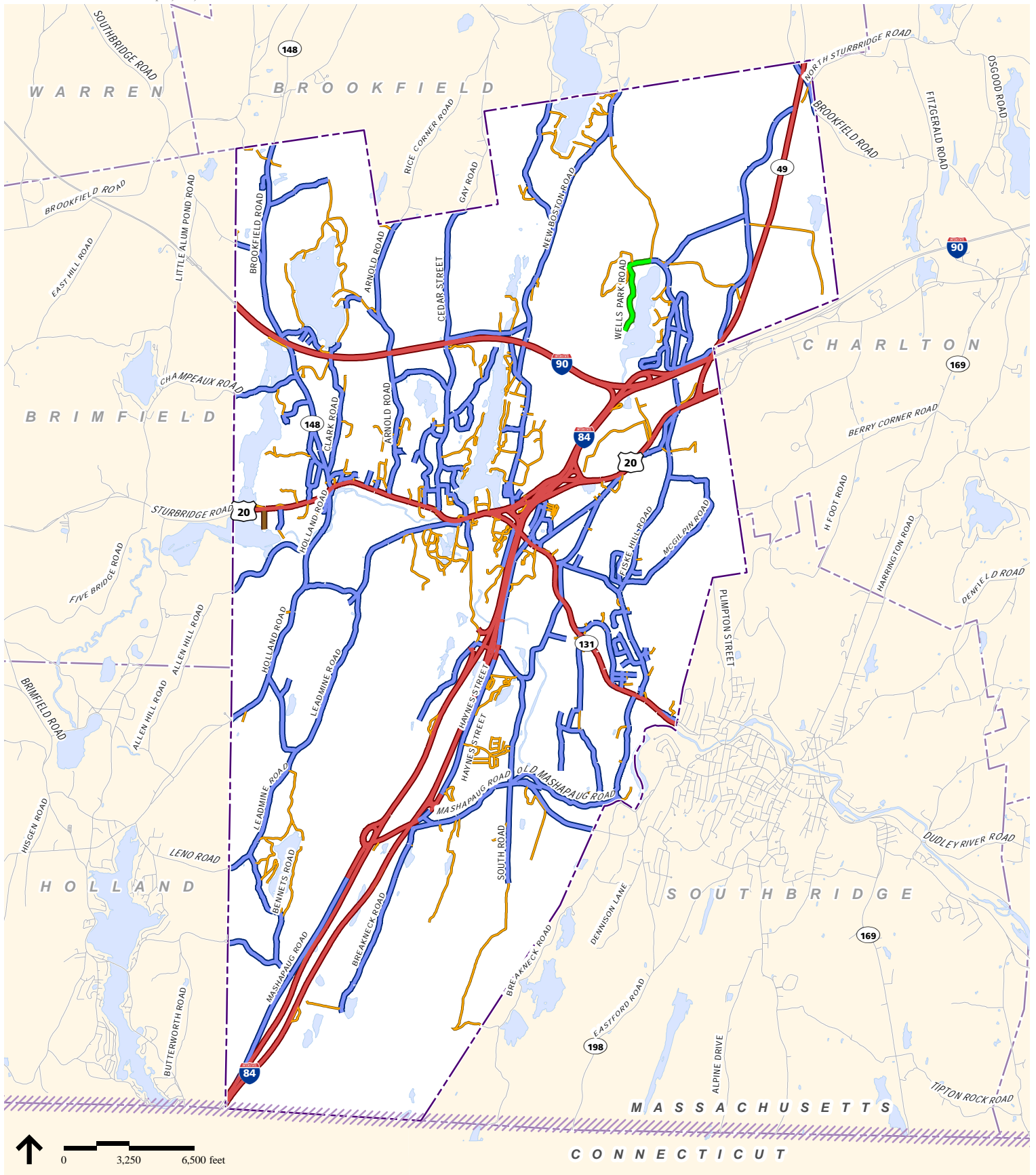
Table 7.1 Jurisdiction of Roadways in Sturbridge

Roadway Ownership	Length (miles)	Length (%)
Town-owned roads	80	43%
Private roads unaccepted by the Town	58	31%
MassDOT roads (I-90, I-84, Route 20, Route 131, Route 49)	48	25%
Other (State Park, Army Corp of Engineers)	<u>1</u>	<u>1%</u>
Total	187	100%

Source: Office of Geographic Information (MassGIS), Commonwealth of MA Information Technology Division

While the majority of the roadway system falls under the jurisdiction of the Town of Sturbridge (80 miles, or 43 percent), the critical gateway roadway through the CTD, Route 20, is under MassDOT control.

The functional classification of roadways in Sturbridge is depicted on Figure 7.2 and summarized in Table 7.2. A roadways functional classification indicates its design function – to serve local demands with multiple driveways to maximize access; or to serve regional demands with limited access points to maximize mobility.



Source(s): MassGIS

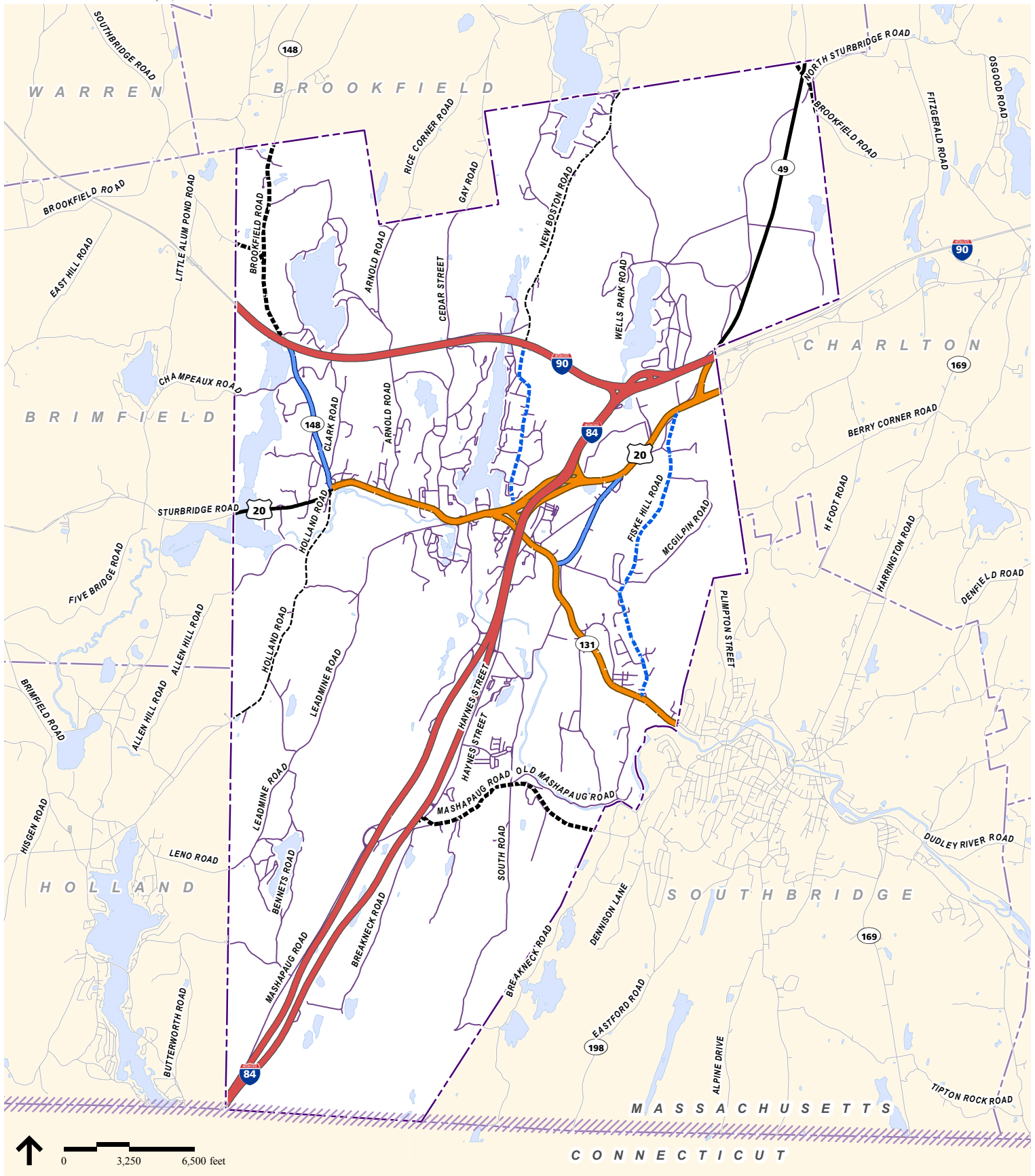
Legend

Jurisdiction

- Town/Public
- MassDOT
- State Park
- Army Corp
- Private/Unaccepted

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Figure 7.1
Roadway Jurisdiction



Source(s): MassGIS

Legend

Functional Classification			
———	Interstate	- - - - -	Urban Collector
———	Urban Principal Arterial	- - - - -	Rural Minor Collector
———	Urban Minor Arterial	———	Rural and Urban Local
		- - - - -	Rural Major Collector

VIIB Vanasse Hangen Brustlin, Inc.

Figure 7.2

Roadway Functional Classification

Sturbridge Master Plan
Sturbridge, Massachusetts

Table 7.2 Functional Classification of Roadways in Sturbridge

Functional Classification	Length (miles)	Length (%)
Local Roads (Rural and Urban)	125	66%
Interstates (I-90 and I-84)	27	14%
Urban Principal Arterials* (Route 20 and Route 131)	13	7%
Rural Minor Collectors* (Route 148)	5	3%
Rural Major Collectors*	5	3%
Urban Collectors*	5	3%
Rural Minor Arterials*	4	2%
Urban Minor Arterials* (Route 148)	<u>3</u>	<u>2%</u>
Total	187	100%

Source: Office of Geographic Information (MassGIS), Commonwealth of MA Information Technology Division

* Eligible for Surface Transportation Program (STP) federal funding for improvements.

The majority of the roadways in Sturbridge are classified as local roadways totaling 126 miles, or 66 percent of the total roadway miles in Sturbridge. Interstate highways (I-90 and I-84) comprise 27 miles or 14 percent. Route 20 and Route 131 are classified as urban principal arterials since they serve as the primary links to the interstate highway system.



Roadway Network

Vehicular traffic in Sturbridge is carried on several key roadways. The major east-west roadways in Sturbridge are Route 20 and Route 131. The major north-south roadways in Sturbridge are Route 148, New Boston Road, Route 15, and Route 49.

Two interstate highways travel through the Town. The Massachusetts Turnpike (I-90) is an east-west interstate that connects Boston to New York State. The nearest access point to I-90 is located at the regional connection with Interstate 84 (I-84) in Sturbridge. I-84 is a north-south interstate that provides access to Connecticut and points southwest. The northern terminus of I-84 is at I-90 in Sturbridge.

Route 20

Route 20 parallels I-90 to the south and provides regional east-west access. Route 20 is under the jurisdiction of MassDOT. There are three distinct areas along Route 20 through Sturbridge with varying character and transportation-related issues.

Route 49 to I-84

The eastern segment of Route 20 from Route 49 to the interchange of I-84 is a four-lane cross-section with turning lanes at key intersections. Speed limits along this

stretch range from 45 to 50 miles per hour (mph). The adjacent land uses vary as Route 20 travels from east to west. Near Route 49, land uses are spread out with few curb cuts. As the road travels west towards the interchange of I-84, land uses become more tailored to tourism with hotels, restaurants, and retail uses with multiple curb cuts. There are no sidewalks in this area of Route 20. Safety is an issue for this entire stretch of Route 20 and in particular at the following intersections:

- **Route 20 and Fiske Hill Road/Picker Road** – Left-turns are prohibited from Fiske Hill Road; however, vehicles illegally make this movement. Additionally, although left-turns from Picker Road are permitted, the movement is difficult given the speed of through traffic along Route 20.
- **Route 20 and Hall Road** – Left-turns out of Hall Road are extremely difficult across a 4-lane cross-section on Route 20. Route 20 speeds, limited gaps, and many nearby curb cuts combine to make it difficult to turn left from Hall Road.
- **Route 20 and Comfort Inn/Cracker Barrel driveway** – Similar to the Hall Road intersection, the high speed of traffic on Route 20, limited gaps, nearby curb cuts, and the proximity to the I-84 ramps makes it difficult to access Route 20. There have been multiple serious injury crashes at this intersection.

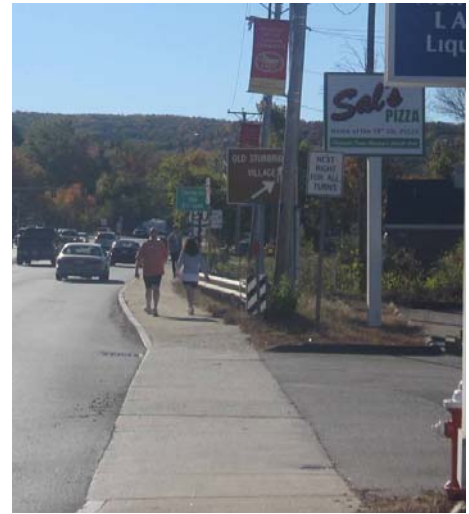
I-84 to Cedar Street

From the interchange of I-84 to Cedar Street, Route 20 provides a four-lane cross-section with turning lanes at key intersections. A concrete median divides eastbound and westbound traffic. There is a desire to provide a more scenic streetscape and gateways along this stretch of Route 20 to convey a sense of arrival and help calm vehicle speeds. Speed limits along this stretch range from 30 to 35 mph. The adjacent land uses in this area are primarily tailored to tourism with hotels, restaurants, and retail uses. Sidewalks are present along both sides of Route 20 from Route 131 to Cedar Street. Route 20 has recently been repaved from New Boston Road to just west of Cedar Street. The following intersections in this area of Route 20 have safety and/or congestion issues:

- **Route 20 and New Boston Road** – Left turns out of New Boston Road are extremely difficult due to Route 20 speeds coupled with the proximity to the I-84 ramps. As redevelopment plans for the hotel parcel in the northwest corner progress, concerns at this intersection should be taken into consideration.
- **Route 20 and Route 131** – Traffic congestion and confusing signage are the primary concerns at this intersection. Additionally, Route 131 east of this intersection and Route 20 west of this intersection are both known as “Main Street,” which is confusing to tourists and those unfamiliar with the area. The intersection consumes a large amount of land with large islands.
- **Route 20 and Stallion Hill Road** – Access to Old Sturbridge Village (OSV) is provided at the Stallion Hill Road intersection. Drivers coming from the east must use a jughandle at Stallion Hill Road (left-turns are prohibited). Although

there is directional signage for the jughandle, drivers often make an illegal left-turn from Route 20 to Stallion Hill Road after missing the jughandle turn.

There is an overabundance of signs along this portion of Route 20 which include different shapes, sizes, and colors of traffic advisory/street signs, directional signs, and commercial business signs. These signs, intended to provide direction and guidance, has actually had the opposite effect of confusing and distracting most drivers unfamiliar with the area. While the Sturbridge Zoning Bylaws include a “Signs” chapter which regulates the number, size, style, and location of signage throughout the Town, modifications to this bylaw could be considered to address signage clutter concerns and require a consistent approach to the placement and look of wayfinding signs in public view.



Signage clutter along Route 20

Cedar Street to Route 148

Approximately one-mile of Route 20 from Cedar Street to Route 148 is designated as the CTD. A Commercial/ Tourist District Revitalization Study was conducted in December 2009 by CMRPC. The recommendations of this study, along with input from the community have been incorporated in this section.

Route 20 in the CTD is known locally as Main Street and is two lanes with no median. The posted speed limit is 35 miles per hour, although traffic in this portion of Route 20 typically moves at an estimated average speed of 35-45 miles per hour. This one-mile corridor is part of a larger stretch of road, between Bates Hill Road and Route 131, which has been deemed as one of 32 “high crash corridors” in the Central Massachusetts region. Additionally, the following intersections in this area of Route 20 have safety and/or congestion issues:

- **Route 20 and Cedar Street** – This signalized intersection was included in the Route 20 repaving project. There is a desire to provide a more attractive streetscape at this location.
- **Route 20 and Arnold Road** – The separate left- and right-turn lanes for the Arnold Road approach can be problematic. A driver exiting Arnold Road to head west on Route 20 blocks the sight line of a driver exiting Arnold to head east on Route 20. Sight distance improvements should be explored for this approach.

The adjacent land uses in this area have a small town scale; however the pedestrian accommodations do not reflect this. Sidewalks exist along the entire northern side of the roadway. Along the south side of the road in this stretch, sidewalks occur in only about one-third of the area, including a 100-foot length of brick walkway in front of the Sturbridge Marketplace, and a similar stretch in front of the Yankee Peddler.

Where sidewalks are not present, worn paths or “cow paths” were observed that confirm pedestrian activity and desire lines. Many sidewalks have obstructions such as utility poles and many have not yet been upgraded to be ADA compliant.

There are approximately six crosswalks that exist in this district, however only one of them (at Cedar Street) has pedestrian signals (without countdown timers). The design of the existing crosswalks is very basic, with white painted lines that are fading. Several crosswalks lack ADA compliant ramps from the sidewalk to the crosswalks or where there are ramps, there is not a level landing area on the sidewalk. There are no detectable warning pads on the crosswalks or sidewalks to help blind pedestrians identify the vehicular the conflict points at intersection and midblock crosswalk locations. The condition of the crosswalks, together with a lack of adequate sidewalks discourages pedestrians from walking along the corridor.

The Route 20 CTD lacks adequate parking supply to accommodate the residents, services, and businesses in the town. On-street parking is not permitted in this portion of Route 20 and there are no municipal parking lots. There are a number of areas where parking lots adjacent to the roadway have no curbing to define areas of entry or exit. This results in motor vehicles moving in an uncontrolled manner, and creates a potential hazard for pedestrians walking through these areas.



Worn pedestrian path along Route 20 illustrates a desire line.



Sidewalk obstruction and steep grass slope along Route 20.

The overhead utility wires and poles are seen as a visual eyesore to the character of this area of Main Street and there is local desire to have them either buried or relocated. Moreover, utility poles typically obstruct pedestrians in areas of narrow sidewalks.

Route 131

Route 131 begins at Route 20 and travels southeast to the Southbridge town line. Route 131 is known locally as Main Street and is a two-lane cross-section with turning lanes at key intersections. Route 131 is under the jurisdiction of MassDOT. Speed limits along the corridor range from 25 to 30 mph near Route 20 to 35 to 40 mph east of Route 15. The roadway links Route 20 and the hospitality/entertainment zone with the historic Town Hall, Town Common, and then Southbridge center and the Harrington Hospital medical district to the south. Route 131 is currently undergoing a repaving and sidewalk construction project. There is a desire to provide a more scenic streetscape, particularly at Farquar Road, Willard Road, and at the Public Safety Complex. The following intersections along the Route 131 corridor have safety and/or congestion issues:



Typical Route 131 cross-section.

- **Route 131 and Route 15** – Potential increases to traffic and truck volumes are of concern due to the future potential recreational development of Route 15.
- **Route 131 and Hall Road** – Traffic flow at this location is influenced by the Route 131 through traffic speeds of 40 mph.
- **Route 131 and Shepard Road** – The existing grade of Shepard Road creates sight distance issues for turning vehicles. There is also high truck traffic volumes related to activities at the Southbridge Landfill.
- **Route 131 and Fiske Hill Road** – This intersection is currently under construction and the new design aims to increase safety and provide for more efficient traffic flow.

Route 148

Running north/south to the west of I-84, Route 148/Brookfield Road is two-lanes and provides access between Brookfield and the Tantasqua Regional High School in the north and Route 20. The roadway becomes to Holland Road south of Route 20. Although a numbered route, Route 148 is not a state highway and is under Town jurisdiction. Speed limits along the corridor range from 30 mph near Route 20 to 45 mph north of Route 20. The majority of the corridor consists of residential uses.

Route 15 (Mashapaug Road/Haynes Street)

Running north/south and parallel to I-84, this two-lane roadway provides access between Connecticut and Route 131 and to a number of the Town's natural resource areas. Although a numbered route, Route 15 is not a state highway and is under local jurisdiction. Speed limits along the corridor range from 45 to 50 mph. While the majority of the corridor is undeveloped, the Town's economic development objectives include potentially expanding recreational opportunities along this corridor.

Buses travelling I-84 between Boston and New York City typically make a rest stop on Route 15. There is a desire to potentially modify the bus routes to include an official stop along Route 15. The creation of a Park and Ride lot on Route 15 could encourage use of the bus and commuter service. Careful attention should be paid towards retaining the tree buffer along the perimeter of the lot.

Route 49

Running north/south east of I-84, Route 49/Podunk Pike is two-lanes and provides access between East Brookfield and Route 9 in the north and terminates at Route 20 in the south. Route 49 is under the jurisdiction of MassDOT. Speed limits along the corridor range from 35 mph near Route 20 to 55 mph north of Route 20. The majority of the corridor is undeveloped due to wetlands, Wells State Park, and existing single-family homes on residentially zoned parcels that have frontage on Podunk Road and Route 49.

Fiske Hill Road

Running north/south east of I-84, Fiske Hill Road is one lane in each direction and provides access between Route 20 in the north and Route 131 in the south. Fiske Hill Road is under the jurisdiction of the Town of Sturbridge. The majority of the corridor is residential in nature. The roadway is often used as a north-south cut-through for vehicles traveling between Route 20 and Route 131 and speeding was observed to be an issue.



Vehicular Traffic

To gain an understanding of existing travel patterns and to provide a basis for recommendations, historical traffic data, trip distribution patterns, and transportation mode choice data were obtained.

Traffic Volumes

Table 7.3 summarizes traffic volumes and growth on various roadways throughout Sturbridge using MassDOT² and CMRPC³ historical traffic volume data.

Table 7.3 Traffic Volumes on Select Roadways in Sturbridge

Route	Source	Count Date	Average Daily Traffic Volume ¹
I- 84 north of Route 20	MassDOT	2009	62,300
Route 49 north of Route 20	CMRPC	2008	8,000
Route 148 south of I-90	CMRPC	2008	6,800
Fiske Hill Rd. south of Route 20	CMRPC	2008	2,800
Fiske Hill Rd. north of Route 131	CMRPC	2008	3,700
Route 20 at Brimfield T.L.	CMRPC	2008	8,400
Route 131 at Southbridge T.L.	CMRPC	2008	14,000
Arnold Rd. north of Route 20	CMRPC	2008	1,100
Cedar St. south of I-90	CMRPC	2008	1,100
Route 15 south of Route 131	CMRPC	2008	1,800
I- 90 between Exits 9-10	MassDOT	2006	95,000

Source: MassDOT and CMRPC traffic count data

¹ Average daily traffic volumes expressed in vehicles per day (vpd).

As would be expected, traffic volumes along I-90 and I-84 are the highest in Sturbridge, carrying approximately 95,000 and 62,300 vehicles per day (vpd), respectively.

Route 131 carries the next highest number of vehicles with 14,000 vpd, followed by Route 20 with 8,400 vpd, Route 49 with 8,000 vpd, and Route 148 with 6,800 vpd.

Fiske Hill Road carries between 2,800 vpd and 3,700 vpd. Arnold Road, Cedar Street, and Route 15 accommodate more local traffic with volumes less than 2,000 vpd.



² <http://www.mhd.state.ma.us/default.asp?pgid=content/traffic01&sid=about>, accessed October 12, 2010

³ <http://www.cmrpc.org/Regional-Traffic-Counting.aspx>, accessed October 12, 2010

Journey-to-Work

A review of US Census journey-to-work data⁴ for Sturbridge residents reveals commuting trends - specifically work location and mode choice. Table 7.4 summarizes these data.

Table 7.4 2000 Census Journey-to-Work Data for Sturbridge Residents

Location of Employment	Percent of Sturbridge Residents
Sturbridge	26%
Worcester	15%
Southbridge	11%
Marlborough	3%
Charlton	3%
Auburn	3%
Springfield	2%
Spencer	2%
Webster	2%
Westborough	2%
Shrewsbury	2%
Dudley	1%
Framingham	1%
Boston	1%
Other ¹	26%

Source: US Census, 2000, Census Transportation Planning Package, Part 3 – CT, MA, RI, May 2004

¹ Other towns and cities not listed comprise less than one percent each of employment locations of Sturbridge residents.

Approximately 26 percent of Sturbridge residents were also employed in Sturbridge in 2000. The top commute single destinations outside Sturbridge were Worcester (15 percent) and Southbridge (11 percent).

The majority of the remaining commute destinations are neighboring towns and employment centers near Worcester and I-495. Approximately 1 percent of Sturbridge residents work in Boston.



⁴ US Census, 2000, Census Transportation Planning Package, Part 3, 2004

The journey-to-work census data was also reviewed to determine where people live who commute to Sturbridge. Table 7.5 summarizes these data.

Table 7.5 2000 Census Journey-to-Work Data for Sturbridge Workers

Location of Residence	Percent of Sturbridge Workers
Sturbridge	22%
Southbridge	15%
Worcester	5%
Warren	4%
Charlton	4%
Brimfield	4%
Holland	3%
Spencer	3%
West Brookfield	2%
Brookfield	2%
Dudley	2%
Monson	2%
North Brookfield	2%
Wales	2%
Thompson, CT	2%
East Brookfield	1%
Holden	1%
Oxford	1%
Belchertown	1%
Other ¹	22%

Source: US Census, 2000, Census Transportation Planning Package, Part 3 – CT, MA, RI, May 2004

¹ Other towns and cities not listed comprise less than one percent each of employment locations of Sturbridge residents.

Approximately 22 percent of Sturbridge workers also live in Sturbridge. Approximately 15 percent of people employed in Sturbridge resided in Southbridge and 5 percent in Worcester. The majority of the remaining locations of residence of Sturbridge employees are neighboring towns, including one town in Connecticut.

Mode Choice

Similar to the journey-to-work evaluation, Table 7-6 summarizes the mode choice for Sturbridge residents and Sturbridge workers.

Table 7-6 Sturbridge Journey-to-work Mode Choice

Mode	Percent of Employed Sturbridge Residents	Percent of Sturbridge Workers
Single-Occupant Automobile	84%	82%
Multiple-Occupant Automobile	9%	12%
Transit	1%	0%
Walk/Bicycle	1%	1%
Other	0%	1%
Work at Home	5%	4%
Total	100%	100%

Source: US Census, 2000, Census Transportation Planning Package, Part 3 – CT, MA, RI, May 2004

Approximately 93 percent of Sturbridge residents take a car to work – either alone (84 percent) or with others (9 percent). Approximately five percent of Sturbridge residents work from home. Transit and walk/bicycle modes rounded out the survey results; approximately two percent of Sturbridge residents either utilized transit or walked/ bicycled.

Approximately 94 percent of Sturbridge workers take a car to work – either alone (82 percent) or with others (12 percent). Approximately four percent of employees of businesses in Sturbridge work from home. Walk, bicycle, other, and transit modes comprise approximately two percent of Sturbridge workers. Less than one percent of Sturbridge workers utilized transit.

The low transit mode share for Sturbridge residents and workers reflects the limited public transportation options in the Town. This lack of public transportation options was cited as a weakness of the Town by residents at the Public Forum.



Safety

In addition to intersection issues noted in previous sections, the following intersections in Sturbridge were noted as “Medium Priority” in the CMRPC 2006-2008 Highway Safety Report:

- Route 20 and Route 49/Podunk Pike;
- Route 20 and Fiske Hill Road; and
- Route 20/Main Street and Stallion Hill Road.

Further, Route 20 between Bates Hill Road and Route 131 was deemed as one of 32 “high crash corridors” by CMRPC for the years 2004-2006.



Transit

Public transportation opportunities are limited in Sturbridge. Sturbridge is a member of the Worcester Regional Transit Authority (WRTA) but does not have fixed-route service. The WRTA does provide on-demand service through South Central Mass Elderbus, Inc. Elderbus is a private paratransit transportation company, under contract with the WRTA that provides transportation to the elderly and disabled in Sturbridge.

MassRIDES sponsors a commuter van service from Sturbridge to Boston with a Park-and-Ride lot at the Bethlehem Lutheran Church (located at junction of Route 131 and Route 20).

There is no passenger rail service in Sturbridge.



Pedestrians and Bicycles

In the Public Forum on November 21, 2009, residents stated that building and/or repairing sidewalks is the most pressing transportation need. The presence and condition of pedestrian accommodations along the major roadways throughout Sturbridge has been discussed in previous sections and a series of issues have been identified. These issues/needs include:

- Lack of sidewalks on both sides of Route 20/Main Street in the CTD;
- Condition of existing sidewalks on Route 20/Main Street in the CTD; many existing sidewalks have obstructions such as telephone poles and are not ADA compliant;
- Crosswalk design and visibility;
- Need for signage to reinforce vehicle and pedestrian awareness; and
- Need to improve pedestrian and bicycle traffic on rural residential and suburban residential roads.

When considering new construction or rehabilitation of existing sites, consideration should be made to encourage safe pedestrian movement. Potential references to design pedestrian facilities could include the Walkable Communities proposal, CMRPC Walkable Communities, CMRPC 2007 Growth and Transportation Survey, and community input.

There are currently no dedicated bicycle facilities in Sturbridge. However, eight in ten Sturbridge residents favor the Town providing more dedicated bike routes. These routes would meet the desires of the residents, as well as add to the tourism diversity. For example, the Cape Cod Rail Trail has had a tremendously positive impact on tourism and economic development.



Bridges

There are several bridges in Sturbridge that are routinely inspected by MassDOT using National Bridge Inspection Standards (NBIS). The primary purpose of the NBIS is to locate, evaluate, and act on existing bridge deficiencies to ensure that the bridges are safe for the traveling public. Each NBIS bridge is inspected at regular intervals of two years with certain types or groups of bridges requiring inspections at less than two-year cycles.

Table 7-7 summarizes the seven bridges in Sturbridge that are classified as “structurally deficient” or “functionally obsolete” by NBIS standards. Structural deficiencies are characterized by deteriorated conditions of significant bridge elements and reduced load-carrying capacity. Functional obsolescence is a function of the geometrics of the bridge not meeting current design standards based on traffic demands carried, including lane or shoulder widths or horizontal/vertical curvature. Neither type of deficiency indicates that a bridge is unsafe.

Table 7-7 Sturbridge Deficient/Obsolete Bridges

Bridge #	Bridge Carrying	At	Owner	Year Built	Year Rebuilt	Deficiency
S-30-003	Farquahar Road	Quinebaug River	Town of Sturbridge	1938	1956	Functionally Obsolete
S-30-004	Haynes Street	Quinebaug River	MassDOT	1961		Structurally Deficient
S-30-007	Holland Road	Quinebaug River	Town of Sturbridge	1956		Functionally Obsolete
S-30-023	Route 20/Main Street	Long Pond	MassDOT	1958		Functionally Obsolete
S-30-036	I-84 westbound	Route 15	MassDOT	1970		Functionally Obsolete
S-30-041	I-84 eastbound	Quinebaug River	MassDOT	1970		Functionally Obsolete
S-30-043	I-84 westbound	Route 20 eastbound	MassDOT	1973		Functionally Obsolete

Source: MassDOT NBIS Master List 2008.

The Sturbridge DPW indicated three bridges under local jurisdiction that are in need of repair and should be prioritized:

- Holland Road;
- Champeaux Road; and
- Farquahar Road.

Both Holland Road and Farquahar Road were noted by MassDOT to be “functionally obsolete” by NBIS standards. All of these bridges have immediate structural and support needs. These bridges were installed and designed 50 to 60 years ago when Sturbridge had substantially less traffic.

Future Conditions

The next step in the planning process is to identify growth trends in the area (see Chapter 3 for population and housing forecasts). These trends are often based on previous traffic volume patterns (as described in Table 7-3), past and forecasted population growth, and major development projects.

Future Challenges and Opportunities

As described in Chapter 4, Economic Development, Sturbridge's population has steadily grown over the last six decades and is expected to continue growing through 2030 due in part to its accessibility to major highways. Increases in population in the future will lead to increased vehicular traffic along both the minor and major roadways in Sturbridge. These increased traffic volumes will impact the ability of existing transportation infrastructure to handle the increased demand placed on it, particularly during the morning and evening peak hours. In order to avoid operational and safety issues along roadways and at intersections in the Town, alternative modes of transportation should be investigated further. These alternatives could include expanded shuttle bus service, car pooling, public transportation, telecommuting, and improved pedestrian and bicycle accessibility.

Planned Developments

Currently, there are several development proposals that would have significant impacts to traffic conditions on the Town's roadways. The development projects are described in Chapter 2 – Land Use and Community Design.

Transportation Recommendations

Sturbridge transportation must meet the needs of its residents, commuters (traveling through town), tourists, and commercial trucking through vehicular, public transportation, bicycle and pedestrian means. Transportation must be convenient, safe, aesthetically pleasing and environmentally friendly as it meets the complex needs of residents and travelers. A thorough transportation plan which ties Sturbridge in with neighboring communities, and connecting to the greater region, is essential to ensure a sustainable system over the long-term. The goals and recommendations described in this section are based upon this framework.

Recommendations

Taking into account the existing and future issues, needs, and the goals of the transportation element, the following specific recommendations have been developed.

While funding sources have not been identified for these recommendations, there are many candidate sources including:

- Surface Transportation Program (STP) federal funding for eligible roadways (Route 49, 20, 131, 148, and 15);
- Public Works Economic Development Grants (PWED);
- Commercial Development Block Grants; and
- Chapter 90 funding for Town-owned roads.

1. Roadways

Issue: Need to improve the traffic flow, character, and safety of roadways in Sturbridge.

Recommendations:

For state-owned roadways, these recommendations would have to be vetted with MassDOT. The Town should work with MassDOT to consider elements of these recommendations for further study that could be included in the TIP. Since Route 20 is included in a list of high-crash corridors compiled by CMRPC for the years 2004-2006, Surface Transportation Program (STP) funds could potentially be used for safety improvements.

1.1 Develop Distinct Gateways

Both the Sturbridge Heritage & Preservation Partnership Study and the Commercial/Tourist District Revitalization Plan reflect the community desire for an attractive gateway at each end of the Main Street section of Route 20. The specific areas that could serve as gateways include New Boston Road and/or Route 131 to the east and Route 148 to the west. If feasible from a right-of-way and traffic flow standpoint, roundabouts at these locations would serve the dual role of creating a gateway and calming traffic thereby improving conditions for pedestrians and bicyclists.

1.2 Develop Scenic Streetscapes

Durable landscaping that is close to the highway or along medians can increase the driver's awareness of the immediate environment and alter behavior, resulting in slower speeds and a safer street. The following streetscape strategies should be considered:

- Consider a landscaped median on Route 20, with particular attention to New Boston Road to Route 131, the CTD and the Route 49 intersection area;
- Creating an attractive landscape on both sides of Route 20 in the area of New Boston Road. Improve both advertising, business, and directional signage to address sign clutter;
- Consider replacing overhead utilities with underground services in the CTD;
- Consider replacing the existing street lighting with period lighting in the CTD. Lighting for sidewalks needs to be lower, pedestrian scale, and more closely spaced than conventional “cobra head” street lights;
- Design ADA compliant sidewalks that include a landscaping buffer between the sidewalk and roadway in CTD;
- Replace the existing faded crosswalks with imprinted/textured crosswalks at intersections and mid-block locations along Route 20 through the CTD.

1.3 Consider Traffic Calming Measures

Traffic calming involves changes in street alignment and other physical measures to reduce traffic speeds in the interest of street safety and livability. The following traffic calming elements could be considered for the CTD along Route 20:

- Curb extensions/bump outs/neckdowns along with complimentary on-street parking;
- Narrowed travel lanes and widened shoulders with potential for bike lanes (Route 20 and Route 131);
- Rumble strips (only in non-residential/non-business areas due to noise);
- Raised crosswalks; and
- Roundabouts.



Example of a roundabout from North Haven, New York

Two other areas of Route 20 were noted to have vehicular speeding and safety issues. Recommendations to calm traffic in these areas include:

- **Route 20 westbound at I-90 ramps:** Install a transverse rumble strip on Route 20 westbound just after the ramp from the I-90. This would alert drivers to the dangerous intersection ahead and slow the traffic to a safer speed.
- **Route 20 from Route 49 to I-84:** Consider the following centerline/median treatments:

- Widen the double yellow line and install a centerline rumble strip within these yellow lines on Route 20 from Route 49 to the median east of Route 84; or
- Consider extending the landscaped median from Route 84 potentially as far as Route 49, as a means of improving safety through access management with the added benefits of traffic calming and aesthetic improvement.

1.4 Access Management and Compact Development

Develop access management and traffic impact study guidelines and incorporate them into the zoning bylaw and subdivision regulations. Minimizing curb cuts and greater separation between driveways improve safety, appearance, and the viability of roadways. An access management approach would benefit Route 131 where there is an abundance of driveways and strip malls.

Review the zoning bylaws and consider amendments that would encourage mixed-use (residential, office, retail) and compact/clustered development in areas already served by transportation infrastructure.

1.5 Bridge Repairs

Prioritize bridge repairs along:

- Holland Road;
- Champeaux Road; and
- Farquahar Road.

1.6 Fiske Hill Road

Fiske Hill Road has been noted as a north-south cut-through street between Route 20 and Route 131 and speeding was observed to be an issue. Given the residential nature of the corridor, several traffic calming measures could be considered. One measure involves “residential area” signage to reinforce the character of the roadway. To reduce cut-through traffic, the Town could consider restricting all or a portion of the roadway to one-way southbound. This measure could present an undue burden on residents of the neighborhood and/or result in unwanted impacts to other roadways in the Town. For these reasons, further study would be required prior to moving forward with this alternative. Should a one-way southbound roadway be deemed feasible and desirable, pedestrian and/or bicycle accommodations could be enhanced along the corridor. If further study reveals that cut-through traffic is only an issue during the peak hours, turning restrictions could be considered in place of conversion to a one-way roadway.

2. Intersections

Issue: A number of intersections in Sturbridge are problematic. Traffic flow, character, and safety need to be improved. For intersections with state-owned roadways, these recommendations would have to be vetted with MassDOT.

Recommendations:

2.1 Route 20 and Fiske Hill Road/Picker Road

Consider more visible signage and geometric improvements to reinforce the northbound Fiske Hill Road left-turn prohibition at this intersection. Additionally, consider geometric improvements to improve turning movements at this intersection, particularly the left-turns from Picker Road to Route 20 eastbound.

2.2 Route 20 and Hall Road

Left-turns out of Hall Road have been noted as extremely difficult. The potential installation of a flashing or fully operational traffic signal in front of the Comfort Inn could assist motorists exiting Hall Road as well. The proximity of Hall Road to the Comfort Inn driveway should be considered as improvements for this stretch of Route 20 progress.

2.3 Route 20 and Comfort Inn/Cracker Barrel driveway

Similar to the Hall Road intersection, the high speed of through traffic on Route 20 in conjunction with nearby curb cuts and the proximity to the I-84 ramps has created a hazardous condition. Installation of a flashing or fully operational traffic signal at this location should be considered to alleviate the safety issues. This recommendation would require more engineering feasibility, concept design, and right-of-way impact review.

2.4 Route 20 and New Boston Road

Left turns out of New Boston Road have been noted as extremely difficult. A flashing traffic signal and improved warning signage should be considered for this location. A flashing traffic signal and improved warning signage should be considered for this location. A fully operational traffic signal at this location could also be considered. Given the proximity to the I-84 off-ramps, advanced warning signage, sight distance improvements, and geometric modifications to the inbound ramp would likely be necessary to slow traffic to a safe speed in advance of the traffic signal. Additionally, the traffic signal itself would operate most efficiently as a fully-actuated signal whereby the phase for New Boston Road is only activated when a vehicle is present on this approach. This recommendation would require an engineering evaluation including a signal warrant analysis. As redevelopment plans for the hotel parcel in the northwest corner progress, a more detailed engineering review should be conducted to implement these improvements.

2.5 Route 20 and Route 131

Traffic congestion and confusing signage have been noted at this intersection. If feasible from a right-of-way and traffic flow standpoint, installation of a roundabout with landscaped central island could help to ease traffic congestion. This recommendation would require more engineering feasibility, concept design, and right-of-way impact review. Streamlining of signage and removal of signage “clutter” should also be considered.

2.6 Route 20 and Stallion Hill Road

Even with the existing directional signage, drivers often make illegal left-turns from Route 20 West to Stallion Hill Road. Consider removal of signage “clutter” near this intersection to emphasize the existing way-finding signage to Old Sturbridge Village.

2.7 Route 20 and Cedar Street

There is a desire to provide a more attractive streetscape at this location to develop it as a gateway to the CTD. If feasible from a right-of-way and traffic flow standpoint, installation of a roundabout at this location would help to create a more scenic gateway to the CTD. This recommendation would require more engineering feasibility, concept design, and right-of-way impact review.

2.8 Route 20 and Arnold Road

Local input indicated that the separate left- and right-turn lanes for the Arnold Road approach to this newly designed intersection are not efficient. Geometric improvements could be considered to improve sight distance for turning vehicles. As this intersection is located within the CTD, a flashing signal and/or bump outs could also be considered to calm through traffic on Route 20.

2.9 Route 131 and Hall Road

Traffic flow at this location has been noted as problematic, likely due to the Route 131 through traffic speeds of 40 mph. The outcome of the ongoing work on Route 131 will need to be reviewed in the future so that potential further improvements can be evaluated. These improvements could include separate left- and right-turn lanes for Hall Road.

2.10 Route 131 and Shepard Road

The existing grade of Shepard Road creates sight distance issues for turning vehicles. There is also high truck traffic volumes related to activities at the Southbridge Landfill. Improved warning signage at this location and potential geometric modifications could help to improve sight distance for vehicles entering/exiting Shepard Road.

3. Pedestrians

Issue: Need to provide a more safe and walkable environment.

Recommendations:

- Install or upgrade sidewalks on both sides of Route 20/Main Street in the CTD to be ADA compliant and include a landscaped buffer.
- Construct crosswalks that enhance the awareness of drivers to pedestrians; could include raised and or textured treatments.
- Install crosswalk signage to reinforce vehicle and pedestrian awareness.
- Install countdown pedestrian signal heads at signalized crossings.
- Improve pedestrian mobility on rural residential and suburban residential roads.
- Educate public to "Stop- Look-and Wave" in the town of Sturbridge at crosswalks.
- Support the Sturbridge Trails Committee as well as the development of the Trails Master Plan.
- Educate the public of existing walking trails.

4. Bicyclists

Issue: Need to make Sturbridge more bikeable – commuter and recreational.

Recommendations:

- Develop and implement a town wide Bicycle Master Plan that addresses both commuter and recreational bicycling.
- Consider installation of bicycle racks at activity centers.
- Explore ways to incorporate on-road bicycle lanes from Spencer to Connecticut and Brimfield to Connecticut.
- Implement programs and events which will encourage people to consider bicycling and trail hiking.
- Consider installing bike lanes on Route 131 and possibly portions of Route 20 in the CTD;
- Educate the public of existing bicycling opportunities; and
- Improve bicycle mobility on rural residential and suburban residential roads.

5. Public Transportation

Issue: The Town lacks public transportation options. Less than one percent of Sturbridge residents use public transit to commute to work.

Recommendations:

- Review CMRPC research for a fixed bus route to connect Sturbridge with Southbridge and Webster through WRTA.

- Research the possibility of creating a Sturbridge tie-in with tour buses that connect Boston with New York City and currently regularly make rest stops on Route 15 in Sturbridge; a Park-n-Ride lot is also possible.
- Explore feasibility of a seasonal shuttle trolley to points of interest in Sturbridge including, but not limited to, Old Sturbridge Village, the Publick House, the Sturbridge Host, shopping areas, and parking lots;
- Assure that Sturbridge has a representative on the WRTA Advisory Council.
- Launch an educational campaign to inform citizens of the public transportation currently available and of the possibility of additional services.
- Advertise the Park and Ride lot at the Bethlehem Lutheran Church with signage on I-84 and I-90.

6. Parking

Issue: The CTD on Route 20 lacks adequate parking supply to accommodate the residents, services, and businesses in the town. Future demands related to increased population will require increased parking availability.

Recommendation:

- Create two consolidated public parking areas – one each on the western and eastern ends of Route 20. Possible locations are The Mill on the corner of Route 20 and Route 148 and at the intersection of Cedar Street and Route 20. An added benefit of these locations is the possible connection to the Town owned Riverlands Trail along the Quineboag River. The Town could also research the possibility of combining parking for recreation and public parking at Turner’s Field. This area also has potential to connectivity to the Riverlands Trail.

7. Signage

Issue: Need to address over signage issues, particularly along Route 20:

Recommendations:

- Collaboratively (DPW and MassDOT) remove existing sign clutter along Route 20.
- Amend Chapter 22 of the Town’s Bylaws and Regulations to review and revise the number, size, style, and location of signage throughout the Town and include specific language that would address the sign clutter issue. Consider a professional evaluation of the existing signage.
- Commission a “Way-finding Program” to assist visitors to navigate and experience Sturbridge without confusion by using effective signage branded to Sturbridge.
- Improve consistency of traffic signage throughout Town with Manual on Uniform Traffic Control Devices (MUTCD) guidelines.

- Enhance entry of visitors approaching from Connecticut at Route 15 through informational signage.

8. MassDOT

Issue: Need regular communication with MassDOT.

Recommendations:

- Determine the MassDOT District 3 point of contact for the Town of Sturbridge Town Planner to collaborate with and establish regular ongoing communication regarding current and planned projects in the Town.
- Leverage CMRPC's relationship with MassDOT to ensure that the Town's interests are considered during the Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP) development.

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