

US ROUTE 7 MILTON CORRIDOR STUDY

November 2016

Prepared for:





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In association with: Third Sector Associates

Disclaimer:

"The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation."

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This report details the findings and recommendations of the US Route 7 Milton Corridor Study. The study assessed conditions along a four-segment section of Route 7 in central Milton, extending 3 miles from Forbes Road in the south to Main Street in the north; a map of the corridor is shown Figure 1-1 on the next page. The Vermont Department of Health conducted a Health Impact Assessment (HIA) concurrently with the corridor study. The HIA can be found in Appendix B. US Route 7 is owned and maintained by VTrans.

The study was funded by the Chittenden County Regional Planning Commission (CCRPC) in association with the town of Milton. The study team consisted of CCRPC staff and a consultant team of WSP | Parsons Brinkerhoff and Third Sector Associates. Other participating agencies were the Vermont Agency of Transportation (VTrans), Vermont Department of Health, Chittenden County Transit Authority, and Local Motion. In addition, a project Advisory Committee participated throughout the study, as described below.

Study Process

The study process involved four primary steps, in addition to project management and public outreach activities, occurring throughout the study:

- Assess existing and future conditions
- Define the corridor vision, goals, and candidate strategies
- Recommend, evaluate, and prioritize strategies
- Develop study report and implementation plan

The final report is organized into three chapters: Study Introduction and Overview, Existing and Future Conditions, and Recommendations and Implementation Plan. Public involvement is summarized in this introductory section, as are vision and goals that were established to guide development of corridor recommendations.

Public Involvement

The public involvement process is summarized here, with further details provided in Appendix A. The Public Involvement Plan for the Milton US Route 7 Milton Corridor Study was designed in the spirit of the Chittenden County Regional Planning Commission's (CCRPC) 2014 Public Participation Plan. The plan is predicated on an effective public involvement and public outreach campaign that involves transportation stakeholders and the broader public early in the process, checks in with them frequently, and then supports an outreach effort to present the final plan to an even broader audience. The intent of the public involvement effort is to foster a spirit of inclusiveness and general ownership of the Milton US Route 7 Corridor Study.

Public involvement was integrated into all aspects of the work plan. Tasks included: Advisory Committee meetings, public meetings, participation in community events, and project specific website. Information management included a website with background and current information, Advisory Committee and public meeting documents (agendas, meeting materials, presentations, and meeting notes), advertisements, and media clips. The website was hosted on CCRPC's website: http://www.ccrpcvt.org/transportation/corridors/milton-us-7-corridor-study/

The Advisory Committee consisted of nineteen members, including several representatives of Milton Town government departments. The group met four times between June 2014 and April 2015. Agendas and meeting notes are available in a separate document.



Figure 1-1: Study area map with corridor and key destinations

There were a total of three public meetings held between October 2014 and May 2015; two were held at Milton Selectboard meetings and one was a dedicated meeting for the corridor study. Meeting materials are available in Appendix A.

In addition, study team members attended two Milton Community Dinners at the Milton Elementary/Middle School during November 2014 and January 2015. These free community dinners stemmed from the work of the Healthy Community Design Task Force, the efforts of which also revitalized the Milton Farmer's Market. The dinners are sponsored by the Milton Community Youth Coalition and the Milton Town School District through a grant from the Vermont Department of Health. Showcasing the study at these events engaged a broad segment of the Milton community to the process and provided the study team with feedback and new perspectives on corridor issues and strategies.

Previous Studies

In past years, the town of Milton, CCRPC, and VTrans have performed numerous studies of traffic and transportation issues in and around the corridor, either directly or indirectly concerning the town of Milton. Each study is briefly summarized below:

 Interchange Feasibility Studies at Four Locations in the Chittenden County MPO Area (CCRPC, 1987) – This study analyzed the benefit-cost potential of three I-89 interchange alternatives at Mayo Road/W. Milton Road, including a diamond alignment, loop ramp/outer connection, and trumpet alignment. The study concluded that the benefit-cost potential of all interchange alternatives would be too low unless full build-out of Catamount Industrial Park were reached by 1990 (at present, the industrial park is less than 50% developed).

- Town of Milton Long Range Access and Mobility Committee Final Report (Town of Milton, 2001) – This study also envisioned an I-89 interchange at West Milton Road (called "Exit 17½") in addition to a more commercially "developed" downtown area with Class I Town Highway designation.
- Project Definition Report: Milton High School Access Improvements (CCMPO, 2004) – This study recommended upgrades to the Rebecca Lander Drive and Barnum Street/Lamoille Terrace intersections with US Route 7, including larger turning radii for school buses, left turn lanes on Route 7, and raised medians.
- Vermont Western Corridor Transportation Management Plan Final Report (VTrans, 2010) – This study addressed highway deficiencies along the entire US Route 7 corridor in Vermont. The report specifically called out Route 7 in Milton from Bartlett Road south to Andrea Lane (Segment #5), stating that moderate congestion (LOS E) may occur on the segment by 2035. The report provides options for improvement, including wider shoulders and selective widenings to provide periodic passing lanes.
- US-7 / Middle Road / Railroad Street Intersection Scoping Report (CCRPC and Town of Milton, 2013) This scoping study presented conceptual alternatives for the improvement of the Cozy Corner intersection in the center of Milton. The "Full Hourglass" alternative, which replaces the existing Y-intersections at Route 7 and the unconventional 3-way stop at Railroad and Middle (a High Crash Location) with two perpendicular access roads, was selected as the municipally preferred alternative. This VTrans project is currently being advanced and has been included in the CCRPC's Transportation Improvement Program (TIP) and VTrans's Capital Program.

Vision and Goals

The study team developed a vision statement and related goals to guide development of corridor recommendations. The vision statement is intended to reflect community values, needs, and perspectives, and was developed with participation of the project Advisory Committee and public through the public involvement process.

Vision Statement

The town of Milton is expected to continue to grow in the decades to come. As this occurs, Route 7 will adapt to changing demands yet continue to serve as the main arterial route through town. The corridor will transform into an inviting, safe, and attractive street for all users of any age and ability. Route 7 will offer convenient multimodal travel options by foot, bicycle, transit, and automobile. Corridor improvements will promote economic development and enhance the quality of life and health of residents and commuters by improving mobility, safety, access, recreational opportunity, and visual character as envisioned in municipal plans.

Supporting Corridor Goals

Goal 1: Balance regional and local transportation needs

- 1.1 Improve roadway's ability to accommodate traffic
- 1.2 Reduce reliance on Route 7 for local trips
- 1.3 Enhance circulation between adjacent commercial and residential areas
- 1.4 Provide more travel options and encourage non-automobile modes for short trips

Goal 2: Improve safety for all users

2.1 Provide convenient and safe crossing opportunities for pedestrians and bicyclists

- 2.2 Manage access to and from the corridor to reduce potential for crashes
- 2.3 Design roadway to discourage speeding

Goal 3: Provide convenient multimodal transportation options

- 3.1 Create continuous, safe, and attractive pedestrian facilities
- 3.2 Establish a safe and connected network for bicyclists of all ages that provides access to community resources
- 3.3 Improve access to transit services and provide shelters at bus stops

Goal 4: Enhance the quality of life and wellbeing of the community

- 4.1 Support economic development consistent with municipal plans
- 4.2 Improve the visual character of the corridor by creating attractive and inviting public spaces
- 4.3 Improve public health by encouraging transportation by foot or bicycle
- 4.4 Preserve character of existing neighborhoods

Overview of Findings

Existing and anticipated future conditions in the study area are described in further detail in Chapter 2, while study findings and recommendations are summarized in Chapter 3. Several key findings were fundamental in guiding the development of study recommendations, in particular:

• According to the Vermont Agency of Commerce and Community Development's (ACCD) report titled "Vermont Population Projections – 2010 – 2030," town population is estimated to increase between 5.7% and 11.4% (600-1200 residents) by 2030.¹

- Moderate congestion (LOS E) is projected south of the corridor on Route 7 between Chimney Corners and Forbes Road related to demand for I-89 at Exit 17 in Colchester².
- Motorists using the corridor's numerous cross streets can expect long wait times of greater than 55 seconds (LOS E and F) during the AM and PM peak periods.
- Intersection delay is greater during the PM peak than AM peak because of commuter traffic mixing with higher levels of local traffic around corridor activity centers.
- By 2035, traffic signals or roundabouts may be warranted at four intersections due to higher traffic volumes, including W.
 Milton Road, Bombardier Road, Rebecca Lander Drive, and Main Street.
- The corridor is generally not pedestrian-friendly, with significant gaps in the sidewalk network in the southern portion of the corridor and limited opportunities to cross Route 7 safely.
- Bikeability in the corridor is reasonably good due to the presence of continuously paved shoulders.
- Parallel roads to Route 7 are very limited, which results in overdependence on Route 7 even for local trips.
- The corridor lacks a distinctive visual identity. The northernmost segment between Cherry Street and Main Street has some degree of traditional townscape character, but needs streetscape improvements such as trees, landscaping, lighting, pedestrian furnishings etc.



Figure 1-2: There are large gaps between crosswalks in the corridor, which forces pedestrians to cross Route 7 where there are no crosswalks

- ¹ Vermont Population Projections 2010-2030. August, 2013. Scenarios A and B.
- ² Vermont Western Corridor Transportation Management Plan, February 2010

To address these and other issues, several short-term improvements have been recommended. These are actions that could, if pursued, be implemented within three years at low to moderate cost. Over the longer-term, a full reconstruction of Route 7 between Bartlett Road and Milton Square Shopping Center is recommended to incorporate bicycle lanes or more bicycle-compatible shoulders, non-continuous center raised medians, and other streetscape improvements. Between Cherry Street and Main Street, major streetscape enhancements are recommended, including a mini-roundabout at Main Street. In the southern portion of corridor, where development is expected to intensify, new developments should provide backage roads for local access alternatives to Route 7. South of the study corridor, minor capacity improvements to Route 7 between Chimney Corners and Forbes Road, including passing lanes, are recommended to improve travel times to and from I-89 Exit 17 in Colchester.



Figure 1-3: This cross-section shows a proposed reconfiguration option of Route 7 between Forbes Road and Milton Square (one of several strategies presented in Chapter 3 of this report) that installs planted medians with turn lanes to beautify the street and provide pedestrian refuges for easier crossings.

Corridor Setting

The study corridor is located on US Route 7 in the heart of Milton, a growing suburban community located 14 miles north of Burlington. The corridor runs along Route 7 for approximately 3 miles, from Forbes Road in the south to Main Street in the north. The corridor has a generally suburban character with lower density in the southern segment of the corridor; closely-spaced curb cuts in the central part of the corridor; and a walkable, more traditonal townscape in the northern portion. The corridor study area is shown in Figure 1-1 in the previous section along with key destinations along the corridor. The corridor provides access to I-89 (off-map) to the south and north at Exits 17 and 18 respectively.

Demographics

The town currently has a population of 10,352 residents according to the 2010 US Census, and is now the eigth largest municipality in the state of Vermont. Milton is fast becoming one of Burlington's largest suburbs; following the 2010 Census, Milton was re-classified as an urban cluster. Town population is estimated to increase between 5.7 and 11.4% (600-1200 residents) by 2030.³

Over three quarters (79%) of Milton households have an income of \$50,000 or more and almost a quarter (24.2%) have a Bachelor's degree or higher.⁴ Milton is the largest exporter of workers in Northwest Vermont. This means that of all the towns in the region, Milton sends the most residents to jobs in other towns. As such, the

town is geared towards commuters, which places some strain on Route 7 and I-89 Exit 17 during the AM and PM peak periods.

Commute Patterns

Data from the US Census "OnTheMap" application confirms that a very large share of Milton residents who work outside the home commutes south to jobs in Burlington, South Burlington, Essex, Colchester, and Williston (62% altogether). The town of Milton itself also captures some of its residents' work trips (12%). Overall, out-of-town southbound trips, which are mostly dependent of Route 7 for at least some portion of the journey to I-89 Exit 17, account for the overwhelming majority of trips by Milton residents to work. Table 2-1 lists the top 25 workplace destinations of Milton residents. Most residents are bound for workplace destinations south of the study area.

³ Vermont Population Projections – 2010-2030. August, 2013. Scenarios A and B.

 $^{^{\}rm 4}$ U.S. Census Bureau. (2009-2013). American Community Survey. Five year estimates. Milton, VT.



Key Land Use Features:

- 1. Milton Diner
- 2. Birchwood Mobile Home Park
- 3. Ace Hardware
- 4. Municipal Complex
- 5. Hannaford
- 6. Milton Square Shopping Center
- 7. Town High School
- 8. Town Middle School
-). Town Picnic Area
- 10. The Dam

Figure 2-1: Key land use features in the corridor

Workplace Destination of Milton Residents	2011		
County Subdivision	Count	Share	
Burlington City (Chittenden, VT)	978	18.2%	
South Burlington City (Chittenden, VT)	719	13.4%	
Essex Town (Chittenden, VT)	663	12.3%	
Milton Town (Chittenden, VT)	645	12.0%	
Colchester Town (Chittenden, VT)	499	9.3%	
Williston Town (Chittenden, VT)	465	8.6%	
Winooski City (Chittenden, VT)	130	2.4%	
St. Albans Town (Franklin, VT)	120	2.2%	
St. Albans City (Franklin, VT)	114	2.1%	
Hartford Town (Windsor, VT)	106	2.0%	
Shelburne Town (Chittenden, VT)	58	1.1%	
Waterbury Town (Washington, VT)	43	0.8%	
Georgia Town (Franklin, VT)	41	0.8%	
Montpelier City (Washington, VT)	41	0.8%	
Swanton Town (Franklin, VT)	31	0.6%	
Rutland City (Rutland, VT)	30	0.6%	
Berlin Town (Washington, VT)	29	0.5%	
Barre City (Washington, VT)	27	0.5%	
Manhattan Borough (New York, NY)	25	0.5%	
Morristown Town (Lamoille, VT)	21	0.4%	
Fairfax Town (Franklin, VT)	20	0.4%	
Highgate Town (Franklin, VT)	20	0.4%	
Cambridge Town (Lamoille, VT)	20	0.4%	
Hinesburg Town (Chittenden, VT)	19	0.4%	
Middlebury Town (Addison, VT)	18	0.3%	
All Other Locations	496	9.2%	

Table 2-1: A major of Milton residents who work are destined for workplaces located south of the corridor study area. Many of these trips rely on Route 7 for access to I-89 at Exit 17 (Source: US Census OnTheMap)

Land Use

While the corridor consists mainly of residential uses, it also contains the most intensive commercial activity centers in the town, including a supermarket, drug store, fast food restaurants, hardware stores, gas stations, auto repair shops, and other service-related establishments. A mix of traditional and suburban styles of development are found throughout the corridor, with traditional styles more prevalent near Main Street and the former railroad depot at the northern end of the corridor. The Town Municipal Complex and library are located just south of the center section of the corridor.

The corridor has numerous significant traffic generators. Noteworthy commercial traffic generators include Milton Diner, Ace Hardware, Hannaford Supermarket, and Milton Square Shopping Center. In addition to single family detached housing and more recentlybuilt multi-family housing complexes (mostly in the southern part of the corridor), there are also several more densely populated mobile home parks, including Checkerberry Village, Woodbriar Manor, Bert's, and West View. Birchwood Mobile Home Park, located west of I-89 on West Milton Road, is not on the corridor, but dependent on it for access to key services in the Town. Mobile home residents generally have lower rates of auto ownership than other Milton residents, and are therefore more dependent on walking, cycling, and transit (an issue that was frequently raised during public meetings). Finally, both Milton High School and Milton Middle School are located within the corridor study area. Existing land uses in the study area and key features are shown in Figure 2-1 on the previous page.

Planning Vision

The corridor study area is zoned for various types of future development, predominantly residential. There has been significant growth in multi-family housing stock along Route 7, including new complexes on Racine Road and Southerberry Drive. The Southerberry Drive complex is completely dependent on Route 7 for access, although the internal roadway network has been built to accommodate alternate access in the rear. Recent development projects along the Route 7 study corridor have considered secondary transportation access, but many developments continue to rely exclusively on Route 7.



Figure 2-2: Multi-family housing complexes such as this one at Route 7 and Racine Road in the southern part of the corridor have become increasingly common in the town of Milton.

Many recent development projects in the corridor study area consist of senior housing projects. The perceived benefit of senior housing is that it contributes fewer school age children to the Milton school district while increasing the Town's tax base.

The Haydenberry Drive area in the central part of the corridor is the current locus of future development in the Town. Planned development projects in Milton are summarized below:

- 64 unit senior housing complex on Haydenberry Drive;
- 30 lot planned unit development on Haydenberry Drive;
- 27 lot planning unit development at 400 Route 7 (on the northbound side) between Chrisemily Lane and Clifford Drive
- A seasonal farmers' market in the space between Hannaford Supermarket and Milton Square Shopping Center;
- A mixed-use planned unit development at 496 Route 7 (on the northbound side) at Racine Road.

Most of the developable land in the corridor study area is located in wooded areas 1,000-2,000 feet north and south of Route 7 between Racine Road and Haydenberry Drive. These areas, as shown on Figure 2-3, are slated for various types of development over the mediumto-long term, including Low Density Residential (R3); development associated with Checkerberry (M4); expansion of Olde Town residential (R1) district to the east and west (beyond Railroad Street and further towards Lamoille River, respectively); additional development associated with the Downtown Business District (DB) in the vicinity of Cozy Corner; and future General Industrial (I2) uses on vacant land between Route 7 and I-89.

The large tracts of vacant land slated for residential and industrial development in the corridor study area would be completely dependent on Route 7 for transportation access without additional through and/or parallel connections. The CCRPC regional land use model projects substantial population growth in these areas; this growth, driven by the zoning shown in Figure 2-3, is projected to increase traffic at existing Route 7 intersections, as explained later in this chapter.



Figure 2-3: Official zoning map for the Town of Milton (mapped by CCRPC)

Transportation Context

US Route 7 serves as both the primary commercial and commuter corridor for the town of Milton. As previously mentioned, the majority of commuters are destined to points south via I-89. Route 7 feeds I-89 to the south at Exit 17 and connects Milton with larger employment centers in Chittenden County. As a commercial corridor, Route 7 serves both town needs and those of the more rural bordering communities of Georgia, Fairfax, and Westford.

Parallel or alternate routes to Route 7 in the study area are limited. Middle Road, Railroad Street, Racine Road, and Haydenberry Drive provide some redundancy to Route 7 within Milton itself, but lack direct connections to I-89 and are not long or continuous enough to be considered alternatives to Route 7 that might result in travel time savings during peak travel periods. The study area street grid, with a system of collector and local roads feeding Route 7, is not well developed. Many local roads are in the study area are cul-de-sacs—some of which feed directly into Route 7. Route 7 therefore has to fulfill several roles for Milton, principally:

- Commuter travel between Milton and larger employment centers in the region (i.e. Burlington, South Burlington, and Essex).
- Local circulation providing access to businesses and residents, including short trips between nearby locations.

Route 7 Characteristics

Route 7 in the study area is functionally classified as an undivided urban minor arterial. Most of the roadway has a suburban drivein/drive-out character with numerous commercial establishments set back from Route 7, although the northern section near Main Street is a more pedestrian oriented street, with buildings closer to the roadway and increased density.

As the central and southern portions of the corridor have developed with lower density, suburban-type uses, the traffic demands on Route 7 and its connecting roads have increased in parallel. Multimodal alternatives to Route 7 would improve connectivity and accessibility for Milton residents, employees, and visitors. Route 7 itself would become a more attractive and appealing corridor by evolving into a more multi-functional corridor that reduces barriers to walking and cycling; provides safe and convenient access to abutting uses via access management; accommodates a high volume of I-89 bound commuter traffic at a reasonable level of service; and promotes a positive identity for the town.

The corridor lies within an approximate 66-foot, or four rod, right-ofway (a single rod is equal to 16½ feet). The road closely follows the centerline of the corridor and in most instances does not fill the entire right-of-way. In a few sections, especially near newer suburban developments such as Hannaford and Southerberry Drive, the roadway has been expanded to accommodate dedicated left turn lanes.

Route 7 in the study area has a base two-lane cross section, with two travel lanes in each direction and a dedicated left turn lanes at six intersections. Several intersections also have auxiliary right turn lanes on the approach to the intersection. Travel lanes in the corridor are generally 11 feet wide with paved shoulders that are generally 6 or more feet wide. Most shoulders on Route 7 in the corridor meet the preferred width (5 ft for speeds 35 mph or less, 6 ft for speeds exceeding 35 mph) for bicycles per VTrans guidelines⁵, although there are short sections of narrower shoulder in some constrained portions of the corridor. Except near Main Street and a few other scattered locations in the corridor, curbs and stormwater drains are

⁵ Vermont Pedestrian and Bicycle Facility Planning and Design Manual, 2002

generally absent. Throughout the corridor, the Route 7 right-of-way width remains constant at 66-67 feet.

Driveways and Access Management

Route 7 is classified as Category 6 under VTrans's access management categories from West Milton Road to Main Street. This category is defined as "urban" sections of state highway with travel speeds of 25-40 mph. The degree of access control on Category 6 roads is fairly flexible and dictated by design and land use features. Direct property access to/from the road can be denied, restricted, or allowed by Trans. Private direct access may be denied if the property in question has other reasonable access or reasonable opportunity to access a local street. Operationally, all turns in and out are permitted unless specifically limited by VTrans based on site conditions and/or safety concerns. Signal spacing can be no less than 500 feet on roads with Category 6 access management.⁶

South of West Milton Road, Route 7 is classified as a Category 3 roadway, which is defined as a highway capable of safely supporting a posted speed limit of 35-45 mph with 50 mph in undeveloped areas. Access control for Category 3 roadways is somewhat more restricted than Category 6, yet often allowed if deemed to be safe based on site conditions.

Traffic Control and Regulations

Traffic signals, approximately 1,500 feet apart, govern traffic movements at two intersections along the corridor:

- Centre Drive/Hannaford Supermarket
- Milton Square Shopping Center

The intersection at Centre Drive was improved in 2014 as part of the Hannaford Supermarket development project. The work included

widening of the roadway cross-section to include left turn lanes; new sidewalk construction with ADA ramps to make the development pedestrian accessible; installation of new traffic signals with black mast arms providing protected left turns; installation of pedestrian actuated countdown signals; and installation of traffic cameras and emergency pre-emption devices.



Figure 2-4: Route 7 south of W. Milton Road is the highest speed segment in the corridor.

The intersection at the Milton Square shopping center is a t-intersection that was the first intersection in the corridor that was signalized. Unlike the newer traffic signals at Centre Drive (installed in mid-2014), traffic signals at Milton Square are mounted on span wire assemblies. This intersection allows protected left turns into the shopping center from Route 7 NB and a dedicated right turn into the shopping center from Route 7 SB. In addition, an LED no right turn blankout sign was recently installed for the shopping center approach to

⁶ VTrans Access Management Guidelines

Route 7; this sign is actuated during the red phase for the shopping center. ADA ramps also appear to have been recently added on all approaches where there are existing crosswalks.

Based on the signal timing plans received from VTrans, the two traffic signals at Centre Drive/Hannaford and Milton Square are coordinated for Route 7 NB/SB traffic. These two signals both have three phasing patterns with cycles of 74 seconds, 100 seconds, and 102 seconds, for different times of day.

All other intersections in corridor are stop controlled for the crossstreet approaches. Route 7 at Main Street has an overhead flashing beacon that flashes yellow on the Route 7 approaches and red on the Main Street approach.

Intersection and Segment Details

Forbes Road to West Milton Road

Route 7 between Forbes Road and West Milton Road is less built up than the other parts of the corridor and has a somewhat rural look and feel. The segment was last rebuilt in 1994. Consistent with the predominant corridor layout, there are two travel lanes with a rightof-way of approximately 66 feet, or four rods. The total roadway width is 30 feet, including shoulders. The speed limit on this segment—35 to 50 mph—is the highest in the corridor (the 50 mph section is at the southernmost end of the segment and transitions to 35 just south of Bartlett Road). There is a vertical curve with an apex between Forbes Road and Bartlett Road and grades as steep as 4.9% on its southern side. Continuing northbound, there is a 6 degree horizontal curve between Bartlett Road and West Milton Road, as shown in Figure 2-4. The segment has an annual average daily traffic



Figure 2-5: Route 7 near Ace Hardware lacks a cohesive visual identity. Utility clutter is present, frontage is poorly defined, and sidewalks on the southbound side are limited at best.

In a walkability audit conducted using the checklist developed by the Partnership for a Walkable America, the Pedestrian and Bicycle Information Center and the US DOT; this segment earned a score in the lowest quintile indicating it is unsuitable for pedestrians.

Key intersecting roads include Bartlett Road, Racine Road/Legion Road, and West Milton Road. The Bartlett Road intersection is a stop controlled Y interseciton. The Racine Road/Legion Road intersection is two-way stop controlled for the crossroads. The West Milton Road intersection, like Bartlett Road, is a stop controlled Y-intersection. There are no sidewalks or traffic signals along Forbes Road to W. Milton Road segment.

West Milton Road to Bombardier Road

Route 7 between West Milton Road and Bombardier Road has a somewhat suburban look and feel, with a mix of widely-spaced, lowdensity residential and commercial uses. Many abutters along the segment have direct access to Route 7. The roadway width is 32 feet, including shoulders (bicycle compatible), but appears wider due to large building setbacks and limited tree canopy. In reviewing the VTrans Route Log Progress Chart for Route 7, the segment was last overhauled in 1994, although there appears to have been a more recent widening at the Southerberry Drive intersection to accommodate dedicated left and right turn lanes for movements into a recently built multi-family residential complex and mid-sized commercial-retail establishments (e.g., Apollo Diner and Ace Hardware). The speed limit on this segment is 35 mph. The segment is flat and straight, except for a 9 degree horizontal curve on the approach to Bombardier Road, where the southbound shoulder narrows to less than 3 feet, hampering the ability of cyclists to negotiate that portion of the corridor. In 2012, the segment had an average annual daily traffic (AADT) count of 13,300 vehicles, the second highest in the corridor.

Major intersecting roads include Nancy Drive, Chrisemily Lane, and Bombardier Road. Bombardier Road provides access to the Municipal Complex and Middle Road. There are numerous other cross-streets in this segment, although most are cul-de-sacs with no connections to the local street grid. All intersections with Route 7 along this segment are stop controlled for the minor street approaches.

Sidewalks in the West Milton Road to Bombardier Road segment are inconsistent, with several large gaps on the southbound side. There are no mainline crosswalks along this segment and cross-street crosswalks are limited. These conditions contributed to a low walkability score as part of the walkability audit.

Bombardier Road to Lamoille Terrace

Route 7 between Bombardier Road and Lamoille Terrace has a suburban look and feel with a mixture of low-density residential and commercial-retail uses. Commercial-retail uses consist of two shopping centers and smaller free-standing establishments. This segment serves as the modern commercial and institutional center for Milton. Building setbacks in this segment are generous (in order to accommodate customer parking), though the northern portion has smaller setbacks and a more traditional appearance. The Centre Drive/Hannaford intersection has recently been upgraded with a signal and dedicated left and right turn lanes to accommodate heavier moves in and out of the shopping center.



Figure 2-6: Route 7 at Centre Drive has recently been upgraded with new signal equipment and sidewalks, but still lacks well defined crosswalks on Route 7.

The existing layout of Route 7 with Railroad Street and Middle Road (Cozy Corner) is an awkward complex of three intersections in a tightly-spaced triangle. Railroad Street and Middle Road intersect with Route 7 at stop-controlled, acute-angle approaches; the fourway intersection of Railroad Street/Middle Road has three stop-controlled approaches, while the fourth approach, southbound Middle Road, is uncontrolled. This area has experienced a higher than average number of crashes in the past and is planned for reconstruction as an "hourglass" shaped intersection. In effect, the locally preferred alternative creates two signalized right angle intersections with short connectors to Middle Road and Railroad Street, well defined turn lanes, full crosswalks, and a possible additional access to Milton Square (see Figure 2-7). Constructing the locally preferred alternative will be possible by a mixture of funding sources. Through a MOU with VTrans, the town plans to fund the southern half of the hourglass with VTrans covering the northern half. The roadway width of this segment of Route 7 varies from a 32 foot minimum at Cozy Corner to a 56 foot maximum between Haydenberry and Centre Drive; shoulders are bicycle compatible throughout. The speed limit on the segment is 25 mph and 35 mph (the short 35 mph section is located between Bombardier Road and Haydenberry Drive). The segment is entirely flat with some horizontal curvature (6 degrees) at Cozy Corner. In 2012, the segment had an average daily traffic (AADT) of 11,100 and 13,300 vehicles north and south of Cozy Corner, respectively.

Key intersecting roads include Centre Drive, Haydenberry Drive, Middle Road, Railroad Street, Villemaire Lane, and Lamoille Terrace—all of which have some degree of connectivity to the local street grid. Many smaller abutters in the segment have direct access to Route 7, particularly north of Cozy Corner. Rebecca Lander Drive, a cul-de-sac that loops around the Milton High School parking lot, provides direct access to the school from Route 7. There have been several proposals to connect Rebecca Lander Drive with Brandy Lane as a throughstreet through the high school grounds, though none of these proposals has moved forward to date. Sidewalks are present along most of the segment, though crosswalks on the mainline are widely spaced apart and many cross-street crosswalks are missing entirely. The segment scored a 20/30 using the walkability checklist indicating it is somewhat walkable, but needs work.



Figure 2-7: Reconfigured "hourglass" shaped intersection at Route 7 and Middle Road/Railroad Street (source: RSG). Note: VTrans is only funding the northern half of the hourglass with the town responsible for the southern half.

Lamoille Terrace to Main Street

Route 7 between Lamoille Terrace and Main Street has a denser, more traditional appearance than the other segments in the corridor. The dominant built feature is older single family detached homes with relatively small setbacks from right-of-way and direct driveways onto Route 7. The northern portion of the segment has older multifamily buildings and commercial uses, including a gas station, several auto repair shops, a small roadside restaurant, and a riverside park and picnic area. Average annual daily traffic (AADT) in this section ranges is 14,000 vehicles between Barnum Street and Cherry Street (the highest volume in the corridor), and 9,800 vehicles between Cherry and Main Streets (the lowest volume in the corridor).

The paved width varies from a minimum width of 30 feet near Barnum Street to a maximum of width of 47.5 feet near Main Street; shoulders are bicycle compatible throughout (although a portion of the northbound shoulder serves as a gutter). The section near Main Street is unusual in that it has a 20-foot shoulder on the northbound side (used to accommodate tanker trucks delivering fuel to the Valero gas station), which may detract from the visual appeal of the streetscape (see Figure 2-8).

The southbound side has traditional planting strip between the shoulder and sidewalk; however, they lack trees and serve more as a reservation for utility poles. Trees are located on abutting private property and therefore too far from the right-of-way to create much canopy over the street. The speed limit is 35 mph for most of this segment, though there is a short 25 mph section is located near Barnum Street closer to high school and middle school. The roadway has some horizontal curvature (3 to 4 degrees) between Village Drive and Cherry Street, and slopes moderately downward towards Ritchie Avenue (-9% grade). This gradient, locally known as Gimlet Hill, experiences moderate flooding where it levels out around Ritchie Avenue. There are gutters on both sides of the road between Appletree Court and Ritchie Avenue (the northbound gutter is asphalt, while the southbound gutter is a dirt and gravel ditch located approximately 8-10 feet off-road), as well as two stormwater drains on opposite sides of Ritchie Avenue. These measures have been stated to have little effect during heavy rainfall and snowmelt. Other Route 7 intersections with reported stormwater drainage issues include Lamoille Terrace, Mackey Street, Village Drive, and Villemaire Drive.

Key intersecting roads include Barnum Street, Cherry Street, and Main Street—all of which provide access to Railroad Street, which runs parallel to Route 7 between Cozy Corner and Main Street.

The segment has a continuous sidewalk on the northbound side, and an intermittent sidewalk on the southbound side. The segment has a single crosswalk across the Route 7 mainline at Main Street, and several cross-street crosswalks that appear to have been re-striped with block style markings fairly recently.



Figure 2-8: Route 7 between Cherry Street and Main Street has an unusually large paved shoulder on the northbound side that sharply contrasts from the otherwise traditional townscape of this part of the corridor

Current Traffic Volumes and Operating Conditions

Traffic Volumes

Traffic patterns on Route 7 in the corridor study area are influenced by both commuter traffic and local trips within the community. With Interstate 89 parallel to US 7, truck traffic is mostly limited to local deliveries and businesses. Annual average daily traffic (AADT) estimated by VTrans along the corridor ranges from 9,800 vehicles to 14,000 vehicles. Figure 2-10 on the following page uses bandwidths to show AADT on the primary roadway network in corridor study area. Volumes decrease north of Cozy Corner because some traffic diverts to Railroad Street, which parallels Route 7 for approximately 1 mile up to Main Street.

Traffic volume on Route 7 spikes to approximately 14,000 vehicles in the short corridor segment between Barnum Street and Main Street. This aberration may be caused by some local trips from the adjacent neighborhoods and schools using Route 7 as a connection between Cherry and Lamoille/Barnum Streets. Some local trips may also be using Haydenberry Drive and Lamoille Terrace to bypass the signalized intersections at Centre Drive and Milton Square.

Distinct commuting patterns are evident during the AM and PM peak periods, which are 7:00-8:00 AM and 4:30-5:30 PM, respectively. Full peak period traffic counts for key corridor intersections are presented in Appendix A. During the AM peak, there is a strong directional split on Route 7, with the overwhelming majority of traffic traveling south. For example, at Rebecca Lander Drive, 77% of AM peak traffic is heading south on Route 7. During the PM peak, the directional split is more balanced, with 60% traveling northbound. This reveals that corridor travel in AM peak may be weighted more towards commuters, while during the PM peak there may be a greater mix of commuter and local traffic contributing to a more balanced directional split. Total PM peak traffic is generally 20% to 30% greater than AM peak traffic.



Figure 2-9: Catching a gap onto Route 7 from W. Milton Road can be difficult during peak periods. Approach LOS F conditions during the morning and afternoon peak periods reflect this.



Figure 2-10: Corridor traffic volumes (Source: VTrans)

AM and PM Peak Hour Operating Conditions

Current traffic conditions on Route 7 in the corridor were evaluated for the AM and PM peak hours using the Synchro traffic analysis software package. Estimates for average vehicle delay were compiled and translated to Level of Service (LOS) using the ranges established by the 2010 Highway Capacity Manual (HCM); these ranges are summarized in Table 2-2 below.

The Vermont Level of Service Policy for Vermont roadways is to maintain a LOS C for a prescribed design period, although reduced criteria may be appropriate in densely settled areas. For two-way stop controlled intersections LOS is to be D or better for cross streets exceeding 100 vehicles/hour for a single lane approach, or 150 vehicles/hour for a two-lane approach. There are no criteria for volumes less than this.

Level of	Average Delay (seconds per vehicle)				
Service (LOS)	Unsignalized Intersections	Signalized In- tersections	Generalized Description		
А	≤10	≤10	Free Flow		
В	>10 - 15	>10-20	Stable Flow (slight delays)		
С	>15 – 25	>20 – 35	Stable Flow (minor delays)		
D	>25 – 35	>35 – 55	Approaching unstable flow (moderate delay, occasionally wait through more than one signal cycle before proceeding)		
E	>35 – 50	>55 – 80	Unstable flow (severe delays)		
F	>50	>80	Forced flow (jammed)		
Source: Highway Capacity Manual					

Table 2-2: Intersection Level of Service grades A through F

The stick diagram in Figure 2-11 shows intersection and approach peak LOS at key intersections along the corridor. The southern and northern portions of the corridor—Forbes Road to Bombardier Road and Bombardier to Main Street, respectively—are shown separately on the top and bottom of the graphic. Under existing conditions, congestion is essentially limited to cross-streets; Route 7 itself performs well, with LOS A free flow conditions at every intersection except the northbound approach to Railroad Street (LOS B), which is slated for reconfiguration by VTrans (see previous Figure 2-7).

The collector roads of West Milton Road, Racine Road/Legion Road, Bombardier Road, Railroad Street, and Main Street also perform well except at their approaches to Route 7. In fact, the intersection approaches of many collector and local roads in the corridor (many local roads are dead ends with no other connections to the surrounding street grid) with Route 7 are somewhat problematic, with long wait times for gaps in traffic at mostly two-way stop controlled intersections. Eleven intersection approaches experience LOS D, LOS E, and LOS F under existing conditions due to the delay to make turning movements onto Route 7 and are summarized below:

- 1. Legion Road/Racine Road Approach LOS D during the AM peak
- West Milton Road* Approach LOS F during the AM and PM peaks;
- Chrisemily Lane Approach LOS E during the AM and PM peaks;
- 4. Landfill Road Approach LOS F during the PM peak;
- Bombardier Road* Approach LOS F during the AM and PM peaks;
- 6. Centre Drive WB* Approach LOS E during the PM peak;
- Railroad Street* Approach LOS E during the PM peak (subject to improvement with planned hourglass reconfiguration);

Level of Service (LOS)

Level of Service, or LOS, is a standard measure of operational effectiveness for transportation facilities. LOS is defined by the Highway Capacity Manual, published by the Transportation Research Board (current edition: 2010). LOS is graded from LOS A (best conditions) to LOS F (very poor conditions). For signalized intersections, LOS is based on the estimated average vehicle delay for traffic at the intersection, while for unsignalized intersections, LOS is based on the average delay experienced by each vehicle at each minor street approach (i.e. under stop control). LOS A represents little to no delay, or uncongested conditions, whereas LOS F indicates very congested conditions with long delays. In suburban areas, such the Route 7 corridor in Milton, LOS conditions of D or better are generally considered satisfactory during the peak hours. LOS E conditions indicate an intersection that is operating at or near peak capacity, while intersections operating at LOS F cannot effectively serve peak demand.

- Milton Square Shopping Center Driveway* LOS E during the PM Peak;
- Rebecca Lander Drive LOS F during the school time AM and PM peaks;
- 10. Lamoille Terrace LOS F during the AM peak;
- 11. **Barnum Street** LOF F during the AM peak and LOS E during the PM peak;
- 12. Main Street* LOS E during the PM peak

*Does not meet VTrans LOS Policy of maintaining LOS C or better at signalized or unsignalized intersection; two-way and "T" stop controlled intersections have a separate policy based on vehicle per hour thresholds of 100 vph for single lane approaches and 150 vph for two lane approaches. The VTrans LOS Policy is shown in the Appendix of this report.





Forecast Future (2035) Conditions

The CCRPC's regional travel demand model was used to estimate changes in traffic volumes over time. The CCRPC model estimates future year traffic volumes based on forecast changes in population and employment in Chittenden County. The future year (2035, which is the latest available projection year in the CCRPC model) scenario also includes any planned transportation system improvement projects in the CCRPC's Metropolitan Transportation Plan. In Milton, this is limited to the hourglass project at Middle and Railroad Streets.

Regional Growth Projections

Projected traffic growth along the corridor ranges from 23% to 38% (see Table 2-3). These increases in volume are driven by an aggressive regional land use scenario that assumes significantly more residential and commercial development (i.e., people and jobs) in and around the corridor. Over 500 acres of corridor-adjacent land is vacant and considered ripe for development. With Route 7 providing the primary access to these parcels, traffic in the corridor will only increase once development is in place. In the future year 2035, with no new roads, Route 7 is left absorbing the projected demand for local and commuter travel from nearby development.

Operational Assessment – Intersections

Future intersection and intersection approach level of service is shown graphically in Figure 2-12. Route 7 traffic will continue to experience good levels of service in 2035 where it remains a free movement; only Route 7 at Main Street is projected to experience moderate traffic delay (overall LOS D during the PM peak). However, forecasted conditions deteriorate at several cross-street approaches that were experiencing poor LOS under existing conditions (listed in the previous section). The number of intersection approaches experiencing LOS D, LOS E, or LOS F condition increases from 11 in 2015 to 15 in 2035. They include:

- 1. West Milton Road approach LOS F during the AM and PM peak periods (both no change from 2015);
- 2. **Nancy Drive** approach LOS E during the AM and PM peak periods;
- 3. Clifford Drive approach LOS E during the AM peak;
- 4. **Chrisemily Lane** approach LOS E during the AM peak (no change) and LOS F during the PM peak (worse);
- Bert's Mobile Home Park Access approach LOS E and AM mad PM peak periods;
- 6. Landfill Road approach LOS E during the AM peak and LOS F during the PM peak (both worse);
- Southerberry Drive approach LOS E during the AM peak and LOS F during the PM peak;
- 8. **Bombardier Road*** LOS F during the AM and PM peaks (no change)
- 9. Centre Drive* LOS E during the PM peak period (no change)
- 10. **Railroad Street*** LOS E during the AM peak period (no change, but conditions likely to improve with partial hourglass reconfiguration)
- 11. **Milton Square Shopping Center Driveway** LOS E during the PM peak period (no change)*
- 12. **Rebecca Lander Drive** LOS F during the AM and PM peak periods (no change)
- 13. Lamoille Terrace LOS F during the AM and PM peak periods (no change)
- 14. **Barnum Street** LOS F during the AM peak and LOS E during the PM peak (no change)
- 15. Main Street LOS F during the PM peak (worse)

*Does not meet VTrans LOS Policy of maintaining LOS C or better at signalized or unsignalized intersection; two-way and "T" stop controlled intersections have a separate policy based on vehicle per hour thresholds of 100 vph for single lane approaches and 150 vph for two lane approaches. The VTrans LOS Policy is shown in the Appendix of this report.

Roadwa	Roadway Section		AM Traffic Increase		PM Traffic Increase		Daily Vol-	
From	То	SB	NB	Bi-di- rec- tional	SB	NB	Bi-di- rec- tional	ume In- crease
Main Street	Cherry Street	38%	44%	40%	32%	23%	27%	38%
Cherry Street	Milton Square Shopping Center	38%	42%	39%	32%	29%	30%	38%
Milton Square Shopping Center	Middle Road	54%	35%	47%	26%	15%	20%	37%
Middle Road	Bom- bardier Road	21%	9%	17%	28%	-1%	9%	23%
Bom- bardier Rd	West Mil- ton Road	28%	25%	27%	37%	19%	25%	31%
West Mil- ton Road	Bartlett Road	32%	23%	29%	33%	27%	29%	33%
Bartlett Road	Petty Brook Road	31%	24%	28%	33%	28%	29%	33%

Table 2-3: Growth rates used to estimate future (2035) traffic conditions (source: CCRPC Regional Model)

Signal Warrants

During community outreach efforts for this study, various Milton residents and members of the Advisory Committee suggested a potential need for additional traffic signals in the corridor. The decision to install a traffic signal at an intersection generally follows guidelines or "warrants" established by the Federal Highway Administration (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*. These warrants are specific to traffic signals as an intersection control measure. If warrants are met and the decision is made to install intersection control, a roundabout shall be evaluated as well as per state law⁷. There are nine different warrants for traffic signals, or ways in which an intersection could demonstrate a potential need for a traffic signal. These different criteria include eight-hour vehicular volume; four-hour vehicular volume; peak hour vehicular; pedestrian volume; school crossing; coordinated signal system; crash experience; road-way network; and intersection near a railroad grade crossing. According to the *MUTCD* Section 4C.01, "The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."

Four key intersections along the Route 7 corridor—the intersections at West Milton Road, Bombardier Road, Rebecca Lander Drive, and Main Street—were analyzed to determine if the peak hour warrant was met for a traffic signal on the basis of existing and future vehicular volume.⁸ The results of the analysis, plotted in Figure 2-13, demonstrate that all four intersections *meet or exceed* the volumebased threshold for a traffic signal during the AM peak, PM peak, or both. However, traffic volume alone is not the only determinant of whether a traffic signal is justified. The eight other warrants mentioned above play an equally important role, as does the desire by the community to have additional traffic signals along Route 7.

⁷ VT Act 141, Section 37, 2001-2002 Session

⁸ 8-hour and 4-hour volumes were not available for warrant analysis



Figure 2-12: Future (2035) AM and PM peak hour operating conditions at corridor intersections

US 7 + BOMBARDIER

US 7 + REBECCA LANDER (HS)





MAJOR STREET—TOTAL OF BOTH APPROACHES— VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

AM PEAK (MAJOR ST, MINOR ST)

PM PEAK (MAJOR ST, MINOR ST)



MAJOR STREET—TOTAL OF BOTH APPROACHES— VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

AM PEAK (MAJOR ST, MINOR ST)

PM PEAK (MAJOR ST, MINOR ST)

Figure 2-13: Peak hour signal warrants on the Route 7 study corridor; blue and red dots falling above the bottom curve meet the warrant for a traffic signal

Arterial Level of Service

To identify improvement opportunities entering the study area from I-89/Exit 17 interchange, it is necessary to evaluate the arterial level of service for Route 7. Existing and future arterial LOS was evaluated using Highway Capacity Software (HCS) for Route 7 from Route 2 to Forbes Road. To calculate arterial LOS, several input parameters were required, including traffic volume, peak hour factor, truck percentage, lane width, shoulder width, terrain, percent no-passing zones, posted speed limit, and design speed.

Output from the analysis is volume to capacity ratio (v/c) and level of service. Level of Service is determined by two key parameters: average travel speed and percent time spent following, as shown in Table 2-4. VTrans Highway Design "Level of Service Policy" recommends designing facilities to effect improvements that will maintain a LOS C for the design period, although reduced LOS criteria may be acceptable on a case-by-case basis.⁹

Table 2-4: HCM Arterial LOS for Urban Street Class 1 Roadway

Urban Street Class		I		
Free-flow Speed Range (FFS)	55 to 4	15 mph		
Typical FFS	50 r	nph		
LOS	Average Travel	Percent Time		
	Speed (mph)	Spent Following		
A	> 55	≤ 35%		
В	> 50-55	> 35-50%		
С	> 45-50	> 50-65%		
D	> 40-45	> 65-80%		
E	≤ 40	> 80%		
F	Demand Exceeds Capacity			
Source: Highway Capacity Manual, 2010				

⁹http://vtransengineering.vermont.gov/sites/aot_program_development/files/documents/publications/LevelOfServicePolicy2007.pdf Based on the input data and HCM criteria for LOS, Table 2-5 describes measures of effectiveness for the existing (2014) and future (2035) projections for the corridor.

Table 2-5: Exist	ing and Future	Conditions	Measures a	f Effectiveness
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Analysis Year	Direction - Peak	LOS	v/c	Average Travel Speed (mph)	Percent Time Spent Follow- ing -PTSF
	NB- AM Peak	С	.15	45.2	41.9%
2014	NB-PM Peak	E	.52	43.5	85.9%
(Existing)	SB- AM Peak	E	.54	44.3	87.9%
	SB- PM Peak	С	.21	46.0	53.7%
	NB- AM Peak	D	.16	44.0	44.7%
2025	NB-PM Peak	E	.66	41.3	90.5%
2035	SB- AM Peak	E	.69	42.3	94.7%
	SB- PM Peak	D	.28	43.4	63.3%

Key findings from the analysis are:

- The northbound corridor will operate at LOS D in the AM peak and E in the PM peak
- The southbound corridor will operate at LOS E in the AM peak and D in the PM peak
- Both northbound and southbound directions will have future volumes that are less than the capacity of the roadway (v/c < 1.0)

The future volume of the roadway is less than the capacity, but LOS is worse than the VTrans policy. Therefore, it is necessary to consider strategies to improve LOS by improving the average travel speed and reducing the percent of time vehicles spend following. Strategies that can be considered include:

- Evaluate existing sight distance to determine if additional passing zones can be considered within the existing travel way
- Add passing lanes
- Add turn lanes



Figure 2-14: The planned Exit 17 interchange improvement project just south of the corridor in Colchester will increase capacity at Chimney Corners, and allow for more efficient travel to and from Milton via I-89
Transit

Existing Transit Services

Existing transit service in the corridor is limited to peak direction, weekday only commuter bus service to and from downtown Burlington provided by the Chittenden County Transportation Authority (CCTA). Amtrak's daily "Vermonter" passenger train runs through Milton on its journey between St. Albans and New York, but does not stop in Milton, which lies between the Essex Junction/Burlington station stop and the St. Albans terminal. The Chimney Corners Park and Ride lot, located 2 miles south of the corridor on Route 7 near Exit 17, provides some additional scheduled CCTA bus service to and from Burlington.

Milton Commuter Route

The Milton Commuter bus (Route 56) currently operates 6 inbound and 6 outbound trips to and from downtown Burlington on weekdays only. Trips are scheduled to coincide with the morning and evening rush hours. The core route begins at Route 7/Villemaire Street in Milton and ends at St. Paul Street/Cherry Street in downtown Burlington. One midday trip is provided in each direction. The route loops around the northern portion of the corridor study area on Route 7, Main Street, and Railroad Street in a clockwise direction. On several peak period trips, on-board requests can be made for an extension of service to Husky located north of the corridor study area. Other key destinations served by the Milton Commuter are highlighted in Figure 2-15 (the corridor study area locus is circled). One-way travel time between Milton and Burlington is approximately 50 minutes.

Bus Stops

The corridor has nine permanently signed CCTA bus stops serving Route 56, which are listed in Table 2-6. Outbound stops are reasonably well spaced (between one-quarter and three-quarters of a mile apart on Route 7 NB) given the intensity of service. However, some gaps exist on Route 7 near Main Street and near Legion Road in the inbound direction.

Table 2-6: CCTA bus stops in the corridor

Street	Location/ Cross-street	Direction of Bus Service	Shelter with Bike Rack	Con- necting Side- walk	Nearby Mainline Crosswalk
Route 7 NB	Citgo (W. Mil- ton Road)	Outbound	No	No	No
Route 7 SB	Nancy Drive	Inbound	No	No	No
Route 7 NB	lce Barn (near Bert's Mobile Home Park)	Outbound	No	Yes	No
Route 7 SB	Boysenberry Drive	Inbound	No	Yes	No
Park Place	Milton Mu- nicipal Com- plex Park and Ride	Inbound/Out- bound	Yes	Yes	No
Route 7 NB	Centre Drive	Outbound	No	Yes	Yes
Route 7 NB	Villemaire Lane	Inbound/Out- bound	Yes	Yes	No
Route 7 NB	Barnum Street	Inbound/Out- bound	No	Yes	Yes
Route 7 NB	Cherry Street	Inbound/Out- bound	No	Yes	No



Figure 2-15: Map of CCTA Milton Commuter bus route; study locus is circled (Source: CCTA)

Walking and Bicycling

Pedestrian Accommodations

Much of the corridor lacks sidewalks. This is particularly true in the southern portion of the corridor, where sidewalks are absent completely, limited to just one side of the road, or are present in isolated sections with no connection to the rest of the pedestrian network. The sidewalks that do exist are generally 5 to 6 feet wide with ADA curb ramps and detectable warning strips at most intersections (although in many cases, with no crosswalk).

Many sidewalks have minimal buffering from the roadway. A common type of buffering is planted strips with grass, trees, or both. Planted strips between the sidewalk and roadway, also known as greenbelts, are commonplace in many traditional Vermont villages, and are often applied in streetscape beautification projects. For a town or village setting a greenbelt of 6 feet or greater will be needed to sustain a shade tree.¹⁰

While there are significant stretches of Route 7 with greenbelts, none have trees, which would create a more pleasant walking environment, especially during summer months. Where greenbelts do exist in the corridor, they generally serve as a reservation for signposts and utility poles, as shown in the example on the previous page. Curbing, to create a defined edge between the pedestrian and automobile realm, is also absent throughout the corridor. Cubing would be necessary should the town want to install trees in its greenbelts. This would be to accommodate minimum clear zone distances found in the *Vermont State Design Standards*. It should also be noted that while installing curbing would accommodate clear zone distances for

¹⁰ Landscape Guide for Vermont Roadways & Transportation Facilities, June 2002, 19.

tree installations and better protect pedestrians, it would also require substantial stormwater improvements.



Figure 2-16: Typical greenbelt buffering of sidewalks in the corridor

Sidewalk Gaps

As shown in Figure 2-20 and consistently noted by community members during public engagement, substantial portions of the corridor lack sidewalks. The purple lines in the graphic indicate where sidewalks are missing and proposed by the Town of Milton. The total length of missing sidewalk is over one mile, so sidewalk construction will likely need to be pursued incrementally. Notable gaps in the corridor sidewalk network that severely restrict pedestrian access include:

- West Milton Road, from Route 7 to Birchwood Mobile Home Park, a dense lower income residential community located on the western side of I-89. Although this roadway segment is not part of the study corridor, it is adjacent to it, and important for multimodal access to the study corridor.
- The southbound side of Route 7 between West Milton Road and Haydenberry Drive. Existing sidewalks, where provided, are incomplete; because of this, Bert's Mobile Home Park and multi-family housing in Checkerberry Village lack good pedestrian accessibility to the rest of the town.
- The northbound side of Route 7 between Clifford Drive and Racine Road (near Citgo).

Crosswalk Gaps

Long stretches of Route 7 in the corridor study area lack crosswalks on both the cross-streets and Route 7 itself. Existing crosswalks, as shown in Figure 2-20, are mainly limited to the central and northern sections of the corridor. "Mainline" crosswalks—i.e., those crossing Route 7—principally serve the major pedestrian generators in the study area, including Hannaford Supermarket, Milton Square Shopping Center, and the high school. The southern section of the corridor has almost no crosswalks on either Route 7 or the cross-streets. However, some crossings, especially adjacent to newer developments, have been fitted with curb ramps. Measures to improve crosswalks, add mainline crosswalks where significant gaps exist, and better separate pedestrians from traffic could help to improve physical pedestrian access.

Contextual Barriers to Walking

In addition to the specific physical features – sidewalks and crosswalks – the urban design context of the corridor is an important element of pedestrian accessibility. Except for the segment near Main Street, the corridor has a very suburban, auto-oriented feel. In particular, businesses and other land uses are set far back from the roadway. In many cases (particularly the southern and central parts of the corridor) business access is directed towards off-street parking lots rather than the sidewalk or street front. These corridor design characteristics may discourage walking in the corridor by making pedestrians feel physically separated from the land uses, and "out-ofplace." These issues could be addressed by considering new development guidelines that encourage development adjacent to the roadway, and parking in the rear of the buildings.



Figure 2-17: Existing crosswalk locations in the corridor

Bicycling

The vast majority of the corridor is compatible with cycling, with paved shoulders that meet the minimum width for cycling along an uncurbed street without parking and speeds of 35 mph or less.¹¹ Bicycle facilities in the corridor are comprised of paved shoulders (there are no designated bike lanes in the corridor) and racks at some CCTA bus stops and major generators.

Cycling is common along Route 7 during the summer months. The Lake Champlain Bikeway, which connects to the Burlington Bike Path, is located approximately 3 miles south of the study area at the intersection of US Route 2 and Route 7 in Colchester (Chimney Corner). Route 7 between Chimney Corner and the study corridor is also generally compatible with cycling; although speeds are higher, with a 50 mph speed limit, the 9-foot wide shoulders are adequate for cycling on roadways with such a speed limit.

A few sections of Route 7 in the corridor study area may be difficult for cyclists to negotiate because of narrow shoulders or minor congestion. These include an approximately 300-foot section of guardrail along a sharp curve at Bombardier Road that protects vehicles from an adjacent ravine (shown in Figure 2-18), the Cozy Corner intersection, and the southernmost section of the study area where the speed limit is 50 mph. Paved multi-use paths are existing or planned for Haydenberry Drive and the high school site (see Figure 2-19 and Figure 2-20). Collectively, the paths will greatly enhance bicycle accessibility to the high school by providing new access from the southwest and an alternative route that bypasses the busy Cozy Corner intersection. As of early 2015, the Town has begun scoping for the high school multi-use path, as shown in Figure 2-19.



Figure 2-18: At Bombardier Road, Route 7 SB (on the right side) lacks a bicycle compatible shoulder. Also, the existing guardrail may give cyclists a feeling of being trapped.

¹¹ Source: Vermont Bicycle and Pedestrian Facility Planning and Design Manual.



Figure 2-19: Planned multi-use path between Haydenberry Drive and Milton High School with a short connecting segment to Route 7 on an easement (Source: Town of Milton)

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LEGEND

- MULTI PURPOSE
 PROPOSED MULTI PURPOSE
 PROPOSED SIDEWALK
- SIDEWALK
- ---- CROSSWALKS
- & ELEMENTARY SCHOOL
- FIRE
- 🏠 HIGH SCHOOL
- MEDICAL OFFICES
- MUNICIPAL OFFICES
- DOLICE
- b PUBLIC LIBRARY
- S PUBLIC RECREATION FACILITY
- * RESCUE
- SENOIR HOUSING
- SHOPPING CENTER MEDIUM
- SHOPPING CENTER SMALL



Figure 2-20: Town map of existing sidewalks and sidewalk gaps (cropped). Source: Town of Milton

Corridor Crash History

High Crash Locations

The study area has two high crash locations (HCLs) listed in the most recent VTrans High Crash Location Report (2008-2012). The first is a section of roadway on Middle Road between Railroad Street and Bombardier Road. The second is the intersection of Railroad Street and Middle Road (Cozy Corner) which is the target of a reconfiguration project. A preferred alternative, as shown previously in Figure 2-7, is currently being advanced by VTrans. There are no HCLs on Route 7 itself.

Crash Frequency and Types

To gauge how crash types and frequency vary along the corridor, crash data from VTrans were grouped and compared for four general corridor segments, including 1) Forbes Road to W. Milton Road; 2) W. Milton Road to Bombardier Road; 3) Bombardier Road to Lamoille Terrace; and 4) Lamoille Terrace to Main Street. The state average crash rate for urban minor arterials such as Route 7 in the study area is 3.4574 crashes per million vehicle miles (MVM). As shown in Table 2-7, there are no segments of the corridor with crash rates exceeding the state average. Bombardier Road to Lamoille Terrace, which includes Cozy Corner (slated for reconfiguration), comes closest to the statewide average with a 2008-2012 crash rate of 3.39 crashes per motor vehicle mile. The most common crash type in all segments was rear end collisions, accounting for 47% of all crashes in the corridor. Single vehicle crashes were the second most common crash type—accounting 18% of all crashes in the corridor.

Clusters of crashes (five or more crashes within a 250-foot linear distance) were found at five intersections along Route 7 in the corridor, including West Milton Road, Willy's Lane, Haydenberry Drive, Rebecca Lander Drive, and Lamoille Terrace/Barnum Street. Only Route 7 at Rebecca Lander Road, which serves as the entrance to Milton High School, had a calculated crash rate higher than the statewide average for urban minor arterial/urban collector intersections (.511 crashes per million vehicle miles). Most of these crashes were rear end collisions caused by driver inattention and following too closely. Table 2-8 provides a summary of crashes—including types, injuries, and rates—at the five intersections in the corridor where crashes are clustered.

No reported crashes involving bicycles or pedestrians were found in the data. Full crash data and crash rate calculation worksheets can be found in Appendix C.

Table 2-7: Crash rates by Route 7 corridor segment; the statewide average for minor arterials is 3.46 crashes per million vehicle miles

Location	# of Crashes in 5 Years	AADT (2010)	Crash Rate (Crashes/MVM)
Forbes Road to W. Milton Road (MP 1.7 – 2.6)	43	10,900	2.40
W. Milton Road to Bom- bardier Road (MP 2.61 – 3.49)	52	13,300	2.43
Bombardier Road to Lamoille Terrace (MP 3.5 – 4.36)	59	11,100	3.39
Lamoille Terrace to Main Street (MP 4.37 – 5.1)	35	14,000	1.88

Other Potential Safety Issues

Many potential safety concerns for pedestrians, cyclists, and motorists along the corridor were identified during staff field visits and the public outreach process:

- Sight distance issues at Forbes Road and Route 7 (from Forbes Road);
- No opportunities for pedestrians to cross Route 7 for a nearly two mile stretch between Forbes Road and Centre Drive;
- Sight distance and speed issues at Legion Road and Route 7
- Sidewalks that abruptly end on Route 7 southbound near Nancy Drive, Chrisemily Lane, and Boysenberry Drive. In one

instance and due to the adjacent ravine, unsuspecting pedestrians are trapped in a sidewalk surrounded by a guiderail and chain link fence (see Figure 2-21);

• Ongoing concerns in the community about pedestrian safety on Route 7 at Rebecca Lander Drive and Lamoille Terrace/Barnum Street involving school children.



Figure 2-21: This sidewalk on the north side of Route 7 near Boysenberry Drive traps pedestrians with no outlet (Source: Google Earth)

Table 2-8: Intersection crash summary for clusters of five crashes or more

Year	US 7 & W. Mil- ton Rd	US 7 & Willy's Ln	US 7 & Hayden- berry Dr	US 7 & Rebecca Lander Dr	US 7 & Lamoille Ter /Bar- num St
2008	1	0	4	1	1
2009	2	4	2	3	4
2010	1	3	1	2	2
2011	1	2	1	4	3
2012	3	3	1	2	0
TOTAL	8	12	9	12	10
Type of Crash					
Single Vehicle	1	2	0	0	1
Angle	4	2	2	0	2
Rear-End	2	6	3	8	4
Sideswipe (Same Direction)	1	0	3	0	0
Sideswipe (Opp. Direction)	0	1	0	1	0
Head-On	0	1	0	2	1
Not Reported/Other	0	0	1	1	2
TOTAL	8	12	9	12	10
Crash Severity					
No Injury	5	7	7	9	7
Non-Fatal Injury	3	5	2	3	3
Fatality	0	0	0	0	0
TOTAL	8	12	9	12	10
Weather					
Clear	4	5	6	6	5
Cloudy	3	4	1	3	4
Rain	0	2	1	2	1
Snow	1	1	2	1	0
TOTAL	8	12	10	12	10
Crashes per Million Enter- ing Vehicles					
Calculated Crash Rate	0.31	0.47	0.4	0.58	0.5
Statewide Average	0.521	0.521	0.521	0.521	0.521

Chapter 3: Recommendations and Implementation Plan

Corridor recommendations have been developed by the study team with the participation of the project Advisory Committee and the public, who helped to define problems and identify potential solutions. A Health Impact Assessment conducted in tandem with the Corridor Study brought attention to bear on community health, particularly regarding physical activity and unintentional injury. With that in mind, three categories of recommendations have been developed including short-term, medium-term, and long-term, as described below:

- Short-Term Recommendations: Improvements that can be implemented in less than three years. For example, turning movement restrictions; improved pavement markings; intersection and crosswalk re-striping; mid-block crosswalks; and signage improvements.
- Medium-Term Recommendations: Improvements that can be implemented in three to ten years. For example, gateway treatments; sidewalk installations; intersection capacity enhancements; modest complete streets improvements such as spot traffic calming; and bus pullouts.
- Long-Term Recommendations: Improvements that would require more than ten years to implement. For example, new roads; major "complete streets" undertakings such as roundabouts and other streetscape makeovers that may require full depth street reconstructions.

Further study will be needed to advance plans to reconstruct the corridor, but this study identifies proof-of-concept improvements recommended for inclusion in a corridor redesign. Separate scoping studies are recommended for many recommendations, including:

- Installation of a roundabout or traffic signal at Route 7 and Legion Road/Racine Road in addition to sidewalks and crosswalks;
- Backage roads parallel to Route 7 in the southern and central sections of the corridor;
- Realignment of Lamoille Terrace and Barnum Street intersections along with a green belt on Rebecca Lander Drive and catch basins with underdrains to the west at Lamoille/Barnum and Rebecca Lander;
- Addition of a center turn lane with dedicated turn lanes at major intersections between Bartlett Road and the northern entrance to the Milton Square Shopping Center;
- Installation of a mini-roundabout at Main Street in addition to major streetscape enhancements on the northbound side of Route 7;
- Installation of a dedicated pedestrian bridge alongside the existing West Milton Road bridge over I-89;
- Several multi-use paths to link unconnected neighborhoods

Chapter Organization

The Implementation Matrix presented at the end of this chapter presents each action recommended in this study, which are organized by topic (pedestrian/bicycle, roadway congestion and safety, and transit), reference ID and time frame (e.g. P5-ST for Pedestrian/Bicycle, Recommendation 5 - Short Term).

Short-Term Recommendations

This section describes recommendations that could be implemented in less than three years prior to, or independent of, medium and longer-term recommendations such as corridor reconstruction. Short-term recommendations were selected to improve safety, user accommodation, and traffic conditions ahead of full reconstruction efforts that are more than three years away from possible implementation.

Bicycle and pedestrian

Six short-term bicycle and pedestrian recommendations that could be implemented prior to, or independent of, major reconstruction efforts are presented in Table 3-1.

Difficulty crossing Route 7 and the quality of the pedestrian environment are two key issues affecting walkability today. Options for improving pedestrian crossings were selected mainly for their potential to shorten the distance between crosswalks and improve the safety of pedestrians.

The West Milton Road bridge over I-89 is currently unsuitable for pedestrian use due to minimal shoulders and no sidewalks. A cost efficient, quick fix solution may be to change the existing travel lanes on the bridge to 10 feet in each direction which would allow enough room for striped 2-foot shoulders on each side of the bridge to accommodate pedestrians (P2-ST). A future modification (P2-MT) to this once a sidewalk is installed on the northern side of West Milton Road would be to restripe the bridge with a 3-foot shoulder on the same side as the sidewalk. Figures 3-1 and 3-2 on the following pages show the evolution of Recommendation P2 graphically from short to medium terms.

Table 3-1: Short-Term Bicycle and Pedestrian Recommendations

ID	Recommendation	Implementation Details
P1- ST	Improve pedestrian connections and safety at Bartlett Road, Legion Road/Racine Road, and West Milton Road intersections	 Initiate scoping study of intersections See Figure 3-7 concept to consolidate the intersections and install sidewalks/crosswalks
P2- ST	Facilitate safer pedestrian travel on West Milton Road bridge over I-89	 Stripe a 2-foot shoulder on each side of the bridge making the travel lanes 10 feet in each direction
P3- ST	Pursue backage roads and path con- nections parallel to Route 7	 Construct the preferred alternative(s) for high school multi-use path(s) as identi- fied in the scoping study Initiate scoping study of backage road between Racine Road and Park Place as seen in Figure 3-16 See Figure 3-15 for potential cross sections Initiate Scoping Study of multi-use path from Landfill Road to Stacy Street
P5- ST	Improve roadway and safety condi- tions at connections to Milton High School	 Re-stripe intersection and crosswalks Install RRFB's and signage at key Route 7 crosswalks with connections to Milton High School: Rebecca Lander Drive & Route 7 Barnum Street/Lamoille Terrace & Route 7 Initiate scoping study of Rebecca Lander Dr & Barnum St/Lamoille Terr intersections (see Figure 3-8 for con- cepts)
P7- ST	Enhance streetscape on Route 7 be- tween Main Street and Cherry Street	 Install midblock crossing with block markings on Route 7 with RRFB sign- age as necessary Install midblock crossing on Route 7 north of Cherry Street at the picnic area with RRFB signage as necessary
P8- ST	Improve sidewalks and crosswalks to close existing gaps on Route 7	 Stripe or restripe crosswalks at: Route 7 & Clifford Drive (cross-street) Route 7 & Southerberry Drive (cross-street) Route 7 & Bombardier Road (cross-street)

 Route 7 & Centre Drive (cross- street) 			
 Route 7 & Villemaire Ln (cross- 			
street)			
 Route 7 & Lamoille Terrace/Barnum 			
Road (cross-street)			
 Route 7 & Main Street (cross-street 			
and mainline-south side)			
 Install new crosswalks at locations 			
with existing sidewalks			
o Route 7 & Cherry Street (mainline-			
north side)			
o Route 7 & Villemaire Lane (mainline-			
north side)			
o Route 7 & Milton Square (mainline-			
north side)			
o Route 7 & Centre Drive (mainline-			
south side)			
 Route 7 & Haydenberry Drive (main- 			
line- north side)			
Route 7 & Bombardier Road (main-			
line- north side)			
Route 7 & Chrisemily Lane (main-			
line- south side)			
Route 7 & Nancy Drive (mainline-			
south side)			
 Construct sidewalks to fill existing 			
ans:			
\sim Route 7 Segment Δ (820')			
Route 7 Segment R (220)			
\sim Poute 7 Segment C (2000)			
\sim Pouto 7 Segment D (500')			
\circ Route 7 Segment E (040')			
O ROULE / Seyment E (940)			



Figure 3-1: Recommendation P2-ST adds 2' striped shoulders to the W. Milton Road Bridge over I-89 prior to the sidewalk installation.

The existing crosswalks on Route 7 at Lamoille Terrace and Barnum Street, which provide pedestrian access to Milton High School and Middle School, suffer from poor visibility. Restriping and the additions of Rectangular Rapid Flashing Beacons (RRFBs) on both sides of the street are recommended (P5-ST) to increase driver expectancy of pedestrians, especially at night; these freestanding signs could be solar powered (Figure 3-3 on the following page provides an example of RRFB signs at a crosswalk).



Figure 3-2: Once sidewalks are installed, Recommendation P2-MT restripes the shoulders on the W. Milton Road Bridge over I-89 so there is a 3' striped shoulder on the northern side of the bridge.

Route 7 (River Street) between Cherry and Main Streets lacks crossing opportunities except at Main Street. This quarter-mile stretch of River Street does not have mid-block crosswalks, even at key pedestrian generators such as the town park and picnic area on the Lamoille River. The addition of new crosswalks at Cherry Street (near the town park) and halfway between Main and Cherry would improve walkability and pedestrian safety in Milton's traditional village core (P7-ST). These mid-block crosswalks could be supplemented by pedestrian actuated RRFBs on both sides of the street.

In addition to the ones already mentioned, there are numerous other sidewalk and crosswalk gaps along the corridor, particularly in the southern portion. Short-term recommendations include repainting all existing crosswalks and installing new crosswalks at several key locations (P8-ST). This includes installing applicable signage and curb ramps. Figure 3-4 on the next page identifies where new mainline and cross-street crosswalks are recommended. Restriping can be implemented quickly by the Town of Milton Public Works Department. Adding new crosswalks along the Route 7 mainline will require coordination with VTrans and need to meet applicable thresholds under the VTrans Guidelines for Pedestrian Crossing Treatments.



Figure 3-3: Recommendations P5-ST and P7-ST use RRFB signs to increase driver expectancy at proposed crosswalks (image source: FHWA)



Figure 3-4: Recommendations P8-ST (sidewalk and crosswalk improvements), P1-MT (southern corridor pedestrian connections and ped safety), P8-MT (close bike/ped gaps), T1-MT (new bus stops and access improvements), and P1-LT (mainline crosswalk at Route 7 and Racine Road)

Roadway Congestion and Safety

Short-term recommendations related to congestion and safety that can be implemented prior to, or independent of, medium and long-term recommendations are listed in Table 3-2.

As discussed in Chapter 2, congestion in the corridor is primarily limited to local roads approaching Route 7. The Route 7 corridor itself is not anticipated to experience congestion now or in 2035, although a section of Route 7 south of Forbes Road to Chimney Corners may experience LOS E conditions in the future, as determined by the arterial LOS analysis presented in Chapter 2. The "hourglass" reconfiguration of the Cozy Corner intersection will improve traffic safety and flow near Railroad Street and Middle Road (a High Crash Location).



Figure 3-5: Recommendation R4-ST involves enhanced speed enforcement in the 40 MPH to 35 MPH speed transition areas located at the southern and northern ends of the corridor. This photo shows the 35-mph speed zone just south of Racine Road.

Congestion on roads leading to Route 7 is forecasted to increase as Milton continues to grow. Capacity and operational solutions to various intersections in the corridor will only be one part of a multifaceted approach to providing mobility in the context of this growth. Backage roads parallel to Route 7, traffic signals at key intersections (if signal warrants are met), and roundabouts, as well as multimodal access improvements, have the potential to improve travel conditions in the corridor.

To ensure that the corridor is being operated as efficiently and safely as possible, low-cost actions related to signage and speed enforcement are recommended, including a left turn prohibition for Route 7 NB at West Milton Road (R1-ST) and speed enforcement for critical locations in the corridor. Important areas for focusing speed enforcement are the 40 mph to 35 mph transition areas located at the southern and northern ends of the corridor and the Route 7 southbound approach to the Bombardier Road curve at Haydenberry Drive (R4-ST).

Table 3-2: Short-Term Roadway Congestion and Safety Recommendations

ID	Recommendation	Implementation Details
R1- ST	Improve traffic circula- tion/safety at Bartlett Road, Legion Road/Racine Road, and West Milton Road inter- sections	 Restrict turning movement (No left turn from Route 7 NB to W. Milton Road) Initiate Scoping Study of intersections (see Fig- ure 3-7 concept)
R3- ST	Pursue backage roads and path connections parallel to Route 7	 Initiate scoping study of backage road between Racine Road and Park Place as seen in Figure 3-16 See Figure 3-15 for potential cross sections
R4- ST	Enforce corridor area speed limits	 Focus on speed transition areas at northern and southern ends of the corridor and Route 7 southbound at Haydenberry Drive/El- lison Street (in advance of Bombardier Road curve)
R5- ST	Improve roadway and safety conditions at connections to Milton High School	 Initiate scoping study of Rebecca Lander Dr & Barnum St/Lamoille Terr intersections (see Fig- ure 3-8 concept)

Medium-Term Recommendations

This section describes medium-term recommendations that could be implemented within three to ten years prior to, or independent of, long-term recommendations. Some medium-term recommendations can be constructed as the first phase of a long-term recommendation. For example, installing sidewalks on West Milton Road (P2-MT) ahead of the separate pedestrian bridge over the Interstate (P2-LT). Most medium-term recommendations build upon short-term efforts. A new recommendation, P6-MT, begins the process to examine the reconstruction of US 7 as a three-lane cross section between West Milton Road and the Shopping Center.

Bicycle and Pedestrian

Seven pedestrian and bicycle recommendations that can be implemented in the medium-term to improve multimodal access in the corridor are listed in Table 3-3. Several recommendations involve installing new crosswalks mainly on cross-streets in Checkerberry Village and the south/central portion of the corridor (P1-MT and P8-MT). To address crosswalk gaps in the southern portion of Route 7, a new mainline crosswalk has been recommended at Landfill Road near Ace Hardware and Apollo Diner.

Locations for new crosswalks and sidewalks are identified graphically in Figure 3-4. Nearly 5,000 feet of new sidewalk on Route 7 (River St) and West Milton Road are recommended in the medium-term. The sidewalk gaps listed in the Recommendation P8-MT implementation details of Table 3-3 correspond to the Town of Milton sidewalk proposals shown in Figure 2-20 of Chapter 2.

Recommendation P1-MT involves installing full crosswalks on Route 7 at Racine Road/Legion Road to facilitate better walking conditions in the Checkerberry Village area. Crosswalks at this location would also serve the two CCTA bus stops proposed in Recommendation T1-MT. P1-MT would be coordinated with efforts to either install a roundabout or traffic signal at the intersection under Recommendation R1-MT (presented in the next section). Figure 3-7 shows a diagram of Recommendation P1-MT. This recommendation would likely be led by VTrans with input from the Town of Milton unless Route 7 is reclassified as a Class I Town Highway. Class I reclassification would establish joint jurisdiction of Route 7 with VTrans and the Town of Milton. The Town would assume responsibility for operations and maintenance.

Recommendation P2-MT Option 2 involves converting the West Milton Road bridge over I-89 to a shared use facility with alternating oneway traffic governed by traffic signals at both ends (not unlike some covered bridges in elsewhere in the state).



Figure 3-6: Recommendation P2-MT converts the West Milton Road bridge to an alternative one way street to allow for a wide shared use shoulder

Table 3-3: Medium-Term Bicycle and Pedestrian Recommendations

ID	Recommendation	Implementation Details
P1- MT	Improve pedestrian con- nections and safety at the southern end of the corri- dor: Bartlett Road, Legion Road/Racine Road, and West Milton Road Inter- sections	 Construct preferred alternative identified in the scoping study
P2- MT	Facilitate safe pedestrian travel on West Milton Road bridge over I-89	 Install sidewalks on north side of roadway extending from Route 7 to the Birchwood Mobile Home Park Facilitate safer pedestrian travel across the bridge Option 1: Stripe a 3-foot shoulder on north side of bridge to accommodate pedestrians and change lane widths to 10' WB and 11' EB (see Figure 3-2) Option 2: Install traffic signals on both sides of bridge to allow alternating one-way traffic on bridge; re-stripe for one travel lane and bicy-cle/pedestrian facilities (see Figure 3-6) Initiate scoping study for long term separate pedestrian bridge
P3- MT	Pursue backage roads parallel to Route 7	 Construct segments of backage road or reserve rights-of-way between Racine Road and Park Place as development occurs according to preferred alternative cross section and alignment identified in scoping study Construct preferred alternative of multi-use path between Landfill Road and Stacy Street Initiate scoping study of backage road north of Milton Square Shopping Center as seen in Figure 3-16 See Figure 3-15 for potential cross sections
P5- MT	Roadway and safety im- provements at connec- tions to Milton High School	Construct preferred alternative identified in scop- ing study
P6- MT	Three-lane cross section between W. Milton Road and northern Shopping Center Entrance	 Initiate scoping study of new roadway cross section including the following elements identified in Figure 3-13 concept: Center turn lane and/or landscaped median with dedicated left turn lanes at major intersections Dedicated bicycle facilities

Р7- МТ	Streetscape enhance- ments on Route 7 be- tween Main Street and Cherry Street	 Initiate scoping study of roadway section and intersection at Main St See Figure 3-9 for concept of a landscaped buffer on northbound side of Route 7 and mini roundabout at the Main Street intersection Construct preferred alternative identified in scoping study
P8- MT	Close pedestrian network gaps on Route 7	 Construct sidewalks to fill existing gaps: River Street Segment A (550') River Street Segment B (750') River Street Segment C (500') W. Milton Segment A (700') W. Milton Segment B (1350') W. Milton Segment D (1000') Widen shoulder on Route 7 SB near Bombardier Road to provide adequate width for bicycles (linear distance of 300') Install new crosswalks Route 7 & Haydenberry Drive (cross-street) Route 7 & Landfill Road (cross-street and mainline) Route 7 & Bert's Mobile Home Park (cross-street and mainline) Route 7 & Kapica Ln (cross-street) Route 7 & Chrisemily Lane (cross-street) Route 7 & Nancy Drive (cross-street)

Under this option (shown in Figure 3-6) one lane is maintained for vehicles, while the remaining space is reserved for pedestrians and westbound cyclists, separated from vehicle traffic by bollards. It is expected that eastbound cyclists would assume the travel lane. The Vermont Department of Health recommends this option since it strives to reduce barriers to physical activity, increase access to services, and decrease risk of unintentional injury. Although much more cost-effective when compared to building a separate pedestrian bridge (P2-LT), this option comes with the downside of slightly increased travel times for motor vehicles, including trucks that may have time-sensitive deliveries.

Recommendation P5-MT, which could be pursued by as a partnership between the Public Works Department and the Milton Town School District, would install a new, wider sidewalk on Rebecca Lander Drive approaching the high school. This sidewalk would be buffered from the road by a landscaped planting strip, as shown previously in Figure 3-8. Such an improvement would help make walking to the high school a more viable and attractive option for students who live nearby.

Recommendation P7-MT initially involves scoping the section of Route 7 known locally as River Street between Main and Cherry Streets, the historical center of the town. See Figure 3-9 for a conceptual example of a landscaped buffer on the northbound side of Route 7 and a mini roundabout at Main St. Towards the latter duration of the medium-term, the preferred alternative identified in the scoping study would be constructed thus creating a gateway into the town center from the north.



Figure 3-7: Recommendations for the southern end of the corridor: R1-ST (left turn ban); P1-MT (limited striped crosswalks); T1-MT (bus pull-outs); R1-MT (roundabout or traffic signal at Legion Road, West Milton Road one-way WB, 4-way stop at Legion Road and West Milton Road); P1-MT (full crosswalks); and P8-MT (sidewalks)



Figure 3-8: Recommendations for the Milton High School area: P5-ST (block crosswalk restriping and RRFB's); R5-MT (splitter islands); P5-MT (Rebecca Lander sidewalk reconstruction/planting strips); R5-MT (Lamoille/Barnum realignment; daylight drain west of Brandy Lane and catch basins)



Figure 3-9: Recommendations for the northern end of the study corridor: P7-MT (streetscape enhancements between Main and Cherry Streets); R7-LT (mini-roundabout and landscaped buffer with lampposts); and P7-LT (install mid-block crosswalks with RRFB signage).

Transit

Study recommendations include one transit recommendation for the medium-term: making Checkerberry Village more transit-accessible by coordinating with CCTA and VTrans to install four new bus stops with pull-outs and shelters at the intersections of Route 7 with Legion Road/Racine Road and Forbes Road. These transit improvements would complement the bicycle and pedestrian enhancements in the area to significantly improve multimodal access in the southern portion of the corridor. Both new stops are proposed to be "nearside" stops (i.e. just before the intersection) because of potential driveway conflicts on the far side of the intersection (which is typically preferred for bus stops). Figure 3-7 shows the locations of the two new bus stops, which would continue to be served by CCTA commuter service to/from Burlington and provide better transit service to residents of the adjacent growing communities and nearby Birchwood Mobile Home Park.

Table 3-4: Medium-Term Transit Recommendation

ID	Recommendation	Implementation Details
T1- MT	Improve transit ac- cess at the southern end of the study corri- dor	 Install nearside bus pull-outs and shelters on Route 7 NB and SB at Racine/Legion Road Install nearside bus pull-outs and shelters on Route 7 NB and SB near Forbes Road; complement with possible bike/ped access improvements on Racine Road and Forbes Road.

Roadway Congestion and Safety

Six medium-term recommendations have been developed to address roadway congestion and safety issues in the corridor. These strategies are summarized in Table 3-5. Some continue the work of short-term recommendations such as R1-MT, R3-MT, and R5-MT while others are new (R6-MT, R7-MT, and R9-MT).

Table 3-5: Medium-Term Roadway Congestion and Safety Recommendations

ID	Recommendation	Implementation Details
R1- MT	Improve traffic circula- tion/safety at Bartlett Road, Legion Road/Racine Road, and West Milton Road inter- sections	 Construct preferred alternative identified in the scoping study.
R3- MT	Pursue backage roads paral- lel to Route 7	 Construct segments of backage road or reserve rights-of-way between Racine Road and Park Place as development occurs according to preferred alternative cross section and alignment identified in scoping study Initiate scoping study of backage road north of Milton Square Shopping Center as seen in Figure 3-16
R5- MT	Roadway and Safety Im- provements at connections to Milton High School	Construct preferred alternative identified in scoping study
R6- MT	Three-lane cross section be- tween W. Milton Road and northern Shopping Center En- trance	 Initiate scoping study of new roadway cross section including the following elements identi- fied in Figure 3-12 concept: Center turn lane and/or landscaped median with dedicated left turn lanes at major inter- sections Dedicated bicycle facilities
R7- MT	Streetscape enhancements on Route 7 between Main Street and Cherry Street	 Initiate scoping study of roadway section and intersection at Main St See Figure 3-9 for concept of a landscaped buffer on northbound side of Route 7 and mini roundabout at the Main Street intersec- tion Construct preferred alternative identified in scoping study

Recommendation R1-MT aims to improve to traffic circulation and safety at the problematic intersections of Route 7 with Bartlett Road, West Milton Road, and Legion Road/Racine Road by installing a roundabout or traffic signal. By 2035, the warrant based on projected traffic volume would be met for a signal at West Milton Road under the existing configuration (as shown in Figure 2-13 of Chapter 2).

With the closure of Bartlett Road and the role of West Milton Road minimized in this recommendation —it would be converted one way westbound with no left turns permitted from Route 7 NB (see Figure 3-7)—demand for a traffic signal would shift south to the Legion Road/Racine Road intersection. An alternative to installing a traffic signal here would be a roundabout. Two lanes through the roundabout would likely be necessary to maintain an acceptable level of service, as explained in the following Future LOS Analysis and Results section. Either a single or double lane roundabout at Route 7/Racine Road/Legion Road would necessitate right-of-way acquisition on parcels south and east of the existing intersection. A scoping study and close coordination with VTrans would be required. The project could be led by VTrans, or the Town of Milton if Route 7 is re-classified as a Class I Town Highway.

Recommendation R5-MT, which also concerns connections to Milton High School, has three implementation elements. The first element involves the installation of center median islands on Route 7 at the high school access roads, which would provide pedestrian refuge areas in the middle of the street (see Figure 3-10 for an example). The second implementation element is the realignment of Barnum Street and Lamoille Terrace, which are currently offset from each other by about 15 feet (see Figure 3-8). Relocation of above ground utility boxes on the northwest corner of the intersection would be necessary to realign Lamoille Terrace approximately 15 feet to the north. Right-of-way acquisition would not likely be needed; the existing right-of-way on Lamoille Terrace extends approximately 18 feet north from the current curb line based on recent tax maps and aerial imagery. The third element is to address flooding issues at the Barnum Street and Lamoille Terrace intersection by installing catch basins on Lamoille Terrace (near the intersection) and linking them to new underdrain extending to a daylight drain west of Brandy Lane.

Recommendation R7-LT would involve reconstructing the Route 7 streetscape between Main Street and Cherry Street and installing a single lane mini-roundabout at the intersection of Route 7 and Main Street (refer to Figure 3-9 shown previously). A mini-roundabout at this location would improve overall intersection performance in the future, as explained in the following Future LOS Analysis and Results section. A mini-roundabout at this location would also have minimal right-of-way impacts; however, a scoping study would be needed to make a definitive determination on whether additional right-of-way is needed for the full improvement. Similar to Recommendation R6-MT, Class I Town Highway designation of Route 7 in this vicinity may be the easiest path towards implementing a mini-roundabout and streetscape improvements, including a landscaped planting strip with trees and lampposts, from Cherry Street to the dam.



Figure 3-10: Median refuge island inside a center turn lane (source: FHWA)



Figure 3-11: Roundabout Options for Recommendation R1-MT at Rt. 7 and Racine/Legion Road

Future LOS Analysis and Results (R-1 & R-7)

Route 7 at Racine/Legion Road

Installing a traffic signal or roundabout at the intersection of Route 7 and Racine/Legion Road would have mixed effects on traffic. A new traffic signal would worsen overall intersection LOS, but would have the positive effects of decreasing delays on Racine Road and Legion Road and adding a new protected pedestrian crossing. A double lane roundabout would have a better effect on overall intersection performance than a single lane roundabout (Figure 3-11 on the previous page compares the two configurations), but would require significant right-of-way acquisition to the south of the existing intersection. Table 3-6 shows the 2035 LOS results of all signal and roundabout options proposed.

In 2035, the Route 7 traffic would continue to experience free flow conditions (LOS A) without changes to the existing configuration. However, the Racine Road and Legion Road approaches will experience worse delay (LOS D), and speed and sight distance issues at the intersection will persist. In addition, the current unsignalized configuration is not ideal for pedestrian crossings of Route 7. If the intersection is signalized using the existing lane configuration, overall intersection performance would be LOS B during the AM and PM peaks. Adding a left turn lane at the newly signalized intersection would allow for greater safety by separating through northbound on Route 7 from left turn movements onto Legion Road.

A double lane roundabout would have a favorable effect on intersection performance at Racine/Legion. As a double lane roundabout, the intersection would experience LOS A in 2035, with all approaches except Route 7 SB in the AM peak benefiting from free flow conditions. Conversely, a single lane roundabout would have an unfavorable effect on intersection performance; overall intersection LOS would drop to F during the AM Peak, and E during the PM Peak. As such, a single lane roundabout is not recommended at Route 7 and Racine Road/Legion Road.

Table 3-6: LOS Results for Legion/Racine Traffic Signal and Roundabout Options

2035 NO BUILD								
AM Peak PM Peak								
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	А	0	-	А	0	-	
	US 7 SB	А	0	-	А	0	-	
US 7 + LEGION / RACINE	RACINE NB	D	28.4	0.07	D	25.7	0.11	
	LEGION SB	D	31	0.17	D	33.3	0.09	
	OVERALL	А			А			
2035 SIGNAL, EXISTING LANES								
			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	А	4	0.31	В	17.9	0.88	
	US 7 SB	В	18.3	0.89	А	5.4	0.43	
US 7 + LEGION / RACINE	RACINE NB	А	7	0.06	В	15	0.09	
	LEGION SB	В	17.7	0.14	С	20.5	0.06	
	OVERALL	В	14.8		В	13.9		
2035 SIG	NAL, US 7 NO	RTHBO	UND LEFT	TURN I	ANE			
			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	Α	5.3	0.32	С	23.5	0.91	
	US 7 NB LT	А	4.5	0.07	А	5.0	0.14	
	US 7 SB	С	25.5	0.93	Α	7.0	0.46	
US / + LEGION / RACINE	RACINE NB	Α	6.7	0.04	В	14.0	0.07	
	LEGION SB	D	43.5	0.72	D	36.5	0.61	
	OVERALL	С	22.7		В	19.0		
ROUN	IDABOUT SING	ile lan	E (HCM A	NALYSI	S)			
			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	Α	7.5	0.38	F	63.4	1.06	
	US 7 SB	F	82.3	1.12	Α	9.1	0.5	
US 7 + LEGION / RACINE	RACINE NB	Α	5.1	0.02	В	11.3	0.06	
	LEGION SB	В	13.3	0.09	Α	6.5	0.02	
	OVERALL	F	62.6		Е	45.2		
ROUNDABOUT	DOUBLE LANE	<u>ON 7 S</u>	B AND 7 I	NB (HCIN	/I ANAL	YSIS)		
			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	А	5.3	0.19	А	9.8	0.53	
	US 7 SB	В	10.2	0.56	А	5.7	0.25	
US 7 + LEGION / RACINE	RACINE NB	Α	4.4	0.01	Α	7.8	0.04	
	LEGION SB	Α	8.9	0.06	Α	5.5	0.02	
	OVERALL	А	9		А	8.5		

Table 3-7: LOS Results for Main Street Roundabout Options

2035 NO BUILD								
	AM Peak PM Peak						:	
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	А	0	0.49	А	0	0.49	
	US 7 SB	А	1	0.06	А	3.4	0.13	
US 7 + IVIAIN	MAIN ST WB	D	32.1	0.59	F	25.7	1.25	
	OVERALL	А	5.9		D	30.4		
	ROUNDABOUT	SINGLE	LANE (H	CM AN	ALYSIS)			
			AM Peak			PM Peak		
		LOS	Delay	v/c	LOS	Delay	v/c	
	US 7 NB	А	6.1	0.24	D	26.1	0.84	
US 7 + MAIN	US 7 SB	С	20.6	0.79	В	11.3	0.57	
	MAIN ST WB	А	6	0.2	В	14.2	0.45	
	OVERALL	С	15.4		С	19.3		

Route 7 at Main Street

Installing a single lane roundabout at the intersection of Route 7 and Main Street would have a generally favorable effect on traffic, as shown in Table 3-7. In addition, a roundabout would have other benefits, such as improving the pedestrian environment near the dam and improving the aesthetic of Milton's traditional village center. If no action is taken, overall intersection performance will decrease to LOS D during the PM Peak by 2035; the Main Street approach will experience LOS F conditions. The single lane roundabout alternative improves intersection performance during the PM Peak (overall LOS C) while decreasing delay on Main Street to LOS B, which is stable flow. Overall intersection LOS would be worse during the AM Peak with the single lane roundabout (LOS). However, levelof-service is not the only consideration when deciding whether to implement a roundabout. There are other benefits such as traffic calming and promoting a safer, more hospitable pedestrian and bicycle environment. This in turn will promote physical activity, reduce the incidence of unintentional injury and improve access to

services. An example of a mini-roundabout with pedestrian amenities on a similar corridor in Manchester, Vermont is shown in Figure 3-12 below.



Figure 3-12: Example of a mini-roundabout on VT Route 7A in Manchester

Long-Term Recommendations

The previously mentioned short and medium-term recommendations go a long way in addressing the vision and goals identified during the study process. The long-term recommendations could be viewed as the final piece to the puzzle in completing the corridor's vision of offering convenient multimodal travel options by foot, bicycle, transit, and automobile while continuing to serve as the main arterial route through town.

The report contains recommendations that would help to improve safety and multimodal connections in the town, while improving streetscape aesthetics and mobility. These actions would require more than ten years to implement due to environmental and permitting issues, design requirements, or cost.

All long-term pedestrian/bicycle and roadway recommendations are outlined in Table 3-8 and Table 3-9, respectively, with associated implementation details.

Table 3-8: Long-Term Bicycle and Pedestrian Recommendations

ID	Recommendation	Implementation Details
P2- LT	Facilitate safe pedestrian travel on West Milton Road bridge over I-89	Install separate pedestrian bridge
P3- LT	Pursue backage roads and paths parallel to Route 7	 Construct segments of backage roads or reserve rights-of-way according to preferred alternative cross sections and alignments identified in scoping studies Initiate scoping study of multi-use path parallel to I-89 south of W. Milton Road possibly extending to Go- nyeau Road as partially shown in Figure 3-16
P6- LT	Three-lane roadway between W. Milton Road and northern Shopping Center Entrance	 Construct preferred alternative identified in scoping study







Figure 3-13: Recommendation P6-LT/R6-LT options (center turn lanes and/or planted median islands with crosswalks and gateway treatments)

Bicycle and Pedestrian

Three long-term recommendations have been developed to address bicycle and pedestrian issues in the corridor. These recommendations are summarized in Table 3-8 and described in further detail below.

Recommendation P2-LT would construct a pedestrian bridge on a separate structure alongside the existing West Milton Road bridge over I-89. This would require a separate scoping study because of its potentially high cost (greater than \$1 million) and need for close coordination on design and construction with VTrans, who owns the existing bridge. Construction of a dedicated pedestrian bridge would likely be pursued by the Town of Milton, since West Milton Road is designated as a Town Highway. Figure 3-14 shows the proposed alignment of the pedestrian bridge. Such a structure would need to be linked with sidewalks to Checkerberry Village and Birchwood Mobile Home Park, which currently do not exist but are proposed in Recommendation P8-MT (West Milton Street Segments A, B, and C according to the map shown in Figure 2-20), which also recommends filling in the missing sidewalk segments on Route 7 SB between Haydenberry Drive and Nancy Drive. Transition ramps to and from the sidewalk will need to be installed for on-road westbound cyclists that want to use the pedestrian bridge. On-road eastbound cyclists will be expected to stay on the road when navigating the bridge.

Recommendation P3-LT, which is related to R3-LT, would construct pedestrian and bicycle facilities alongside proposed backage roads that provide alternate local routes to Route 7 (shown in Figure 3-16). The longest proposed backage road, which lies to the south of Route

¹² Milton has three existing TIF districts: the Core TIF District, which includes most of corridor, and the Husky and Catamount Industrial Park TIF Districts. A map of the Milton Core TIF District is shown in Appendix D.

7 between Racine Road and the Municipal Complex, would have either a share-use path or sidewalks with on-street bicycle lanes (see Figure 3-15). P3-LT also recommends building off-street shared-use paths connecting existing neighborhoods that are only accessible via Route 7. Backage roads and shared-use paths would be pursued by the Town of Milton with assistance from private developers via direct construction as part of parcel development or through value capture techniques such as impact fees and tax increment financing (TIF).¹²



Figure 3-14: Recommendation P2-LT dedicated pedestrian bridge

Recommendation P6-LT (in conjunction with R6-LT) would reconstruct Route 7 with a three-lane cross-section as shown previously in Figure 3-13. There are three options presented that would adequately accommodate all roadway users and allow for street trees. (Note: while trees are shown in the 5' greenbelt, 6' is the recommended minimum in the Landscape Guide for Vermont Roadways & Transportation Facilities for curbed roadways) This recommendation serves to transform the southern and central sections of the corridor into a more traditional small town streetscape with a more peopleoriented – rather than auto-oriented – character.

Roadway Congestion and Safety

Three long-term recommendations have been developed to address roadway congestion and safety issues in the corridor. These are summarized in Table 3-9.

Recommendation R3-LT would work towards building a network of locally-oriented backage roads parallel to Route 7. The longest proposed backage road would follow a meandering one-mile alignment from Racine Road to Park Place near the Municipal Complex, as shown in Figure 3-16. This backage road would also carry 6-foot bicycle lanes, or a shared use path with 5-foot shoulders, as discussed in the previous Bicycle and Pedestrian section. This concept is shown in plan view on Figure 3-16 and cross-section view in Figure 3-15. The Racine Road/Park Place connector would have connections to Route 7 at Nancy Drive, Landfill Road, Willy's Lane, Bombardier Road, and Center Drive. Significant residential development is planned for vacant parcels south of Route 7; therefore, the expense of building the connector could be borne (in full or in part) by private developers through direct construction as part of parcel development or through value capture mechanisms such as TIF or impact fees. By having dedicated bicycle and pedestrian facilities, the Racine Road/Park Place connector would produce community benefits beyond enhanced traffic circulation. Either the shared use path option or bike lane option would require a 57-foot right-of-way through existing private land.

Table 3-9: Long-Term Roadway Congestion and Safety Recommendations

ID	Recommendation	Implementation Details				
R3- LT	Pursue backage roads parallel to Route 7	 Construct a new roadway parallel to Route 7 between Racine Road and Park Place Construct a new connection to Route 7 across from Bert's Mobile Home Park Construct a backage road parallel to Route 7 from Milton Plaza to Lamoille Terrace 				
R6- LT	Redesign Route 7 between West Milton Road and northern Shop- ping Center Entrance to provide a three-lane cross-section, with cen- ter turn lane	 Add a center turn lane (possible median) with dedicated turn lanes at major intersec- tions. 				
R9- LT	Address flooding issues on Route 7 in the north/central section of the corridor	 Drainage improvements at the following Route 7 intersections: Village Drive Villemaire Lane Mackey Street 				

Recommendation R3-LT will also involve constructing a backage road to complement portions of the planned multi-use path around Milton High School designed by Toole Design Group (shown on Figure 2-19 in the previous chapter). This connector would run approximately 1,500 feet north from Milton Square Shopping Center to Lamoille Terrace behind existing lot lines on Route 7 SB to provide alternate roadway access to the high school and shopping center. Such a connector would also take some vehicle volume off Route 7 and Rebecca Lander Drive (the primary high school access road) during peak school times. Right-of-way acquisition would be necessary to build this connector, which would likely be pursued by the Town of Milton in collaboration with the high school and shopping center owner.





Figure 3-15: Cross-sections for a potential Racine Road/Park Place connector under Recommendation R3-LT (top: shared use path option; bottom: on street bike lanes)

Recommendation R6-LT involves reconstructing Route 7 as a threelane roadway between Bartlett Road and the northern entrance of Milton Square Shopping Center. This reconfiguration is illustrated in Figure 3-13. A three-lane configuration would have the benefit improving traffic flow on Route 7 by separating left turn movements from through and right movements. It would also improve the corridor's visual appearance and pedestrian/bicycle access, which could have positive economic development effects. Gateway treatments such as decorative banners with town themes could be included along portions of the segment, the entirety of the segment, or simply at the beginning and end of the segment (Figure 3-17 provides an example); such gateway treatments can decrease speeds because they provide motorists a visual cue that a town or place is being entered. Gateway treatments will need to be reviewed with VTrans unless Milton takes over Route 7 as a Class 1 Town Highway.



Figure 3-16: Recommendation R3-LT (backage roads with multi-use paths and/or bike lanes); and P3-LT (bicycle and pedestrian pathways)

A scoping study would be needed to analyze the traffic impacts of a three-lane reconfiguration. The 66-foot right-of-way of Route 7 should provide adequate width for a three-lane reconfiguration, thereby minimizing the need for right-of-way acquisition. Reconstructing a 1.7-mile section of Route 7 as three-lane road is a multi-million dollar undertaking that would likely require significant financial assistance from federal and state funding sources. Reclassifying Route 7 in Milton north of Bartlett Road as a Class I Town Highway, whereby the Town would share construction and/or maintenance responsibilities with VTrans, may be the easiest path towards realizing this project. This is largely due to concerns over streetscape design details that make it difficult for VTrans's large plowing equipment.



Figure 3-17: Example of gateway signage developed for US Route 4 in Killington Vermont. Various local themes are reflected in the signage (source: LandWorks)

Recommendation R9-LT would address the need for drainage improvements on Route 7 at Villemaire Lane, Village Drive, and Mackey Street. This section of Route 7, which is flat and has problems with standing water during heavy rains and snowmelt. Depressions in the pavement, and unpaved areas near the roadway edge, cause pools of water to form at intersections and along the sides of the road. Flooding along this stretch of Route 7 could be solved by repaving the road and/or installing catch basins and raised curbs where needed. Such an effort could be pursued by VTrans or jointly with the Town of Milton if Route 7 is reclassified as a Class I Town Highway.

Next Steps

Implementation of the previously mentioned long-term recommendations involves several steps, beginning with detailed scoping of concepts and identification of funding to complete design and construction work. More detailed conceptual design would occur during the scoping process, followed by preliminary and final design, rightof-way acquisition (if necessary), and construction. All long-term strategies can advance separately; however, the pedestrian/bicycle and roadway aspects of several strategies (i.e., those with a shared ID number)—including P1/R1, P3/R3, P5/R5, P6/R6, and P7/R7 should advance jointly or in complementary manners.

Implementation Matrix

Time Frame Criteria:

Short Term (ST): Less than 3 Years

Medium Term (MT): 3 to 10 Years

Long Term (LT): Greater than 10 Years

Table 3-10: <u>Short-term</u> recommendations implementation matrix

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments
ID Bicyclo and	l Podostrian	Details	Entity	Partners	
P1-ST	Improve pedestrian con- nections and safety at Bartlett Road, Legion Road/Racine Road, and West Milton Road Inter- sections	 Initiate scoping study of intersections See Figure 3-7 concept to consolidate the intersections at Racine/Forbes Roads and install sidewalks/crosswalks 	Town of Mil- ton	VTrans, CCRPC & CCTA	 See companion rec- ommendation R1- ST Initiate project for preferred alterna- tive and secure funding
P2-ST	Facilitate safer pedes- trian travel on West Mil- ton Road bridge over I-89	 Stripe 2-foot shoulders on bridge 	Town of Mil- ton		 Pursue planning and design for side- walk on north side of roadway Secure funding
P3-ST	Pursue backage roads and path connections parallel to Route 7	 Construct the preferred alternative(s) for high school multi-use path(s) as identified in the scoping study Initiate scoping study of backage road between Racine Road and Park Place as seen in Figure 3-16 See Figure 3-15 for potential cross sections Initiate Scoping Study of multi-use path from Landfill Road to Stacy Street 	Town of Mil- ton	Private De- velopers, CCRPC	 See companion rec- ommendation R3- ST Construct segments of backage road or reserve rights-of- way as develop- ment occurs

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments
ID		Details	Entity	Partners	 Initiate project for multi-use path and
P5-ST	Improve roadway and safety conditions at con- nections to Milton High School	 Re-stripe intersection and crosswalks Install RRFB's and signage at key Route 7 crosswalks with connections to Milton High School: Rebecca Lander Drive & Route 7 Barnum Street/Lamoille Terrace & Route 7 Initiate scoping study of Rebecca Lander Dr & Barnum St/Lamoille Terr intersections (see Figure 3-8 for concepts) 	VTrans and/or Town of Mil- ton	CCRPC, Milton High School	 Secure funding Coordinate with Milton High School Public education of RRFB use Identify funding source(s) See companion rec- ommendation R5- ST
P7-ST	Enhance streetscape on Route 7 between Main Street and Cherry Street	 Install midblock crossing on Route 7 with RRFB signage as necessary Install midblock crossing on Route 7 north of Cherry Street at the picnic area with RRFB signage as necessary 	VTrans and/or Town of Mil- ton	CCRPC	 Work with VTrans regarding crosswalk installation thresh- old requirements and RRFB use Initiate scoping study
P8-ST	Improvements to side- walks and crosswalks to close existing gaps on Route 7	 Stripe or restripe crosswalks at: Route 7 & Clifford Drive (cross-street) Route 7 & Southerberry Drive (cross-street) Route 7 & Bombardier Road (cross-street) Route 7 & Centre Drive (cross-street) Route 7 & Villemaire Ln (cross-street) Route 7 & Lamoille Terrace/Barnum Road (cross-street) Route 7 & Main Street (cross-street and main-line-south side) Install new crosswalks at locations with existing side-walks Route 7 & Cherry Street (mainline- north side) 	VTrans and/or Town of Mil- ton	CCRPC	 Identify funding source(s) Plan for future side- walk installations and crosswalks

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments
ID		Details	Entity	Partners	
		 Route 7 & Villemaire Lane (mainline- north side) Route 7 & Milton Square (mainline- north side) Route 7 & Centre Drive (mainline-south side) Route 7 & Haydenberry Drive (mainline- north side) Route 7 & Bombardier Road (mainline- north side) Route 7 & Bombardier Road (mainline- north side) Route 7 & Chrisemily Lane (mainline- south side) Route 7 & Nancy Drive (mainline- south side) Route 7 & Nancy Drive (mainline-south side) Route 7 & Nancy Drive (mainline-south side) Construct sidewalks to fill existing gaps: Route 7 Segment A (820') Route 7 Segment B (230') Route 7 Segment D (500') Route 7 Segment E (940') 			
Roadwav	and Safety	o houte / segment L (s+o)	<u> </u>		
R1-ST	Improve traffic circula- tion/safety at Bartlett Road, Legion Road/Ra- cine Road, and West Mil- ton Road intersections	 Turning movement restrictions (No left turn from Route 7 NB to W. Milton Road) Initiate Scoping Study of intersections See Figure 3-7 concept to consolidate the in- tersections at Racine/Forbes Roads and install sidewalks/crosswalks 	VTrans and/or Town of Mil- ton	CCRPC & CCTA	 Inform and educate public of proposed turn restrictions See companion rec- ommendation P1-ST Initiate project for preferred alterna- tive and secure funding
R3-ST	Pursue backage roads and path connections parallel to Route 7	 Initiate scoping study of backage road between Racine Road and Park Place as seen in Figure 3-16 See Figure 3-15 for potential cross sections 	Town of Mil- ton	Private De- velopers, CCRPC	 See companion rec- ommendation P3-ST Construct segments of backage road or reserve rights-of- way as develop- ment occurs
Reference	Recommendation	Implementation Lead Direct	Next Steps/Comments		
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ID		Details Entity Partners			
R4-ST	Enforce corridor area speed limits	 Speed transition areas at northern and southern ends of the corridor Haydenberry Drive/Ellison Street Milton Police Dept. 	 Discuss safety con- cerns with Town Po- lice 		
R5-ST	Improve roadway and safety conditions at con- nections to Milton High School	 Initiate scoping study of Rebecca Lander Dr & Barnum St/Lamoille Terr intersections to examine the following (shown in Figure 3-8): Realignment of Lamoille Terrace and Barnum Street to remove their offset Installation of a sidewalk and greenbelt on north side of Rebecca Lander Dr to connect with existing sidewalk internal to the high school Splitter islands on Route 7 to calm traffic and provide pedestrian refuge Stormwater improvements 	 See companion rec- ommendation P5-ST Initiate project for preferred alterna- tive and secure funding 		

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments		
ID		Details	Entity	Partners			
Bicycle and Pedestrian							
P1-MT	Improve pedestrian connections and safety at Bartlett Road, Le- gion Road/Racine Road, and West Milton Road Intersections	 Construct preferred alternative identified in the scoping study. 	VTrans and/or Town of Mil- ton	CCRPC, CCTA	 See companion rec- ommendation R1- MT 		
P2-MT	Facilitate safe pedes- trian travel on West Milton Road bridge over I-89	 Install sidewalks on north side of roadway extending from Route 7 to the Birchwood Mobile Home Park Facilitate safer pedestrian travel across bridge Option 1: Stripe a 3-foot shoulder on north side of bridge to accommodate pedestrians and change lane widths to 10' WB and 11' EB (see Figure 3-2) Option 2: Install traffic signals on both sides of bridge to allow alternating one-way traffic on bridge; re-stripe for one travel lane and bicy-cle/pedestrian facilities (see Figure 3-6) Initiate scoping study for long term separate pedestrian bridge 	Town of Mil- ton and/or VTrans	CCRPC	 Utilize a public involvement process to determine the best option in facilitating a safe pedestrian navigation across the bridge Initiate project and secure funding 		
P3-MT	Pursue backage roads parallel to Route 7	 Construct segments of backage road or reserve rights-of-way between Racine Road and Park Place as development occurs according to preferred alter- native cross section and alignment identified in scoping study Construct preferred alternative of multi-use path between Landfill Road and Stacy Street Initiate scoping study of backage road north of Mil- ton Square Shopping Center as seen in Figure 3-16 	Town of Mil- ton	Private De velopers, CCRPC	 See companion rec- ommendation R3- MT Construct segments of backage roads or reserve rights-of- way as development occurs 		

Table 3-11: <u>Medium-term</u> recommendations implementation matrix

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments
ID		Details	Entity	Partners	
		 See Figure 3-15 for potential cross sections 			
P5-MT	Roadway and Safety Improvements at con- nections to Milton High School	 Construct preferred alternative identified in scoping study. 	VTrans and/or Town of Mil- ton	CCRPC, Milton Town School Dis- trict	 See companion rec- ommendation R5- MT
P6-MT	Three-lane cross sec- tion between W. Mil- ton Road and northern Shopping Center En- trance	 Initiate scoping study of new roadway cross section including the following elements identified in Figure 3-13 concept: Center turn lane and/or landscaped median with dedicated left turn lanes at major intersections On street bicycle lanes 	Town of Mil- ton	VTrans, CCRPC, CCTA, Town Im- prove- ments Committee	 See companion rec- ommendation P6- MT
P7-MT	Streetscape enhance- ments on Route 7 be- tween Main Street and Cherry Street	 Initiate scoping study of roadway section and intersection at Main St See Figure 3-9 for concept of a landscaped buffer on northbound side of Route 7 and mini roundabout at the Main Street intersection Construct preferred alternative identified in scoping study 	Town of Mil- ton	VTrans, CCRPC, CCTA	 See companion rec- ommendation R7- MT
P8-MT	Improvements to side- walks and crosswalks to close existing gaps on Route 7	 Construct sidewalks to fill existing gaps: River Street Segment A (550') River Street Segment B (750') River Street Segment C (500') W. Milton Segment A (700') W. Milton Segment B (1350') W. Milton Segment D (1000') Widen shoulder on Route 7 SB near Bombardier Road to provide adequate width for bicycles (linear distance of 300') New crosswalks Route 7 & Haydenberry Drive (cross-street) 	VTrans and/or Town of Mil- ton	VTrans, CCRPC, Pri- vate Devel- opers	 Initiate public involvement process Identify funding source(s) Plan for future sidewalk installations and crosswalks Maintain sidewalks and crosswalks

Reference	Recommendation	Implementation	Lead	Direct	Next Steps/Comments
ID		Details	Entity	Partners	
		 Route 7 & Landfill Road (cross-street and main- line) 			
		 Route 7 & Bert's Mobile Home Park (cross-street and mainline) 			
		 Route 7 & Kapica In (cross-street) 			
		 Route 7 & Chrisemily Lane (cross-street) 			
		 Route 7 & Nancy Drive (cross-street) 			
Transit					
	Improvements to close existing gaps on Route	 Nearside bus pull-outs and shelters on Route 7 NB and SB at Racine/Legion Road Nearside bus pull outs and shelters on Route 7 NB 	CCTA, VTrans and/or	CCRPC	 Meet with VTrans to discuss pull-offs See companion rec
T1-MT		and SB near Forbes Road; complement with possible bike/ped access improvements on Racine Road and Forbes Road.	Town of Mil- ton		ommendation R1-
Roadway ai	nd Safety			•	
R1-MT	Improve traffic circula- tion/safety at Bartlett Road, Legion Road/Ra- cine Road, and West Milton Road intersec- tions	 Construct preferred alternative identified in the scoping study. 	VTrans and/or Town of Mil- ton	CCRPC, CCTA	 See companion rec- ommendation P1- MT
R3-MT	Pursue backage roads parallel to Route 7	 Construct segments of backage road or reserve rights-of-way between Racine Road and Park Place as development occurs according to preferred alter- native cross section and alignment identified in scoping study Initiate scoping study of backage road north of Mil- ton Square Shopping Center as seen in Figure 3-16 	Town of Mil- ton	Private Developers, CCRPC	 See companion rec- ommendation P3- MT Construct segments of backage road or reserve rights-of- way as development occurs

Reference	Recommendation	Implementation Details	Lead Entity	Direct Partners	Next Steps/Comments
R5-MT	Roadway and Safety Improvements at con- nections to Milton High School	 Construct preferred alternative identified in scoping study. 	VTrans and/or Town of Mil- ton	CCRPC, Milton Town School Dis- trict	 See companion rec- ommendation P5- MT
R6-MT	Three-lane cross sec- tion between W. Mil- ton Road and northern Shopping Center En- trance	 Initiate scoping study of new roadway cross section including the following elements identified in Figure 3-13 concept: Center turn lane and/or landscaped median with dedicated left turn lanes at major intersections On street bicycle lanes 	Town of Mil- ton	VTrans, CCRPC, CCTA, Town Im- prove- ments Commit- tee	 See companion rec- ommendation P6- MT
R7-MT	Streetscape enhance- ments on Route 7 be- tween Main Street and Cherry Street	 Initiate scoping study of roadway section and intersection at Main St See Figure 3-9 for concept of a landscaped buffer on northbound side of Route 7 and mini roundabout at the Main Street intersection Construct preferred alternative identified in scoping study 	Town of Mil- ton and/or VTrans	VTrans, CCRPC, CCTA	 See companion rec- ommendation P7- MT

Table 3-12: Lona-teri	n recommendations	implementation matrix
Tuble of IEI Long ten		

Reference	Recommendation	Implementation	Lead En-	Direct	Next Steps/Comments
ID		Details	tity	Partners	
Pedestrian a	ind Bicycle		1	-	
P2-LT	Facilitate safe pedes- trian travel on West Milton Road bridge over I-89	 Install separate pedestrian bridge 	VTrans	CCRPC, Town of Milton	 Preferred alterna- tive determined from previous scop- ing study
P3-LT	Pursue backage roads parallel to Route 7	 Construct segments of backage roads or reserve rights-of-way according to preferred alternative cross sections and alignments identified in scoping studies Initiate scoping study of multi-use path parallel to I-89 south of W. Milton Road possibly extending to Gonyeau Road as partially shown in Figure 3-16 	Town of Milton	CCRPC, Pri- vate Devel- opers	 See companion recommendation R3-LT Construct segments of backage road or reserve rights-of-way as development occurs Complete backage roads Construct multi-use path parallel to I-89
P6-LT	Three-lane roadway be- tween W. Milton Road and northern Shopping Center Entrance	 Construct preferred alternative identified in scoping study 	VTrans and/or Town of Milton	CCRPC, CCTA, Town Improve- ments Com- mittee	See companion rec- ommendation R6-LT
Roddway an	Durque backage reads	Construct constructs of hereboxic mode on more service	Town of		
R3-LT	parallel to Route 7	 Construct segments of backage roads or reserve rights-of-way according to preferred alternative cross sections and alignments identified in scop- ing studies 	Milton	vate Devel- opers	 See companion rec- ommendation P3-LT Construct segments of backage road or reserve rights-of- way as development occurs

Reference	Recommendation	Implementation	Lead En-	Direct	Next Steps/Comments
ID		Details	tity	Partners	
					Complete backage
					roads
	Roadway and Safety	 Install splitter islands for traffic calming at the 	Town of	VTrans,	 Scoping study
	Improvements at con-	following intersections of Route 7 with Rebecca	Milton	CCRPC,	
	nections to Milton High	Lander Drive and Lamoille Terrace/Barnum		Milton	
	School	Street		Town	
		Realign Lamoille Terrace and Barnum Street to		School Dis-	
R5-LT		provide continuous alignment for through traf-		trict	
		fic, including utility and signage relocation			
		 Daylight underdrain west of Brandy Lane and add astable basing 			
		add catch basins			
		O Green buller construction on the east side			
		and sidewalk			
	Three lane roadway be-	Construct preferred alternative identified in	VTrans	CCRPC,	• See companion rec-
	, tween Bartlett Road	scoping study	and/or	CCTA, Town	ommendation P6-LT
R6-LT	and northern entrance		Town of	Improve-	
	to Milton Square Shop-		Milton	ments Com-	
	ping Center			mittee	
	Address flooding issues	• Drainage Improvements at the following Route 7	VTrans		
	in the north/central	intersections:	and/or		
R9-LT	section of the corridor	 Village Drive 	Town of		
		o Villemaire Lane	Milton		
		 Mackey Street 			

Appendix A: Public Outreach

Appendix B: Health Impact Analysis

Appendix C: Traffic Operations Analysis

Appendix D: Milton Core TIF District Map



Appendix E: VTrans LOS Policy