RSG INC.
RESOURCE SYSTEMS GROUP, INC.

Documentation for:

MILTON TOWN CORE TRANSPORTATION PLAN

PART 1:

EXISTING CONDITIONS AND PRELIMINARY TRAFFIC PROJECTIONS

PART 2:

FUTURE TRAFFIC PROJECTIONS CONSIDERING ANTICIPATED LAND USE

Prepared for the:

Chittenden County MPO and

Town of Milton, VT

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60 Lake Street, Unit 1E ▪ Burlington, Vermont 05401

MIILTON TOWN CORE TRAFFIC CIRCULATION PLAN
Project Memorandum 1: Existing Conditions

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1.0 INTRODUCTION

The purpose of this study is to conduct a system-wide assessment of traffic flow and congestion along US 7 and the local streets within Milton's town core. The system-wide assessment is necessary to develop a set of coordinated roadway and intersection modifications that support local goals. Transportation projects will most likely be designed and constructed one at a time by the Town, State, or private developers. The goal of this study is to ensure that each individual project, regardless of the year it is built and the public or private entity that builds it, helps achieve an overall plan for the study area.

This study is being conducted by Resource Systems Group, Inc. for the Town of Milton and is funded by the Chittenden County Metropolitan Planning Organization (CCMPO). In addition, the Town of Milton has recently contracted with a team of consultants that consists of River Street and Transportation Concepts (River Street/TC) to undertake a three phase planning study along US 7 that includes the following three projects: (1) Strategic Plan for Economic Development; (2) Town Core Streetscape and Accessibility Design Study; and (3) Route 7 Corridor Land Use Study. The two study areas clearly overlap, and RSG and River Street/TC have been coordinating to share information, ideas, and public outreach efforts.

This Project Memorandum describes the existing conditions in the study area and includes a preliminary twenty-year projection of traffic volumes and congestion. RSG will present the information in this project memorandum at the October 5, 2005 Community Information and Visioning Workshop organized by River Street/TC for the US 7 planning study.

This memorandum contains the following major sections:

- Land Use and Demographics
- Transportation System Characteristics
- Travel Demand
- Congestion, Safety, and Access Management Assessment
- Summary of Findings
- Next Steps

The status of the remaining tasks is summarized in Table 1.

Table 1: Milton Traffic Circulation Study Tasks

Study Phase	Status
Task 1: Project Initiation	Complete
Task 2: Existing Conditions	Project Memo 1 Completed
Task 3: Develop Land Use Scenarios	
Task 4: Future Traffic Conditions	
Task 5: Alternatives and Recommenations	
Task 6: Final Plan	

1.1 STUDY AREA OVERVIEW

Milton, with a population of approximately 9,500 residents, is the northern most Chittenden County municipality. Much of the Town of Milton is rural. By contrast, the town core area boasts a more complex suburban setting. Residents of Milton generally commute to other parts of Chittenden County for work; however the Husky Plant, Catamount Industrial Park, and many small businesses have provided a growing job base for local residents.

Figure 1. Study Area Overview and Study Intersections

Historically, the town's business core was centered around the intersection of US 7 with Main Street. Overtime, the town's business core shifted south along US 7 between Rebecca Lander Drive and the Middle Road – Railroad Street intersection. Recently, the town's business core has expanded south to include an area bounded by US 7, Middle Road, and Bombardier Road.

The study area is defined in Figure 1. The Study area is bordered by Main Street to the North, Middle Road and Railroad Street to the East, Bombardier Road to the South, and US 7 to the West. The 16 intersections in the area that are a focus of this study are shown in Figure 1. The two intersections of Catamount Drive with US 7 have been included in the study for the purpose of the level of service analysis, but the primary study area for the traffic circulation study remains within the green box.

1.2 SUMMARY OF PREVIOUS STUDIES

This section summarizes key findings and recommendations from recently completed and on-going transportation plans and studies.

1.2.1 US 7 Georgia-Winooski Corridor Study – October 2001

The US Route 7 Winooski to Georgia Corridor Study was undertaken in response to a growing need for an integrated approach to transportation development along the US 7 corridor from Winooski to

Georgia. New developments within the corridor and the increasingly wide reach of the Chittenden County economy have placed increasing strains on the aging transport infrastructure.

The study identifies the following goals for the corridor:

1. The corridor should be served by a hierarchical roadway system;
2. A safe highway and transport environment should be provided for highway users and abutters;
3. Meaningful alternative means of transportation should be provided;
4. Transportation service and facilities should be designed to support, further, and enhance community land use and development strategies;
5. Transportation facilities should be designed to complement the areas in which they are located; and
6. Sound and effective long-term fiscal management of necessary improvements within the corridor should be provided.

The following are conclusions of the study that specifically relate to Milton:

1.) Middle Road functions much more like a local road than a collector.

2.) North Road, presently classified a local roadway, provides significant regional access to the Husky development, suggesting potential "collector" status.

3.) A number of intersections have non-standard, difficult geometric configurations, including:

   a. Railroad/Middle/US-7/Grand Union
   b. W Milton/Bartlett/US-7
   c. Haydenberry/Center/US-7 (although this appears to function adequately as two distinct T intersections)
   d. Lake Rd/US-7 (not part of the same geographic cluster, but relevant in the larger picture).

4.) The segments of Route 7, in particular between Checkerberry and roughly Main Street, exhibit a lack of access management. This results in numerous uncontrolled left turns and the potential of vehicles backing into this through roadway.

5.) The high number of commercial uses along Route 7 between Checkerberry and Milton Village generates a high level of internal circulation between destinations, increasing congestion, turning movements and safety issues.

6.) Despite the recent growth in Milton's sidewalk system, there is still room for improvements and expansion especially along part of Route 7 and the New Town Center.

7.) The compact nature of Milton Village and the expanding sidewalk system provide a good environment for linking to transit.

8.) Both industrial and residential development at the southern end of Route 7 in Milton is set back from the roadway behind open green space or vegetation. Given the low industrial buildings, this area retains some feeling of open space and long-range views to the west.

9.) Although Checkerberry is currently undistinguished, the curve in the roadway, the open "village green", and its historic role in the town center present opportunities for future, high quality development.

10.) New Town Center-Middle Road to Barnum: Although the character of the corridor through this section has tremendous potential, the full range of amenities needed in a town center have not yet been completed.

11.) Historic Town Center: The intersection of Main Street and US Route 7 is the entrance to Milton's historic district. Although a few historic buildings remain, the historic character of the intersection has been weakened and there is little to draw visitors east onto historic Main Street.

12.) Arrowhead Lake Corridor: Development in this beautiful part of the Route 7 corridor is likely to be limited due to the difficulty of building on the steep hillsides either side of the roadway. The narrow roadway and 50 mph posted speed limit keep the driver focused on the road and limits opportunities for enjoying the scenic surroundings.

1.2.2 Husky Traffic Impact Study Master Plan – March 1997

Husky develops, manufactures, and tests injection molding machines for the plastics industry. The site is located between North Road and Arrowhead Lake in Milton. The long term plan is for the Husky site to accommodate 2,000 employees. Currently the site is accessed by North Road, however a bridge over Arrowhead lake directly connecting Husky with US 7 has been proposed to alleviate traffic on Railroad Street and Main Street. This bridge has not been constructed to date. Within the study area and assuming the complete build out of Husky, the only intersection that would experience a detrimental Level of Service requiring improvement would be the US 7 – Main Street intersection.

1.2.3 US 7-Rebecca Lander Drive Scoping Study – August 2004

The CCMPO commissioned Dufresne-Henry to investigate potential improvements to the intersection of US 7 and Rebecca Lander Drive, which serves as the primary access point to Milton High School. The goals of the study were to increase intersection performance, increase turning radii to better accommodate school buses, improve the mobility function of US 7, and create a safe pedestrian environment. The recommendations from this study include:

- Adding a left turn lane on the northbound approach at US 7 – Rebecca Lander Drive;
- Adding northbound and southbound left turn lanes at US 7 – Barnum Road;
- Signalizing the US 7 – Barnum Road intersection;

- Increasing the corner radii at both US 7 – Rebecca Lander Drive and US 7 – Barnum Road to better accommodate school buses;
- Installing pedestrian crossing on all approaches to US 7 – Barnum Road;
- Installing a pedestrian crossing on US 7 between Barnum Road and Rebecca Lander Drive;
- Improving street lighting on US 7;
- Designating a school speed zone with flashing beacons; and
- Constructing a raised median on US 7 north of Rebecca Lander Drive and using landscaping to encourage pedestrians to cross only at designated crosswalks.

This scoping study demonstrates that conditions at the US 7-Rebecca Lander Drive intersection and at the US 7-Barnum Road intersection satisfy the school crossing volume traffic signal warrant.

The Town of Milton prefers a traffic signal at the US 7-Barnum Road intersection to accommodate the future relocation of bus access from Rebecca Lander Drive to Lamoille Terrace. However, VTrans has jurisdiction over US 7 and is skeptical that the proposed improvements will force students to cross US 7 at designated locations. As a result, the VTrans project definition team, which is responsible for approving the recommendations of scoping studies before a project moves to the next phase of engineering, voted against the Town's preferred alternative.

1.2.4 US 7-Middle Road-Railroad Street Scoping Study – September 2005

This study was completed by Lamoureux and Dickinson for the CCMPO. The stated purpose of the project is to "…create an overall intersection with acceptable geometry that can safely accommodate vehicles, bicycles and pedestrians and provide adequate capacity for future traffic conditions."

The intersection lacks adequate facilities for pedestrians and cyclists and has poor drainage. However, the primary deficiency is related to its unusual geometry. The location is often referred to as one intersection but actually consists of the following three closely spaced intersections: US 7-Middle Road, US 7-Railroad Street, and Middle Road-Railroad Street. The two US 7 intersections have "Y" configurations and sharp angles that require motorist to turn all the way around to see on-coming traffic from US 7.

Middle Road and Railroad Street also intersect at a sharp angle and only three of the four approaches are controlled by stop signs. The fourth approach, southbound Railroad Street from US 7, is uncontrolled. As described in the scoping study: "(t)his atypical application of (a) multiway stop appears to have been utilized at this location in order to prevent queuing on the southbound approach which, in turn, could affect the left-turn movement from U.S. Route 7".

Seven alternatives were evaluated within the following three general categories: do nothing, realign the roadway and add lanes, and the construction of a roundabout. Details of the seven alternatives can be found in Appendix A. Because the Town of Milton did not select a preferred alternative, the report does not include a final recommendation and the scoping study was not passed on to the VTrans project definition team for approval.

1.2.5 Long Range Access and Mobility Committee Report – January 2001

The long range access and mobility committee was formed in 1998. They were charged with developing a long term transportation plan for the town of Milton while promoting and ensuring public participation in the planning process. The committee also provided input to the CCMPO, Town Selectboard, and Town Planning Commission on the US -7 corridor study and on other long range transportation planning pursued by the Town of Milton.

In 2001 the committee released a report which envisioned significant changes to the Milton transportation network over a twenty year horizon. These ideas include a developed downtown core area with direct access to I-89 via an interchange at West Milton Road, transit service connecting Milton to the rest of Chittenden County, an improved sidewalk system, and a strong grid of east – west roads to connect the north-south roads in the town.

1.2.6 Alternative Transportation Master Plan – May 2002

The goals of this master plan were to develop a plan for linking existing and planned developments with transportation facilities in Milton and improve mobility and accessibility to the town core area and other locations inside and outside of Milton.

Using a combination of input from residents at Town meetings, an estimate of the potential number of users, destinations served, and references to areas in other studies, alternative transportation improvement recommendations were made for various areas in Milton. Some key recommendations are listed below in Table 2.

Table 2: Key Recommended Alternative Transportation Improvements

	Recommended Alternative Transportation Improvement					
Location	*Sidewalk*	*Shared Use Path*	*Bicycle Route*	*Bicycle Lanes*	*Bus Service*	*Train Service*
Town core to Essex			X		X	X
Town core to Colchester		X	X			
US 7 south of town core	X	X		X	X	
Town core to Grand Isle			X			
US 7 north of Milton	X			X	X	
North Road	X			X		
Areas in Milton outside of town core to town core	X	X	X			

2.0 LAND USE AND DEMOGRAPHICS

2.1 EXISTING LAND USE

This section provides a general overview of existing land use in the study area. The US 7 planning project, being conducted by River Street/TC for the Town, will provide additional information and analyses related to land use.

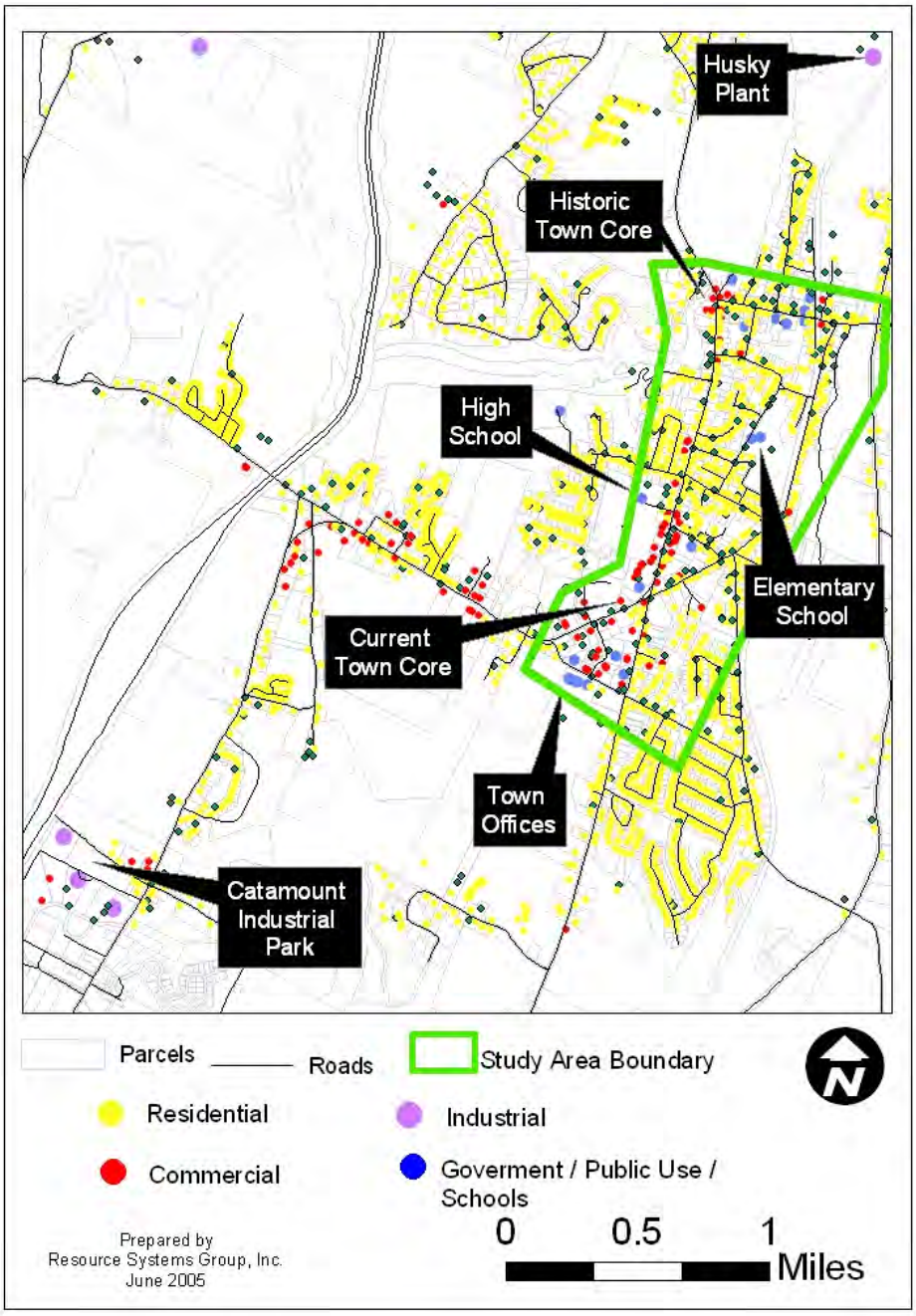
The existing land use map shown in Figure 2, was created using the Vermont e911 site GIS database. This database provides the location of all buildings and infrastructure in Vermont.

The study area includes the town center of Milton which contains a mix of land use types. Residential uses, designated as yellow, are scattered throughout Milton. Commercial areas, designated as red, are concentrated primarily near US 7. There are 3 clusters of commercial areas including:

- Near the US 7-Main Street Intersection;
- Along US 7 south of Rebecca Landers Drive and the Town Core bounded by US 7, Middle Road, and Bombardier Road; and
- From west of Bombardier Road on US 7 to south of West Milton Road.

The Catamount Industrial Park, located along US 7 just north of the Colchester/Milton town line and the Husky campus are two of the Town's major industrial and manufacturing locations. Public facilities, such as the town offices, library, and fire station are located along Bombardier Road. Milton High School, which accesses US 7 through Rebecca Lander Drive, and the Milton Elementary School, are also located in the study area.

Figure 2: Existing Land Use



2.2 MILTON POPULATION AND EMPLOYMENT GROWTH

The total population in the Town of Milton based on the 2000 Census is 9,479. Table 3 compares the population growth of the Town of Milton with several neighboring towns, Chittenden County, and the State of Vermont. From 1980 to 1990 the population growth rate in the Town of Milton exceeded the population growth rate in the neighboring towns of Colchester and Essex as well as all of Chittenden County. From 1990 to 2000 the Town of Milton's population growth rate was comparable to neighboring towns and Chittenden County. From 1980 to 2000 the Town of Milton's growth rate was higher than the population growth rate for the State of Vermont.

Table 4 displays the projected population growth for the Town of Milton and Chittenden County from 2000 to 2020 as reported in Milton's 2003 Comprehensive Plan. Both mean and high estimates for the growth rate in Milton are provided. The higher estimate accounts for expansion of the Husky Plant.

Table 3. Population Growth for Milton and Surrounding Area from 1980 to 2000.

	Census Year			Annual % Increase	
	1980	1990	2000	1980 - 1990	1990 - 2000
Milton	6,829	8,404	9,479	2.1%	1.2%
Colchester	12,629	14,731	16,986	1.6%	1.4%
Essex	14,392	16,498	18,626	1.4%	1.2%
Georgia	2,818	3,753	4,375	2.9%	1.5%
Chittenden County	115,534	143,389	149,466	1.7%	1.3%
Vermont	511,456	562,758	608,827	1.0%	0.8%

Table 4. Projected Population Growth for Milton and Chittenden County, from Milton's 2003 Comprehensive Plan

	Milton				Chittenden County	
	Mean Projection		High Projection			
Year	Annual % Increase	Total Population	Annual % Increase	Total Population	Annual % Increase	Total Population
2000	--	9,479	--	9,479	--	146,571
2005	1.4%	10,161	2.8%	10,882	1.2%	155,579
2010	1.3%	10,839	2.6%	12,372	1.1%	164,326
2015	1.3%	11,562	2.6%	14,066	1.1%	173,565
2020	1.2%	12,273	2.4%	15,837	1.0%	182,419

3.0 TRANSPORTATION SYSTEM CHARACTERISTICS

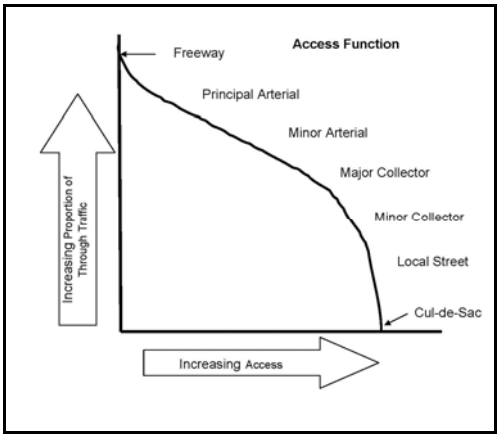
3.1 HIGHWAY SYSTEM CONTEXT

Highway functional class, the National Highway System, the Vermont Truck Network and town highway classification are the foundation for a variety of policies that affect funding eligibility, project prioritization, design requirements, jurisdiction, and maintenance and operation responsibilities for a highway. These various classification systems also provide a big picture view that defines the function of a specific, local highway project within the context of the regional, state, and national transportation systems.

3.1.1 Functional Class

The highway functional classification system, depicted in Figure 3, is organized as a hierarchy of facilities, based on the degree to which the roadway facility serves mobility (through traffic) and access to adjacent land uses. Interstate highways, at the top of the hierarchy, are devoted exclusively to mobility, with no direct access to adjacent land. Arterials and collectors provide both mobility and access. The local road system is devoted exclusively to providing local access, with limited capacity and relatively slow speeds.

Figure 3: Conceptual Roadway Functional Hierarchy

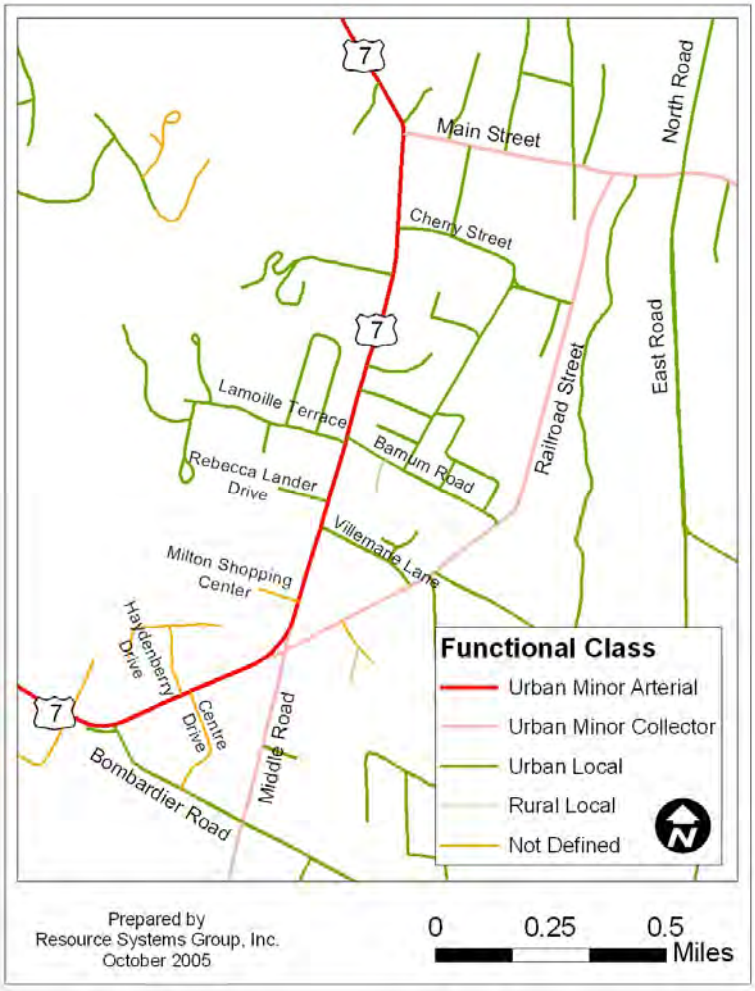


As shown in Figure 4**,** the study area contains a specialized road network that consists of highways classified as minor arterials, minor collectors, and local streets. In general, roadways in the study area are located and operate consistent with their functional class. US 7, a minor arterial and the principal road in the study area, serves through traffic traveling north and south through Milton from Georgia to Colchester and to a lesser extent Westford. Between Middle Road and Main Street in the study area, US 7 also provides access to the local street network. Middle Road, Railroad Street, and Main Street serve as collectors for local traffic to US 7.

Railroad Street is also a parallel and alternate route to US 7, which is somewhat at odds with its function as a collector. In addition, local roads including Villemaire Lane, Barnum Road, and Cherry Street intersect both Railroad Street and US 7 and may provide short-cut routes for some through traffic.

Despite the attraction of Railroad Street and some of local streets for through traffic, the existing roadway system provides a solid foundation from which an interconnected street network could be expanded as development continues in Town. Development and infrastructure improvements that are consistent with roadway function will help maintain the mobility and accessibly functions of the roadways.

Figure 4. Study Area Roadway Functional Classes



3.1.2 National Highway System and VT Truck Route

The National Highway System (NHS) consists of Interstate and Defense Highways and principal arterial roads essential for interstate and regional commerce, travel, national defense, intermodal transfer facilities, international commerce, and border crossings. NHS routes were designated in the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). Non-interstate roads in Vermont designated as part of the NHS consist of VT 9 from Brattleboro to Bennington; VT 103 from I-89 in Rockingham to US 7 in Clarendon; US 4 from I-89 in Hartford to Fair Haven at the New York state border; US 7 from Pownal to Burlington; VT 78 from Swanton to Alburg; US 2 from Alburg to New York State; and US 2 from Montpelier to Guildhall. The section of US 7 in the study area is not eligible to be part of the NHS because it is a minor arterial.

Title 23 V.S.A. Section 1432 as amended by the 2000 Vermont Legislature, establishes the Vermont Truck Network where trucks with overall lengths less than 72 feet (including 53-foot tractor-trailer combinations) may travel without permits. The roads that are not part of the NHS were added to the truck network based on the volume of truck traffic and/or through the legislative decision making process. Inclusion on the truck network does not affect design standards which are governed by functional class, AADT, and truck traffic.

US 7 in the study area is part of the Vermont Truck Network. Because of this designation, recommendations related to the re-design of intersections that may result from this study should accommodate trucks with overall lengths of 72 feet. This requirement will affect turning radii and should be considered in selecting appropriate lane widths.

3.1.3 Roadway Jurisdiction

The entire public highway network in Vermont consists of roads owned either by the state or a municipality. Roads owned by municipalities are designated as class 1, 2, 3, or 4 town highways. A Class 1 Town Highway has a VT or US route number and is considered an important part of the state's arterial network, but is owned and maintained by the municipality through which it passes. No Class 1 town highways are designated within the study area.

Figure 5: Roadway Jurisdiction in Study Area

Class 2 town highways generally connect two or more municipalities but do not have a VT or US number. The minor collector roads in the study area (Main Street, Middle Road, and Railroad Street) are all considered Class 2 town highways.

Class 3 town highways are usually local roads. In general, municipalities own and are responsible for all maintenance and construction costs associated with Class 1-4 town highways, although some funds are provided by the state to support local road projects.

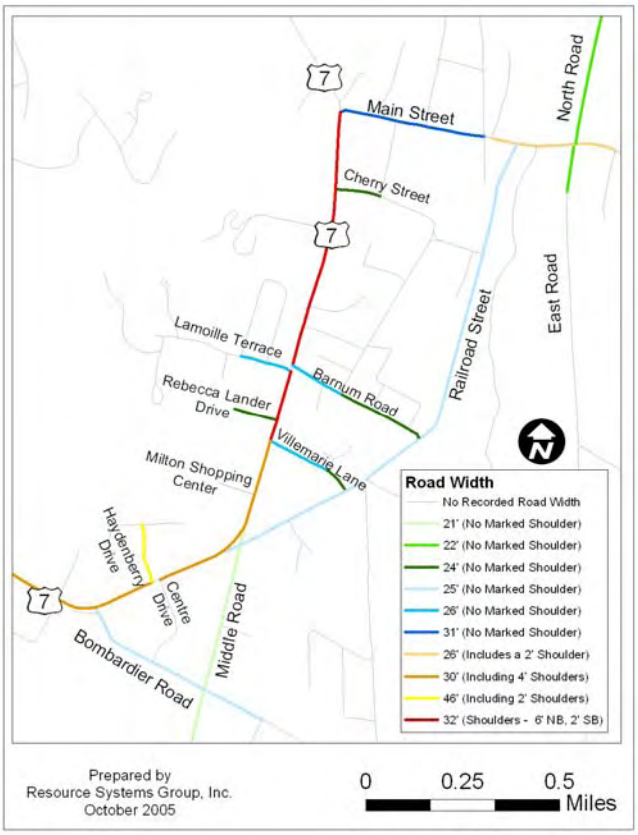
The section of US 7 in the study area is under the jurisdiction of the state. VTrans holds the authority to grant access permits and must consent to the addition of traffic signals, implementation of timing plans, and geometric changes to the roadway. VTrans is responsible for the maintenance of US 7 in

the study area. The balance of study area roadways are either Class 1 or Class 2 town highways and are therefore owned and maintained by the Town of Milton.

3.2 ROADWAY CHARACTERISTICS

Road widths are graphically shown in Figure 6. All roads in the study area are 2 lane roads. Roads with no marked shoulders are designated with blues and greens, while roads with marked shoulders are designated in with yellow, oranges, and reds. With the exception of a section of Main Street and Haydenberry Drive, US 7 is the only road in the study area with marked shoulders. Lane and shoulder width along US 7 in the study area meet or exceed the minimum widths recommended in the *Vermont State Standards* for minor arterials in urban or village settings.

Figure 6: Road Widths



For urban collectors the *Vermont State Standards* suggest a minimum lane width or 9 feet to 11 feet. All urban collectors in the study area meet this requirement. No set standards for shoulders on urban collectors are provided due to the wide range of conditions (such as geometry and right of way) that could limit shoulder width.

For local roads the *Vermont State Standards* suggest a minimum lane width of 9 feet with 2 foot shoulders with traffic volumes between 400 and 1500 vehicles per day[1]. While impractical to survey all local roads in the study area, the local roads that were included in Figure 6 all meet this requirement.

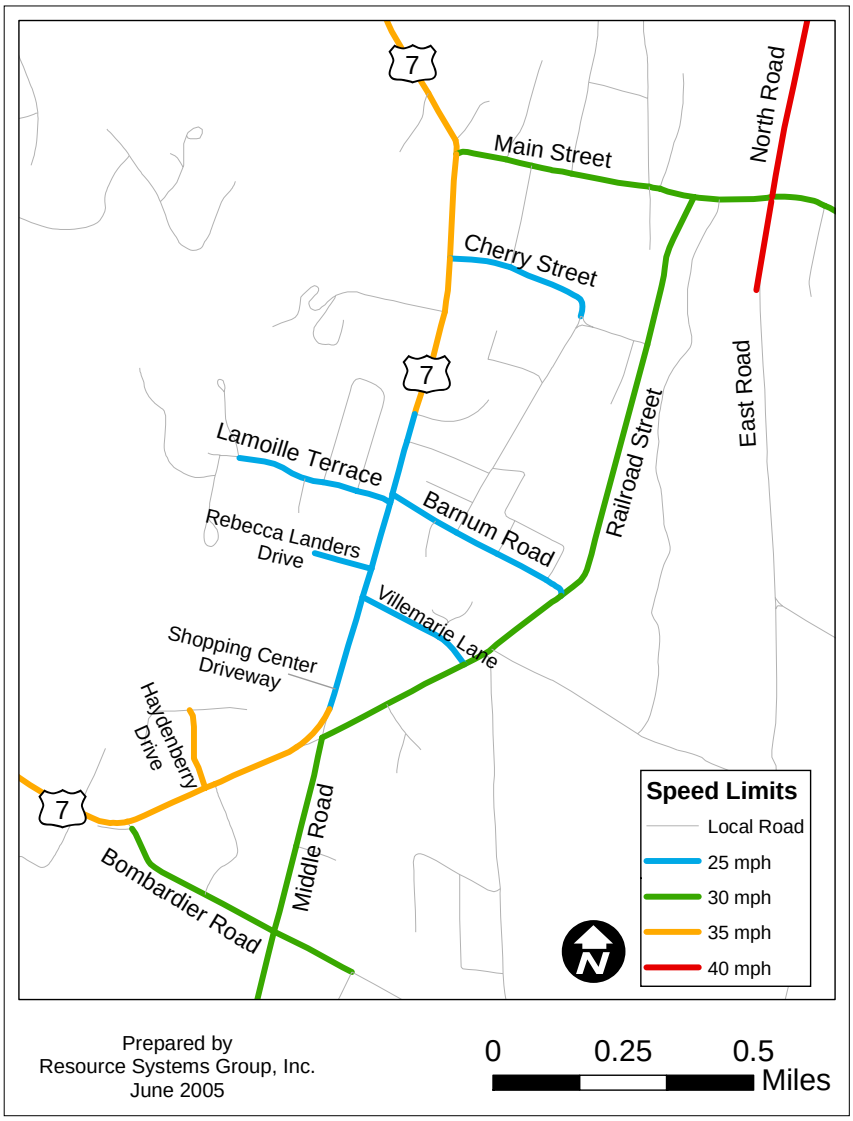
Figure 7 shows the speed limits for all the major roads in the study area as well as for some of the minor local roads. US 7 is designated with a 35 mph speed limit, which drops to 25 mph between the

[1] Minimum lane widths are as small as 8 feet when volumes are less than 50 vehicles per day and as large as 11 feet with 3 foot shoulders when traffic volumes are over 2,000 vehicles per day.

shopping center driveway to just north of Barnum Road. The roads designated as minor collectors (Main Street, Railroad Street, and Middle Road) and Bombardier Road all have speed limits of 30 mph. North Road has a speed limit of 40 mph.

The speed limits on local roads are generally limited to 25 mph. Based on discussions with residents during the field visit; cars routinely exceed the speed limit as they travel the short-cut routes provided by Villemaire Lane and Barnum Road between US 7 and Railroad Street.

Figure 7: Speed Limits



3.2.1 Intersections

Table 5 describes the type of traffic control (stop sign, yield sign, traffic signal) and whether or not turn lanes are provided at each of the study intersections. Figure 8 shows intersection control types at the study intersections. There is one traffic signal in the study area which is located at the US 7 – Milton Shopping Center intersection. All other intersections are controlled by stop signs. The intersection of US 7 and Main Street has flashing beacons. Flashing beacons are utilized as supplements to regulatory or warning signs, on approaches to intersections with additional warning is required, or where special conditions exist[1]. The US 7-Main Street intersection has limited sight distance due to nearby buildings, a curve on the southbound US 7 approach, and short, steep grade on the Main Street westbound approach that justify the beacon. The intersection also marks the north entrance to Village from a higher speed rural section of roadway.

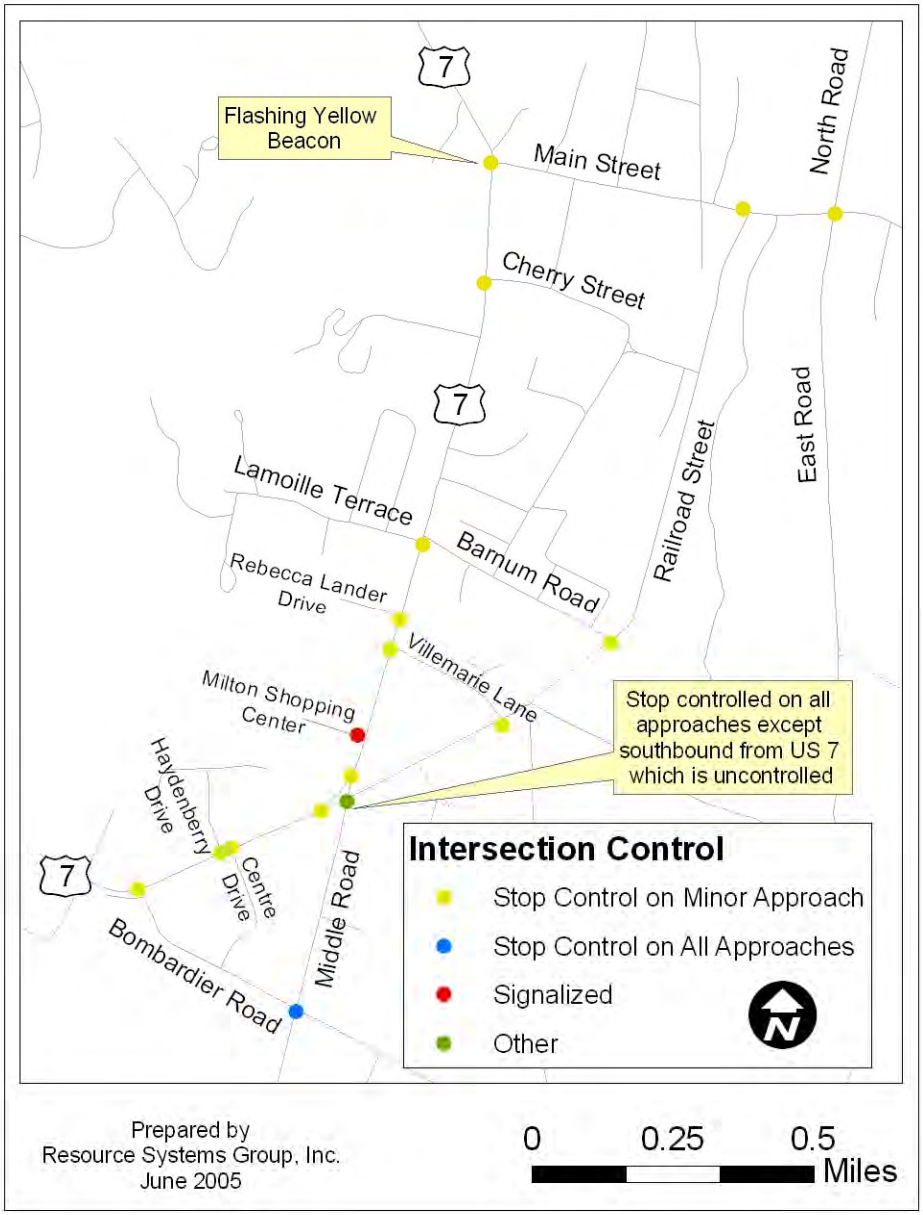
The intersection of Middle Road with Railroad Street has 4 approaches but only 3 of the approaches have stop signs. The southbound approach on Middle Road from US 7 is uncontrolled. Intersection layouts are provided in Appendix B.

[1] 2003 Manual on Uniform Traffic Control Devices

Table 5. Study Intersection Control Type and Turning Lanes

Intersection	Control Type	Turning Lanes	Storage Length	Notes
US 7-Bombardier Road	Stop Sign on Minor Approach	no		No left turn from US 7 SB to Bombardier Road
US 7-Haydenberry Drive	Stop Sign on Minor Approach	Right turn slip lane from US 7 SB to Haydenberry Drive Left turn bay from US 7 SB to Driveway Left turn bay from US 7 NB to Haydenberry Drive Right and left turning lanes from Haydenberry Drive to US 7	81' 81' 290'	
US 7 - Centre Drive	Stop Sign on Minor Approach	Left and right turning lanes on Centre Drive		
US 7– Middle Road-Railroad Street				
US 7 - Railroad Street	Stop Sign			
US 7 - Middle Road	Stop Sign	Left turn bay from US 7 SB to Middle Road	56'	
Railroad Street - Middle Road	Stop Sign			3 - Way Stop Sign with Middle Road SB Free
US 7 –Milton Shopping Center	Traffic Signal	Right turn slip lane from US 7 SB to Supermarket Driveway Left turn bay from US 7 NB to Supermarket Driveway Right and left turn lanes from Supermarket Driveway to US 7	128' 76'	
US 7 – Villemaire Lane	Stop Sign on Minor Approach	no		
US 7 – Rebecca Lander Drive	Stop Sign on Minor Approach	no		
US 7 – Lamoille Terrace-Barnum St	Stop Sign on Minor Approach	no		
US 7 – Cherry Street	Stop Sign on Minor Approach	no		
US 7 – Main Street	Stop Sign on Minor Approach	no		
Middle Road - Bombardier	Stop Sign on All Approaches	no		
Railroad Street-Villemaire Lane	Stop Sign on Minor Approach	no		
Railroad Street-Barnum Street	Stop Sign on Minor Approach	no		
Railroad Street-Main Street	Stop Sign on Minor Approach	no		
Main Street-East Street-North Road	Stop Sign on Minor Approach	no		

Figure 8: Intersection Control Type in Study Area



3.2.2 Pedestrian Facilities

Figure 9 illustrates the pedestrian facilities network in Milton. The majority of the roadways have a sidewalk on at least one side of the road. The section of US 7 though the town core area (between the Milton Shopping Center and Barnum Road on US 7) has sidewalks on both sides of the road.

A major pedestrian crossing location on US 7 is at Rebecca Lander Drive, the entrance to the High School. In 2004 the crosswalk was updated to meet current MUTCD/VTrans standards.

The historic core area of Milton, on Main Street, also has sidewalks on both sides of the road.

The sidewalk system is expanding in the new town core, but gaps remain along US 7 and Bombardier Road.

Railroad Street generally has a sidewalk on one side of the road, except at a key location, north of the Railroad Street-Barnum Road intersection. This location, shown in Figure 9, is near an at-grade railroad track crossing and a curve in the road.

Figure 9: Milton Sidewalk System with Crosswalks

The Long Range Access and Mobility report issued in 2001 included a proposal for the town to initiate a program to upgrade sidewalks. The following sections of roadway in the study are recommended to have sidewalks upgraded or installed to cover both sides of the road and are designated as the highest priority in the plan:

- Bombardier Road (entire length)
- US 7 from Bombardier Road to Middle Road
- US 7 from Middle Road to Rebecca Lander Drive
- Middle Road from Bombardier Road to US 7
- Railroad Street from US 7 to Villemaire Lane
- Villemaire Lane (entire length)
- Middle Road from Bombardier Road to Recreation Park

4.0 TRAVEL DEMAND

This section describes travel demand in the study area based on daily traffic volumes, variations in traffic volumes throughout a typical day, directional flows, journey to work data, and truck traffic.

4.1 TRAFFIC VOLUMES

Figure 10 and Figure 11 show the ranges of Average Annual Daily Traffic (AADT) volumes in terms of vehicles per day on the study area roadways. These volumes indicate that there is a high correlation between the functional road classification (Figure 4) and daily traffic volumes. The arterial road, US 7, carries the highest traffic volumes. The collector roads (Main Street, Railroad Street, and Middle Road) experience less daily traffic than US 7, but more than the local roads. In general, this pattern indicates that the roads in Milton are being utilized as designated.

Additionally, Figure 10 and Figure 11 show the directional traffic volumes for the AM and PM hours respectively in vehicles per hour. During the AM peak hour (Figure 10) traffic volumes are highest along US 7 southbound, which correlates well with the journey to work analysis described later in section 4.3. During the AM peak, vehicles traveling west on Main Street tend to utilize Railroad Street to travel southbound instead of continuing westbound on Main Street to US 7 southbound. During the PM peak (Figure 11) traffic flows are generally higher northbound on US 7, which is also supported by the journey to work data.

Figure 10: AM Peak Hour Directional Volumes and AADT for Study Area Roads

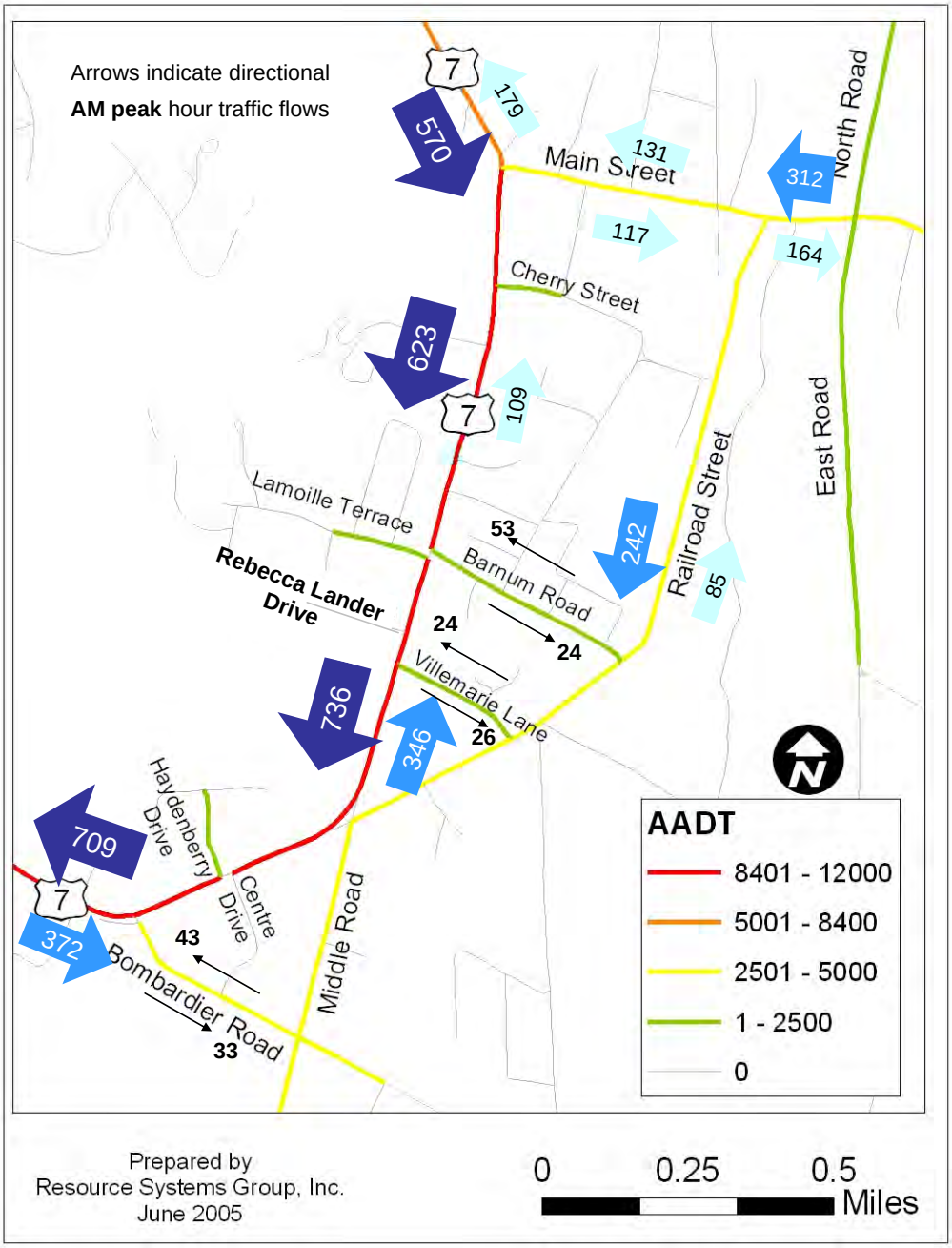
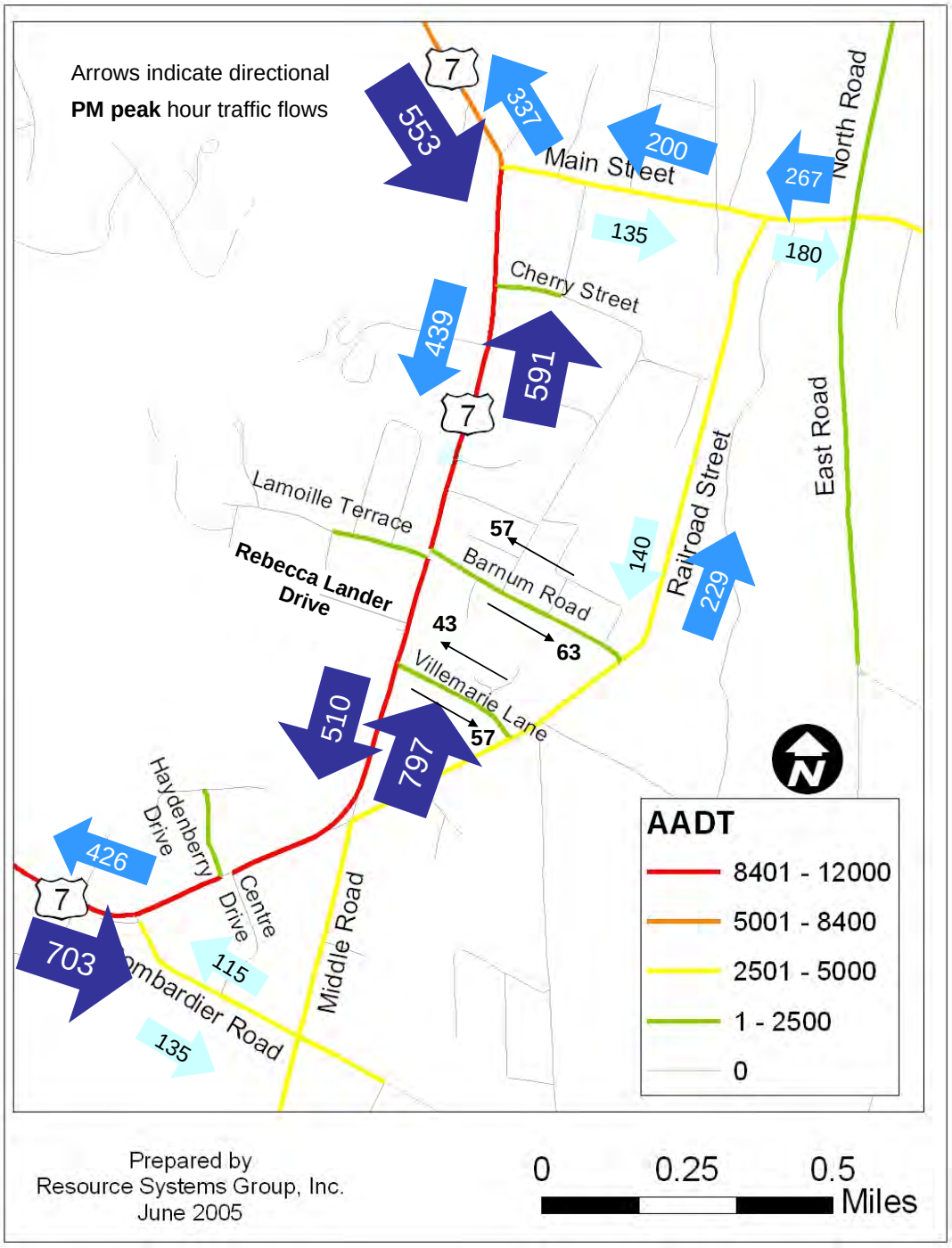


Figure 11: PM Peak Hour Directional Volumes and AADT for Study Area Roads



Data from a VTrans count station located south of Bombardier Road on US 7 (Station D522), are detailed in Figure 12. The location of this count allows the examination of flows in and out of Milton on US 7. The traffic moving south (from Milton) is shown as a dotted gray line, while the traffic moving north (towards Milton) is designated by a solid black line. A sharp, prominent AM peak occurs for the southbound traffic between 6:30 and 7:30 AM , while a more elongated and spread out PM peak occurs for the northbound traffic between 2:30 and 6:00 PM. This pattern suggests that residents of Milton tend to work at designations south of Milton.

Figure 12: Hourly Bi-Directional Traffic Variation at the D522 ATR on US 7 South of Bombardier Road

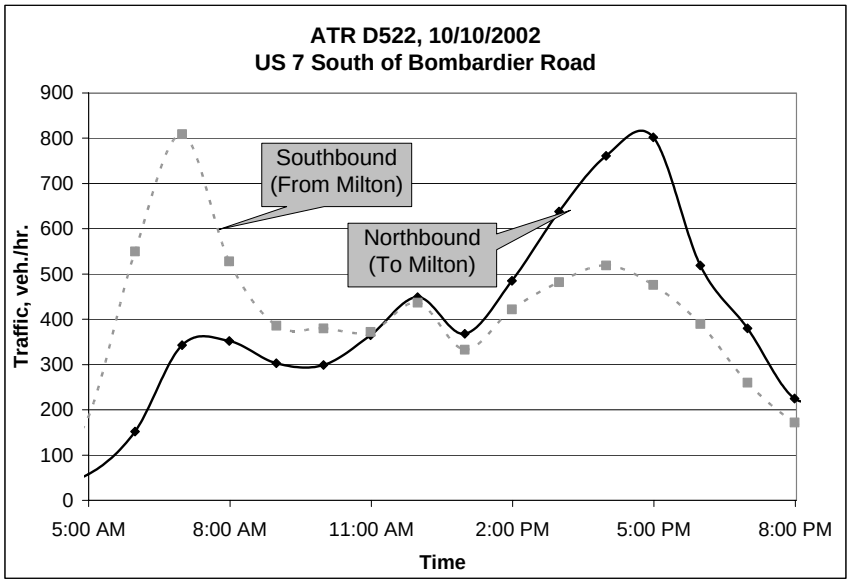


Table 6 compares the historical traffic growth of the major roads in the study area to each other and a statewide average. Traffic has been growing at a faster rate on US 7 than the statewide average. The fastest rate of traffic growth in the study area has occurred on Railroad Street and Middle Road.

Table 6: Historical Traffic Growth in Study Area

Location	*Annual Growth*
US 7: North of Middle Road/Railroad Street	1.36% [1]
US 7: Between Bombardier Road & West Milton Road	1.73% [1]
US 7: North of Colchester/Milton town line	1.42% [1]
Railroad Street: North of Barnum	3.02% [2]
Main Street: US 7 to Railroad Street	1.56% [2]
Middle Road: South of Bombardier Road	2.93% [2]
Statewide Average: Rural Primary/Secondary	1.32% [3]

1 - Twenty-year average based on regression analysis.

2 - Based on difference between 1977 and 2001 AADT counts.

3 - Based on 2004 VTrans Redbook

4.2 TRUCK TRAFFIC

Table 7 presents the number of large trucks passing through the study area at four locations. Large trucks (often referred to as "heavy trucks") have a separate tractor and trailer. The data indicate that there are not a significant number of large trucks that pass through the study area. Large trucks that do not have a destination in the study area are most likely utilizing the interstate.

Table 7: Large Trucks per Day in Study Area

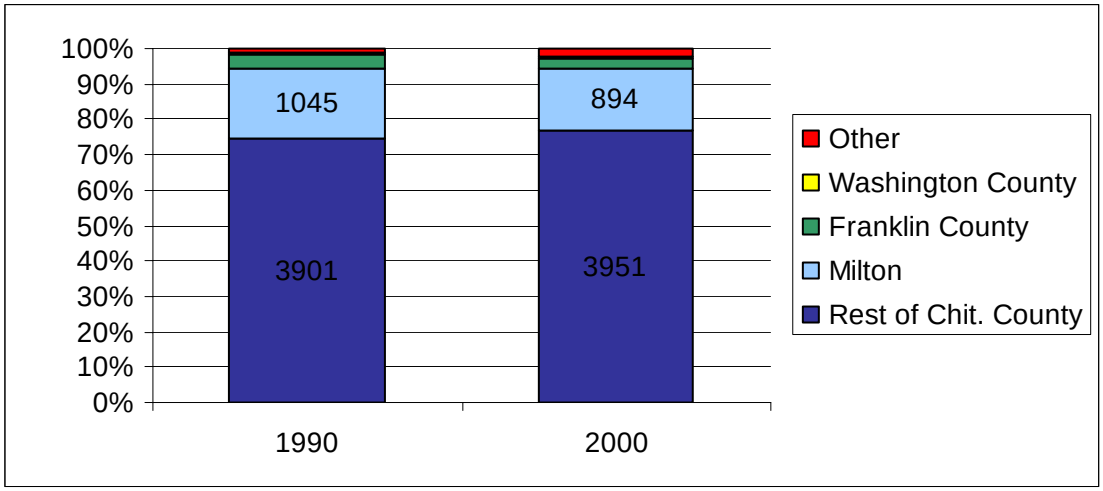
ATR # and Location	AADT	% Large Trucks	Number of Large Trucks per Day
D522 – US 7 south of town core	8300	0.52%	43
D100 – US 7 north of town core	4800	0.98%	47
D307 – Middle Road south of town core	2700	0.31%	9

4.3 JOURNEY TO WORK

Journey to work information from the 1990 and 2000 US Censuses are presented in Figure 13 (Work Designations for Milton Residents) and Figure 14 (Home Origins for People who work in Milton).

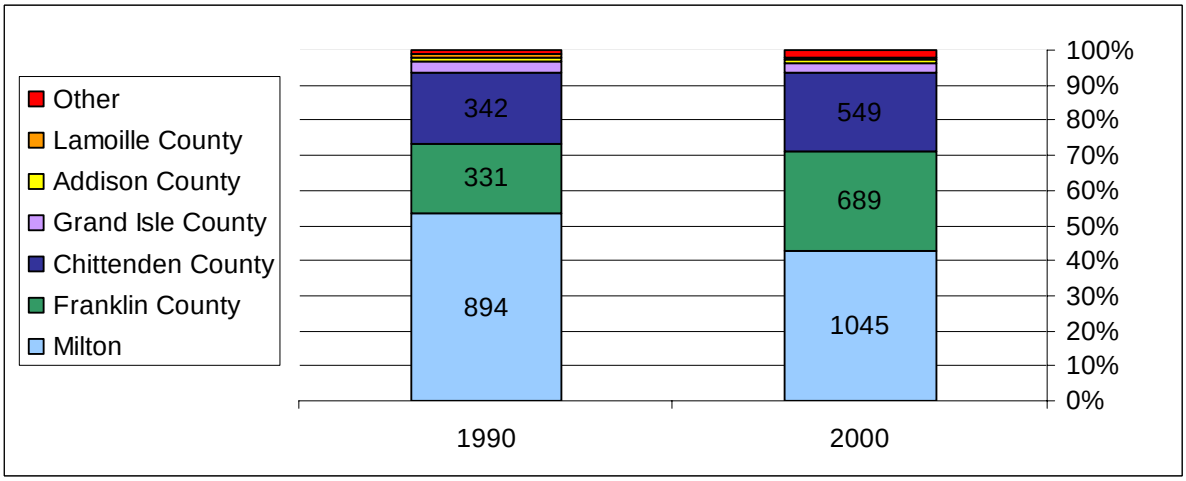
As can be seen in Figure 13, 80% of Milton residents commute to work outside Milton. The vast majority of Milton residents that work out of Town have destinations in the other Chittenden County municipalities which are located mostly south of Milton. The number of trips to destinations outside of Milton has roughly stayed the same from 1990 to 2000, while the number of internal trips has increased. This suggests the increasing importance of local traffic circulation in Milton.

Figure 13: Census Journey to Work – Where Milton Residents Work



As indicated in Figure 14, 43% of the people who work in Milton are Milton residents. Approximately equal proportions of the remaining employees originate from destinations north of Milton (Franklin County) and south of Milton (Chittenden County).

Figure 14: Census Journey to Work – Where People who Work in Milton Live



The journey to work information in Figure 13, Figure 14, and the traffic count data in Figure 12 suggests the following general commuting pattern to and from Milton:

- 74% of Milton residents travel south to Chittenden County to work in the morning and back north to Milton in the afternoon. There remains a strong commuter flow from Milton to destinations south.

- Approximately 43% of the people employed in Milton also live in Milton. The number of people who live and work in Milton is growing which increases the importance of internal traffic circulation. However, the majority of Milton residents still commute to work to destinations outside of Milton.
- Besides providing employment opportunities, the growing job base in Milton also provides goods and services to the people who live and work in Milton. The transportation system should be designed to promote these connections.

5.0 CONGESTION, SAFETY, AND ACCESS MANAGEMENT

5.1 CONGESTION ANALYSIS

This section describes the development of 2005 and preliminary 2025 AM and PM design hour volumes, explains the methodology used to assess congestion, and presents delay and level of service results for the study intersections.

5.1.1 Development of 2005 AM and PM Peak Hour DHV Volumes

Peak hour turning movement counts for the study intersections were conducted on the dates shown in Table 8. The data were collected by the CCMPO or RSG as indicated. The data at most of the study intersections, including US 7-Rebecca Lander Drive, were collected while school was in session. The majority of intersections experienced the AM peak hour of traffic from 7:00 AM to 8:00 AM and the PM peak hour from 5:00 PM to 6:00 PM.

The raw traffic counts have been modified to represent the design hour volume (DHV)[1] in 2005 using two adjustment factors:

- The design hour adjustment factor is based on VTrans Continuous Traffic Counter (CTC) D040, located on US 7 in Colchester. This counter collects traffic volumes 365 days per year, 24 hours per day. These data describe the daily fluctuations in traffic volumes and are used to adjust a ground count conducted on a specific date to the design hour. Depending on the count date volumes were adjusted between -4 and +5 percent.
- An annual adjustment factor, which represents general background traffic growth, is based on the growth rate for rural primary and secondary roads in the 2004 VTrans Redbook. The base year annual adjustment factor increased the raw volumes by 1.5% per year to represent 2005 conditions.

Figure 15 and Figure 16 illustrate the adjusted 2005 peak hour volumes for the AM and PM scenarios respectively.

[1] The DHV is the 30th highest hour of traffic for the year and is used as the design standard in Vermont.

Table 8: Intersection Traffic Count Dates

Intersection	Count Source	Date
US 7 – Catamount Drive South	CCMPO-2002	5/23/2002
US 7 – Catamount Drive North	CCMPO-2002	5/23/2002
US 7-Bombardier Road	CCMPO-2003	6/11/2003
US 7-Centre Road	RSG-2003	5/13/2003
US 7-Haydenberry Drive	RSG-2005	6/09/2005
US 7– Middle Road-Railroad Street	CCMPO-2003	6/11/2003
US 7 – Milton Shopping Center	CCMPO-1999	6/29/1999
US 7 – Villemaire Lane	CCMPO-2003	6/18/2003
US 7 – Rebecca Lander Drive	RSG-2005	6/09/2005
US 7 – Lamoille Terrace-Barnum St	CCMPO -2003	7/17/2003
US 7 – Cherry Street	RSG-2005	6/09/2005
US 7 – Main Street	CCMPO -2003	6/26/2003
Middle Road-Bombardier	CCMPO -2003	5/20/2004
Railroad Street-Villemaire Lane	RSG-2005	6/09/2005
Railroad Street-Barnum Street	RSG-2005	6/09/2005
Railroad Street-Main Street	RSG-2005	6/09/2005
Main Street-East Street-North Road	CCMPO -2003	6/24/2004

Figure 15: 2005 AM Peak Hour Volumes

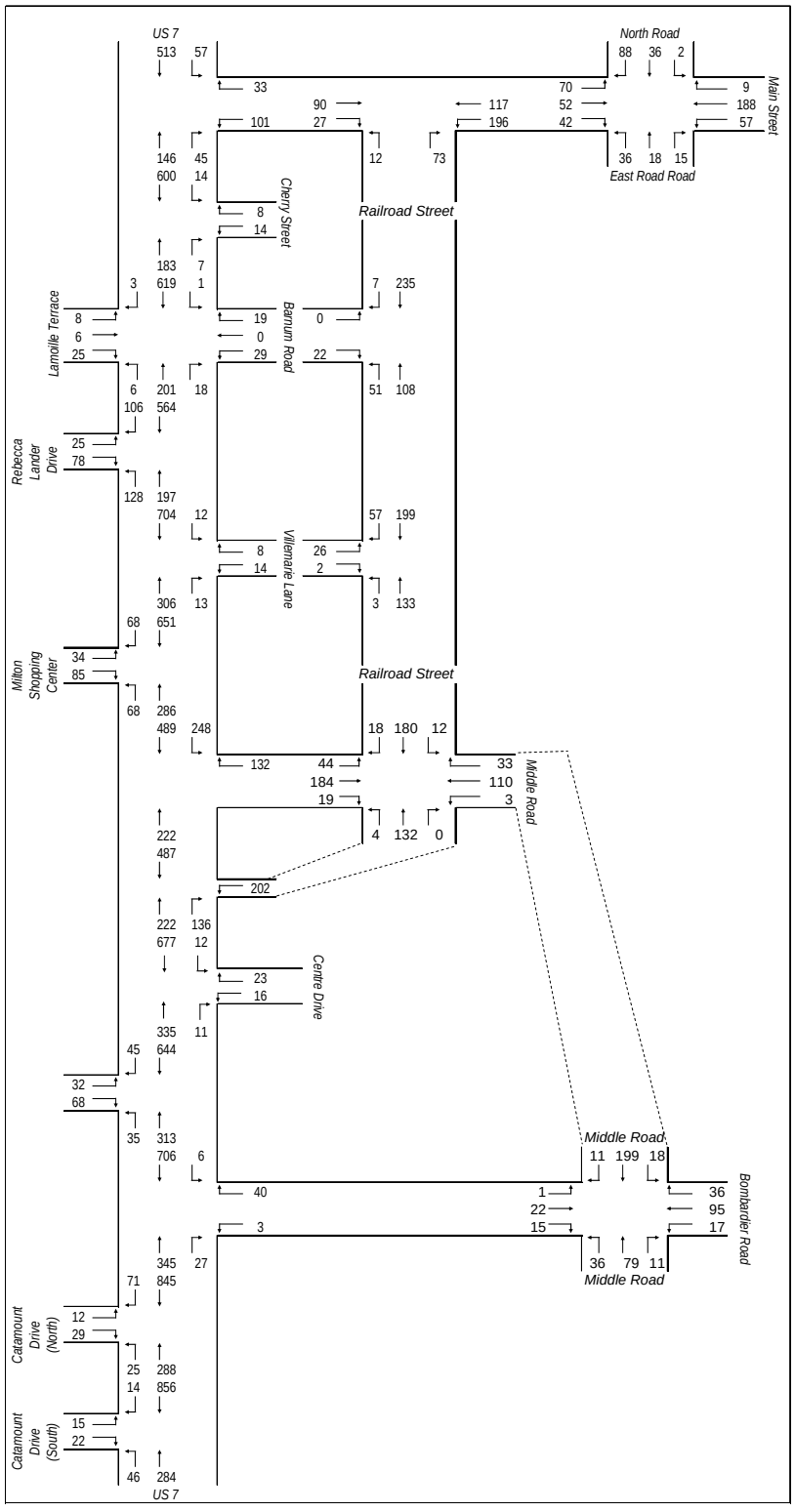
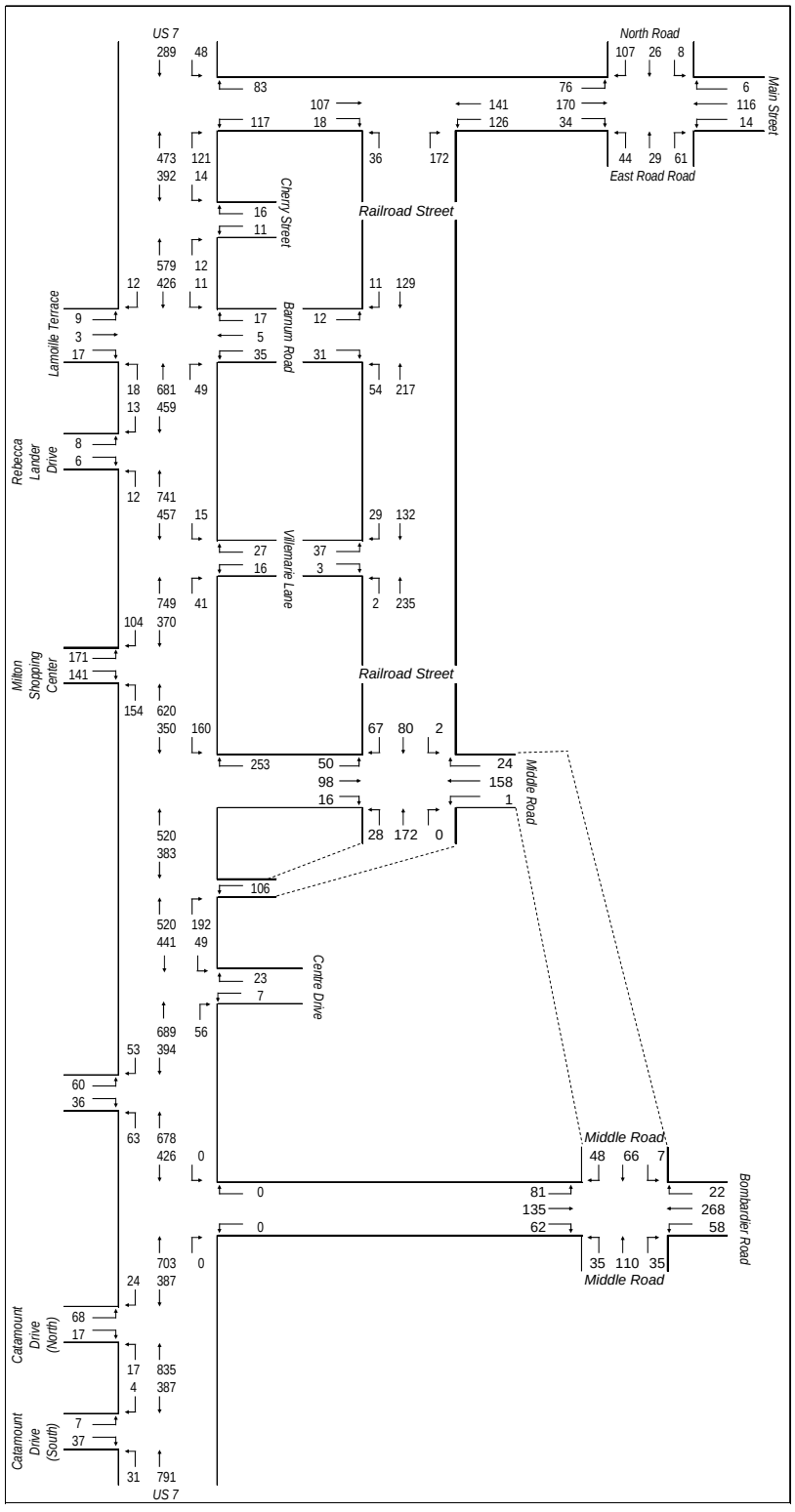


Figure 16: 2005 PM Peak Hour Volumes



5.1.2 Development of Preliminary 2025 DHV Volumes

This report presents preliminary traffic projection for the 2025 peak hour conditions. Final projections will be developed for the 2010 and 2025 time frames based on a land use scenario that will be developed by River Street/TC following the Community Information and Visioning Workshop. These preliminary projections are presented to help identify potential future issues.

To produce the 2025 volumes an annual adjustment factor, which represents general background traffic growth, was calculated using regression analysis on traffic count information collected by VTrans since 1977. The base year annual adjustment factor increased the adjusted 2005 volumes by 33%.

Figure 17 and Figure 18 illustrate the 2025 peak hour volumes for the AM and PM scenarios, respectively.

Figure 17: 2025 AM Peak Hour Volumes

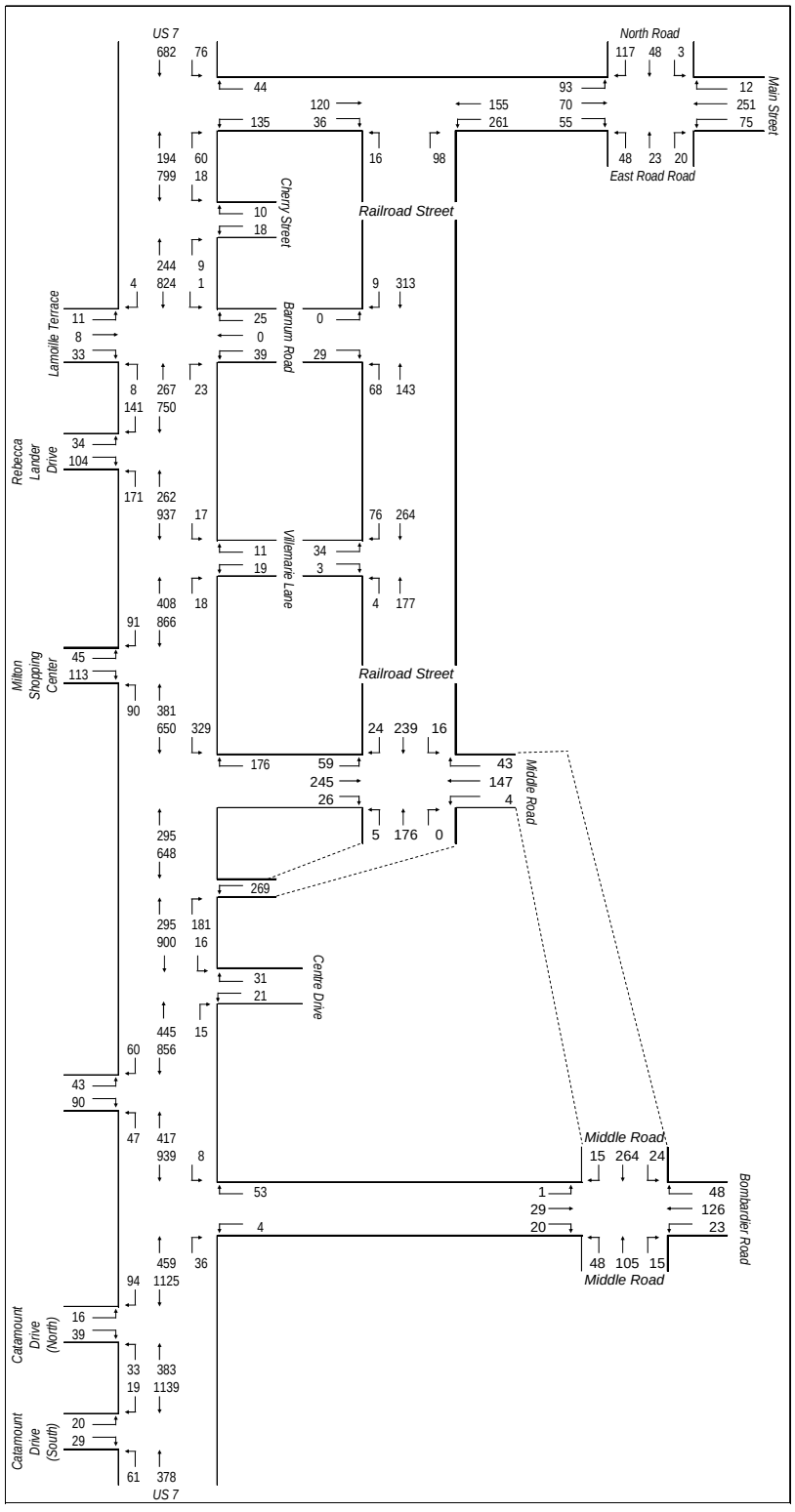
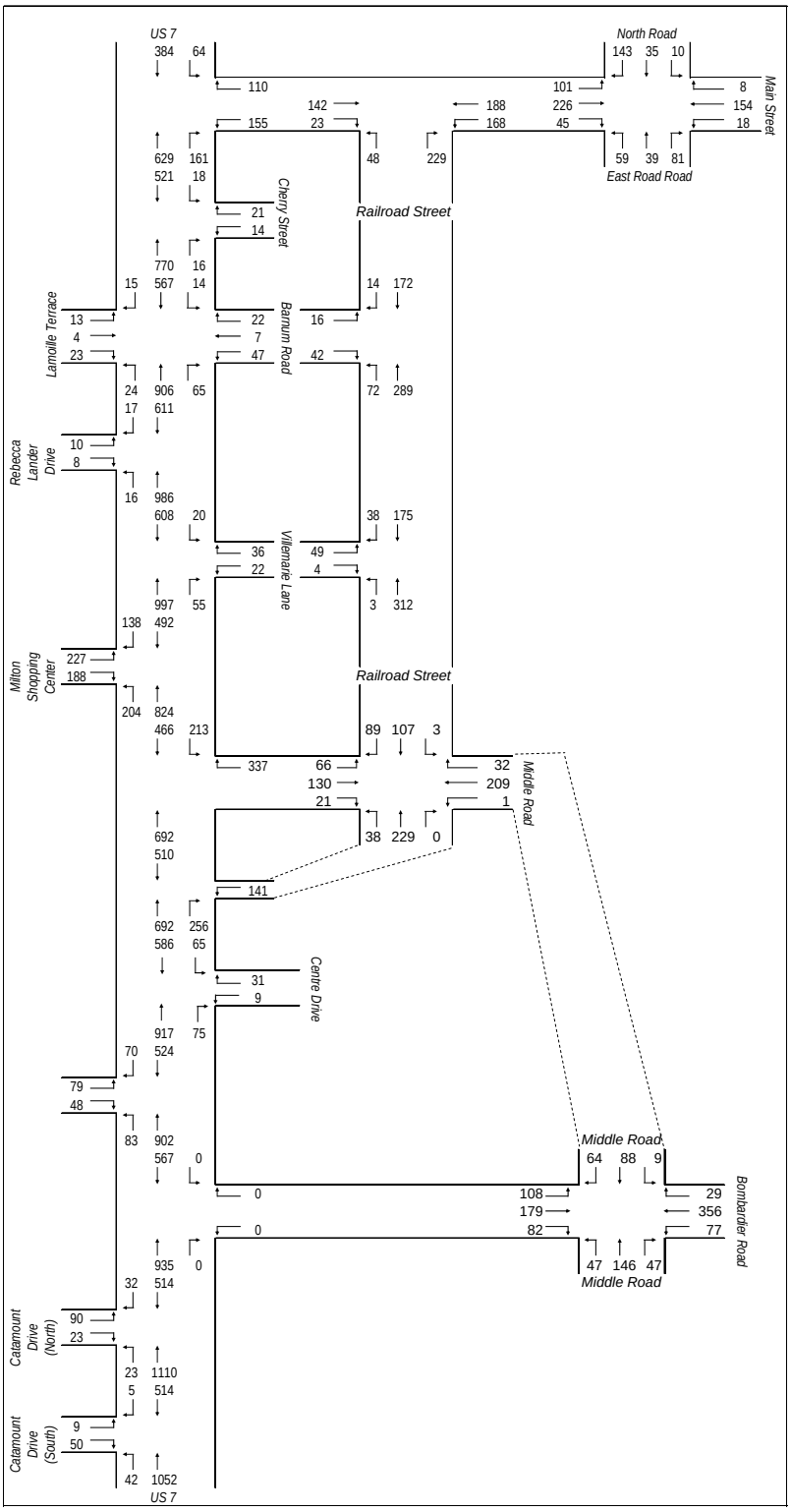


Figure 18: 2025 PM Peak Hour Volumes



5.1.3 LOS Methodology

Level-of-Service (LOS) is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. The 2000 Highway Capacity Manual (HCM) defines six grades to describe the level of service at an intersection. Level-of-service is based on the average delay per vehicle.

Table 9 shows the various level-of-service grades, qualitative descriptions, and quantitative definitions for unsignalized and signalized intersections.

Table 9: LOS Criteria for Intersections

LOS	CHARACTERSTICS	SIGNALIZED DELAY (sec)	UNSIGNALIZED DELAY (sec)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short delays	10.1-20.0	10.1-15.0
C	Average delays	20.1-35.0	15.1-25.0
D	Long delays	35.1-55.0	25.1-35.0
E	Very long delays	55.1-80.0	35.1-50.0
F	Extreme delays	80.0<	50.1<

The VTrans policy on LOS states that principal and minor arterials in urban or village areas will generally be designed for a level of service C or better. However, in heavily developed urban areas, reduced level of service criteria such as D or E may be appropriate as judged on a case by case basis. For the purpose of this study, the assumed performance target is LOS D or better. The Town of Milton should consider developing its own level of service policy.

5.1.4 LOS Results

Synchro (v6), a traffic analysis software package from Trafficware, was used to quantify delay, level of service, and vehicle queues at the study intersections. The software uses procedures that are consistent with those specified in the 2000 Highway Capacity Manual.

The LOS results for the 2005 and 2025 AM and PM peak hour scenarios for the US 7 intersections are shown in Table 10. The LOS results for the 2005 and 2025 AM and PM peak hour scenarios for the Middle Road, Railroad Street, and Main Street intersections are shown in Table 11.

The LOS and delays are reported in Table 10 and Table 11 for each intersection approach and for the overall intersection where traffic signals exist. At stop-controlled intersections, overall LOS and delay are not provided. Through traffic on the major street is seldom delayed and typically has much higher traffic volumes than side streets. As a result, the overall intersection LOS at an unsignalized intersection is less meaningful. Detailed LOS worksheets will be provided in an appendix submitted with the final report.

The congestion analysis indicates that:

- During the 2005 AM peak hour scenario all intersections function at an acceptable LOS D or better.
- During the 2005 PM peak hour scenario all intersections function at an acceptable LOS D or better except for the following:
    - LOS E
        - Northbound Middle Road approach at Middle Road – Railroad Street
        - Eastbound Catamount Drive approach at US 7 – Catamount Drive North
- During the 2025 AM peak hour scenario all intersections function at LOS D or better except for the following:
    - LOS E
        - Eastbound Catamount Drive approach at US 7 – Catamount Drive North
        - Eastbound Rebecca Lander Drive approach at US 7 – Rebecca Lander Drive
        - Westbound Main Street approach at US 7 – Main Street
        - Westbound Railroad Street approach at Middle Road – Railroad Street
    - LOS F
        - Westbound Railroad Street approach at US 7 – Railroad Street
- During the 2025 PM peak hour scenario 10 of the 19 intersections have at least one approach with a LOS E or F.

During field observations by Transportation Concepts, it was noted there is a lack of gaps in the through traffic on US 7 during the AM and PM peak hours. As a result, it is difficult to enter the traffic stream from side streets or driveways. Traffic signals at strategic locations may help address this problem.

Table 10: LOS Results for US 7 Corridor 2005 and 2025, AM and PM

	2005 AM No Build		2005 PM No Build		2025 AM No Build		2025 PM No Build	
US7 - Catamount Drive South	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Eastbound: Catamount Drive	C	20	B	13	D	34	C	17
Northbound: US 7	A	2	A	<1	A	3	A	1
US7 - Catamount Drive North								
Eastbound: Catamount Drive	C	19	E	31	E	30	F	>100
Northbound: US 7	A	1	A	<1	A	2	A	<1
US7 - Bombardier Road								
Westbound: Bombardier Road	A	<1	D	33	A	<1	F	>100
Southbound: US 7	A	<1	A	<1	A	<1	A	<1
US 7 - Haydenberry Drive								
Eastbound: Haydenberry Drive	C	16	C	24	C	25	F	77
Northbound: US 7	A	<1	A	<1	A	1	A	<1
US 7 - Centre Drive								
Westbound: Centre Drive	B	15	C	17	C	21	D	27
Southbound: US 7	A	<1	A	2	A	<1	A	2
US7 - Railroad Street								
Westbound: Railroad Street	D	27	C	23	F	>100	F	82
Middle Road - Railroad Street**								
Eastbound: Railroad Street	B	10	B	15	C	17	E	40
Westbound: Railroad Street	C	16	C	20	E	43	F	>100
Northbound: Middle Road	B	10	E	35	C	15	F	>100
US7-Middle Road								
Westbound: Middle Road	B	10	C	17	B	11	E	37
Southbound: US 7	A	3	A	3	A	3	A	3
US7 - Milton Shopping Center ***								
Overall	**B**	**15**	**B**	**13**	**C**	**23**	**C**	**19**
Eastbound: Supermarket	C	17	B	13	C	19	B	14
Northbound: US 7	A	7	B	11	A	9	C	20
Southbound: US 7	C	18	C	16	D	31	C	22
US7 - Villemarie Lane								
Westbound: Villemarie Lane	C	17	D	27	C	25	F	>100
Southbound: US 7	A	<1	A	<1	A	<1	A	2
US 7 - Rebecca Lander Drive								
Eastbound: Rebecca Lander Drive	C	18	C	21	E	39	F	71
Northbound: US 7	A	5	A	<1	A	6	A	<1
US7 - Barnum Road								
Eastbound: Lamoille Terrace	C	15	C	20	C	22	E	38
Westbound: Barnum Road	C	17	D	32	D	28	F	>100
Northbound: US 7	A	<1	A	<1	A	<1	A	<1
Southbound: US 7	A	<1	A	<1	A	<1	A	<1
US 7 - Cherry Street								
Westbound: Cherry Street	B	14	C	16	C	18	C	21
Southbound: US 7	A	<1	A	<1	A	<1	A	<1
US7 - Main Street								
Westbound: Main Street	C	18	D	28	E	39	F	>100
Southbound: US 7	A	1	A	2	A	2	A	2

** HCS analysis does not provide for an intersections with 4 approaches of which only 3 are stopped while the fourth is free. Therefore this intersection was evaluated using the micro traffic simulation program SimTraffic.

*** Both the 2005 and 2025 scenarios assume optimal signal timing plans at the US 7 - Milton Shopping Center intersection

Table 11: LOS Results for Main Street, Railroad Street, and Middle Road 2005 and 2025, AM and PM

	2005 AM No Build		2005 PM No Build		2025 AM No Build		2025 PM No Build	
Middle Road - Bombardier Road	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)
Eastbound: Bombardier Road	A	8	B	12	A	9	C	20
Westbound: Bombardier Road	A	9	B	14	A	10	D	31
Northbound: Middle Road	A	9	B	11	A	10	C	16
Southbound: Middle Road	A	9	B	11	B	11	B	13
Railroad Street - Villemarie Lane								
Eastbound: Villemarie Lane	B	11	B	11	B	12	B	12
Northbound: Railroad Street	A	<1	A	<1	A	<1	A	<1
Railroad Street - Barnum Street Street								
Eastbound: Barnum Road	A	10	B	10	B	10	B	11
Northbound: Railroad Street	A	3	A	2	A	3	A	2
Railroad Street - Main Street								
Westbound: Main Street	A	<1	A	<1	A	<1	A	<1
Northbound: Railroad Street	A	9	A	9	A	9	A	9
Main Street - North Road - East Road								
Eastbound: Main Street	A	4	A	2	A	4	A	3
Westbound: Main Street	A	2	A	<1	A	2	A	<1
Northbound: East Road	C	16	B	15	D	25	C	24
Southbound: North Road	B	12	B	11	B	15	B	13

From a qualitative perspective, there is a general lack of gaps in traffic on US 7 during peak hours. This makes turning onto US 7, especially left turns, difficult. The US 7-Rebecca Lander Drive can become congested during the PM when the high school lets out in the afternoon. The Railroad Street – Middle Road intersection has a non – standard control type (3 approaches with stop signs, while the 4th approach has no stop control). The confusion created by this type of intersection control reduces the throughput of the intersection.

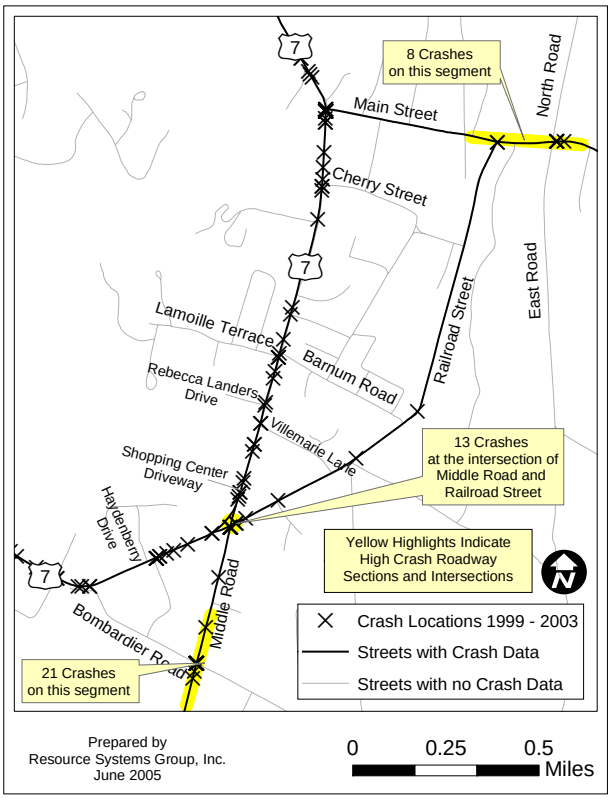
5.2 SAFETY ANALYSIS

Figure 19 shows the locations of crashes reported to VTrans from 1999-2003 on the federal aide highways in the study area (US 7, Railroad Street, Middle Road, and Main Street). It is VTrans policy to report crashes involving injuries, fatalities, or those that exceed $1,000 in property damage on federal aide highways.

VTrans analyzes the number of crashes occurring along road segments and intersections and compares the frequency and severity to statewide averages for similar facilities. The locations with the highest crash rates are identified as High Crash Locations (HCL). In order to be classified as an HCL, an intersection or road section (0.3 mile section) must meet two conditions: 1) it must have at least 5 crashes over a 5-year period; and 2) the actual crash rate of the location (number of crashes per million vehicles) must exceed a critical crash rate. The critical crash rate is based on the average crash rates of similar roadways in the state and is related to the functional class of the highway and whether it is located in an urban or rural area.

The following high crash locations (See Figure 19) have been identified by VTrans:

Figure 19: Crashes and High Crash Locations



- Intersection of Middle Road-Railroad Street. Several factors at this intersection contribute to its designation as a high crash location. As discussed in section 3.2.1, the southbound approach on Middle Road (coming from US 7) has no stop sign while the other approaches are stop controlled. This design facilitates movements from US 7 on to Middle Road, but this uncommon configuration creates confusion relating to which approach has the right of way. Also, to be discussed in section 5.3, there are several access management issues at the Middle Road – Railroad Street intersection.
- The section of Main Street between Railroad Street and North Road. As to be discussed in section 5.3, this intersection has less than ideal sight distances. Additionally, the westbound Main Street approach towards Railroad Street is on a downward slope which allows vehicles to carry more speed into the intersection.
- The section of Middle Road centered on the Bombardier Road. The straight, unobstructed stretch of Middle Road contained in this high crash segment, while resulting in sight distances that are more than adequate at the intersection with Bombardier Road, also allows vehicles to travel at increased speeds. Residents with homes or businesses adjacent to this intersection, cite that cars routinely speed through the intersection.

5.3 ACCESS MANAGEMENT ASSESSMENT

Access management is the systematic control of the location and design of driveways and street intersections. VTrans has established an Access Management Program that assigns all segments of the State's highway system into one of six access management categories. The standards provide the basis for access permitting on state highways and are used in the planning and development of VTrans roadway construction projects. Existing highways are not required to meet the design standards. However, the standards are applied to all new access permits and construction projects.

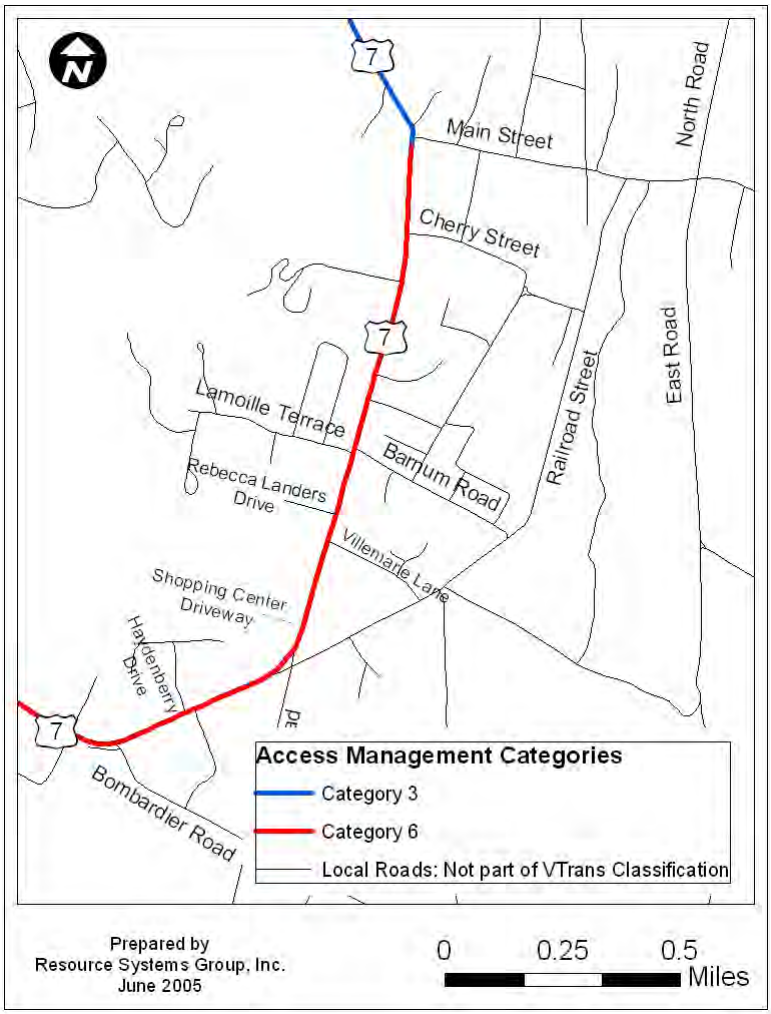
The access management guidelines, which are summarized in Table 12**,** specify whether or not direct access to adjacent property is permitted, the type of driveway design factors to be considered, and type of turning movements allowed.

Table 12: VTrans Access Management Categories

Access Category	Functional Class and AADT Characteristics	Direct Property Access	Driveway Design Factors	Traffic Operations and Movements Allowed	Design Features
1	- Interstates	No	Not Applicable	Access only provided at Interchanges with public highways	Grade-Separated Interchanges
2	- Other Principal Arterials - Limited Access Major Collectors	No – Except by Access Rights	Number, Spacing and Locations	Access at intersections with public highways	At-Grade or Grade-Separated intersections at ½ to 1 mile intervals
3	- Other Principal Arterials - Minor Arterials (AADT > 5,000) - Non-limited Access Major Collectors on State Highway and Class 1 Town Highways (AADT greater than 5,000)	Deny, Restrict or Allow	Number, Spacing and Locations	May limit turning movements	- Physical Barriers (Medians or Islands) - Traffic signal spacing requirements - Left and/or Right Turn Lanes Required - Spacing of public highway intersections that are or may be signalized (1/4 to ½ mile)
4	- Minor Collectors - Minor Arterials and Class 1 Town Highways (< 5,000 AADT) - Non-limited Access Major Collectors on State Highway and Class 1 Town Highways (Less than 5,000 AADT)	Yes	Number, Spacing and Locations	All turns in & out May limit turning movements	- Spacing of public highway intersections that are or may be signalized (1/4 to ½ mile)
5	- Frontage or Service Road	Yes	Number and location	All turns in and out	- Traffic signal spacing not less than 500 feet.
6	- May have any functional class but are urban in nature.	Deny, restrict, or allow	Number and location		- Traffic signal spacing not less than 500 feet.

As shown in Figure 20, the two access management categories along US 7 in the study area are Class 3 and Class 6. These categories are similar in that they both allow VTrans to deny direct access to US 7 if a parcel has safe and reasonable access to a side street. They differ in the distance recommended between signalized intersections. The Class 6 area is intended for urban areas and recommends a minimum of 500 feet between traffic signals. The Class 3 area is for arterials passing through less developed areas, where speeds are higher, and recommends that traffic signals be spaced between ¼ and ½ mile apart.

Figure 20: VTrans Access management Categories in Study Area



5.3.1 US 7 Access Management Inventory

RSG conducted an access management windshield survey of each commercial driveway along US 7 in the study area in August 2005. The field inventory captured information such as driveway location, business name(s), and an identification of the following access management issues:

- ***Poor definition and/or continuous curb cuts.*** Driveways should be designed with clearly defined borders that safely channel traffic between the street and parking area. Wide open curb cuts cause confusion by mixing entering and exiting traffic, creating additional conflict points, and often obscure sidewalks (where they exist);

- ***Lack of adequate spacing between driveways.*** Adequate spacing between driveways provides the distance necessary for drivers to react to vehicles entering and exiting a driveway. Although there are no national standards that provide minimum driveway spacing distances, VTrans uses the lower limit of the AASHTO stopping sight distance[1]. Given the posted speed limit of 35 miles per hour through most of the study area, the resulting driveway spacing is 225 feet.
- ***Poor alignment with driveways or intersections on opposite sides of the road***. Driveways on opposite sides of a road should be aligned to reduce the number of potential conflict points. If driveways on opposite sides of road can not be aligned, they should be separated by the same distance recommended for driveways on the same side of the road (225 feet for the 35 mph posted in the study area);
- **Inadequate corner clearance**. Corner clearance is the distance between the edge of a street intersection and a driveway. Insufficient corner clearance causes conflicts between vehicles within a functional area of an intersection and vehicles entering and exiting a driveway. The functional area of an intersection includes the approaches where vehicles may be changing lanes, merging, accelerating or decelerating, or forming queues as they wait at traffic signals or to exit from a stop-controlled side street. Recommended corner clearance varies based upon the movements allowed at a driveway (for example: right-out/right-in versus all movements allowed); and whether or not a driveway is located downstream or up-stream from an intersection;
- **Multiple access points for a single parcel**. VTrans limits the number of access points for new projects along state highways to one per parcel. It is desirable to limit access points because each one creates potential conflict points; and
- **Limited sight distance**. Limited sight distance at a driveway causes potential safety problems.

As indicated in Table 11, 49 of the 64 commercial driveways evaluated along the corridor had at least one access management issue. Over half of the driveways have two or more access management problems.

[1] "Vermont Agency of Transportation Access Management Program Guidelines"; Utilities and Permits Unit, Technical Services Division; July 17, 2000.

Table 13: Number of Driveways with Access Management Issues

Issues per Driveway	Number of Driveways
No Issues	15
One Issue	14
Two Issues	13
Three Issues	15
Four Issues	7
Total Driveways	64

Table 12 shows that the most common access management issues in the study area are poorly defined or continuous curb cuts, inadequate spacing between driveways, and more than one driveway per parcel.

Table 14: Frequency of Access Management Issues

Access Management Issue	Number of Parcels with A.M. Issue
No issues	15
Poorly Defined or Continuous Curb Cut	32
Too close to adjacent driveways	28
Poor alignment with opposite drives or intersections	18
Inadequate corner clearance	10
More than one driveway per parcel	23
Limited sight distance	4
Number of Issues Identfied	130

Figure 21 on the following page provides a graphical overview of the access management inventory along US 7. The map shows that the three areas with the most access management issues (more reds, oranges, and yellows) are concentrated in Detail Area 1, north and south of West Milton Road; Detail Area 2, Middle Road to Rebecca Lander Drive; and Detail Area 6, between Cherry Street and Main Street.

Figure 22 through Figure 26 provide additional information for each of the six detail areas.

Figure 21: Access Management Issues along US 7

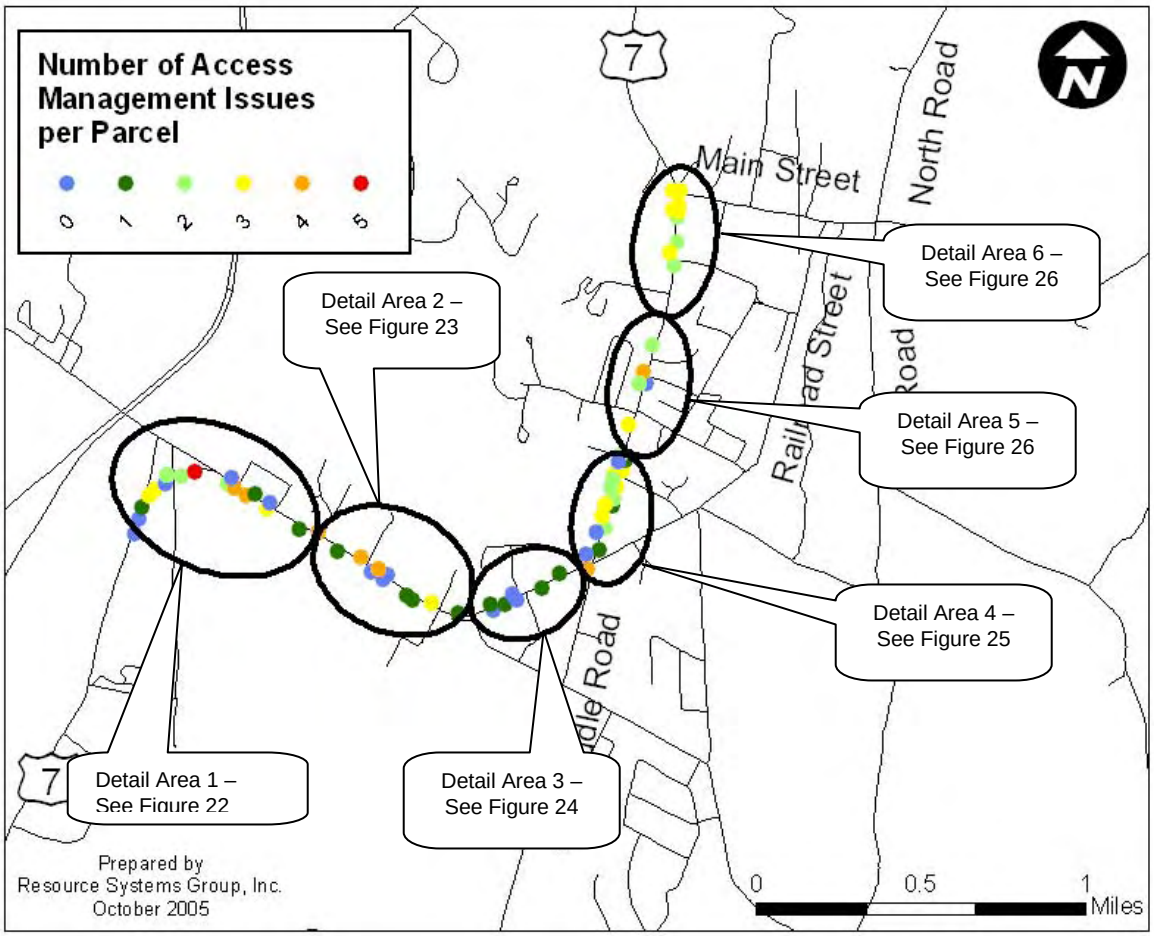
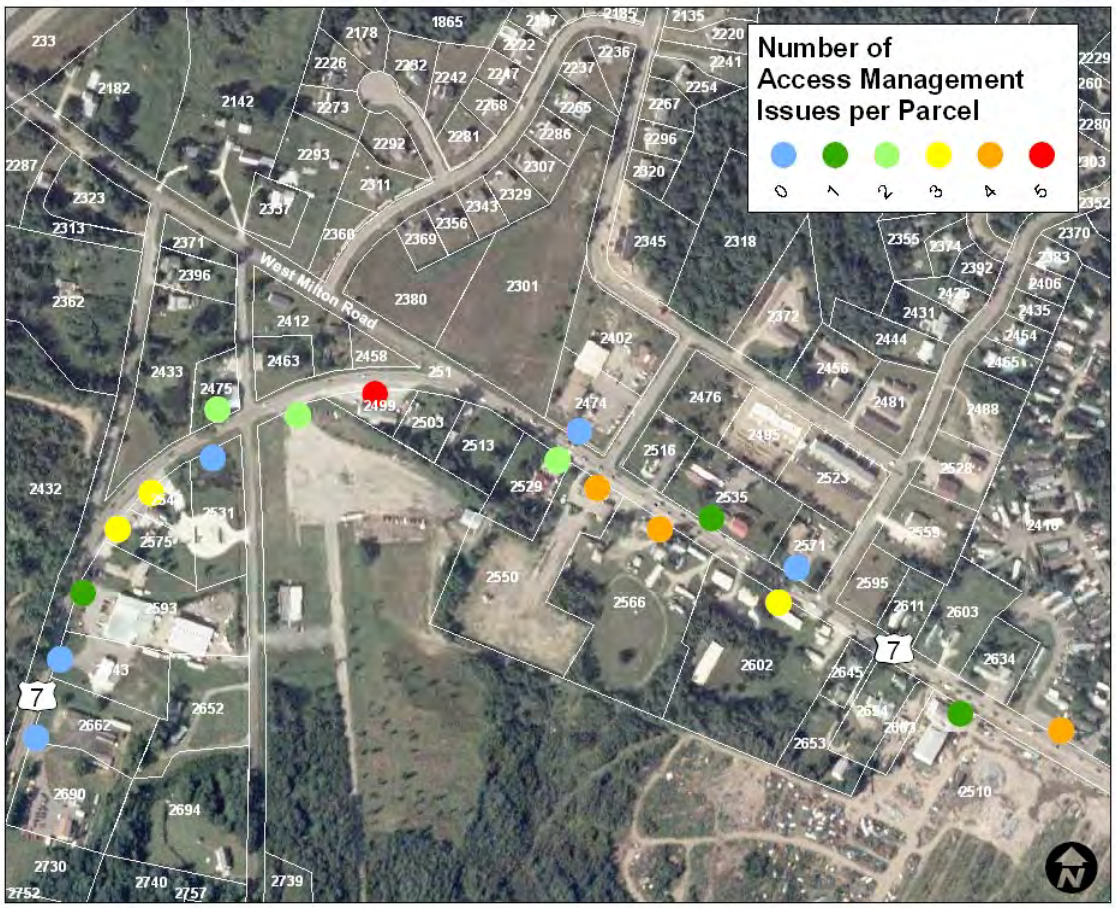


Figure 22: Access Management Issues-Detail Area 1

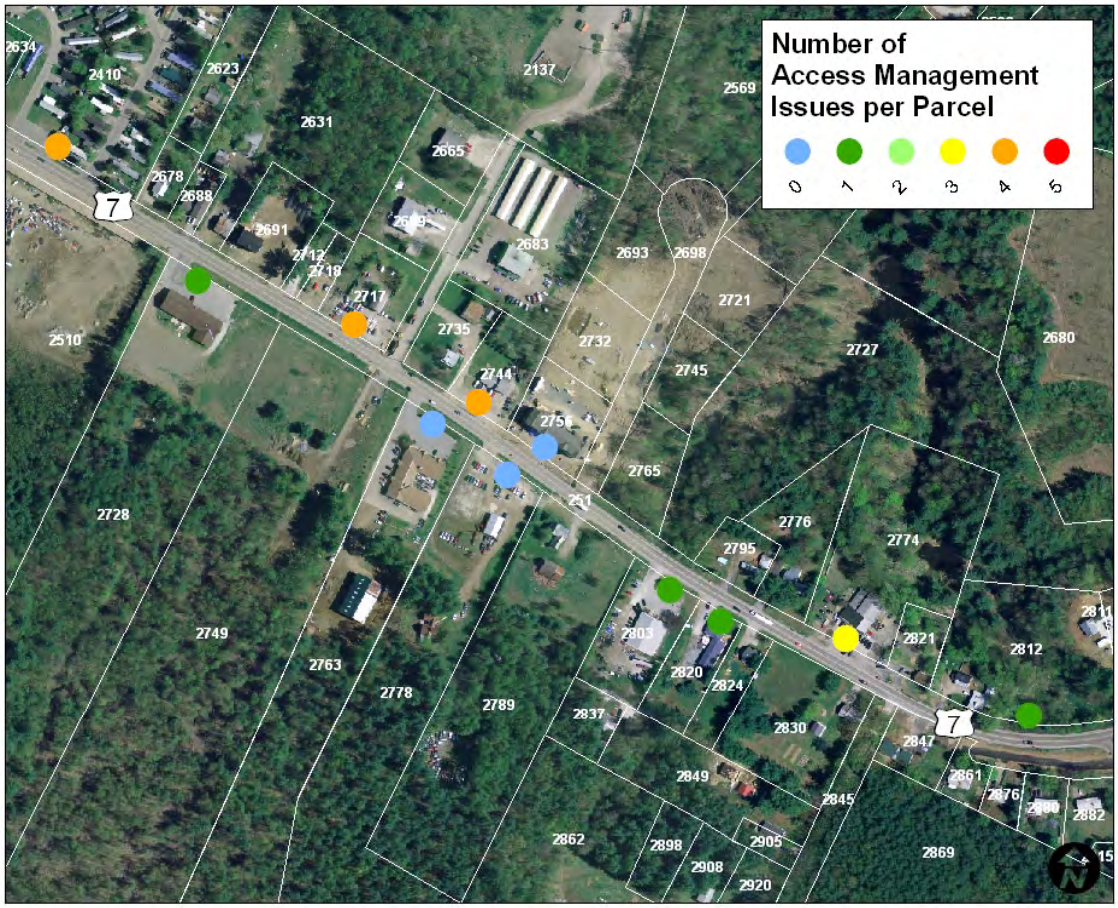


Prepared by
Resource Systems Group, Inc.
October 2005

0 750 1,500 Feet

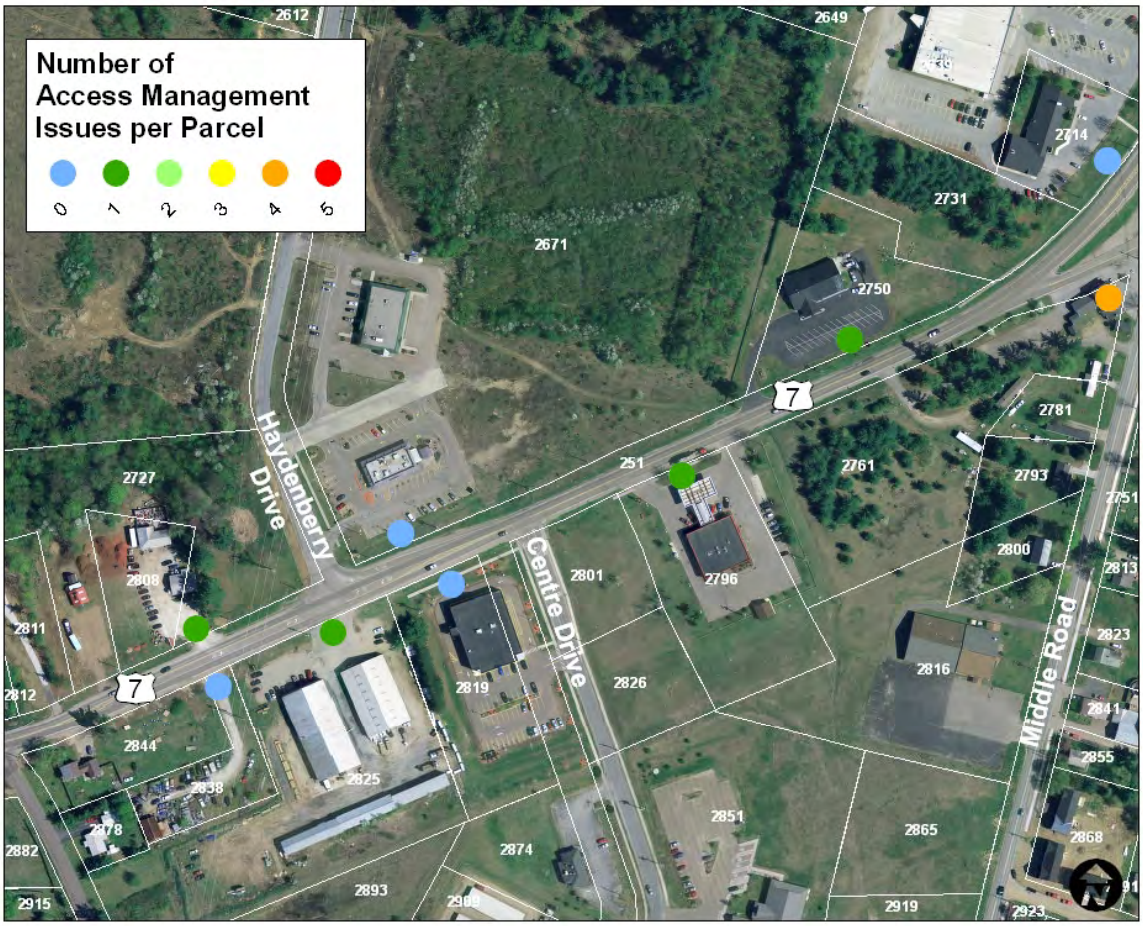
Driveway ID Number	Business	Access Description	ACCESS MANAGEMENT ISSUE						
			No Issues	Poorly Defined / Continuous Curb Cut	Too Close to Adjacent Driveways	Poor Alignment with Opposite Drives or Intersection	Inadequate Corner Clearance	More than One Driveway	Limited Sight Distance
2690	Arrow Head Used Cars	1 Driveway	X						
2643	Car Wash	1 Driveway	X						
2593	Milton Building Supply	1 Driveway			X				
2575	Milton Diner	2 Driveways		X	X			X	
2547									
2531		Access from Milton Diner and Side Street	X						
2510	Highway Truck Driving School	1 Driveway		X	X				
2499	Citgo Gas Station	2 Driveways		X	X	X		X	X
2529	Marty's Auto	1 Driveway		X					X
2550	Little "A" Wood Floors	2 Driveways		X	X	X		X	
2556	Ride Extreme Motor Sports and Residential	3 Driveways		X	X	X		X	
2602	Sarah Marie Motor Court Apartments and Efficiencies	2 Driveways		X	X			X	
2571	Milton Veternary Hospital	1 Driveway on Side Street	X						
2535	Red Top Apartments and	No Driveway - On Street Parking		X					
2474	Milton Retail and Sales Center	Access on Side Street	X						
2475	American Legion	2 Driveways - 1 on Side Street		X				X	
2510	B and W Auto Parts	1 Driveway		X					

Figure 23: Access Management Issues-Detail Area 2



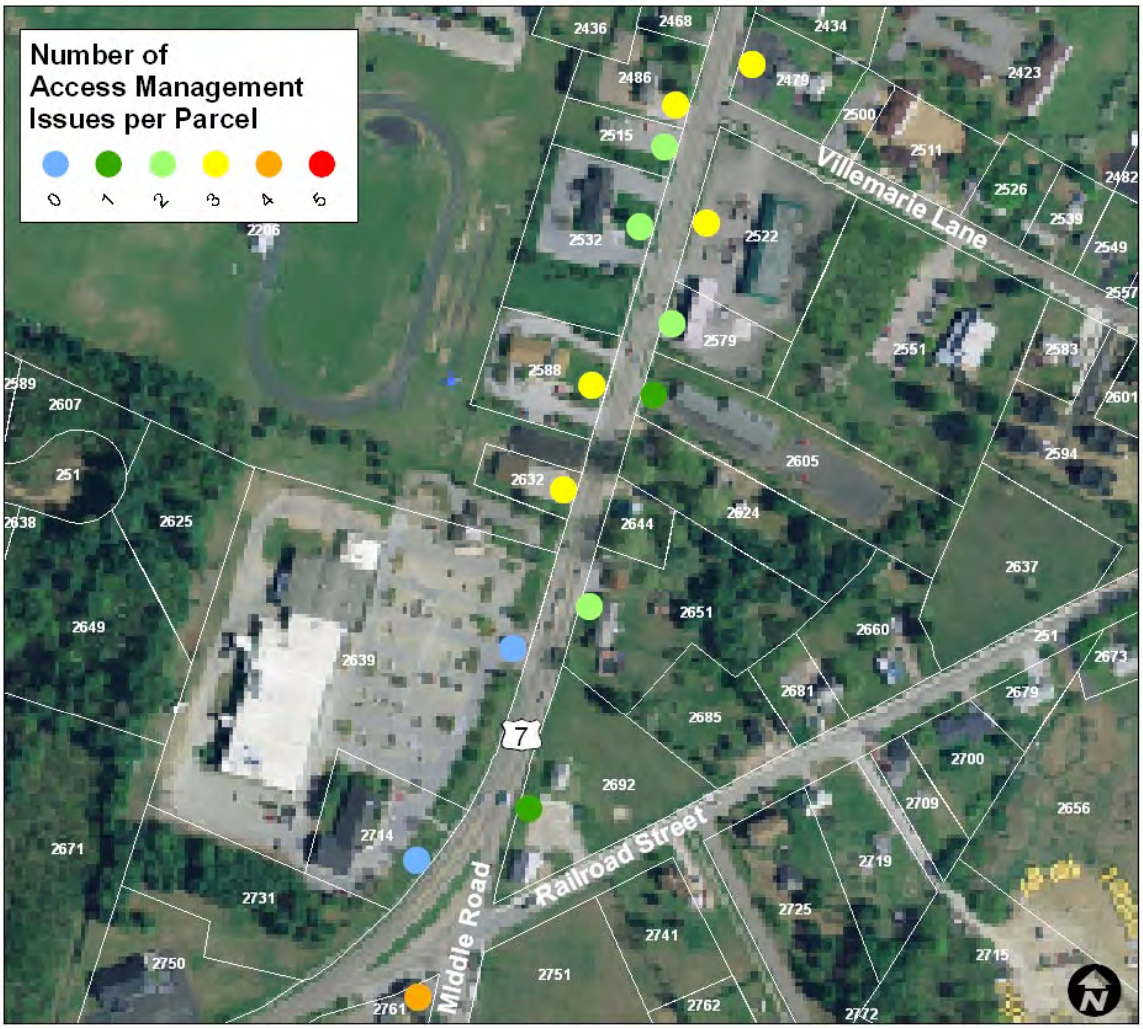
Driveway ID Number	Business	Access Description	ACCESS MANAGEMENT ISSUE						
			No Issues	Poorly Defined / Continuous Curb Cut	Too Close to Adjacent Driveways	Poor Alignment with Opposite Drives or Intersection	Inadequate Corner Clearance	More than One Driveway	Limited Sight Distance
2728	Party Adventure	1 Driveway		X					
2763	"Strip Mall" - 4 Buisnesses	1 Driveway	X						
2778	Mechanic/Garage	1 Driveway	X						
2803	Premier Tire and Auto	1 Driveway			X				
2820	Avalon Pools and Spa	1 Driveway			X				
2812	Residential - Townhouses	1 Driveway		X					
2774	Willy's Auto Sales	2 Driveways		X	X			X	
2756	Professional Offices / Residential	1 Driveway on Side Street	X						
2744	Milton Auto Service	2 Driveways		X	X	X		X	
2717	Mark's Auto Repair	2 Driveways - 1 Driveway on Side Street		X	X		X	X	
2410	Bert's Mobile Homes	3 Driveways		X	X	X		X	

Figure 24: Access Management Issues – Detail Area 3



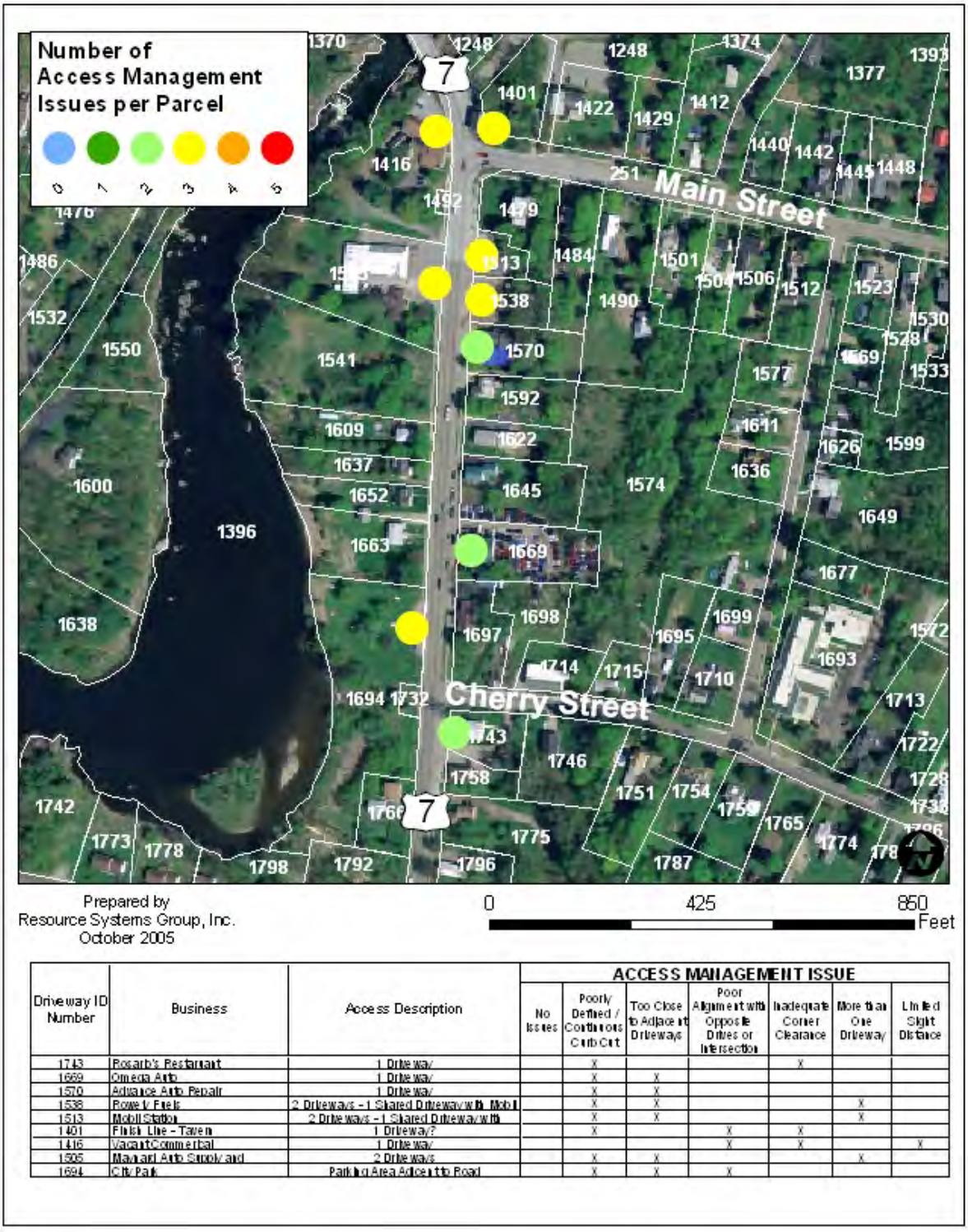
Driveway ID Number	Business	Access Description	ACCESS MANAGEMENT ISSUE						
			No Issues	Poorly Defined / Continuous Curb Cut	Too Close to Adjacent Driveways	Poor Alignment with Opposite Drives or Intersection	Inadequate Corner Clearance	More than One Driveway	Limited Sight Distance
2838	Ed's Vehicle Service	1 Driveway	X						
2825	Home Building Center	1 Driveway		X					
2819	Kinney Drugs	1 Driveway on Side Street	X						
2796	Exxon Station	2 Driveways						X	
2761	Bar and Tavern	3 Driveways		X	X		X	X	
2750	Milton Funeral Home	1 Driveway				X			
2671	McDonald's	Access on Side Street	X						
2808	Professional Offices	1 Driveway		X					

Figure 25: Access Management Issues – Detail Area 4



Driveway ID Number	Business	Access Description	ACCESS MANAGEMENT ISSUE						
			No Issues	Poorly Defined / Continuous Curb Cut	Too Close to Adjacent Driveways	Poor Alignment with Opposite Drives or Intersection	Inadequate Corner Clearance	More than One Driveway	Limited Sight Distance
2692	Dance Connection	1 Driveway on Railroad Street					X		
2651	Vermont Treasures and	1 Driveway		X		X			
2605	Excel Physical Therapy	1 Driveway				X			
2579	Mobil Station	2 Driveways - 1 Driveway shared with			X			X	
2522	Midtown Plaza	2 Driveways - 1 Driveway shared with Mobil			X		X	X	
2479	4 Seasons Real Estate	1 Driveway on Villemarie Lane				X	X	X	
2486	Milton Chiropactor	1 Driveway		X	X	X			
2515	The Serect Garden Florists	1 Driveway		X	X				
2532	TD Bank North	2 Driveways			X			X	
2588	Key Bank	2 Driveways			X	X		X	
2632	Subway	1 Driveway			X	X	X		
2636	Milton Shopping Center	1 Driveway	X						
2714	Post Office	Access through Hanaford's Plaza	X						

Figure 26: Access Management Issues-Detail Area 6



Driveway ID Number	Business	Access Description	ACCESS MANAGEMENT ISSUE						
			No Issues	Poorly Defined / Continuous Curb Cut	Too Close to Adjacent Driveways	Poor Alignment with Opposite Drives or Intersection	Inadequate Corner Clearance	More than One Driveway	Limited Sight Distance
1743	Rosario's Restaurant	1 Driveway		X			X		
1669	Omega Auto	1 Driveway		X	X				
1570	Advance Auto Repair	1 Driveway		X	X				
1538	Powell Fuels	2 Driveways - 1 Shared Driveway with Mobil		X	X			X	
1513	Mobil Station	2 Driveways - 1 Shared Driveway with		X	X			X	
1401	Finish Line - Tavern	1 Driveway?		X		X	X		
1416	Vacant Commercial	1 Driveway				X	X		X
1505	Maynard Auto Supply and	2 Driveways		X	X			X	
1694	City Park	Parking Area Adjacent to Road		X	X	X			

6.0 FINDINGS

This project memorandum assesses the performance of the existing transportation system and presents preliminary traffic projections and congestion analyses. Key findings of each section are summarized below:

6.1 LAND USE

- Municipal offices, schools, and a growing commercial area are concentrated in the emerging town center along Bombardier Road, Middle Road and US 7.
- The town's two principal industrial sites, Catamount Industrial Park and the Husky campus are located on the southern and northern ends of the Town respectively.
- There is a concentration of residential neighborhoods surrounding the emerging town center.
- As the town continues to grow, and these different land uses intensify, travel circulating through the community between home, jobs, and services will increase.

6.2 TRANSPORTATION SYSTEM CHARATERISTICS

- US 7 is classified as an urban arterial. The *Vermont State Standards* provide a significant amount of flexibility in selecting lane and shoulder widths for arterials that pass through built-up urban and village areas. The flexibility allowed for urban arterials provides an opportunity to change the characteristics of the roadway in the study area as the surrounding land is developed.
- US 7 is designated as part of the Vermont Truck Network. Because of this designation, recommendations related to the re-design of intersections that may result from this study should accommodate trucks with overall lengths of 72 feet. This requirement will affect turning radii and should be considered in selecting appropriate lane widths.
- In general, roadways in the study area are operating consistent with their functional class. Road speed limits and current AADT volumes also correspond well with roadway function. This presents an opportunity for future developments and infrastructure improvements to build off of the existing grid system. Development and infrastructure improvements that are consistent with roadway function will help maintain the mobility and accessibly functions of the roadways.
- Existing lanes widths and shoulders satisfy the minimums recommended in the *Vermont State Standards*.
- Milton has an established sidewalk system in the historic town core and the current town core. There is a deficiency of sidewalks in the town core expansion area bounded by US 7, Middle Road, and Bombardier Road. However, a sidewalk improvement plan has been proposed that would significantly expand and upgrade the sidewalk system in this area.

- The speed limits on local roads are generally limited to 25 mph. However, some of the local roads such as Villemaire Lane and Barnum Road provide for a cut-trough route between US 7 and Railroad Street. Residents on these streets have indicated that cars routinely exceed the speed limit as they drive through the neighborhoods as a short-cut between US 7 and Railroad Street.
- Intersection control in the study area is primarily through the use of stop signs on the minor approach of an intersection. There is one traffic signal in Milton.

6.3 TRAVEL DEMAND

- The existing traffic flows during the AM peak hour indicate a significant southerly flow of traffic along US 7. The reverse occurs during the PM peak hour with the dominant traffic flow shifting northerly inbound towards Milton.
- 80% of Milton residents are employed outside of the Town of Milton. The vast majority of these people work in other Chittenden County municipalities which are located, for the most part, to the south of Milton.
- 43% of employees in Milton are residents of Milton. The other people employed in Milton commute to Milton from the south and north in roughly equal proportions.
- Between 1990 and 2000 the number of people who work and live in Milton has increased which increases the importance of internal circulation.

6.4 CONGESTION, SAFETY, AND ACCESS MANAGEMENT

The congestion analysis indicates that:

- During the 2005 AM peak hour all intersections function at Level of Service (LOS) D or better. LOS is projected to decrease to E or F in 2025 at five intersections during the AM peak hour.
- During the 2005 PM peak hour scenario all intersections function at LOS D or better except for the following:
    - The northbound Middle Road approach to Railroad Street; and
    - The eastbound Catamount Drive (northernmost driveway) approach to US 7.
- During the 2025 PM peak hour scenario, LOS E or F is projected at 10 of the 19 intersections studied.
- As traffic volumes increase on US 7, Middle Road, and Railroad Street, it will become increasingly difficult for vehicles to enter the traffic stream from stop controlled approaches during both the AM and PM peak hours due to a lack of gaps in the flow of traffic on US 7.

- There is a lack of gaps in the through traffic on US 7 during the AM and PM peak hours. As a result, it is difficult to enter the traffic stream from side streets or driveways. Traffic signals at strategic locations may help address this problem.
- The following locations satisfy the High Crash Location criteria based on 1999-2003 crash data:
    - The intersection of Middle Road and Railroad
    - A section of Main Street between Railroad Street and North Road
    - A section of Middle Road centered on the Bombardier Road – Middle Road
- The two primary access management concerns along US 7 are poorly defined, continuous curb cuts and driveways spaced too closely. While these two concerns can be found throughout US 7 in Milton the following three areas are especially problematic: US 7 between West Milton Road and Bombardier Road, US 7 between Milton Shopping Center and Barnum Road, and US 7 between Cherry Street and Main Street. A roadway with a high frequency of access points will reduce the capacity of the roadway and may cause an earlier need for additional new lanes. Additionally, the frequent access points with poorly defined or continuous curb cuts along US 7 make the roadway visually unattractive.

7.0 NEXT STEPS

- Evaluate future year traffic conditions based on a land use scenario to be developed by River Street/TC for the US 7 Planning Project;
- Prepare Project Memorandum #2- Future Traffic Conditions and Identification of Reasonable Alternatives; and

MIILTON TOWN CORE TRAFFIC CIRCULATION PLAN
Project Memorandum 2: Traffic Projections considering Future Land Use

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1.0 INTRODUCTION

The Milton Town Core Transportation Plan evaluates the traffic impacts associated with projected growth in land use estimated by River Street Planning and Development with Transportation Concepts and Elabd Architectural Illustration in the August 2007 *Route 7 Land Use and Transportation Study*.

This study includes the following items:

- Future land use assumptions and associated trip generation rates
- Future road network changes
- Traffic volumes in 2012 and 2025
- Estimated congestion in 2012 and 2025 with corresponding road network changes
- Recommendations

This study relies upon design standards and analysis procedures documented in the *2000 Highway Capacity Manual*,[1] *Trip Generation*,[2] *A Policy on Geometric Design of Highways* and Streets,[3] *Manual on Uniform Traffic Control Devices (MUTCD)*,[4] *Traffic Impact Evaluation: Study and Review Guide*,[5] and the *Vermont State Design Standards*.[6]

2.0 ROAD NETWORK CHANGES

With the expansion of the Milton Shopping Center (Figure 1), a number of road network changes are proposed. Figure 1 and Figure 2 show the existing and proposed road network, respectively.

---

[1] Transportation Research Board, National Research Council, *Highway Capacity Manual* (Washington, DC: National Academy of Sciences, 2000).

[2] Institute of Transportation Engineers, *Trip Generation* 7th Edition (Washington, D.C.: Institute of Transportation Engineers, 2003).

[3] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 4th Edition (Washington DC: AASHTO, 2004).

[4] American Traffic Safety Services Association (ATSSA), ITE, and AASHTO, *Manual on Uniform Traffic Control Devices*, 2003 Edition (Washington DC: FHWA, 2003).

[5] Vermont Agency of Transportation, Development Review Section, *Traffic Impact Evaluation Study and Review Guide* (January 2003).

[6] State of Vermont Agency of Transportation, *Vermont State Standards* (Montpelier: VTrans, 1 July 1997).

Figure 1: Existing Road Network

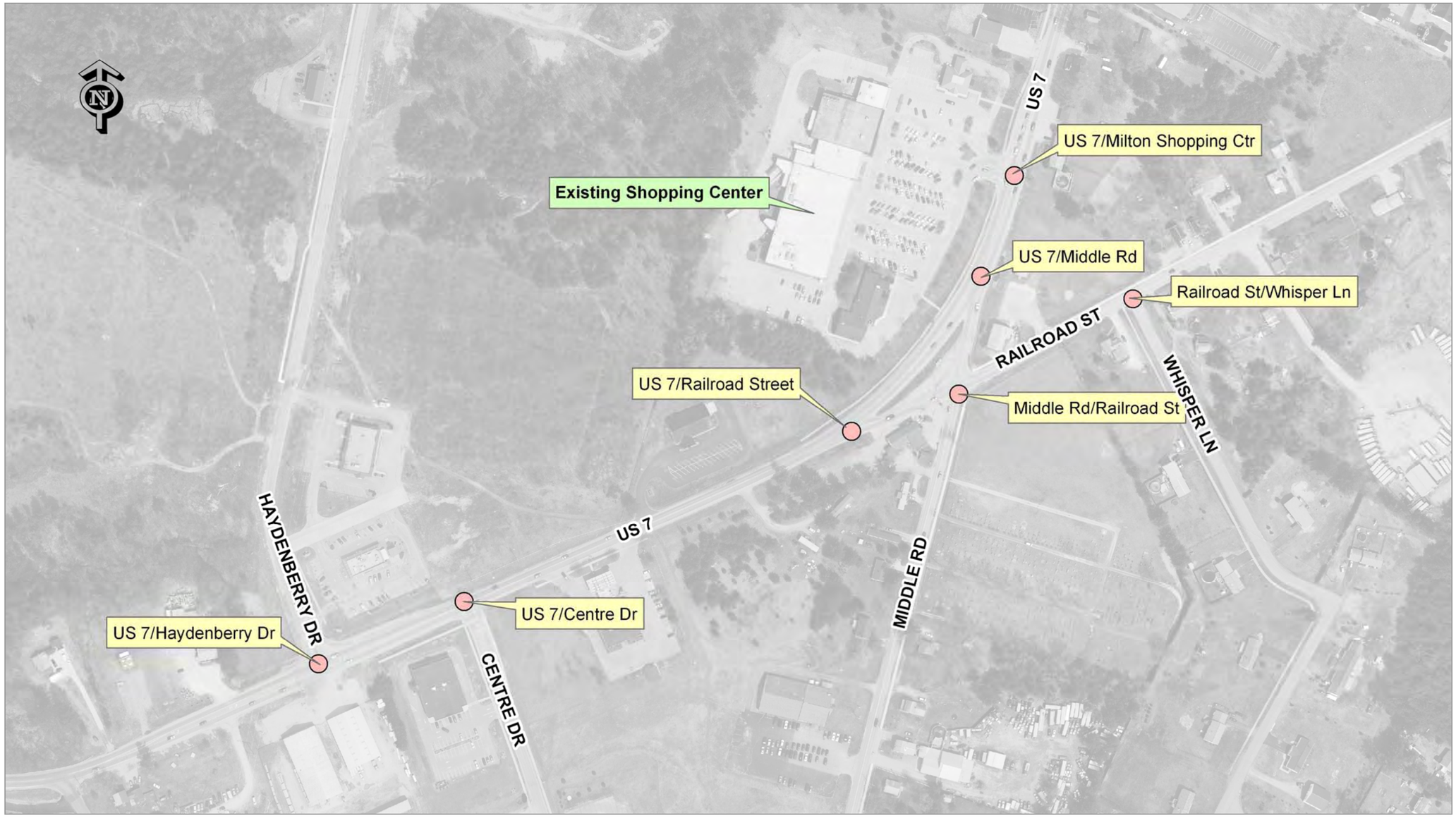


Figure 2: Proposed Road Network

The proposed road network eliminates the US 7/Middle Road/Railroad Street triangle and adds two connector roads, referred to as the Hourglass. A private frontage road used for circulation within the Milton Shopping Center would parallel US 7 beginning at Haydenberry Drive and ending at the northernmost shopping center driveway. The shopping center would have three additional driveways:

- Along US 7 at Railroad Street
- Along US 7 at Centre Drive
- Along Haydenberry Drive

The new connector roads would connect the northernmost shopping center driveway to Railroad Street (referred to as "Hourglass North"). The intersections where US 7, Railroad Street, and Middle Road cross one another would be reconfigured and combined into one intersection. This southern connector is referred to as "Hourglass South."

It is estimated that all changes will be complete by the base year of analysis, 2012, except for construction of Hourglass North. This new link between US 7 and Railroad Street is estimated to be complete by 2025.

The geographic scope of the study focuses on the following core intersections, shown in Figure 2:

1. US 7/Haydenberry Drive (2012, 2025)
2. US 7/Milton Shopping Center/Centre Drive (2012, 2025)
3. US 7/Milton Shopping Center/Hourglass South (2012, 2025)
4. US 7/Milton Shopping Center/Hourglass North (2012, 2025)
5. Middle Road/Hourglass South (2012, 2025)
6. Railroad Street/Hourglass North/Whisper Lane (2025 Only)

3.0 SCENARIO VOLUMES

The PM peak hour of traffic in the base year (2012) and future year (2025) is analyzed for congestion. AM peak hour volumes are significantly lower than the PM volumes and were not evaluated. The PM peak hour scenario volumes consist of the following components:

- Background growth and design hour adjustments
- New trips generated by the Milton Shopping Center
- New trips generated by future growth in the Town

3.1 BACKGROUND AND DESIGN HOUR ADJUSTMENTS

Resource Systems Group adjusted recent turning movement counts at the study intersections[1] to represent the design hour volume (DHV)[2] in 2012 and 2025 using two types of adjustment factors: background adjustment factors and design hour adjustment factors.

Background adjustment factors to 2012 and design hour adjustment factors were calculated using data from the following four VTrans Automatic Traffic Recorders (ATRs):

- S6D197: Main Street just east of Maplewood Ave
- S6D200: US 7 0.1 mile south of Lamoille Terrace
- S6D522: US 7 between Landfill Road and Willy's Lane
- S6D199: Railroad Street 0.1 mile north of Barnum Street

Regression analyses of the historical Annual Average Daily Traffic (AADT) volumes for each of the ATRs yielded the annual background adjustment factors applied to increase volumes to represent 2012 volumes.

Design hour adjustment factors were calculated using standard VTrans methodology, which applies equations based on the ATR Poll Group[3] and compares estimated design hour volumes with the most proximate turning movement count.

The resulting adjustments by ATR are shown in Table 1. Adjustments at each individual intersection were based on geographic proximity to the ATR.

Table 1: Adjustment Factor Summary

ATR	ATR Location	Annual Adj. to 2012	DHV Adj.
S6D197	Main Street just east of Maplewood Ave	1.62%	117%
S6D200	US 7 0.1 mile south of Lamoille Terrace	1.67%	94%
S6D522	US 7 between Landfill Road and Willy's Lane	2.45%	111%
S6D199	Railroad Street 0.1 mile north of Barnum Street	3.05%	109%

The Chittenden Country Transportation Model was used to calculate future growth from 2012 to 2025. This analysis yielded a growth of 4% along US 7 and 6% along sidestreets in the study area between 2012 and 2025.[4]

---

[1] Turning movement counts were conducted in June 2005 and October 2006.

[2] Defined as the 30th highest hour of traffic in a given year

[3] There are six poll group categories that VTrans uses to group automatic traffic counters with similar characteristics: Interstate, Rural Primary and Secondary, Urban, Summer Recreational, Summer/Winter Recreational-US & VT Routes, Summer/Winter Recreational-Town Highways.

[4] The assumption of the proposed interchange off West Milton Road and associated shift of traffic along US 7 was included in the 2012-2025 growth rate.

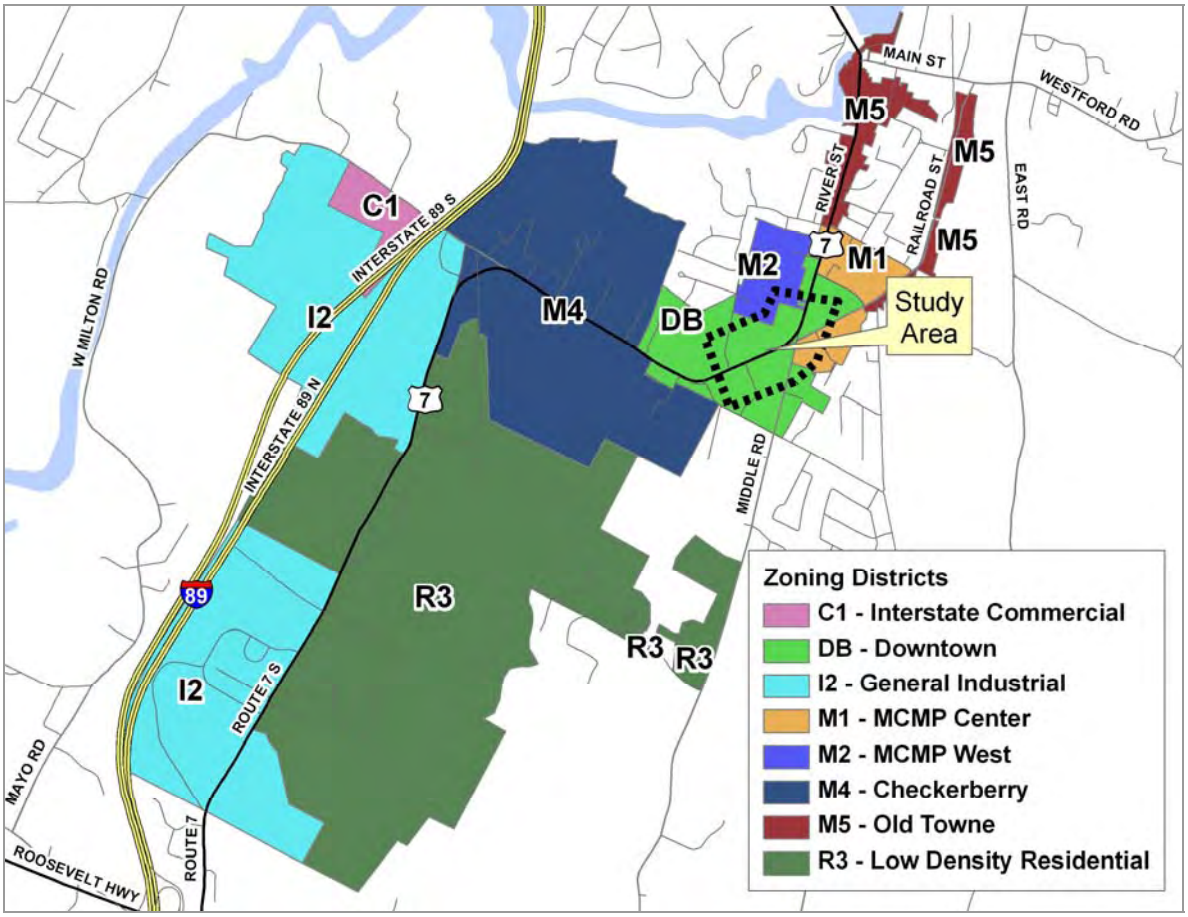
3.2 MILTON SHOPPING CENTER TRIP GENERATION

Lamoureux and Dickinson[1] provided trip generation volumes for the Milton Shopping Center assuming the proposed road network changes without Hourglass North (27 September 2007) and with Hourglass North (21 November 2007). Trips generated by the Milton Shopping Center are included in all scenarios.

3.3 FUTURE GROWTH TRIP GENERATION

River Street Planning and Development with Transportation Concepts and Elabd Architectural Illustration estimated the growth in land use (square feet) by zoning district and general land use category in the August 2007 *Route 7 Land Use and Transportation Study*. The locations of the zoning districts are shown in Figure 3.

Figure 3: Zoning District Map



[1] The consulting engineer for the shopping center project

The Town of Milton further refined the land use projection numbers based on River Street's twenty-year market analysis to represent growth by 2025, as shown in Table 2.[1] The full buildout estimated in the River Street Planning study is dependent on future market forces.

Table 2: Land Use Growth by Zoning District and General Land Use Category (ksf)

		Non-Residential					Residential		
Zone	Zoning District Name	Retail	Comm.	Office	Industrial	Trav. Serv.	SF	MF	Total
DB1	Downtown	124	124	248	0	0	0	248	744
M1	MCMP Center	0	5	0	0	0	18	36	59
M2	MCMP West	0	0	0	0	0	43	0	43
M4	Checkerberry	99	119	25	195	0	1110	740	2,288
M5	Old Towne	1	1	0	0	0	0	24	27
R3	Low Density Residential	0	0	0	0	0	624	0	624
I2	General Industrial	0	528	0	1151	0	0	0	1,680
C1	Interstate Commercial	0	0	0	0	81	0	0	81
	Total	224	778	273	1,346	81	1,795	1,048	5,545

Trip generation rates per thousand square feet (ksf) were developed using published rates in the Institute of Transportation Engineers' publication, *Trip Generation*. PM peak hour trip generation rates for individual land uses were grouped under each of the general land use categories listed in the column headings of Table 2. The trip generation rates were then averaged based on the estimated likelihood of use and relative average size of the development. The average rates were applied to the data in Table 2 to yield the estimated trip generation shown in Table 3.

Table 3: PM Peak Hour Trip Generation by Zoning District and General Land Use Category

		Non-Residential					Residential		
Zone	District Name	Retail	Comm.	Office	Industrial	Trav. Serv.	SF	MF	Total
DB1	Downtown	72	266	434	0	0	0	205	977
M1	MCMP Center	0	12	0	0	0	9	29	50
M2	MCMP West	0	0	0	0	0	22	0	22
M4	Checkerberry	536	256	43	191	0	561	612	2,198
M5	Old Towne	3	3	0	0	0	0	20	26
R3	Low Density Residential	0	0	0	0	0	315	0	315
I2	General Industrial	0	1133	0	990	0	0	0	2,123
C1	Interstate Commercial	0	0	0	0	282	0	0	282
	Total	612	1,669	477	1,181	282	907	866	5,994

A multi-use development is defined by the Institute of Transportation Engineers (ITE) as "a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system."[2] Many future developments will likely combine several land uses. The number of trips that remain internal to a development was calculated using published ITE rates. Internal trips were subtracted from the total trip generation estimate, except

---

[1] Land use projections in the Downtown Business district and residential land use projections in all districts were not reduced because the higher values based on potential buildout were consistent with other known planning efforts.

[2] Institute of Transportation Engineers, *Trip Generation Handbook* (Washington, DC: Institute of Transportation Engineers, March 2001) 79.

within the project area (Downtown District, MCMP Center, MCMP West, and Old Towne). Trips in the project area were distributed proportionally to background traffic. Internal trips represent instances such as when a single trip to a shopping plaza allows a vehicle to visit both a grocery store and a bank without having to go back onto the main road network. Table 4 summarizes the number of internal and external trips by zoning district.

Table 4: Internal and External Trip Generation by Zoning District and General Land Use Category[1]

		Internal Trips		External Trips	
Zone	Zoning District Name	Enter	Exit	Enter	Exit
DB1	Downtown	83	83	287	523
M1	MCMP Center	2	2	28	17
M2	MCMP West	0	0	14	8
M4	Checkerberry	171	171	996	857
M5	Old Towne	1	1	15	9
R3	Low Density Residential	0	0	202	113
I2	General Industrial	111	111	680	1,218
C1	Interstate Commercial	28	28	110	116
	Total	396	396	2,331	2,862

Therefore, only external trips were added and distributed through the road network based on background traffic flows and 2000 Census Journey-to-Work[2] data.

Figure 4 and Figure 5 show the trip generation in 2012 and 2025, respectively, assuming linear growth in land use.

Raw turning movement volumes, adjustments, and trip generation calculations are available in Appendix A.

[1] Numbers vary by 0.2% due to rounding error.

[2] US Census Bureau. This data provides estimates of where people work and live.

Figure 4: 2012PM Peak Hour Projected Additional Land Use Trip Generation - Based on River Street Study Data

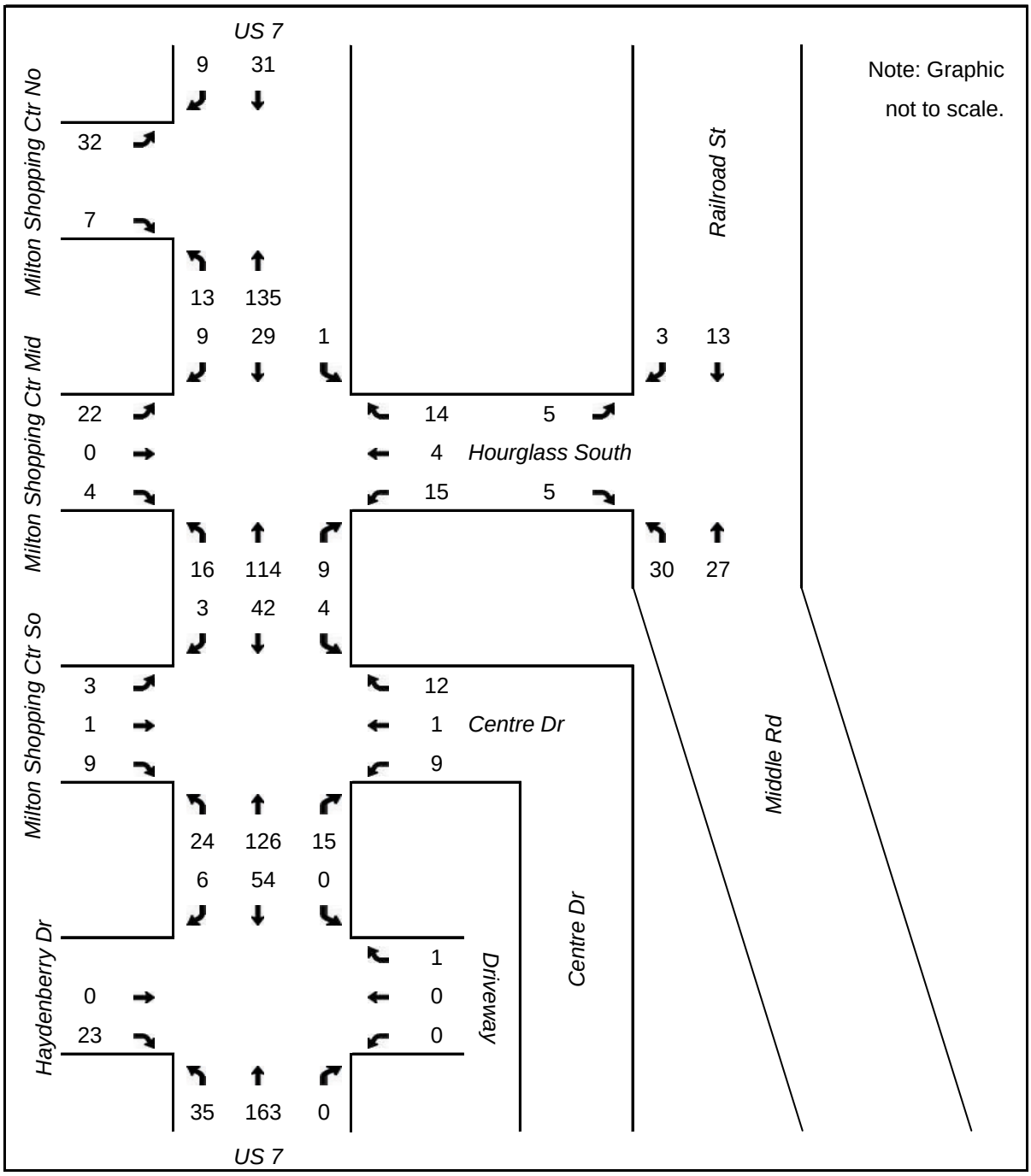
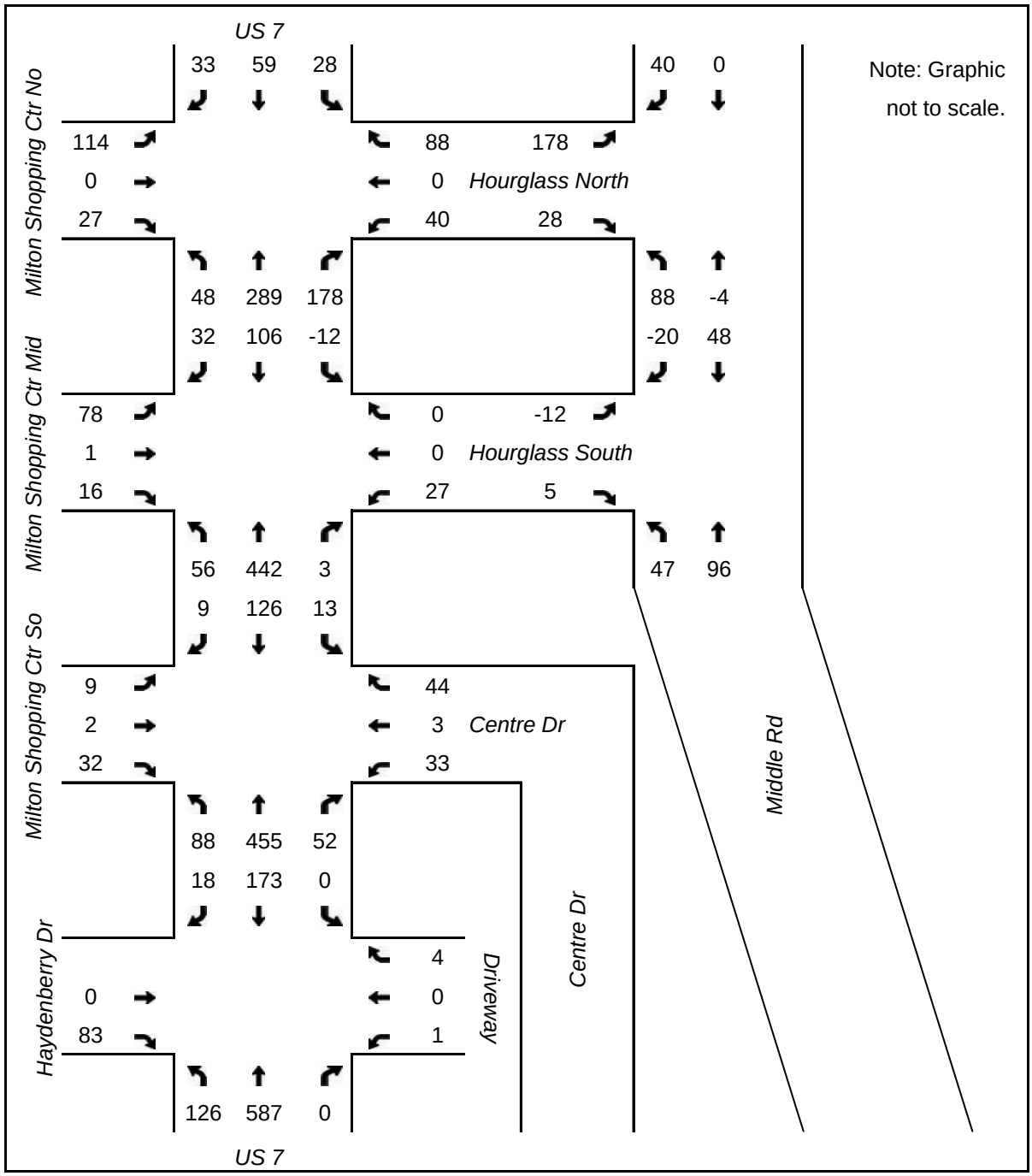


Figure 5: 2025 PM Peak Hour Projected Additional Land Use Trip Generation - Based on River Street Study Data



3.4 GROWTH COMPARISON WITH THE EXISTING CONDITIONS REPORT

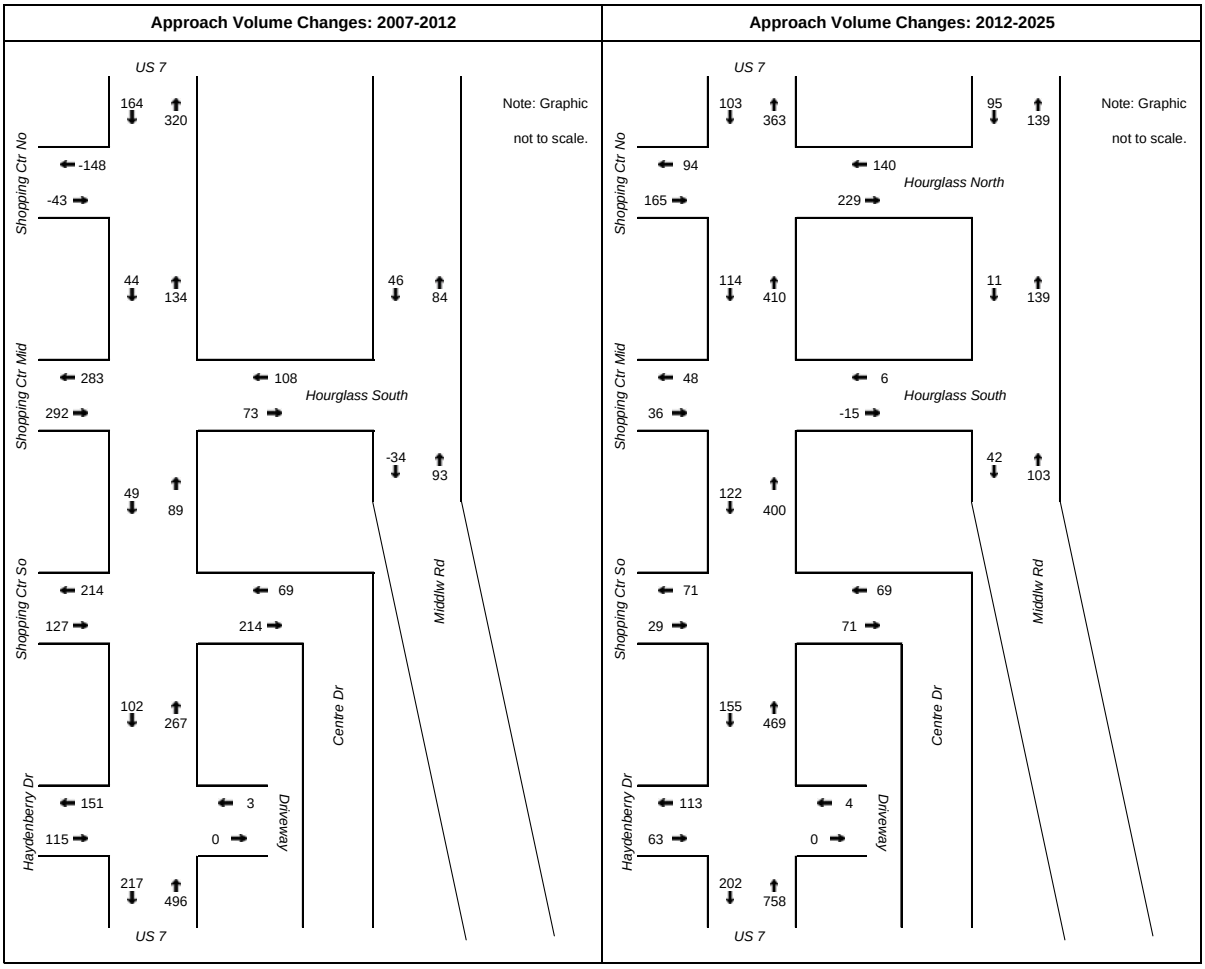
In the Existing Conditions report (9 November 2005), the growth between 2005 and 2025 was estimated to grow by 33%. With the addition of trip generation estimates based off the projected land use in the River Street Planning study (August 2007) the average growth between 2007 and 2025 is 75%.[1]

For perspective on the magnitude of change from current traffic levels, Figure 6 shows existing traffic and the change in approach volumes on a road segment basis. The assumptions for each scenarios are as follows:

- 2007 volumes assume annual background growth based on proximity to local ATRs.
- 2012 volumes assume annual background growth based on proximity to local ATRs, trips generated by Milton Shopping Center, and 28% of the projected land use growth in Milton.
- 2025 volumes assume annual background growth based on proximity to local ATRs up to 2012, background growth from the Chittenden County Model between 2012 and 2025, trips generated by Milton Shopping Center, and 100% of the projected land use growth in Milton.

[1] The Existing Conditions report did not include the growth projected in the River Street Planning study (August 2007) as it preceded the River Street study. Also, the volumes within this report are based on updated turning movement counts.

Figure 6: Approach Volume Changes



3.5 SCENARIO VOLUME GRAPHICS

The 2012 (Figure 7:) and 2025 (Figure 8) PM peak hour volumes represent the annual growth of background traffic volumes, the DHV adjustment, trips generated by the Milton Shopping Center, and trips generated by estimated future growth in Milton.

Figure 7: 2012 PM Peak Hour Scenario Volumes

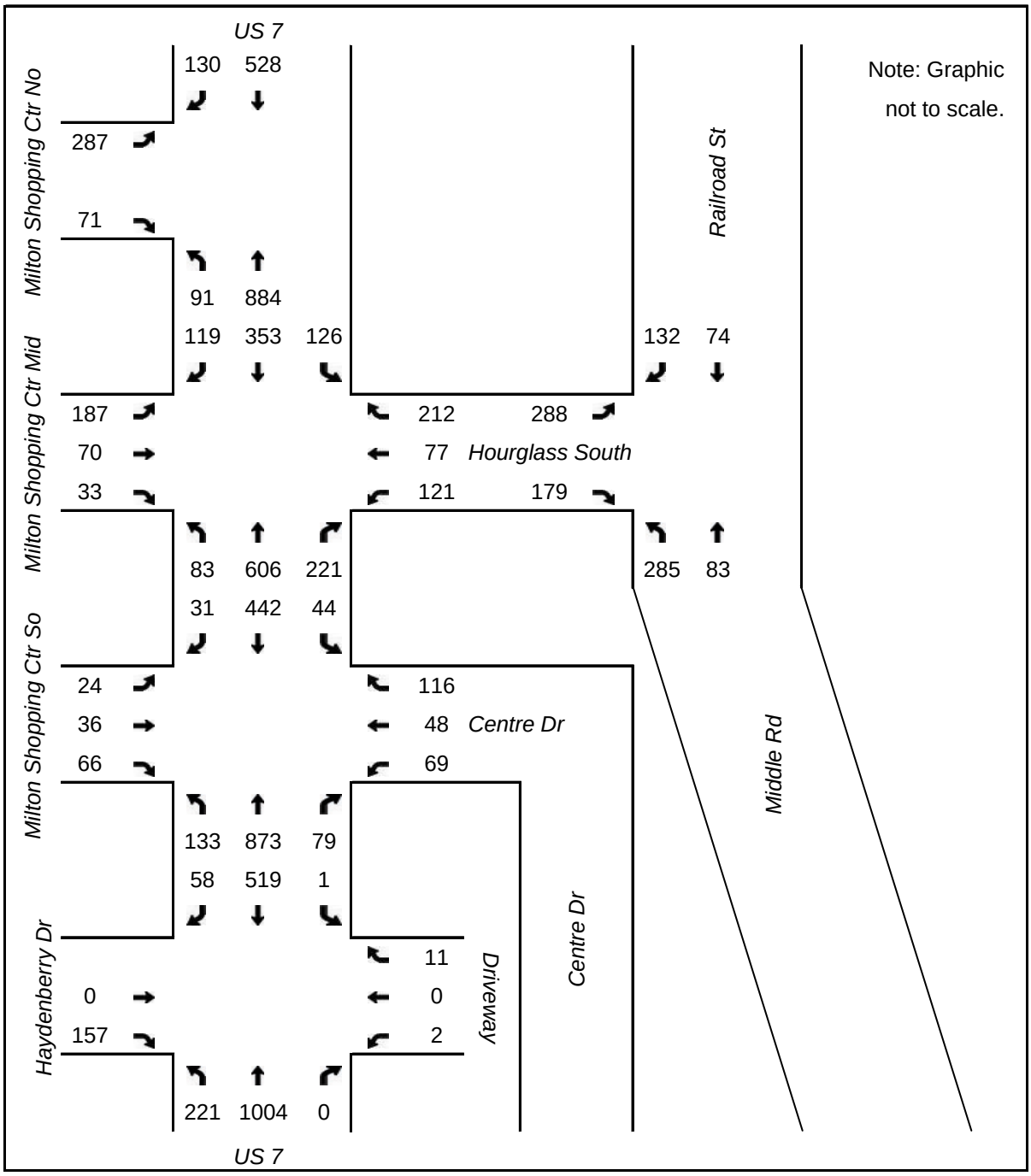
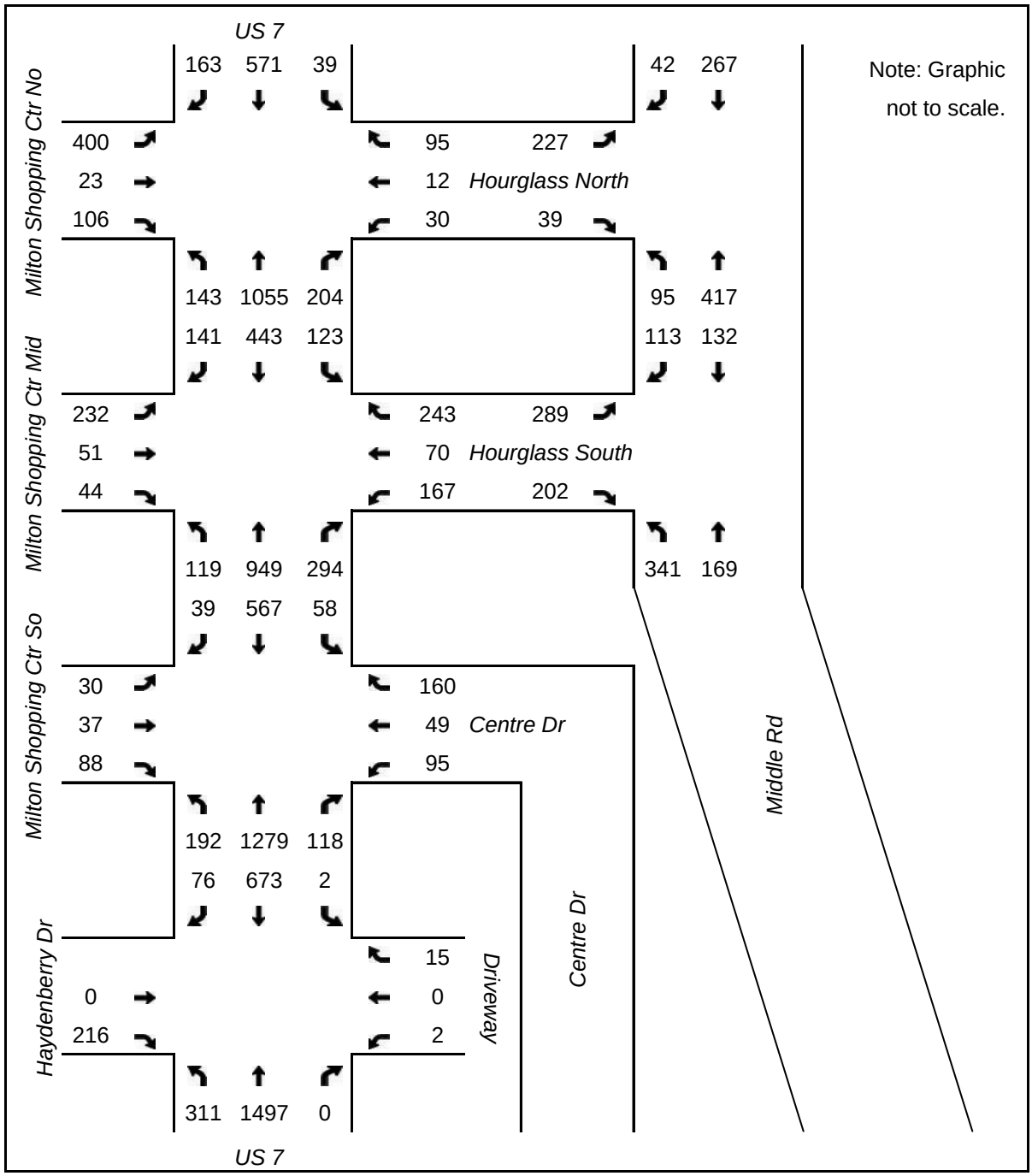


Figure 8: 2025 PM Peak Hour Scenario Volumes



4.0 CONGESTION AND QUEUE ANALYSIS

4.1 LEVEL-OF-SERVICE DEFINITION

Level-of-service (LOS) is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. LOS is estimated using the procedures outlined in the 2000 Highway Capacity Manual. In addition to traffic volumes, key inputs include the number of lanes at each intersection and the traffic signal timing plans.

The 2000 Highway Capacity Manual defines six qualitative grades to describe the level of service at an intersection. Level-of-Service is based on the average control delay per vehicle. Table 5 shows the various LOS grades and descriptions for signalized and unsignalized intersections.

Table 5: Level-of-Service Criteria for Signalized and Unsignalized Intersections

		Unsignalized	Signalized
LOS	Characteristics	Total Delay (sec)	Total Delay (sec)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short delays	10.1-15.0	10.1-20.0
C	Average delays	15.1-25.0	20.1-35.0
D	Long delays	25.1-35.0	35.1-55.0
E	Very long delays	35.1-50.0	55.1-80.0
F	Extreme delays	> 50.0	> 80.0

The delay thresholds for LOS at signalized and unsignalized intersections differ because of the driver's expectations of the operating efficiency for the respective traffic control conditions.[1]

The VTrans policy on level of service is:

- Overall LOS C should be maintained for state-maintained highways and other streets accessing the state's facilities
- Reduced LOS may be acceptable on a case-by-case basis when considering, at minimum, current and future traffic volumes, delays, volume to capacity ratios, crash rates, and negative impacts as a result of improvement necessary to achieve LOS C.
- LOS D should be maintained for side roads with volumes exceeding 100 vehicles/hour for a single lane approach (150 vehicles/hour for a two-lane approach) at two-way stop-controlled intersections.

[1] According to HCM procedures, an overall LOS cannot be calculated for two-way stop-controlled intersections because not all movements experience delay. In signalized and all-way stop-controlled intersections, all movements experience delay and an overall LOS can be calculated.

4.2 LEVEL-OF-SERVICE AND QUEUE RESULTS

The Highway Capacity Manual congestion reports calculated by Synchro (v7), a traffic analysis software package from Trafficware, were used to assess congestion at the study intersections.

Congestion was estimated at the study intersections assuming both the original hourglass lane geometries and proposed modifications to the lane geometries and/or signal phasing to bring the overall average delay to LOS C or better.

The Existing Conditions memorandum, dated 9 November 2005, which assumes 33% growth indicates LOS E or F is projected at 10 of the 19 intersections studied in 2025.

The congestion results are summarized in Table 6. Figure 9 and Figure 10 illustrate the congestion and queue analysis results with the lane geometries and intersection controls for each scenario.[1] Queues in Figure 10 represent number of vehicles.

[1] 50th percentile queue lengths from Synchro are reported for the signalized intersections. 95th percentile queues from the HCM report from Synchro are reported for the unsignalized intersections in 2012. Average maximum queues from SimTraffic are reported for the all-way stop controlled intersections in 2025.

Table 6: PM Peak Hour LOS Results

Signalized Intersections	2012 PM Peak Hour Hourglass Geometry Coordinated LOS	2012 PM Peak Hour Hourglass Geometry Coordinated Delay	2025 PM Peak Hour Hourglass Geometry Coordinated LOS	2025 PM Peak Hour Hourglass Geometry Coordinated Delay	2025 PM Peak Hour Mitigaton Geometry Coordinated LOS	2025 PM Peak Hour Mitigaton Geometry Coordinated Delay
US 7/Milton Shopping Ctr/Centre Dr						
Overall	C	23	F	81	B	19
EB, exiting Milton Shopping Ctr	*C*	*29*	*E*	*55*	*D*	*37*
WB, exiting Centre Dr	*D*	*36*	*F*	*>100*	*D*	*43*
NB, towards Main St	*C*	*24*	*F*	*>100*	*B*	*12*
SB, towards Bombardier Rd	*B*	*15*	*B*	*13*	*B*	*20*
US 7/Milton Shopping Ctr/Hourglass South						
Overall	C	22	F	>100	C	20
EB, exiting Milton Shopping Ctr	*E*	*57*	*F*	*>100*	*D*	*52*
WB, exiting Hourglass South	*C*	*30*	*D*	*45*	*C*	*31*
NB, towards Main St	*B*	*18*	*F*	*>100*	*A*	*9*
SB, towards Bombardier Rd	*A*	*4*	*B*	*13*	*B*	*19*
US 7/Milton Shopping Ctr/Hourglass North						
Overall	B	14	F	>100	C	22
EB, exiting Milton Shopping Ctr	*C*	*31*	*F*	*>100*	*D*	*54*
WB, exiting Hourglass North	*-*	*-*	*D*	*41*	*C*	*27*
NB, towards Main St	*A*	*8*	*B*	*15*	*A*	*10*
SB, towards Bombardier Rd	*B*	*15*	*E*	*58*	*C*	*25*

Unsignalized Intersections	2012 PM Peak Hour Hourglass Geometry Coordinated LOS	2012 PM Peak Hour Hourglass Geometry Coordinated Delay	2025 PM Peak Hour Hourglass Geometry Coordinated LOS	2025 PM Peak Hour Hourglass Geometry Coordinated Delay	2025 PM Peak Hour Mitigaton Geometry Coordinated LOS	2025 PM Peak Hour Mitigaton Geometry Coordinated Delay
US 7/Haydenberry Dr						
EBR, exiting Haydenberry Dr	B	14	C	19	C	19
WBLTR, exiting Private	F	61	F	>100	F	>100
NBL, entering Haydenberry Dr from US 7	A	10	B	12	B	12
Middle Rd/Hourglass South						
Overall	C	16	C	20	C	17
EBLR, exiting Hourglass South	C	19	C	21	B	14
NBLT, Middle Road towards Railroad St	C	16	C	23	C	22
SBTR, Middle Rd towards Bombardier Rd	B	11	B	11	B	11
Railroad St/Hourglass North						
Overall	-	-	-	-	C	15
EBLR, exiting Hourglass North	-	-	F	54	B	13
NBLT, Railroad St towards Main St	-	-	A	2	C	18
SBTR, Railroad St towards Middle Rd	-	-	-	-	B	12

Figure 9: Expected PM Peak Hour Future Average Delay Results (seconds)

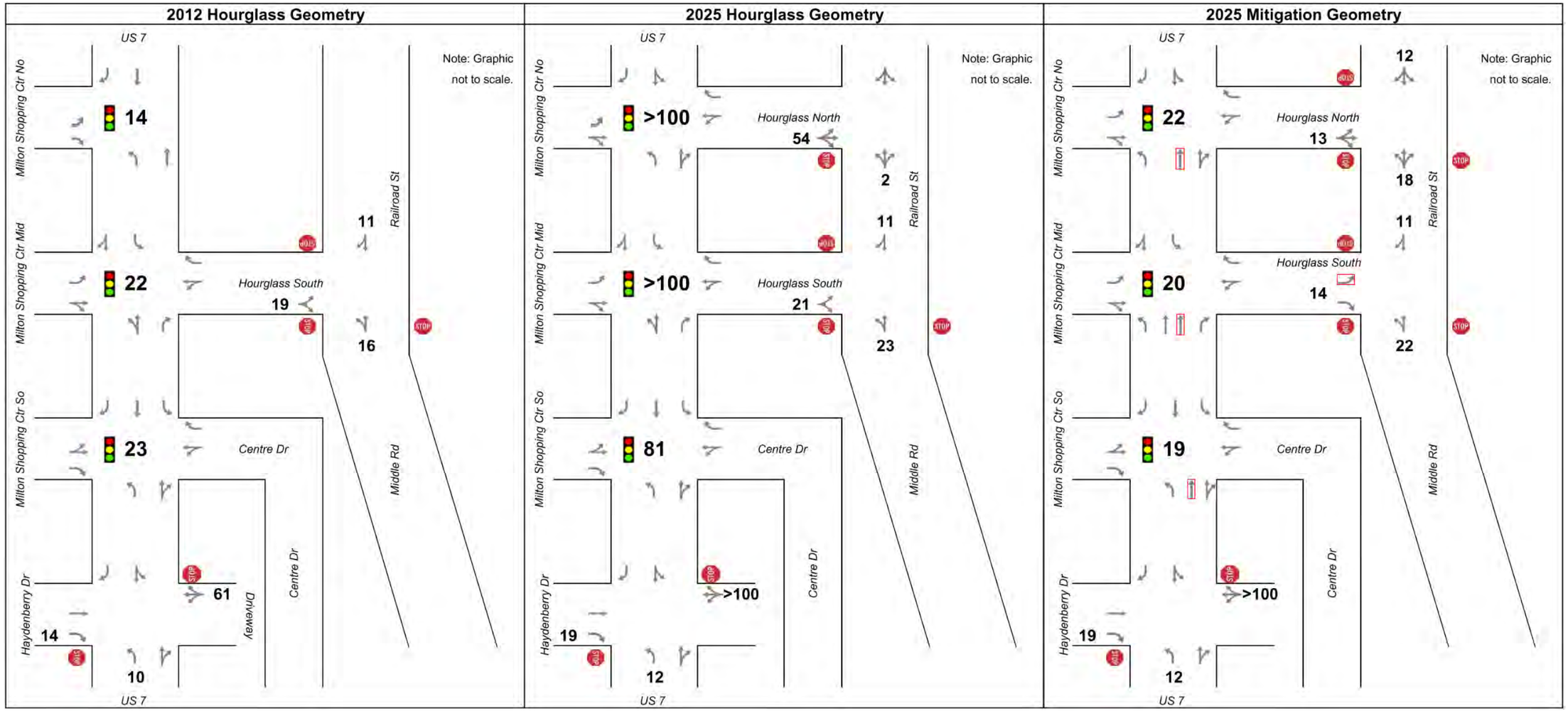
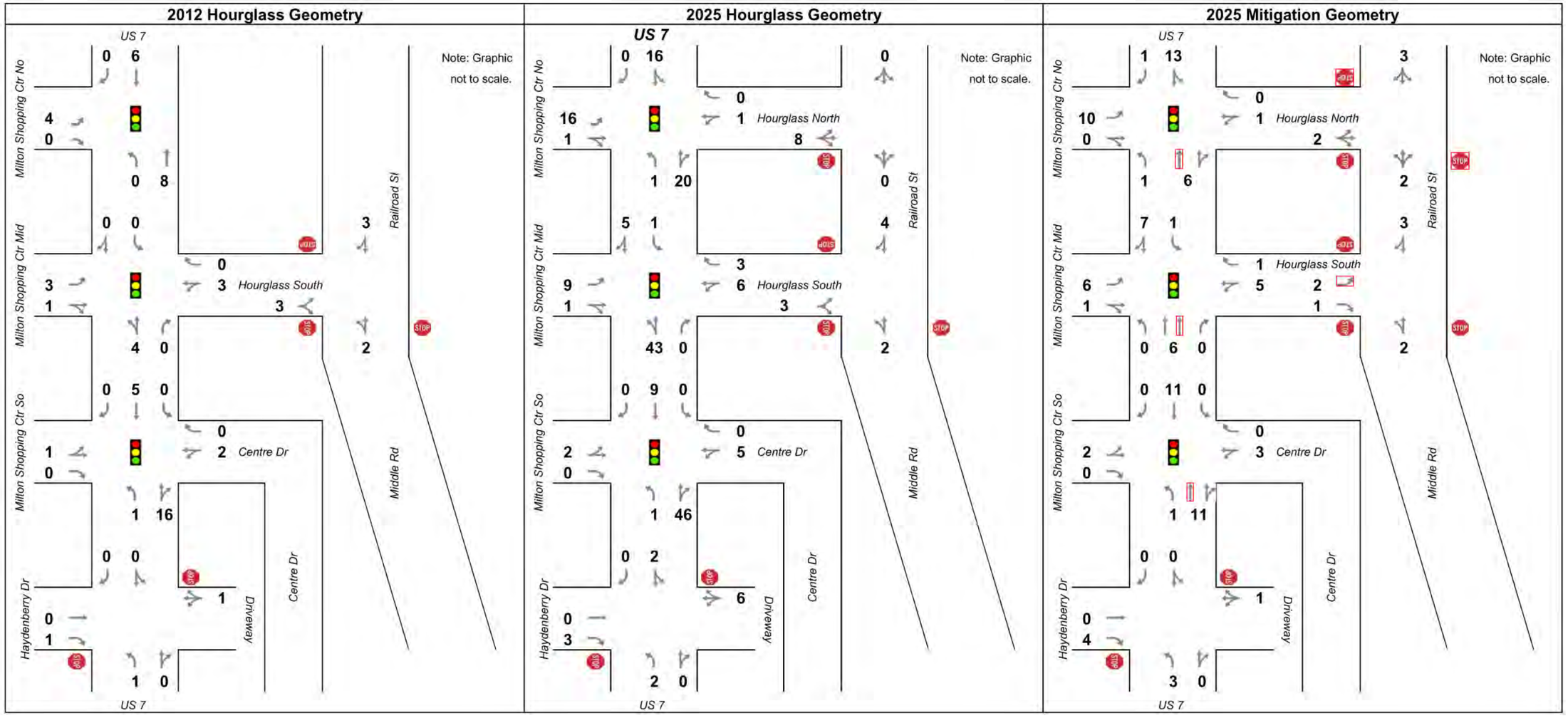


Figure 10: Expected PM Peak Hour Average Queue Results (vehicles)



5.0 SUGGESTED CONGESTION MITIGATION

The new signal system was assumed to be coordinated in the analysis. No additional measures beyond the basic assumptions for intersection control (signal vs. stop control) were deemed necessary in 2012. Mitigation geometry for 2025 is shown in Figures 10 & 11 (red boxes indicate new lanes).

The largest geometric change needed in 2025 is an additional northbound through lane in the study area. The northbound through lane would likely be continuous in the study area because sufficient space does not exist for the tapers required when adding and dropping lanes. Also, providing a continuous second through lane instead of adding and dropping lanes between intersections will reduce driver confusion and be safer.

As a general rule, left and right turn lanes are not always necessary to improve average delays, but turn lanes should be considered for operational or safety reasons when the peak hour left turn volume is greater than 100 or the peak hour right turn volume is greater than 300. A double left turn lane should be considered where the left turn volume is greater than 300.

Another proposed change to the study area's road network is a road connecting Centre Drive to Middle Road (noted as Centre Connector in Figure 2). This road is expected to help with side street circulation under most conditions since it does not provide a shortcut for through traffic. However, it may help relieve excessive congestion, especially at the US 7/Hourglass South and Middle Road/Hourglass South intersections, as it would provide an alternate route.

Detailed Synchro LOS worksheets are available in Appendix B.

6.0 SUMMARY

This report evaluates the traffic impacts associated with projected growth in land use. Modified River Street Planning and Development estimates indicate there will be greater than 5.5 million square feet of additional land use by 2025, which translates into ~5,000 new external trips.

In 2012, the signalized intersections operate at overall LOS B and LOS C with the Hourglass lane geometries. Pursuing the Hourglass Geometry alignment is recommended as it appears to mitigate existing congestion issues while improving safety by more clearly delineating right-of-way on the road.

In 2025, the Hourglass lane geometries alone do not provide enough capacity for the estimated growth. The major required geometric change for the study intersections to operate at overall LOS C is an additional northbound through lane along US 7. Due to the extensive process of adding an additional lane of traffic, we recommend that the Town begin to plan for the additional lane, such as looking into right-of-way, utilities, etc.

7.0 APPENDICES

A) TURNING MOVEMENT VOLUMES AND TRIP GENERATION CALCULATIONS

B) SYNCHRO OUTPUT TABLES

C) TRIP DISTRIBUTION METHODOLOGY

APPENDIX A

TURNING MOVEMENT VOLUMES AND TRIP GENERATION CALCULATIONS

2/22/2008 12:30

		Non-Residential Land Use						Residential Land Use				Retail, Commercial, Office, Traveler Services							
												Internal Trips		External Trips		Industrial		External Trips+Industrial	
Zone	Zoning District Name	Retail	Commercia	Office	Industrial	Trav. Serv.	otal Non-Re	Single Famil	Multi Family	otal Res Uni	Total	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
DB1	Downtown	72	266	434	0	0	772	0	205	205	977	83	83	287	523	0	0	287	523
M1	MCMP Center	0	12	0	0	0	12	9	29	38	50	2	2	28	17	0	0	28	17
M2	MCMP West	0	0	0	0	0	0	22	0	22	22	0	0	14	8	0	0	14	8
M3	MCMP Municipal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M4	Checkerberry	536	256	43	191	0	1,026	561	612	1,173	2,198	171	171	973	689	23	168	996	857
M5	Old Towne	3	3	0	0	0	6	0	20	20	26	1	1	15	9	0	0	15	9
M6	Main Street	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
R3	Low Density Residential	0	0	0	0	0	0	315	0	315	315	0	0	202	113	0	0	202	113
I2	General Industrial	0	1,133	0	990	0	2,123	0	0	0	2,123	111	111	443	466	238	753	680	1,218
C1	Interstate Commercia	0	0	0	0	282	282	0	0	0	282	28	28	110	116	0	0	110	116
	Total	612	1,669	477	1,181	282	4,221	907	866	1,773	5,994	396	396	2,070	1,941	261	921	2,331	2,862

Assumptions:
Used average enter/exit percentages for the same land uses as for trip generation
Assumed commercial and travel trips should be included with retail trips
Only industrial trips are not included in the multi-use trip calculations.
Used average enter/exit percentages for Manufacturing and Industrial.

Downtown

	Percentage			Total Trips		Internal Trips		External Trips		% of Trips by LU Type		Passby	Primary Trips		Passby Trips	
	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	% Enter	% Exit	Rate	Enter	Exit	Enter	Exit
Residential	64%	36%	205	131	74	23	15	108	59	100%	100%	0%	108	59	0	0
Office	17%	83%	434	74	360	9	10	65	350	100%	100%	0%	65	350	0	0
Retail	49%	51%	338	165	172	51	59	114	113	100%	100%	0%	114	113	0	0
			Total Residential	131	74	23	15	108	59			**TOTAL**	287	523	0	0
			Total Office	74	360	9	10	65	350							
			Total Retail	165	172	51	59	114	113							
			Subtotal	370	606	83	83	287	523							
			TOTAL	976		166		809								
			Reduction in Trips Due to Mixed-Use			17%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	To Residential	To Office	To Retail	To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	39
From Office	2%	1%	23%	7	4	83
From Retail	12%	3%	20%	21	5	34

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	From Residentia	From Office	From Retail	To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	3	41
To Office	0%	6%	31%	0	4	23
To Retail	9%	2%	20%	15	3	33

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	15	
From Office	3	4	3	
From Retail	21	5	33	83

MCMP Center

	Percentage			Total Trips		Internal Trips		External Trips		% of Trips by LU Type		Passby	Primary Trips		Passby Trips	
	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	% Enter	% Exit	Rate	Enter	Exit	Enter	Exit
Residential	64%	36%	38	25	14	1	1	24	13	100%	100%	0%	24	13	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	12	6	6	2	2	4	4	100%	100%	0%	4	4	0	0
			Total Residential	25	14	1	1	24	13			**TOTAL**	28	17	0	0
			Total Office	0	0	0	0	0	0							
			Total Retail	6	6	2	2	4	4							
			Subtotal	30	20	2	2	28	17							
			TOTAL	50		5		45								
			Reduction in Trips Due to Mixed-Use			9%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	To Residential	To Office	To Retail	To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	7
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	1	0	1

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	From Residentia	From Office	From Retail	To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	8
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	1	0	1

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	1	
From Office	0	0	0	
From Retail	1	0	1	2

MCMP West

	Percentage			Total Trips		Internal Trips		External Trips		% of Trips by LU Type		Passby	Primary Trips		Passby Trips	
	Enter	Exit	Total	Enter	Exit	Enter	Exit	Enter	Exit	% Enter	% Exit	Rate	Enter	Exit	Enter	Exit
Residential	64%	36%	22	14	8	0	0	14	8	100%	100%	0%	14	8	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
			Total Residential	14	8	0	0	14	8			**TOTAL**	14	8	0	0
			Total Office	0	0	0	0	0	0							
			Total Retail	0	0	0	0	0	0							
			Subtotal	14	8	0	0	14	8							
			TOTAL	22		0		22								
			Reduction in Trips Due to Mixed-Use			0%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	To Residential	To Office	To Retail	To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	4
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	0	0	0

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate			Unconstrained Internal Demand		
	From Residentia	From Office	From Retail	To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	4
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	0	0	0

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	0	0

MCMP Municipal	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Total Residential				0	0	0	0	0	0			**TOTAL**	0	0	0	0
Total Office				0	0	0	0	0	0							
Total Retail				0	0	0	0	0	0							
Subtotal				0	0	0	0	0	0							
TOTAL				0		0		0								
Reduction in Trips Due to Mixed-Use						#DIV/0!										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	0
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	0	0	0

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	0
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	0	0	0

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	0	0

Checkerberry	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	1,173	750	422	49	35	701	387	100%	100%	0%	701	387	0	0
Office	17%	83%	43	7	36	3	9	5	27	100%	100%	0%	5	27	0	0
Retail	49%	51%	792	386	403	120	128	267	275	100%	100%	0%	267	275	0	0
Total Residential				750	422	49	35	701	387			**TOTAL**	973	689	0	0
Total Office				7	36	3	9	5	27							
Total Retail				386	403	120	128	267	275							
Subtotal				1144	860	171	171	973	689							
TOTAL				2005		343		1662								
Reduction in Trips Due to Mixed-Use						17%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	224
From Office	2%	1%	23%	1	0	8
From Retail	12%	3%	20%	48	12	81

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	15	233
To Office	0%	6%	31%	0	0	2
To Retail	9%	2%	20%	35	8	77

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	35	
From Office	1	0	8	
From Retail	48	2	77	171

Old Towne	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	20	13	7	0	0	13	7	100%	100%	0%	13	7	0	0
Office	17%	83%	0	0	0	0	0	0	0	100%	100%	0%	0	0	0	0
Retail	49%	51%	6	3	3	1	1	2	2	100%	100%	0%	2	2	0	0
Total Residential				13	7	0	0	13	7			**TOTAL**	15	9	0	0
Total Office				0	0	0	0	0	0							
Total Retail				3	3	1	1	2	2							
Subtotal				16	11	1	1	15	9							
TOTAL				26		3		24								
Reduction in Trips Due to Mixed-Use						10%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	4
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	0	0	1

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	4
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	0	0	1

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	1	1

Main Street	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Total Residential				0	0	0	0	0	0			**TOTAL**	0	0	0	0
Total Office				0	0	0	0	0	0							
Total Retail				0	0	0	0	0	0							
Subtotal				0	0	0	0	0	0							
TOTAL				0		0		0								
Reduction in Trips Due to Mixed-Use						#DIV/0!										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	0
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	0	0	0

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	0
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	0	0	0

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	0	0

Low Density Residential	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	315	202	113	0	0	202	113	100%	100%	0%	202	113	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Total Residential				202	113	0	0	202	113			**TOTAL**	202	113	0	0
Total Office				0	0	0	0	0	0							
Total Retail				0	0	0	0	0	0							
Subtotal				202	113	0	0	202	113							
TOTAL				315		0		315								
Reduction in Trips Due to Mixed-Use						0%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	60
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	0	0	0

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	4	63
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	0	0	0

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	0	0

General Industrial	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	1,133	553	576	111	111	443	466	100%	100%	0%	443	466	0	0
Total Residential				0	0	0	0	0	0			**TOTAL**	443	466	0	0
Total Office				0	0	0	0	0	0							
Total Retail				553	576	111	111	443	466							
Subtotal				553	576	111	111	443	466							
TOTAL				1129		221		908								
Reduction in Trips Due to Mixed-Use						20%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	0
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	69	17	115

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	0
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	50	11	111

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	111	111

Interstate Commercial	Percentage Enter	Percentage Exit	Total	Total Trips Enter	Total Trips Exit	Internal Trips Enter	Internal Trips Exit	External Trips Enter	External Trips Exit	% of Trips by LU Type % Enter	% of Trips by LU Type % Exit	Passby Rate	Primary Trips Enter	Primary Trips Exit	Passby Trips Enter	Passby Trips Exit
Residential	64%	36%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Office	17%	83%	0	0	0	0	0	0	0	0%	0%	0%	0	0	0	0
Retail	49%	51%	282	138	143	28	28	110	116	100%	100%	0%	110	116	0	0
Total Residential				0	0	0	0	0	0			**TOTAL**	110	116	0	0
Total Office				0	0	0	0	0	0							
Total Retail				138	143	28	28	110	116							
Subtotal				138	143	28	28	110	116							
TOTAL				281		55		226								
Reduction in Trips Due to Mixed-Use						20%										

ORIGIN (EXITING) TRIPS

	Unconstrained Internal Capture Rate To Residential	To Office	To Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
From Residential	0%	0%	53%	0	0	0
From Office	2%	1%	23%	0	0	0
From Retail	12%	3%	20%	17	4	29

DESTINATION (ENTERING) TRIPS

	Unconstrained Internal Capture Rate From Residentia	From Office	From Retail	Unconstrained Internal Demand To Residential	To Office	To Retail
To Residential	0%	2%	31%	0	0	0
To Office	0%	6%	31%	0	0	0
To Retail	9%	2%	20%	12	3	28

INTERNAL TRIP CAPTURE

	To Residential	To Office	To Retail	
From Residential	0	0	0	
From Office	0	0	0	
From Retail	0	0	28	28

Summary of Milton Route 7 Land Use and Transportation Study "Land Use Projection" Tables (in Appendix II of the August 2007 Report)

Source: P:\WGC_Shared Projects\Milton-05041\BG 002 - Restart Project 2007\Revised Land Use per Town\land use reduction employees RM.xls

see zoning district maps ------>

1/24/2007

	Single Family	MultiFamily
Size/Unit	2,000	750

Land Use Sizes (sf)

DB1 Source: Milton Route 7 Land Use and Transportation Study "Land Use Projection" Tables (in Appendix II of the August 2007 Report)

		Non-Residential Land Use						Residential Land Use (sf)		Residential Land Use (units)			
Zone	Zoning District Name	Retail	Commercial	Office	Industrial	Trav. Serv.	*Total Non-Res*	Single Family	Multi Family	Single Family	Multi Family	*Total Res Units*	*Total*
DB1	Downtown	123,980	123,980	247,961	0	0	*495,921*	0	247,961	0	331	*331*	743,882
M1	MCMP Center	0	5,394	0	0	0	*5,394*	17,787	35,574	9	47	*56*	58,755
M2	MCMP West	0	0	0	0	0	*0*	43,124	0	22	0	*22*	43,124
M3	MCMP Municipal												0
M4	Checkerberry	98,689	119,250	24,672	194,912	0	*437,524*	1,110,257	740,172	555	987	*1,542*	2,287,953
M5	Old Towne	976	1,179	244	0	0	*2,399*	0	24,394	0	33	*33*	26,793
M6	Main Street												0
R3	Low Density Residential	0	0	0	0	0	*0*	623,997	0	312	0	*312*	623,997
I2	General Industrial	0	528,312	0	1,151,356	0	*1,679,668*	0	0	0	0	*0*	1,679,668
C1	Interstate Commercial	0	0	0	0	80,711	*80,711*	0	0	0	0	*0*	80,711
	Total	*223,645*	*778,115*	*272,877*	*1,346,268*	*80,711*	*2,701,617*	*1,795,165*	*1,048,101*	***898***	***1,397***	*2,295*	5,544,883

Milton Shopping Center (sf)

		Non-Residential Land Use						Residential Land Use (sf)		Residential Land Use (units)		
Zone	Zoning District Name	Retail	Commercial	Office	Industrial	Trav. Serv.	*Total Non-Res*	Single Family	MultiFamily	Single Family	MultiFamily	*Total Res Units*
DB1	Downtown	102,949										

Employment

		Non-Residential Land Use					
Zone	Zoning District Name	Retail	Commercial	Office	Industrial	Traveler Services	*Total*
DB1	Downtown	74	120	50	0	0	*244*
M1	MCMP Center	0	18	0	0	0	*18*
M2	MCMP West	0	0	0	0	0	*0*
M3	MCMP Municipal						*0*
M4	Checkerberry	247	397	82	260	0	*986*
M5	Old Towne	2	4	1	0	0	*7*
M6	Main Street						*0*
R3	Low Density Residential	0	0	0	0	0	*0*
I2	General Industrial	0	1,761	0	1,535	0	*3,296*
C1	Interstate Commercial	0	0	0	0	202	*202*
	Total	*324*	*2,300*	*133*	*1,795*	*202*	*4,753*

PM Peak Hour Trip Generation Rates

Source: Institute of Transportation Engineers, *Trip Generation*, 7th Edition

Land Use	River Street TG Rate	River Street Per Unit	River Street Percent Use	RSG TG Rate	RSG Per Unit	RSG Percent Use	Enter %	Exit %	LU Code	# Studies	Avg. Size ksf	Relative # Built	Relative Size ksf	Description
General Retail	25.00	ksf	100%	3.44	ksf	100%	47%	52%	-	-	-			
Building Materials and Lumber Store	-	-	-	*4.49*	ksf	*1%*	*47%*	*53%*	812	6	11	1	11	Building Materials and Lumber Store
Free-Standing Discount Superstore	-	-	-	*3.87*	ksf	*13%*	*49%*	*51%*	813	10	161	1	161	Free-Standing Discount Superstore
Specialty Retail Center	-	-	-	*2.71*	ksf	*5%*	*44%*	*56%*	814	5	69	1	69	Specialty Retail Center
Free-Standing Discount Store	-	-	-	*5.06*	ksf	*9%*	*50%*	*50%*	815	47	115	1	115	Free-Standing Discount Store
Hardware/Paint Store	-	-	-	*4.84*	ksf	*1%*	*47%*	*53%*	816	8	18	1	18	Hardware/Paint Store
Nursery (Garden Center)	-	-	-	*3.80*	ksf	*1%*	*n/a*	*n/a*	817	12	9	1	9	Nursery (Garden Center)
Shopping Center	-	-	-	*3.75*	ksf	*30%*	*48%*	*52%*	820	407	379	1	379	Shopping Center
Factory Outlet Center	-	-	-	*2.29*	ksf	*11%*	*47%*	*53%*	823	14	146	1	146	Factory Outlet Center
New Car Sales	-	-	-	*2.64*	ksf	*2%*	*39%*	*61%*	841	34	32	1	32	New Car Sales
Automobile Parts Sales	-	-	-	*5.98*	ksf	*1%*	*49%*	*51%*	843	5	8	1	8	Automobile Parts Sales
Tire Store	-	-	-	*4.15*	ksf	*0%*	*43%*	*57%*	848	16	6	1	6	Tire Store
Tire Superstore	-	-	-	*2.11*	ksf	*1%*	*47%*	*53%*	849	23	13	1	13	Tire Superstore
Discount Club	-	-	-	*4.24*	ksf	*9%*	*50%*	*50%*	861	25	114	1	114	Discount Club
Home Improvement Superstore	-	-	-	*2.45*	ksf	*10%*	*47%*	*53%*	862	11	123	1	123	Home Improvement Superstore
Apparel Store	-	-	-	*3.83*	ksf	*0%*	*50%*	*50%*	870	7	5	1	5	Apparel Store
Furniture Store	-	-	-	*0.46*	ksf	*5%*	*45%*	*55%*	890	16	67	1	67	Furniture Store
Video Rental Store	-	-	-	*13.60*	ksf	*0%*	*46%*	*54%*	896	6	5	1	5	Video Rental Store
High-Generator Retail	25.00	ksf	100%	11.40	ksf	100%	50%	50%	-	-	-			
Supermarket	-	-	-	*10.45*	ksf	*37%*	*51%*	*49%*	850	42	56	2	112	Supermarket
Discount Supermarket	-	-	-	*8.90*	ksf	*49%*	*50%*	*50%*	854	15	74	2	148	Discount Supermarket
Convenience Market (Open 24 Hours)	-	-	-	*52.41*	ksf	*1%*	*51%*	*49%*	851	33	3	1	3	Convenience Market (Open 24 Hours)
Convenience Market (Open 15-16 Hours)	-	-	-	*34.57*	ksf	*1%*	*49%*	*51%*	852	5	3	1	3	Convenience Market (Open 15-16 Hours)
Convenience Market with Gasoline Pumps	-	-	-	*60.61*	ksf	*1%*	*50%*	*50%*	853	53	3	1	3	Convenience Market with Gasoline Pumps
Pharmacy/Drugstore Without Drive-Through Window	-	-	-	*8.42*	ksf	*3%*	*50%*	*50%*	880	9	10	1	10	Pharmacy/Drugstore Without Drive-Through Window
Pharmacy/Drugstore with Drive-Through Window	-	-	-	*8.62*	ksf	*5%*	*49%*	*51%*	881	12	14	1	14	Pharmacy/Drugstore with Drive-Through Window
Drive-In Bank	-	-	-	*45.74*	ksf	*2%*	*50%*	*50%*	912	47	3	2	6	Drive-In Bank
Commercial	11.50	ksf	100%	2.15	ksf	100%	51%	49%	-	-				
Hotel	-	-	-	*0.59*	ksf	*41%*	*53%*	*47%*	310	25	224	2	448	Hotel
Motel	-	-	-	*0.47*	ksf	*30%*	*54%*	*46%*	320	25	166	2	332	Motel
Multipurpose Recreational Facility	-	-	-	*3.35*	ksf	*2%*	*62%*	*38%*	435	2	21	1	21	Multipurpose Recreational Facility
Multiplex Movie Theater	-	-	-	*5.22*	ksf	*6%*	*64%*	*36%*	445	7	65	1	65	Multiplex Movie Theater
Health/Fitness Club	-	-	-	*4.05*	ksf	*3%*	*51%*	*49%*	492	3	36	1	36	Health/Fitness Club
Athletic Club	-	-	-	*5.76*	ksf	*3%*	*63%*	*37%*	493	2	32	1	32	Athletic Club
Recreational Community Center	-	-	-	*1.64*	ksf	*6%*	*29%*	*71%*	495	3	65	1	65	Recreational Community Center
Quality Restaurant	-	-	-	*7.49*	ksf	*2%*	*67%*	*33%*	931	24	9	3	27	Quality Restaurant
High-Turnover (Sit-Down) Restaurant	-	-	-	*10.92*	ksf	*2%*	*61%*	*39%*	932	38	6	4	24	High-Turnover (Sit-Down) Restaurant
Fast-Food Restaurant without Drive-Through Window	-	-	-	*26.15*	ksf	*1%*	*51%*	*49%*	933	4	4	2	8	Fast-Food Restaurant without Drive-Through Window
Fast-Food Restaurant with Drive-Through Window	-	-	-	*34.64*	ksf	*1%*	*52%*	*48%*	934	110	3	2	6	Fast-Food Restaurant with Drive-Through Window
Drinking Place	-	-	-	*11.34*	ksf	*1%*	*66%*	*34%*	936	12	4	3	12	Drinking Place
Quick Lubrication Vehicle Shop	-	-	-	*5.19*	ksf	*0%*	*55%*	*45%*	941	8	3	1	3	Quick Lubrication Vehicle Shop
Automobile Care Center	-	-	-	*3.38*	ksf	*1%*	*50%*	*50%*	942	5	12	1	12	Automobile Care Center
Office	1.50	ksf	100%	1.75	ksf	100%	17%	83%						General Office Building
General Office Building	-	-	-	*1.49*	ksf	*53%*	*17%*	*83%*	710	235	216	1	216	General Office Building
Single Tenant Office Building	-	-	-	*1.73*	ksf	*40%*	*15%*	*85%*	715	42	164	1	164	Single Tenant Office Building
Medical-Dental Office Building	-	-	-	*3.72*	ksf	*7%*	*27%*	*73%*	720	41	30	1	30	Medical-Dental Office Building
Residential	-	-	-	-	-	-								
Residential Single Family	1.00	units	44%	1.01	units	-	63%	37%	210					Single-Family Detached Housing
Residential Multi Family	0.62	units	56%	0.62	units	-	65%	35%	230					Residential Condominium/Townhouse
Industrial	-	-	-	-	-	100%								
Manufacturing/Heavy Industrial	0.74	ksf	*44%*	*0.74*	ksf	*44%*	*36%*	*64%*	140					Manufacturing
Light Industrial	0.98	ksf	*56%*	*0.98*	ksf	*56%*	*12%*	*88%*	110					General Light Industrial
Traveler Services	0.71	ksf	100%	3.50	ksf	100%	37%	32%						
General Retail	-	-	-	*3.44*	ksf	*32%*	*47%*	*52%*	-	-	190	2	380	General Retail
Hotel	-	-	-	*0.59*	ksf	*37%*	*53%*	*47%*	310	25	224	2	448	Hotel
Motel	-	-	-	*0.47*	ksf	*28%*	*54%*	*46%*	320	25	166	2	332	Motel
Gasoline/Service Station with Convenience Market	-	-	-	*96.37*	ksf	*1%*	*50%*	*50%*	945	31	1	15	15	Gasoline/Service Station with Convenience Market
Fast-Food Restaurant with Drive-Through Window	-	-	-	*34.64*	ksf	*2%*	*52%*	*48%*	934	110	3	10	30	Fast-Food Restaurant with Drive-Through Window

PM Peak Hour Trip Generation

Zone	Zoning District Name	Non-Residential Land Use: Retail	Commercial	Office	Industrial	Trav. Serv.	*Total Non-Res*	Residential Land Use: Single Family	Multi Family	*Total Res Units*	Total
DB1	Downtown	72	266	434	0	0	*772*	0	205	*205*	977
M1	MCMP Center	0	12	0	0	0	*12*	9	29	*38*	50
M2	MCMP West	0	0	0	0	0	*0*	22	0	*22*	22
M3	MCMP Municipal	0	0	0	0	0	*0*	0	0	*0*	0
M4	Checkerberry	536	256	43	191	0	*1,026*	561	612	*1,173*	2,198
M5	Old Towne	3	3	0	0	0	*6*	0	20	*20*	26
M6	Main Street	0	0	0	0	0	*0*	0	0	*0*	0
R3	Low Density Residential	0	0	0	0	0	*0*	315	0	*315*	315
I2	General Industrial	0	1,133	0	990	0	*2,123*	0	0	*0*	2,123
C1	Interstate Commercial	0	0	0	0	*282*	*282*	0	0	*0*	282
	Total	*612*	*1,669*	*477*	*1,181*	*282*	*4,221*	*907*	*866*	*1,773*	5,994

25%	% High Generator Retail in Checkerberry
0%	% Manufacturing/Heavy Industrial in Checkerberry
50%	% Manufacturing/Heavy Industrial in General Industrial District

Data from VTrans (http://www.aot.state.vt.us/Planning/Documents/TrafResearch/Publications/2005StationHistoryByTown.pdf)

Site Id	Town	Route	Alt Route	Street Name	Location	mm	fc	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	Adjustment
S6D197	Milton	AU5808		Main St	Main St just E of Maplewood Ave	0.3	17		3200				3300				2900				2600		1.62%
S6D199	Milton	AU5812		Railroad St	Railroad St 0.1 mi N of Barnum	0.8	17		3600				2900				2200				2400		3.05%
S6D522	Milton	US7	US7		US7 Betw Landfill Rd/Willy's Ln	3.5	16			####	####		####		9800		####		####		9400		2.45%
S6D200	Milton	US7	US7	River St	US7 0.1 miSof LamoilleTerr.-TH91	4.3	16	####		####	####		####		9300		9800		9500				1.67%

ATR: S6D197

Table 1

Year	AADT
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
1993	2600
1997	2900
2001	3300
2005	3200

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.898146239
R Square	0.806666667
Adjusted R Sq	0.71
Standard Erro	170.2938637
Observations	4

ANOVA

	df	*SS*	*MS*	*F*	*ıificance F*
Regression	1	####	####	8.34	0.1
Residual	2	####	####		
Total	3	####			

	Coefficients	*ıdard E*	*t Stat*	*ᵖ-valuewer 95per 95ver 95.ɔer 95.0%*			
Intercept	-106945	####	-2.81	0.11	####	####	####	####
X Variable 1	55	19	2.89	0.1	-26.9	137	-26.9	137

Table 2

Projected

Year	AADT
2006	3385
2007	3440

Annual Growth 1.62%

ATR: S6D199

Table 1

Year	AADT
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
1993	2400
1997	2200
2001	2900
2005	3600

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.889866819
R Square	0.791862955
Adjusted R Sq	0.687794433
Standard Erro	348.5685012
Observations	4

ANOVA

	df	*SS*	*MS*	*F*	*ıificance F*
Regression	1	####	####	7.61	0.11
Residual	2	####	####		
Total	3	####			

	Coefficients	*ıdard E*	*t Stat*	*ᵖ-valuewer 95per 95ver 95.ɔer 95.0%*			
Intercept	-212117.5	####	-2.72	0.11	####	####	####	####
X Variable 1	107.5	39	2.76	0.11	-60.2	275	-60.2	275

Table 2

Projected

Year	AADT
2006	3528
2007	3635

Annual Growth 3.05%

ATR: S6D522

Table 1

Year	AADT
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
1993	9400
1994	10200
1996	11600
1998	9800
2000	12500
2002	13000
2004	13400

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.876175493
R Square	0.767683495
Adjusted R Sq	0.721220194
Standard Erro	857.0404971
Observations	7

ANOVA

	df	*SS*	*MS*	*F*	*ıificance F*
Regression	1	####	####	16.5	0.01
Residual	5	####	####		
Total	6	####			

	Coefficients	*ıdard E*	*t Stat*	*ᵖ-valuewer 95per 95ver 95.ɔer 95.0%*			
Intercept	-681709.2068	####	-4	0.01	####	####	####	####
X Variable 1	346.8838527	85.3	4.06	0.01	128	566	128	566

Table 2

Projected

Year	AADT
2006	14140
2007	14487

Annual Growth 2.45%

ATR: S6D200

Table 1

Year	AADT
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
#NUM!	#NUM!
1994	9500
1996	9800
1998	9300
2000	11200
2002	11400
2004	11400
2006	11400

dxdxz

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.862115563
R Square	0.743243243
Adjusted R Sq	0.691891892
Standard Erro	546.4169
Observations	7

ANOVA

	df	*SS*	*MS*	*F*	*ıificance F*
Regression	1	####	####	14.5	0.01
Residual	5	####	####		
Total	6	####			

	Coefficients	*ıdard E*	*t Stat*	*ᵖ-valuewer 95per 95ver 95.ɔer 95.0%*			
Intercept	-382285.7143	####	-3.7	0.01	####	####	####	####
X Variable 1	196.4285714	51.6	3.8	0.01	63.7	329	63.7	329

Table 2

Projected

Year	AADT
2006	11750
2007	11946

Annual Growth 1.67%

02/22/08 12:19 PM

PM Raw Count Data

Study Intersection

		EB	WB	NB	SB	
US 7/Hannaford	LT	201	0	220	0	
Milton, VT	TH	0	0	564	372	
06/10/04	RT	190	0	0	120	1667
2nd Thursday	Enter	391	0	784	492	1667
	Exit	0	340	765	562	1667
	% Trucks	1.0%	0.0%	0.8%	3.0%	
	Peds	0	0	0	0	PHF
	Peak Hour	4:45 PM - 5:45 PM Peak				0.96

		EB	WB	NB	SB	
US 7/Railroad St	LT	0	92	0	170	
Milton, VT	TH	0	0	635	381	
10/11/06	RT	0	208	195	0	1681
2nd Wednesday	Enter	0	300	830	551	1681
	Exit	365	0	843	473	1681
	% Trucks	0.0%	0.3%	1.3%	1.3%	
	Peds	0	1	0	0	PHF
	Peak Hour	4:45 PM - 5:45 PM Peak				0.96

		EB	WB	NB	SB	
US 7/Centre Dr	LT	0	47	0	42	
Milton, VT	TH	0	0	685	381	
10/24/06	RT	0	98	51	0	1304
4th Tuesday	Enter	0	145	736	423	1304
RSG Count	Exit	93	0	783	428	1304
	% Trucks	0.0%	0.7%	0.8%	1.2%	
	Peds	0	0	0	1	PHF
	Peak Hour	4:30 PM - 5:30 PM Peak				0.95

		EB	WB	NB	SB	
US 7/Haydenberry Dr	LT	61	1	64	1	
Milton, VT	TH	0	0	692	402	
06/09/05	RT	37	8	0	54	1320
2nd Thursday	Enter	98	9	756	457	1320
RSG Count	Exit	1	118	761	440	1320
	% Trucks	1.0%	0.0%	1.1%	1.1%	
	Peds	2	1	0	0	PHF
	Peak Hour	4:30 PM - 5:30 PM Peak				0.96

		EB	WB	NB	SB	
Middle Rd/Railroad St	LT	41	6	1	54	
Milton, VT	TH	112	175	186	98	
10/11/06	RT	0	45	14	31	763
2nd Wednesday	Enter	153	226	201	183	763
	Exit	180	207	272	104	763
	% Trucks	0.0%	0.0%	0.5%	0.5%	
	Peds	1	0	0	4	PHF
	Peak Hour	4:30 PM - 5:30 PM Peak				0.91

		EB	WB	NB	SB	
Railroad St/Hourglass North	LT					
	TH			272	183	
	RT					455
	Enter	0	0	272	183	455
	Exit	0	0	272	183	455

DHV & Annual Adjustments to 2012

ATR/CTC	Location	DHV Adj.	Annual Adj.
S6D197	Milton: Main St just E of Maplewood Ave	1.17	1.62%
S6D200	Milton: US7 0.1 miSof LamoilleTerr.-TH91	0.94	1.67%
S6D522	Milton: US7 Betw Landfill Rd/Willy's Ln	1.11	2.45%
S6D199	Milton: Railroad St 0.1 mi N of Barnum	1.09	3.05%

Italics = Adjusted Volumes

	EB/WB	NB/SB
ATR/CTC	S6D200	S6D200
TM Count Year	2004	2004
DHV Adj.	0.94	0.94
Annual Adj.	1.14	1.14
Total Adj.	1.08	1.08

	EB	WB	NB	SB	
LT	*217*	*0*	*237*	*0*	
TH	*0*	*0*	*608*	*401*	
RT	*205*	*0*	*0*	*129*	1797
Enter	421	0	845	530	1797
Exit	0	366	825	606	1797

	EB	WB	NB	SB	
LT		0	25		
TH			63	-21	
RT	-11		0		57
Enter	-11	0	88	-21	57
Exit	0	25	63	-31	57

	EB	WB	NB	SB	
LT	217	0	262	0	
TH	0	0	671	380	
RT	194	0	0	129	1854
Enter	411	0	933	510	1854
Exit	0	391	888	575	1854

	EB/WB	NB/SB
ATR/CTC	S6D199	S6D200
TM Count Year	2006	2006
DHV Adj.	1.09	0.94
Annual Adj.	1.20	1.10
Total Adj.	1.30	1.04

	EB	WB	NB	SB	
LT	*0*	*120*	*0*	*177*	
TH	*0*	*0*	*662*	*397*	
RT	*0*	*271*	*203*	*0*	1831
Enter	0	391	865	575	1831
Exit	381	0	933	517	1831

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

	EB	WB	NB	SB	
LT	0	120	0	177	
TH	0	0	662	397	
RT	0	271	203	0	1831
Enter	0	391	865	575	1831
Exit	381	0	933	517	1831

	EB/WB	NB/SB
ATR/CTC	S6D522	S6D522
TM Count Year	2006	2006
DHV Adj.	1.11	1.11
Annual Adj.	1.16	1.16
Total Adj.	1.28	1.28

	EB	WB	NB	SB	
LT	*0*	*60*	*0*	*54*	
TH	*0*	*0*	*877*	*488*	
RT	*0*	*126*	*65*	*0*	1670
Enter	0	186	943	542	1670
Exit	119	0	1003	548	1670

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

	EB	WB	NB	SB	
LT	0	60	0	54	
TH	0	0	877	488	
RT	0	126	65	0	1670
Enter	0	186	943	542	1670
Exit	119	0	1003	548	1670

	EB/WB	NB/SB
ATR/CTC	S6D522	S6D522
TM Count Year	2005	2005
DHV Adj.	1.11	1.11
Annual Adj.	1.18	1.18
Total Adj.	1.31	1.31

	EB	WB	NB	SB	
LT	*80*	*1*	*84*	*1*	
TH	*0*	*0*	*908*	*528*	
RT	*49*	*10*	*0*	*71*	1732
Enter	129	12	992	600	1732
Exit	1	155	999	577	1732

	EB	WB	NB	SB	
LT	-4			0	
TH			-51	-45	
RT		-1		-6	-107
Enter	-4	-1	-51	-52	-107
Exit	0	-6	-56	-45	-107

	EB	WB	NB	SB	
LT	76	1	84	1	
TH	0	0	857	482	
RT	49	10	0	65	1625
Enter	124	11	941	548	1625
Exit	1	149	943	532	1625

	EB/WB	NB/SB
ATR/CTC	S6D199	S6D199
TM Count Year	2006	2006
DHV Adj.	1.09	1.09
Annual Adj.	1.20	1.20
Total Adj.	1.30	1.30

	EB	WB	NB	SB	
LT	*53*	*8*	*1*	*70*	
TH	*146*	*228*	*242*	*128*	
RT	*0*	*59*	*18*	*40*	994
Enter	199	294	262	238	994
Exit	234	270	354	135	994

	EB	WB	NB	SB	
LT		-3		27	
TH	56	-85			
RT		-22	7		-20
Enter	56	-110	7	27	-20
Exit	90	-85	-22	-3	-20

	EB	WB	NB	SB	
LT	53	5	1	97	
TH	202	143	242	128	
RT	0	37	25	40	974
Enter	255	185	269	265	974
Exit	324	185	332	133	974

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

02/22/08 12:19 PM

Study Intersection

ODVs-Existing Trips
Milton Shopping Center

Source: L&D Pomerleau Study, 11/21/07

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	204		223		
TH					
RT	193			122	742
Enter	397	0	223	122	742
Exit	0	345	204	193	742

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT		0		60	
TH			168	133	
RT		55	0		416
Enter	0	55	168	193	416
Exit	60	0	223	133	416

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT		0		13	
TH			147	120	
RT		21	0		301
Enter	0	21	147	133	301
Exit	13	0	168	120	301

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	7	0	0	0	
TH	0	0	140	108	
RT	0	0	0	12	267
Enter	7	0	140	120	267
Exit	0	12	147	108	267

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	0	0	0	16	
TH	0	0	47	44	
RT	0	8	0	0	115
Enter	0	8	47	60	115
Exit	16	0	55	44	115

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Change in Background b/c New Geo & No EBL Hydnbry
2012

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	38				
TH					
RT					38
Enter	38	0	0	0	38
Exit	0	0	38	0	38

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	27			-40	
TH			53	40	
RT			-53		27
Enter	27	0	0	0	27
Exit	-94	0	81	40	27

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	4				
TH					
RT					4
Enter	4	0	0	0	4
Exit	0	0	4	0	4

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	-69				
TH					
RT					-69
Enter	-69	0	0	0	-69
Exit	0	0	-69	0	-69

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	229	-5	195	-81	
TH	-202	-143	-170	-79	
RT	84	-29	-25	131	-94
Enter	111	-177	0	-29	-94
Exit	-308	184	31	0	-94

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

ODVs-Primary Trips w/ South Hourglass Only
Milton Shopping Center

Source: L&D Pomerleau Study, 9/27/07

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	147		23		
TH			128	117	
RT	47			88	550
Enter	194	0	151	205	550
Exit	0	111	275	164	550

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	117		47		
TH	70	76	35	70	
RT	23			93	531
Enter	210	76	82	163	531
Exit	70	216	152	93	531

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	12		88		
TH	35	47	70	70	
RT	47			23	392
Enter	94	47	158	93	392
Exit	35	158	82	117	392

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0		88		
TH			158	117	
RT	70				433
Enter	70	0	246	117	433
Exit	0	88	158	187	433

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	23		64		
TH					
RT	47			12	146
Enter	70	0	64	12	146
Exit	0	76	23	47	146

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

ODVs-Passby Trips w/ South Hourglass Only
Milton Shopping Center

Source: L&D Pomerleau Study, 9/27/07

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	44		11		
TH			-44	-17	
RT	6			17	17
Enter	50	0	-33	0	17
Exit	0	28	0	-11	17

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	22		22		
TH	0	0	-55	-28	
RT	6			17	-16
Enter	28	0	-33	-11	-16
Exit	0	39	-33	-22	-16

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	6		22		
TH	0	0	-39	-28	
RT	11			6	-22
Enter	17	0	-17	-22	-22
Exit	0	28	-33	-17	-22

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0		17		
TH			-17	-17	
RT	17			0	0
Enter	17	0	0	-17	0
Exit	0	17	-17	0	0

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	0		0		
TH					
RT	0			0	0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

No Build
2012

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	241	0	73	0	
TH	0	0	755	480	
RT	54	0	0	112	1716
Enter	296	0	828	593	1716
Exit	0	185	996	535	1716

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	166	120	69	77	
TH	70	76	528	347	
RT	29	216	150	110	1957
Enter	265	412	746	534	1957
Exit	297	255	910	495	1957

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	22	60	110	41	
TH	35	47	761	410	
RT	58	105	65	29	1743
Enter	115	212	937	480	1743
Exit	141	186	887	528	1743

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0	1	189	1	
TH	0	0	858	474	
RT	136	10	0	53	1722
Enter	136	11	1047	528	1722
Exit	1	242	868	611	1722

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	306	0	261	0	
TH	0	0	25	5	
RT	131	0	0	184	911
Enter	436	0	286	189	911
Exit	0	444	331	136	911

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH			331	189	
RT					520
Enter	0	0	331	189	520
Exit	0	0	331	189	520

Trip Generation-Downtown (DB1)

	Enter	Exit	
PM	287	523	809

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	97		16		
TH			143	54	
RT	22			25	356
Enter	118	0	159	79	356
Exit	0	42	239	76	356

From/To	NB	SB			
Enter	73	112	& Enter	16	25
Exit	241	54	G Exit	97	22

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	67		15		
TH			92	51	
RT	12			25	262
Enter	78	0	108	76	262
Exit	0	40	159	63	262

From/To	NB	SB			
Enter	69	110	& Enter	15	25
Exit	166	29	G Exit	67	12

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	9	24	25	9	
TH			57	47	
RT	23	42	15	7	257
Enter	32	66	97	63	257
Exit	24	31	108	94	257

From/To	NB	SB			
Enter	175	70	& Enter	39	16
Exit	126	118	G Exit	51	47

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0	1		0	
TH			93	82	
RT	54	4		12	246
Enter	54	4	93	94	246
Exit	0	12	97	137	246

From/To	NB	SB			
Enter	189	54	& Enter	42	12
Exit	10	137	G Exit	4	55

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			84	46	
RT					130
Enter	0	0	84	46	130
Exit	0	0	84	46	130

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH			84	46	
RT					130
Enter	0	0	84	46	130
Exit	0	0	84	46	130

02/22/08 12:19 PM

Study Intersection

Trip Generation-MCMP Center (M1)

PM — Enter 28, Exit 17 | 45

	EB	WB	NB	SB	
LT	4			0	
TH			11	4	
RT		0		1	20
Enter	4	0	11	5	20
Exit	0	1	15	4	20

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	2			1	
TH			7	3	
RT		3		1	15
Enter	2	3	7	4	15
Exit	1	1	11	3	15

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	0			0	
TH			6	2	
RT		1		0	9
Enter	0	1	6	3	9
Exit	0	0	7	2	9

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	0			0	
TH			6	2	
RT		0		0	8
Enter	0	0	6	2	8
Exit	0	0	6	2	8

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	1				
TH			2	2	
RT	1				5
Enter	2	0	2	2	5
Exit	0	0	3	2	5

From/To	NB	SB		NB	SB
Enter	331	136	Enter	2	1
Exit	331	136	G Exit	1	1

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT			3	2	
TH					
RT					5
Enter	0	0	3	2	5
Exit	0	0	3	2	5

Railroad St/Hourglass North

Trip Generation-MCMP West (M2)

PM — Enter 14, Exit 8 | 22

	EB	WB	NB	SB	
LT					
TH			2	4	
RT					5
Enter	0	0	2	4	5
Exit	0	0	2	4	5

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT					
TH			2	4	
RT					5
Enter	0	0	2	4	5
Exit	0	0	2	4	5

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			2	4	
RT					5
Enter	0	0	2	4	5
Exit	0	0	2	4	5

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	0		9		
TH			2	1	
RT	6			2	20
Enter	6	0	10	4	20
Exit	0	11	2	7	20

From/To	NB	SB		NB	SB
Enter	189	53	Enter	9	2
Exit	0	136	G Exit	0	6

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0		0		
TH	0	0			
RT	0			0	0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			0	0	
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Railroad St/Hourglass North

Trip Generation-Checkerberry (M4)

Note: Unbalanced b/c balance to 2 areas

PM — Enter 996, Exit 857

	Enter	Exit
Internal	#####	#####
North of Milton	4.0%	#####
South of Milton	#####	#####

Enter	Exit
198	362
40	260
758	235

	EB	WB	NB	SB	
LT		0	9		
TH			95	13	
RT	1		0		119
Enter	1	0	104	13	119
Exit	0	9	95	14	119

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT		5	14		
TH			104	14	
RT	1		30		168
Enter	1	5	148	14	168
Exit	30	14	104	21	168

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT		3	21		
TH			148	21	
RT	3		13		208
Enter	3	3	182	21	208
Exit	13	21	148	26	208

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT		0	40		
TH			182	26	
RT	8		0		256
Enter	8	0	222	26	256
Exit	0	40	182	34	256

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT		0	35		
TH			3	0	
RT	5		0		44
Enter	5	0	38	0	44
Exit	0	35	3	6	44

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			3	0	
RT					4
Enter	0	0	3	0	4
Exit	0	0	3	0	4

Railroad St/Hourglass North

Trip Generation-Old Towne (M5)

Note: Unbalanced b/c lose trips b/w ints

PM — Enter 15, Exit 9 | 24

	EB	WB	NB	SB	
LT	1			0	
TH			3	2	
RT		0		1	7
Enter	1	0	3	3	7
Exit	0	1	4	2	7

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	1			0	
TH			2	2	
RT		1		1	5
Enter	1	1	2	2	5
Exit	0	1	3	2	5

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	0			0	
TH			1	1	
RT		0		0	3
Enter	0	0	1	1	3
Exit	0	0	2	1	3

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	0			0	
TH			1	1	
RT		0		0	3
Enter	0	0	1	1	3
Exit	0	0	1	1	3

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0			0	
TH			1	1	
RT		0		0	3
Enter	0	0	1	1	3
Exit	0	0	1	1	3

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			0	0	
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Railroad St/Hourglass North

Trip Generation-Low Density Residential (R3)

PM — Enter 202, Exit 113

	Enter	Exit
Internal	#####	#####
North of Milton	4.0%	#####
South of Milton	#####	#####

Enter	Exit
40	48
8	34
154	31

	EB	WB	NB	SB	
LT		0	1		
TH			13	3	
RT	0		0		17
Enter	0	0	14	3	17
Exit	0	1	13	3	17

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT		1	2		
TH			14	3	
RT	0		4		24
Enter	0	1	20	3	24
Exit	4	2	14	4	24

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT		1	3		
TH			20	4	
RT	1		2		29
Enter	1	1	24	4	29
Exit	2	3	20	5	29

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT		0	5		
TH			24	5	
RT	2		0		36
Enter	2	0	29	5	36
Exit	0	5	24	7	36

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT		0	5		
TH			24	5	
RT	2		0		36
Enter	2	0	29	5	36
Exit	0	5	24	7	36

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT					
TH			0	0	
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Railroad St/Hourglass North

Trip Generation-General Industrial (I2)

Note: didn't distribute trips to Catamount Driveways

PM — Enter 680, Exit 1218

	Enter	Exit
Internal	#####	#####
North of Milton	4.0%	#####
South of Milton	#####	#####

Enter	Exit
135	515
27	369
518	334

	EB	WB	NB	SB	
LT		0	13		
TH			135	9	
RT	1		0		158
Enter	1	0	148	9	158
Exit	0	13	135	10	158

US 7/Hannaford
Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT		3	19		
TH			148	10	
RT	1		42		224
Enter	1	3	210	10	224
Exit	42	19	148	14	224

US 7/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT		2	30		
TH			210	14	
RT	2		18		276
Enter	2	2	258	14	276
Exit	18	30	210	18	276

US 7/Centre Dr
Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT		0	57		
TH			258	18	
RT	5		0		338
Enter	5	0	315	18	338
Exit	0	57	258	23	338

US 7/Haydenberry Dr
Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT		0	57		
TH			258	18	
RT	5		0		338
Enter	5	0	315	18	338
Exit	0	57	258	23	338

Middle Rd/Railroad St
Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT		0	49		
TH			5	0	
RT	4		0		58
Enter	4	0	54	0	58
Exit	0	49	5	4	58

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT					
TH			5	0	
RT					5
Enter	0	0	5	0	5
Exit	0	0	5	0	5

02/22/08 12:19 PM

Study Intersection

Trip Gen-Interstate Commercial (C1)

	Enter	Exit	Enter	Exit
PM	110	116		
Internal	#####	#####	22	49
North of Milton	4.0%	#####	4	35
South of Milton	#####	#####	84	32

All Internal Trips

Note: Unbalanced b/c lose trips b/w ints

	Enter	Exit	
PM	395	974	1369

Total Trip Generation

Total Trip Generation by 2012

28% % Growth Assumed by 2012

Trip Gen Balancing - Hourglass South

2012

Total Trip Gen - Balanced Hourglass South

2012

US 7/Hannaford Milton, VT 06/10/04 2nd Thursday

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT		0	1		
TH			13	1	
RT	0		0		16
Enter	0	0	14	1	16
Exit	0	1	13	2	16

All Internal Trips

	EB	WB	NB	SB	
LT	13	0	4	0	
TH	0	0	41	26	
RT	3	0	0	6	93
Enter	16	0	45	32	93
Exit	0	10	54	29	93

NB Vol 1716 | Enter 27 | Exit 66
% of Total 7%

Total Trip Generation

	EB	WB	NB	SB	
LT	114	0	45	0	
TH	0	0	455	116	
RT	28	0	0	33	790
Enter	142	0	500	148	790
Exit	0	78	569	143	790

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	32	0	12	0	
TH	0	0	126	32	
RT	8	0	0	9	219
Enter	39	0	139	41	219
Exit	0	22	158	40	219

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT		0	1		
TH			9	-1	
RT	0		0		9
Enter	0	0	10	-1	9
Exit	0	1	9	-1	9

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	32	0	13	0	
TH	0	0	135	31	
RT	7	0	0	9	228
Enter	39	0	149	40	228
Exit	0	22	167	39	228

US 7/Railroad St Milton, VT 10/11/06 2nd Wednesday

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT		1	2		
TH			14	2	
RT	0		4		22
Enter	0	1	20	2	22
Exit	4	2	14	2	22

All Internal Trips

	EB	WB	NB	SB	
LT	9	6	4	4	
TH	4	4	28	19	
RT	2	12	8	6	106
Enter	14	22	40	29	106
Exit	16	14	49	27	106

NB Vol 1957 | Enter 30 | Exit 75
% of Total 8%

Total Trip Generation

	EB	WB	NB	SB	
LT	78	16	56	5	
TH	4	4	411	106	
RT	16	15	88	32	831
Enter	98	35	555	143	831
Exit	97	92	504	138	831

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	22	5	16	1	
TH	1	1	114	29	
RT	4	4	24	9	231
Enter	27	10	154	40	231
Exit	27	26	140	38	231

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT		11		-1	
TH	-1	3			
RT		10	-15		6
Enter	-1	23	-15	-1	6
Exit	-17	3	10	11	6

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	22	15	16	1	
TH	0	4	114	29	
RT	4	14	9	9	237
Enter	26	33	139	39	237
Exit	10	28	150	49	237

US 7/Centre Dr Milton, VT 10/24/06 4th Tuesday RSG Count

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT		0	3		
TH			20	2	
RT	0		2		27
Enter	0	0	25	2	27
Exit	2	3	20	3	27

All Internal Trips

	EB	WB	NB	SB	
LT	1	3	6	2	
TH	2	3	41	22	
RT	3	6	4	2	94
Enter	6	11	51	26	94
Exit	8	10	48	29	94

NB Vol 1743 | Enter 27 | Exit 67
% of Total 7%

Total Trip Generation

	EB	WB	NB	SB	
LT	10	33	88	12	
TH	2	3	504	117	
RT	32	48	52	8	910
Enter	44	84	644	137	910
Exit	66	99	563	183	910

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	3	9	24	3	
TH	1	1	140	33	
RT	9	13	15	2	253
Enter	12	23	179	38	253
Exit	18	27	156	51	253

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT	0			1	
TH			-14	9	
RT		-1		1	-5
Enter	0	-1	-14	11	-5
Exit	1	1	-15	9	-5

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	3	9	24	4	
TH	1	1	126	42	
RT	9	12	15	3	248
Enter	12	22	165	49	248
Exit	19	28	141	60	248

US 7/Haydenberry Dr Milton, VT 06/09/05 2nd Thursday RSG Count

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT		0	5		
TH			25	3	
RT	1		0		34
Enter	1	0	30	3	34
Exit	0	5	25	4	34

All Internal Trips

	EB	WB	NB	SB	
LT	0	0	10	0	
TH	0	0	46	26	
RT	7	1	0	3	93
Enter	7	1	57	29	93
Exit	0	13	47	33	93

NB Vol 1722 | Enter 27 | Exit 66
% of Total 7%

Total Trip Generation

	EB	WB	NB	SB	
LT	0	1	126	0	
TH	0	0	636	165	
RT	83	5	0	17	1033
Enter	83	5	762	183	1033
Exit	0	144	641	248	1033

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	0	0	35	0	
TH	0	0	177	46	
RT	23	1	0	5	287
Enter	23	1	212	51	287
Exit	0	40	178	69	287

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT	0			0	
TH			-13	8	
RT		0		1	-5
Enter	0	0	-13	9	-5
Exit	0	1	-14	8	-5

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	0	0	35	0	
TH	0	0	163	54	
RT	23	1	0	6	282
Enter	23	1	198	60	282
Exit	0	41	164	77	282

Middle Rd/Railroad St Milton, VT 10/11/06 2nd Wednesday

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT		0	5		
TH			0	0	
RT	1		0		6
Enter	1	0	5	0	6
Exit	0	5	0	1	6

All Internal Trips

	EB	WB	NB	SB	
LT	17	0	14	0	
TH	0	0	1	0	
RT	7	0	0	10	49
Enter	24	0	15	10	49
Exit	0	24	18	7	49

NB Vol 911 | Enter 14 | Exit 35
% of Total 4%

Total Trip Generation

	EB	WB	NB	SB	
LT	18	0	108	0	
TH	0	0	96	48	
RT	19	0	0	10	299
Enter	37	0	204	58	299
Exit	0	118	114	67	299

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	5	0	30	0	
TH	0	0	27	13	
RT	5	0	0	3	83
Enter	10	0	57	16	83
Exit	0	33	32	19	83

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	5	0	30	0	
TH	0	0	27	13	
RT	5	0	0	3	83
Enter	10	0	57	16	83
Exit	0	33	32	19	83

Railroad St/Hourglass North

Trip Gen-Interstate Commercial (C1)

	EB	WB	NB	SB	
LT					
TH			0	0	
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

All Internal Trips

	EB	WB	NB	SB	
LT					
TH			18	10	
RT					28
Enter	0	0	18	10	28
Exit	0	0	18	10	28

Total Trip Generation

	EB	WB	NB	SB	
LT	0	0	0	0	
TH	0	0	114	58	
RT	0	0	0	0	173
Enter	0	0	114	58	173
Exit	0	0	114	58	173

Total Trip Generation by 2012

	EB	WB	NB	SB	
LT	0	0	0	0	
TH	0	0	32	16	
RT	0	0	0	0	48
Enter	0	0	32	16	48
Exit	0	0	32	16	48

Trip Gen Balancing - Hourglass South 2012

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

Total Trip Gen - Balanced Hourglass South 2012

	EB	WB	NB	SB	
LT	0	0	0	0	
TH	0	0	32	16	
RT	0	0	0	0	48
Enter	0	0	32	16	48
Exit	0	0	32	16	48

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Study Intersection

Build 2012

Adjusted Raw Counts 2025

Italics = Adjusted Volumes

Background growth, 2012 to 2025

US 7	1.04
Sidestreets	1.06

Balancing 2025

Balanced Adjusted Raw Counts 2025

Change in Background b/c New Geo & No EBL Hydnbry 2025

ODVs-Primary Trips w/ Full Hourglass

Milton Shopping Center

Source: L&D Pomerleau Study, 11/21/07

US 7/Hannaford

Milton, VT
06/10/04
2nd Thursday

	EB	WB	NB	SB	
LT	273	0	86	0	
TH	0	0	890	512	
RT	62	0	0	121	1945
Enter	335	0	977	633	1945
Exit	0	208	1163	573	1945

	EB	WB	NB	SB	
LT	*230*	*0*	*251*	*0*	
TH	*0*	*0*	*632*	*417*	
RT	*217*	*0*	*0*	*137*	1885
Enter	447	0	884	554	1885
Exit	0	388	862	634	1885

	EB	WB	NB	SB	
LT		0	26		
TH			66	-22	
RT	-11		0		59
Enter	-11	0	92	-22	59
Exit	0	26	66	-33	59

	EB	WB	NB	SB	
LT	230	0	278	0	
TH	0	0	698	395	
RT	206	0	0	137	1944
Enter	435	0	976	532	1944
Exit	0	415	928	601	1944

	EB	WB	NB	SB	
LT	53				
TH					
RT					53
Enter	53	0	0	0	53
Exit	0	0	53	0	53

	EB	WB	NB	SB	
LT	147		23		
TH	23	12	128	117	
RT	47			88	585
Enter	217	12	151	205	585
Exit	23	123	275	164	585

US 7/Railroad St

Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	188	135	85	77	
TH	70	80	642	376	
RT	33	230	159	119	2194
Enter	292	444	885	572	2194
Exit	307	283	1060	544	2194

	EB	WB	NB	SB	
LT	*0*	*127*	*0*	*188*	
TH	*0*	*0*	*689*	*413*	
RT	*0*	*287*	*216*	*0*	1919
Enter	0	414	904	601	1919
Exit	403	0	976	540	1919

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

	EB	WB	NB	SB	
LT	0	127	0	188	
TH	0	0	689	413	
RT	0	287	216	0	1919
Enter	0	414	904	601	1919
Exit	403	0	976	540	1919

	EB	WB	NB	SB	
LT	18			-43	
TH			57	43	
RT			-57		18
Enter	18	0	0	0	18
Exit	-99	0	74	43	18

	EB	WB	NB	SB	
LT	117		47		
TH	47	64	35	70	
RT	23			93	496
Enter	187	64	82	163	496
Exit	47	204	152	93	496

US 7/Centre Dr

Milton, VT
10/24/06
4th Tuesday
RSG Count

	EB	WB	NB	SB	
LT	24	69	134	45	
TH	36	48	888	452	
RT	67	117	80	32	1991
Enter	127	234	1102	528	1991
Exit	160	214	1029	588	1991

	EB	WB	NB	SB	
LT	*0*	*64*	*0*	*57*	
TH	*0*	*0*	*912*	*508*	
RT	*0*	*133*	*69*	*0*	1743
Enter	0	197	982	565	1743
Exit	126	0	1046	571	1743

	EB	WB	NB	SB	
LT					
TH					
RT					0
Enter	0	0	0	0	0
Exit	0	0	0	0	0

	EB	WB	NB	SB	
LT	0	64	0	57	
TH	0	0	912	508	
RT	0	133	69	0	1743
Enter	0	197	982	565	1743
Exit	126	0	1046	571	1743

	EB	WB	NB	SB	
LT	2				
TH					
RT					2
Enter	2	0	0	0	2
Exit	0	0	2	0	2

	EB	WB	NB	SB	
LT	12		88		
TH	35	47	70	70	
RT	47			23	392
Enter	94	47	158	93	392
Exit	35	158	82	117	392

US 7/Haydenberry Dr

Milton, VT
06/09/05
2nd Thursday
RSG Count

	EB	WB	NB	SB	
LT	0	2	224	1	
TH	0	0	1021	528	
RT	158	11	0	58	2005
Enter	158	13	1245	588	2005
Exit	1	283	1032	688	2005

	EB	WB	NB	SB	
LT	*85*	*1*	*89*	*1*	
TH	*0*	*0*	*944*	*549*	
RT	*51*	*11*	*0*	*75*	1807
Enter	136	13	1033	625	1807
Exit	1	164	1040	601	1807

	EB	WB	NB	SB	
LT	-5			0	
TH			-53	-47	
RT		-1		-6	-112
Enter	-5	-1	-53	-54	-112
Exit	0	-6	-59	-47	-112

	EB	WB	NB	SB	
LT	80	1	89	1	
TH	0	0	891	501	
RT	51	11	0	69	1695
Enter	132	12	980	571	1695
Exit	1	158	982	554	1695

	EB	WB	NB	SB	
LT	-73				
TH					
RT					-73
Enter	-73	0	0	0	-73
Exit	0	0	-73	0	-73

	EB	WB	NB	SB	
LT	0		88		
TH			158	117	
RT	70				433
Enter	70	0	246	117	433
Exit	0	88	158	187	433

Middle Rd/Railroad St

Milton, VT
10/11/06
2nd Wednesday

	EB	WB	NB	SB	
LT	311	0	290	0	
TH	0	0	52	18	
RT	136	0	0	187	994
Enter	447	0	342	205	994
Exit	0	477	363	154	994

	EB	WB	NB	SB	
LT	*57*	*8*	*1*	*75*	
TH	*155*	*242*	*257*	*135*	
RT	*0*	*62*	*19*	*43*	1053
Enter	211	312	277	253	1053
Exit	248	286	375	144	1053

	EB	WB	NB	SB	
LT		-3		29	
TH	59	-90			
RT		-23	7		-21
Enter	59	-116	7	29	-21
Exit	95	-90	-23	-3	-21

	EB	WB	NB	SB	
LT	57	5	1	103	
TH	214	152	257	135	
RT	0	39	27	43	1032
Enter	270	196	285	281	1032
Exit	343	196	352	140	1032

	EB	WB	NB	SB	
LT	244	-5	210	-87	
TH	-214	-152	-183	-86	
RT	91	-31	-27	140	-99
Enter	122	-188	0	-33	-99
Exit	-327	198	30	0	-99

	EB	WB	NB	SB	
LT	0		64		
TH					
RT	47			0	111
Enter	47	0	64	0	111
Exit	0	64	0	47	111

Railroad St/Hourglass North

	EB	WB	NB	SB	
LT	0	0	0	0	
TH	0	0	363	205	
RT	0	0	0	0	568
Enter	0	0	363	205	568
Exit	0	0	363	205	568

	EB	WB	NB	SB	
LT					
TH			*375*	*253*	
RT					628
Enter	0	0	375	253	628
Exit	0	0	375	253	628

	EB	WB	NB	SB	
LT					
TH			-23	29	
RT					5
Enter	0	0	-23	29	5
Exit	0	0	-23	29	5

	EB	WB	NB	SB	
LT	0	0	0	0	
TH	0	0	352	281	
RT	0	0	0	0	633
Enter	0	0	352	281	633
Exit	0	0	352	281	633

	EB	WB	NB	SB	
LT					
TH			30	-33	
RT					-3
Enter	0	0	30	-33	-3
Exit	0	0	30	-33	-3

	EB	WB	NB	SB	
LT	23		0		
TH					
RT	0			12	35
Enter	23	0	0	12	35
Exit	0	12	23	0	35

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Study Intersection

Source: L&D Pomerleau Study, 11/21/07

ODVs-Passby Trips w/ Full Hourglass

Milton Shopping Center

	EB	WB	NB	SB	
US 7/Hannaford	LT	44		11		
Milton, VT	TH			-44	-17	
06/10/04	RT	6			17	17
2nd Thursday	Enter	50	0	-33	0	17
	Exit	0	28	0	-11	17
US 7/Railroad St	LT	22		22		
Milton, VT	TH	0	0	-55	-28	
10/11/06	RT	6			17	-16
2nd Wednesday	Enter	28	0	-33	-11	-16
	Exit	0	39	-33	-22	-16
US 7/Centre Dr	LT	6		22		
Milton, VT	TH	0	0	-39	-28	
10/24/06	RT	11			6	-22
4th Tuesday	Enter	17	0	-17	-22	-22
RSG Count	Exit	0	28	-33	-17	-22
US 7/Haydenberry Dr	LT	0		17		
Milton, VT	TH			-17	-17	
06/09/05	RT	17			0	0
2nd Thursday	Enter	17	0	0	-17	0
RSG Count	Exit	0	17	-17	0	0
Middle Rd/Railroad St	LT	0		0		
Milton, VT	TH			0	0	
10/11/06	RT	0			0	0
2nd Wednesday	Enter	0	0	0	0	0
	Exit	0	0	0	0	0
Railroad St/Hourglass North	LT	0		0		
	TH			0	0	
	RT	0			0	0
	Enter	0	0	0	0	0
	Exit	0	0	0	0	0

No Build 2025

	EB	WB	NB	SB	
US 7/Hannaford	LT	270	0	89	0	
Milton, VT	TH	23	12	782	495	
06/10/04	RT	66	0	0	120	1857
2nd Thursday	Enter	359	12	871	615	1857
	Exit	23	221	1052	561	1857
US 7/Railroad St	LT	157	127	69	85	
Milton, VT	TH	47	64	557	365	
10/11/06	RT	29	232	159	110	2001
2nd Wednesday	Enter	233	423	785	560	2001
	Exit	291	243	946	521	2001
US 7/Centre Dr	LT	20	64	110	44	
Milton, VT	TH	35	47	796	430	
10/24/06	RT	58	112	69	29	1814
4th Tuesday	Enter	113	223	976	503	1814
RSG Count	Exit	148	186	928	551	1814
US 7/Haydenberry Dr	LT	0	1	194	1	
Milton, VT	TH	0	0	892	493	
06/09/05	RT	138	11	0	57	1788
2nd Thursday	Enter	138	12	1086	551	1788
RSG Count	Exit	1	251	903	633	1788
Middle Rd/Railroad St	LT	301	0	275	0	
Milton, VT	TH	0	0	27	5	
10/11/06	RT	138	0	0	183	929
2nd Wednesday	Enter	439	0	302	188	929
	Exit	0	458	327	143	929
Railroad St/Hourglass North	LT	23	0	0	0	
	TH	0	0	382	248	
	RT	0	0	0	12	665
	Enter	23	0	382	260	665
	Exit	0	12	405	248	665

Trip Gen Bal. - Hourglass South and North 2025

	EB	WB	NB	SB	
US 7/Hannaford	LT		0	3		
Milton, VT	TH			32	-3	
06/10/04	RT	-1		0		32
2nd Thursday	Enter	-1	0	35	-3	32
	Exit	0	3	32	-3	32
US 7/Railroad St	LT		38		-3	
Milton, VT	TH	-2	10			
10/11/06	RT		35	-55		23
2nd Wednesday	Enter	-2	83	-55	-3	23
	Exit	-60	10	35	38	23
US 7/Centre Dr	LT	-1			3	
Milton, VT	TH			-49	33	
10/24/06	RT		-5		2	-16
4th Tuesday	Enter	-1	-5	-49	38	-16
RSG Count	Exit	3	2	-55	33	-16
US 7/Haydenberry Dr	LT	0			0	
Milton, VT	TH			-49	29	
06/09/05	RT		0		3	-16
2nd Thursday	Enter	0	0	-49	33	-16
RSG Count	Exit	0	3	-49	29	-16
Middle Rd/Railroad St	LT					
Milton, VT	TH					
10/11/06	RT					0
2nd Wednesday	Enter	0	0	0	0	0
	Exit	0	0	0	0	0
Railroad St/Hourglass North	LT					
	TH					
	RT					0
	Enter	0	0	0	0	0
	Exit	0	0	0	0	0

Total Trip Gen - Balanced Hourglass South & North 2025

	EB	WB	NB	SB	
US 7/Hannaford	LT	114	0	48	0	
Milton, VT	TH	0	0	487	113	
06/10/04	RT	27	0	0	33	822
2nd Thursday	Enter	141	0	535	146	822
	Exit	0	81	601	140	822
US 7/Railroad St	LT	78	54	56	2	
Milton, VT	TH	1	14	411	106	
10/11/06	RT	16	50	33	32	854
2nd Wednesday	Enter	95	118	500	140	854
	Exit	37	101	539	176	854
US 7/Centre Dr	LT	9	33	88	15	
Milton, VT	TH	2	3	455	150	
10/24/06	RT	32	44	52	11	893
4th Tuesday	Enter	43	80	595	175	893
RSG Count	Exit	69	101	508	215	893
US 7/Haydenberry Dr	LT	0	1	126	0	
Milton, VT	TH	0	0	587	194	
06/09/05	RT	83	4	0	21	1016
2nd Thursday	Enter	83	5	714	215	1016
RSG Count	Exit	0	147	592	278	1016
Middle Rd/Railroad St	LT	18	0	108	0	
Milton, VT	TH	0	0	96	48	
10/11/06	RT	19	0	0	10	299
2nd Wednesday	Enter	37	0	204	58	299
	Exit	0	118	114	67	299
Railroad St/Hourglass North	LT	0	0	0	0	
	TH	0	0	114	58	
	RT	0	0	0	0	173
	Enter	0	0	114	58	173
	Exit	0	0	114	58	173

Trip Redistribution Due to New Road 2025

	EB	WB	NB	SB	
US 7/Hannaford	LT		40		28	
Milton, VT	TH			-198	-54	
06/10/04	RT		88	178		83
2nd Thursday	Enter	0	128	-20	-25	83
	Exit	206	0	-109	-14	83
		33%	pull here for EBT			
		16%	pull here for WBT			
US 7/Railroad St	LT		-27		-14	
Milton, VT	TH		-14	**30**	**0**	
10/11/06	RT		-50	-30		-105
2nd Wednesday	Enter	0	-91	0	-14	-105
	Exit	-44	-14	-20	-27	-105
US 7/Centre Dr	LT	0			-2	
Milton, VT	TH			0	-23	
10/24/06	RT		0		-2	-27
4th Tuesday	Enter	0	0	0	-27	-27
RSG Count	Exit	-2	-2	0	-23	-27
US 7/Haydenberry Dr	LT	0			0	
Milton, VT	TH			0	-21	
06/09/05	RT		0		-2	-23
2nd Thursday	Enter	0	0	0	-23	-23
RSG Count	Exit	0	-2	0	-21	-23
Middle Rd/Railroad St	LT	-30		-60		
Milton, VT	TH	0		**0**	**0**	
10/11/06	RT	-14			-30	-135
2nd Wednesday	Enter	-44	0	-60	-30	-135
	Exit	0	-91	-30	-14	-135
Railroad St/Hourglass North	LT	178		88		
	TH			-118	-59	
	RT	28			40	158
	Enter	206	0	-30	-19	158
	Exit	0	128	60	-30	158

Total TG - Bal. Hrglss South & North + New Rd 2025

	EB	WB	NB	SB	
US 7/Hannaford	LT	114	40	48	28	
Milton, VT	TH	0	0	289	59	
06/10/04	RT	27	88	178	33	905
2nd Thursday	Enter	141	128	515	120	905
	Exit	206	81	492	126	905
US 7/Railroad St	LT	78	27	56	-12	
Milton, VT	TH	1	0	442	106	
10/11/06	RT	16	0	3	32	749
2nd Wednesday	Enter	95	27	500	126	749
	Exit	-7	88	520	149	749
US 7/Centre Dr	LT	9	33	88	13	
Milton, VT	TH	2	3	455	126	
10/24/06	RT	32	44	52	9	866
4th Tuesday	Enter	43	80	595	148	866
RSG Count	Exit	67	100	508	192	866
US 7/Haydenberry Dr	LT	0	1	126	0	
Milton, VT	TH	0	0	587	173	
06/09/05	RT	83	4	0	18	993
2nd Thursday	Enter	83	5	714	192	993
RSG Count	Exit	0	144	592	257	993
Middle Rd/Railroad St	LT	-12	0	47	0	
Milton, VT	TH	0	0	96	48	
10/11/06	RT	5	0	0	-20	164
2nd Wednesday	Enter	-7	0	144	28	164
	Exit	0	27	84	53	164
Railroad St/Hourglass North	LT	178	0	88	0	
	TH	0	0	-4	0	
	RT	28	0	0	40	330
	Enter	206	0	84	40	330
	Exit	0	128	174	28	330

Build 2025

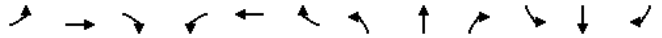
	EB	WB	NB	SB	
US 7/Hannaford	LT	384	40	137	28	
Milton, VT	TH	23	12	1071	555	
06/10/04	RT	93	88	178	153	2762
2nd Thursday	Enter	500	140	1386	736	2762
	Exit	229	301	1544	687	2762
US 7/Railroad St	LT	235	154	125	73	
Milton, VT	TH	48	64	999	471	
10/11/06	RT	45	232	162	142	2750
2nd Wednesday	Enter	328	450	1286	686	2750
	Exit	284	331	1466	670	2750
US 7/Centre Dr	LT	29	97	198	57	
Milton, VT	TH	37	50	1252	556	
10/24/06	RT	90	156	121	38	2680
4th Tuesday	Enter	156	303	1571	651	2680
RSG Count	Exit	215	286	1436	743	2680
US 7/Haydenberry Dr	LT	0	2	320	2	
Milton, VT	TH	0	0	1480	667	
06/09/05	RT	221	15	0	75	2781
2nd Thursday	Enter	221	17	1800	743	2781
RSG Count	Exit	2	395	1494	890	2781
Middle Rd/Railroad St	LT	289	0	322	0	
Milton, VT	TH	0	0	123	53	
10/11/06	RT	143	0	0	162	1093
2nd Wednesday	Enter	432	0	445	216	1093
	Exit	0	485	412	196	1093
Railroad St/Hourglass North	LT	201	0	88	0	
	TH	0	0	378	247	
	RT	28	0	0	52	996
	Enter	229	0	467	300	996
	Exit	0	140	579	276	996

APPENDIX B

SYNCHRO AND SIMTRAFFIC OUTPUT TABLES

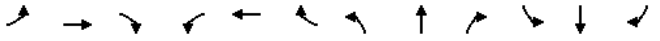
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	273	62	86	890	512	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	14	12	12	12	12
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	2025	1706	1787	1881	1845	1568
Flt Permitted	0.95	1.00	0.30	1.00	1.00	1.00
Satd. Flow (perm)	2025	1706	570	1881	1845	1568
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	273	62	86	890	512	121
RTOR Reduction (vph)	0	50	0	0	0	63
Lane Group Flow (vph)	273	12	86	890	512	58
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.3	13.3	44.7	44.7	33.8	33.8
Effective Green, g (s)	13.3	13.3	44.7	44.7	33.8	33.8
Actuated g/C Ratio	0.19	0.19	0.64	0.64	0.48	0.48
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	385	324	449	1201	891	757
v/s Ratio Prot	c0.13		0.01	c0.47	0.28	
v/s Ratio Perm		0.01	0.11			0.04
v/c Ratio	0.71	0.04	0.19	0.74	0.57	0.08
Uniform Delay, d1	26.5	23.1	6.4	8.7	13.0	9.7
Progression Factor	1.00	1.00	0.33	0.66	1.00	1.00
Incremental Delay, d2	6.1	0.0	0.1	2.5	2.7	0.2
Delay (s)	32.6	23.2	2.3	8.3	15.7	9.9
Level of Service	C	C	A	A	B	A
Approach Delay (s)	30.9			7.7	14.6	
Approach LOS	C			A	B	

Intersection Summary				
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	60		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	70	33	135	80	230	85	642	159	77	376	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.95			1.00	0.85		1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00			0.97	1.00		0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1791			1824	1599		1870	1599	1787	1813	
Flt Permitted	0.56	1.00			0.75	1.00		0.89	1.00	0.14	1.00	
Satd. Flow (perm)	1046	1791			1408	1599		1666	1599	259	1813	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	70	33	135	80	230	85	642	159	77	376	119
RTOR Reduction (vph)	0	25	0	0	0	178	0	0	66	0	11	0
Lane Group Flow (vph)	188	78	0	0	215	52	0	727	93	77	484	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm		Perm	pm+pt		Perm	pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	14.3	14.3			14.3	14.3		32.9	32.9	43.7	43.7	
Effective Green, g (s)	14.3	14.3			14.3	14.3		32.9	32.9	43.7	43.7	
Actuated g/C Ratio	0.20	0.20			0.20	0.20		0.47	0.47	0.62	0.62	
Clearance Time (s)	6.0	6.0			6.0	6.0		6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	214	366			288	327		783	752	266	1132	
v/s Ratio Prot		0.04								0.02	c0.27	
v/s Ratio Perm	c0.18				0.15	0.03		c0.44	0.06	0.16		
v/c Ratio	0.88	0.21			0.75	0.16		0.93	0.12	0.29	0.43	
Uniform Delay, d1	27.0	23.2			26.1	22.9		17.4	10.4	10.2	6.7	
Progression Factor	1.00	1.00			1.00	1.00		0.46	0.15	0.32	0.45	
Incremental Delay, d2	40.6	0.3			10.7	0.2		15.3	0.2	0.5	1.0	
Delay (s)	67.6	23.5			36.9	23.1		23.3	1.8	3.8	4.1	
Level of Service	E	C			D	C		C	A	A	A	
Approach Delay (s)		52.0			29.8			19.4			4.0	
Approach LOS		D			C			B			A	

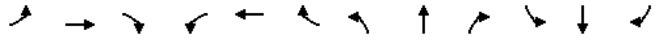
Intersection Summary				
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	60		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	36	67	69	48	117	134	888	80	45	452	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1863	1615		1827	1599	1787	1858		1787	1881	1599
Flt Permitted		0.82	1.00		0.78	1.00	0.43	1.00		0.10	1.00	1.00
Satd. Flow (perm)		1554	1615		1475	1599	814	1858		191	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	24	36	67	69	48	117	134	888	80	45	452	32
RTOR Reduction (vph)	0	0	60	0	0	104	0	4	0	0	0	14
Lane Group Flow (vph)	0	60	7	0	117	13	134	964	0	45	452	18
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm	Perm		Perm	pm+pt			pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)		7.8	7.8		7.8	7.8	45.5	40.6		42.9	39.3	39.3
Effective Green, g (s)		7.8	7.8		7.8	7.8	45.5	40.6		42.9	39.3	39.3
Actuated g/C Ratio		0.11	0.11		0.11	0.11	0.65	0.58		0.61	0.56	0.56
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		173	180		164	178	597	1078		199	1056	898
v/s Ratio Prot							c0.02	c0.52		0.01	0.24	
v/s Ratio Perm		0.04	0.00		c0.08	0.01	0.13			0.13		0.01
v/c Ratio		0.35	0.04		0.71	0.07	0.22	0.89		0.23	0.43	0.02
Uniform Delay, d1		28.7	27.8		30.0	27.9	4.9	12.8		11.0	8.9	6.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.82	1.54	2.55
Incremental Delay, d2		1.2	0.1		14.7	0.2	0.2	13.2		0.5	1.1	0.0
Delay (s)		30.0	27.9		44.7	28.0	5.1	26.0		20.5	14.8	17.4
Level of Service		C	C		D	C	A	C		C	B	B
Approach Delay (s)		28.9			36.4			23.5			15.4	
Approach LOS		C			D			C			B	

Intersection Summary				
HCM Average Control Delay	23.2	HCM Level of Service		C
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization	84.6%	ICU Level of Service		E
Analysis Period (min)	60			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	158	2	0	11	224	1021	0	1	528	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	158	2	0	11	224	1021	0	1	528	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											357	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87		0.87					
vC, conflicting volume	2010	1999	528	2157	2057	1021	586			1021		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2086	2073	384	2255	2140	1021	450			1021		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	73	87	100	96	77			100		
cM capacity (veh/h)	27	36	580	15	33	289	971			684		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	158	13	224	1021	529	58
Volume Left	0	0	2	224	0	1	0
Volume Right	0	158	11	0	0	0	58
cSH	1700	580	78	971	1700	684	1700
Volume to Capacity	0.00	0.27	0.17	0.23	0.60	0.00	0.03
Queue Length 95th (ft)	0	28	15	22	0	0	0
Control Delay (s)	0.0	13.5	60.6	9.8	0.0	0.0	0.0
Lane LOS	A	B	F	A		A	
Approach Delay (s)	13.5		60.6	1.8		0.0	
Approach LOS	B		F				

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	94.9%	ICU Level of Service		F
Analysis Period (min)	60			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	311	136	290	52	18	187
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	311	136	290	52	18	187

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	447	342	205
Volume Left (vph)	311	290	0
Volume Right (vph)	136	0	187
Hadj (s)	-0.01	0.20	-0.51
Departure Headway (s)	5.4	5.8	5.3
Degree Utilization, x	0.67	0.55	0.30
Capacity (veh/h)	639	590	622
Control Delay (s)	19.2	15.6	10.6
Approach Delay (s)	19.2	15.6	10.6
Approach LOS	C	C	B

Intersection Summary				
Delay	16.2			
HCM Level of Service	C			
Intersection Capacity Utilization	66.8%	ICU Level of Service		C
Analysis Period (min)	60			

HCM Signalized Intersection Capacity Analysis
6: Milton Shopping Ctr North & US 7

2025 PM Peak Hour
Hourglass South and North - Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	384	23	93	40	12	88	137	1071	178	28	555	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.88			1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	2025	1655			1812	1599	1787	1841			1840	1568
Flt Permitted	0.72	1.00			0.73	1.00	0.32	1.00			0.53	1.00
Satd. Flow (perm)	1542	1655			1365	1599	606	1841			976	1568
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	384	23	93	40	12	88	137	1071	178	28	555	153
RTOR Reduction (vph)	0	76	0	0	0	72	0	5	0	0	0	49
Lane Group Flow (vph)	384	40	0	0	52	16	137	1244	0	0	583	104
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	3%	3%	3%
Turn Type	Perm			Perm		Perm	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	22.0	22.0			22.0	22.0	86.0	86.0			74.0	74.0
Effective Green, g (s)	22.0	22.0			22.0	22.0	86.0	86.0			74.0	74.0
Actuated g/C Ratio	0.18	0.18			0.18	0.18	0.72	0.72			0.62	0.62
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	283	303			250	293	493	1319			602	967
v/s Ratio Prot		0.02					0.01	c0.68				
v/s Ratio Perm	c0.25				0.04	0.01	0.19				0.60	0.07
v/c Ratio	1.36	0.13			0.21	0.06	0.28	0.94			0.97	0.11
Uniform Delay, d1	49.0	41.0			41.6	40.4	7.6	14.9			21.9	9.4
Progression Factor	1.00	1.00			1.00	1.00	1.14	0.89			1.00	1.00
Incremental Delay, d2	665.7	0.2			0.4	0.1	0.0	2.0			49.2	0.2
Delay (s)	714.7	41.2			42.0	40.5	8.7	15.2			71.1	9.7
Level of Service	F	D			D	D	A	B			E	A
Approach Delay (s)		558.5			41.1			14.6			58.3	
Approach LOS		F			D			B			E	

Intersection Summary				
HCM Average Control Delay	126.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.03			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	140.9%	ICU Level of Service	H	
Analysis Period (min)	60			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
7: Milton Shopping Ctr Mid & US 7

2025 PM Peak Hour
Hourglass South and North - Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	48	45	154	64	232	125	999	162	73	471	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.93			1.00	0.85		1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00			0.97	1.00		0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1745			1817	1599		1871	1599	1787	1816	
Flt Permitted	0.46	1.00			0.73	1.00		0.85	1.00	0.05	1.00	
Satd. Flow (perm)	875	1745			1377	1599		1593	1599	99	1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	48	45	154	64	232	125	999	162	73	471	142
RTOR Reduction (vph)	0	28	0	0	0	103	0	0	26	0	7	0
Lane Group Flow (vph)	235	65	0	0	218	129	0	1124	136	73	606	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm		Perm	pm+pt		Perm	pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	27.0	27.0			27.0	27.0		70.2	70.2	81.0	81.0	
Effective Green, g (s)	27.0	27.0			27.0	27.0		70.2	70.2	81.0	81.0	
Actuated g/C Ratio	0.22	0.22			0.22	0.22		0.59	0.59	0.68	0.68	
Clearance Time (s)	6.0	6.0			6.0	6.0		6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	197	393			310	360		932	935	134	1226	
v/s Ratio Prot		0.04								0.02	c0.33	
v/s Ratio Perm	c0.27				0.16	0.08		c0.71	0.08	0.35		
v/c Ratio	1.19	0.17			0.70	0.36		1.21	0.15	0.54	0.49	
Uniform Delay, d1	46.5	37.4			42.8	39.2		24.9	11.3	57.7	9.5	
Progression Factor	1.00	1.00			1.00	1.00		0.65	0.67	1.74	0.74	
Incremental Delay, d2	396.7	0.2			7.3	0.6		374.2	0.1	2.4	0.7	
Delay (s)	443.2	37.6			50.1	39.8		390.5	7.6	102.7	7.8	
Level of Service	F	D			D	D		F	A	F	A	
Approach Delay (s)		328.2			44.8			342.2			17.9	
Approach LOS		F			D			F			B	

Intersection Summary				
HCM Average Control Delay	211.0	HCM Level of Service	F	
HCM Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	127.6%	ICU Level of Service	H	
Analysis Period (min)	60			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	37	90	97	50	156	198	1252	121	57	556	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1859	1615		1821	1599	1787	1856		1787	1881	1599
Flt Permitted		0.55	1.00		0.76	1.00	0.38	1.00		0.05	1.00	1.00
Satd. Flow (perm)		1049	1615		1432	1599	712	1856		92	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	37	90	97	50	156	198	1252	121	57	556	38
RTOR Reduction (vph)	0	0	81	0	0	140	0	3	0	0	0	10
Lane Group Flow (vph)	0	66	9	0	147	16	198	1370	0	57	556	28
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm	Perm		Perm	pm+pt			pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)		12.0	12.0		12.0	12.0	93.4	85.2		86.6	81.8	81.8
Effective Green, g (s)		12.0	12.0		12.0	12.0	93.4	85.2		86.6	81.8	81.8
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.78	0.71		0.72	0.68	0.68
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		105	162		143	160	628	1318		134	1282	1090
v/s Ratio Prot							c0.02	c0.74		0.02	0.30	
v/s Ratio Perm		0.06	0.01		c0.10	0.01	0.22			0.29		0.02
v/c Ratio		0.63	0.06		1.03	0.10	0.32	1.04		0.43	0.43	0.03
Uniform Delay, d1		51.9	48.9		54.0	49.1	4.5	17.4		57.1	8.6	6.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.33	1.02	0.91
Incremental Delay, d2		11.7	0.1		179.9	0.3	0.3	97.4		1.9	0.9	0.0
Delay (s)		63.6	49.0		233.9	49.3	4.7	114.8		77.8	9.7	5.7
Level of Service		E	D		F	D	A	F		E	A	A
Approach Delay (s)		55.2			138.9			100.9			15.5	
Approach LOS		E			F			F			B	

Intersection Summary					
HCM Average Control Delay	81.8	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.01				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		18.0	
Intersection Capacity Utilization	106.2%	ICU Level of Service		G	
Analysis Period (min)	60				

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	221	2	0	15	320	1480	0	2	667	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	221	2	0	15	320	1480	0	2	667	75
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											357	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87		0.87					
vC, conflicting volume	2806	2791	667	3012	2866	1480	742			1480		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3005	2988	540	3243	3075	1480	626			1480		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	53	0	100	90	62			100		
cM capacity (veh/h)	5	7	472	2	7	156	833			458		

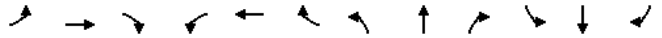
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	221	17	320	1480	669	75
Volume Left	0	0	2	320	0	2	0
Volume Right	0	221	15	0	0	0	75
cSH	1700	472	14	833	1700	458	1700
Volume to Capacity	0.00	0.47	1.19	0.38	0.87	0.00	0.04
Queue Length 95th (ft)	0	65	145	46	0	0	0
Control Delay (s)	0.0	19.3	1190.8	12.0	0.0	0.1	0.0
Lane LOS	A	C	F	B		A	
Approach Delay (s)	19.3		1190.8	2.1		0.1	
Approach LOS	C		F				

Intersection Summary					
Average Delay	10.2				
Intersection Capacity Utilization	126.4%	ICU Level of Service		H	
Analysis Period (min)	60				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	289	143	322	123	53	162
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	289	143	322	123	53	162

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	432	445	215
Volume Left (vph)	289	322	0
Volume Right (vph)	143	0	162
Hadj (s)	-0.03	0.18	-0.42
Departure Headway (s)	5.7	5.8	5.6
Degree Utilization, x	0.69	0.72	0.33
Capacity (veh/h)	603	599	590
Control Delay (s)	21.0	23.0	11.4
Approach Delay (s)	21.0	23.0	11.4
Approach LOS	C	C	B

Intersection Summary				
Delay		19.9		
HCM Level of Service		C		
Intersection Capacity Utilization		71.8%	ICU Level of Service	C
Analysis Period (min)		60		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	201	0	28	0	0	0	88	378	0	0	247	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	201	0	28	0	0	0	88	378	0	0	247	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	827	827	273	855	853	378	299			378		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	827	827	273	855	853	378	299			378		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	27	100	96	100	100	100	93			100		
cM capacity (veh/h)	275	285	766	254	276	669	1262			1180		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	229	0	466	299
Volume Left	201	0	88	0
Volume Right	28	0	0	52
cSH	299	1700	1262	1180
Volume to Capacity	0.77	0.00	0.07	0.00
Queue Length 95th (ft)	201	0	6	0
Control Delay (s)	53.6	0.0	2.1	0.0
Lane LOS	F	A	A	
Approach Delay (s)	53.6	0.0	2.1	0.0
Approach LOS	F	A		

Intersection Summary				
Average Delay		13.3		
Intersection Capacity Utilization		63.8%	ICU Level of Service	B
Analysis Period (min)		60		

HCM Signalized Intersection Capacity Analysis — 2025 PM Peak Hour
6: Milton Shopping Ctr North & US 7 — Hourglass South and North - Mitigation Geometry - Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	384	23	93	40	12	88	137	1071	178	28	555	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95			1.00	1.00
Frt	1.00	0.88			1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00			0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	2025	1655			1812	1599	1787	3498			1840	1568
Flt Permitted	0.72	1.00			0.76	1.00	0.24	1.00			0.90	1.00
Satd. Flow (perm)	1542	1655			1421	1599	448	3498			1652	1568
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	384	23	93	40	12	88	137	1071	178	28	555	153
RTOR Reduction (vph)	0	67	0	0	0	64	0	13	0	0	0	56
Lane Group Flow (vph)	384	49	0	0	52	24	137	1236	0	0	583	97
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	3%	3%	3%
Turn Type	Perm			Perm		Perm	pm+pt			Perm		Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	27.8	27.8			27.8	27.8	60.2	60.2			47.8	47.8
Effective Green, g (s)	27.8	27.8			27.8	27.8	60.2	60.2			47.8	47.8
Actuated g/C Ratio	0.28	0.28			0.28	0.28	0.60	0.60			0.48	0.48
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	429	460			395	445	355	2106			790	750
v/s Ratio Prot		0.03					0.02	c0.35				
v/s Ratio Perm	c0.25				0.04	0.02	0.21				c0.35	0.06
v/c Ratio	0.90	0.11			0.13	0.05	0.39	0.59			0.74	0.13
Uniform Delay, d1	34.7	26.9			27.1	26.5	12.3	12.2			21.0	14.5
Progression Factor	1.00	1.00			1.00	1.00	0.85	0.68			1.00	1.00
Incremental Delay, d2	25.9	0.1			0.2	0.1	0.6	1.0			6.3	0.4
Delay (s)	60.6	27.0			27.2	26.5	11.0	9.4			27.4	14.9
Level of Service	E	C			C	C	B	A			C	B
Approach Delay (s)		52.8			26.8			9.6			24.8	
Approach LOS		D			C			A			C	

Intersection Summary				
HCM Average Control Delay	22.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	109.0%	ICU Level of Service	G	
Analysis Period (min)	60			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis — 2025 PM Peak Hour
7: Milton Shopping Ctr Mid & US 7 — Hourglass South and North - Mitigation Geometry - Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	48	45	154	64	232	125	999	162	73	471	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95	1.00	1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1745			1817	1599	1787	3574	1599	1787	1816	
Flt Permitted	0.53	1.00			0.73	1.00	0.24	1.00	1.00	0.20	1.00	
Satd. Flow (perm)	988	1745			1377	1599	460	3574	1599	384	1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	48	45	154	64	232	125	999	162	73	471	142
RTOR Reduction (vph)	0	33	0	0	0	129	0	0	58	0	10	0
Lane Group Flow (vph)	235	60	0	0	218	103	125	999	104	73	603	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm		Perm	pm+pt		Perm	pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	26.5	26.5			26.5	26.5	56.4	49.4	49.4	54.6	48.5	
Effective Green, g (s)	26.5	26.5			26.5	26.5	56.4	49.4	49.4	54.6	48.5	
Actuated g/C Ratio	0.26	0.26			0.26	0.26	0.56	0.49	0.49	0.55	0.48	
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	262	462			365	424	352	1766	790	295	881	
v/s Ratio Prot		0.03					c0.02	0.28		0.02	c0.33	
v/s Ratio Perm	c0.24				0.16	0.06	0.18		0.06	0.12		
v/c Ratio	0.90	0.13			0.60	0.24	0.36	0.57	0.13	0.25	0.68	
Uniform Delay, d1	35.4	28.0			32.1	28.9	12.9	17.8	13.7	11.9	19.9	
Progression Factor	1.00	1.00			1.00	1.00	0.64	0.48	0.12	1.27	0.84	
Incremental Delay, d2	40.5	0.1			2.7	0.3	0.5	1.1	0.3	0.3	1.7	
Delay (s)	75.9	28.1			34.7	29.2	8.8	9.6	1.9	15.4	18.4	
Level of Service	E	C			C	C	A	A	A	B	B	
Approach Delay (s)		62.3			31.9			8.6			18.1	
Approach LOS		E			C			A			B	

Intersection Summary				
HCM Average Control Delay	21.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	75.0%	ICU Level of Service	D	
Analysis Period (min)	60			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	37	90	97	50	156	198	1252	121	57	556	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1859	1615		1821	1599	1787	3527		1787	1881	1599
Flt Permitted		0.78	1.00		0.76	1.00	0.34	1.00		0.14	1.00	1.00
Satd. Flow (perm)		1488	1615		1432	1599	635	3527		269	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	37	90	97	50	156	198	1252	121	57	556	38
RTOR Reduction (vph)	0	0	76	0	0	132	0	6	0	0	0	11
Lane Group Flow (vph)	0	66	14	0	147	24	198	1367	0	57	556	27
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm	Perm		Perm	pm+pt			pm+pt		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)		15.1	15.1		15.1	15.1	70.4	61.9		63.4	58.4	58.4
Effective Green, g (s)		15.1	15.1		15.1	15.1	70.4	61.9		63.4	58.4	58.4
Actuated g/C Ratio		0.15	0.15		0.15	0.15	0.70	0.62		0.63	0.58	0.58
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		225	244		216	241	545	2183		246	1099	934
v/s Ratio Prot							c0.03	c0.39		0.01	0.30	
v/s Ratio Perm		0.04	0.01		c0.10	0.01	0.22			0.14		0.02
v/c Ratio		0.29	0.06		0.68	0.10	0.36	0.63		0.23	0.51	0.03
Uniform Delay, d1		37.7	36.3		40.2	36.6	6.6	11.9		8.4	12.3	8.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.54	1.56	1.89
Incremental Delay, d2		0.7	0.1		8.9	0.2	0.4	1.4		0.4	1.3	0.0
Delay (s)		38.4	36.4		49.0	36.8	7.0	13.2		13.4	20.4	16.7
Level of Service		D	D		D	D	A	B		B	C	B
Approach Delay (s)		37.3			42.7			12.4			19.6	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM Average Control Delay	19.1	HCM Level of Service		B
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		18.0
Intersection Capacity Utilization	71.5%	ICU Level of Service		C
Analysis Period (min)	60			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	221	2	0	15	320	1480	0	2	667	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	221	2	0	15	320	1480	0	2	667	75
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											357	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	2806	2791	667	3012	2866	1480	742			1480		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3080	3062	492	3329	3153	1480	583			1480		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	54	0	100	90	61			100		
cM capacity (veh/h)	4	6	478	2	6	156	824			458		

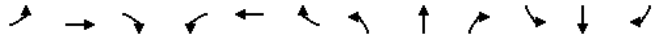
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	221	17	320	1480	669	75
Volume Left	0	0	2	320	0	2	0
Volume Right	0	221	15	0	0	0	75
cSH	1700	478	12	824	1700	458	1700
Volume to Capacity	0.00	0.46	1.42	0.39	0.87	0.00	0.04
Queue Length 95th (ft)	0	63	162	47	0	0	0
Control Delay (s)	0.0	19.0	1644.3	12.1	0.0	0.1	0.0
Lane LOS	A	C	F	B		A	
Approach Delay (s)	19.0		1644.3	2.2		0.1	
Approach LOS	C		F				

Intersection Summary				
Average Delay	13.0			
Intersection Capacity Utilization	126.4%	ICU Level of Service		H
Analysis Period (min)	60			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	289	143	322	123	53	162
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	289	143	322	123	53	162

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total (vph)	289	143	445	215
Volume Left (vph)	289	0	322	0
Volume Right (vph)	0	143	0	162
Hadj (s)	0.53	-0.67	0.18	-0.42
Departure Headway (s)	6.9	5.7	5.7	5.5
Degree Utilization, x	0.55	0.22	0.70	0.33
Capacity (veh/h)	502	605	613	612
Control Delay (s)	17.1	9.1	21.9	11.2
Approach Delay (s)	14.4		21.9	11.2
Approach LOS	B		C	B

Intersection Summary				
Delay	16.8			
HCM Level of Service	C			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	60			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	201	0	28	0	0	0	88	378	0	0	247	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	201	0	28	0	0	0	88	378	0	0	247	52

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	229	0	466	299
Volume Left (vph)	201	0	88	0
Volume Right (vph)	28	0	0	52
Hadj (s)	0.14	0.00	0.07	-0.07
Departure Headway (s)	6.0	6.4	5.1	5.2
Degree Utilization, x	0.38	0.00	0.67	0.43
Capacity (veh/h)	554	466	677	655
Control Delay (s)	12.6	9.4	18.2	12.2
Approach Delay (s)	12.6	0.0	18.2	12.2
Approach LOS	B	A	C	B

Intersection Summary				
Delay	15.1			
HCM Level of Service	C			
Intersection Capacity Utilization	63.8%	ICU Level of Service	B	
Analysis Period (min)	60			

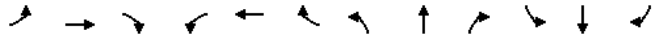
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	14	12	12	12	12
Storage Length (ft)	0	0	75			130
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	411			733	962	
Travel Time (s)	9.3			16.7	21.9	
Lane Group Flow (vph)	273	62	86	890	512	121
v/c Ratio	0.71	0.17	0.18	0.74	0.56	0.14
Control Delay	37.7	8.1	2.3	9.2	16.7	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	8.1	2.3	9.2	16.7	3.1
Queue Length 50th (ft)	109	0	5	211	162	0
Queue Length 95th (ft)	#230	33	m7	m348	310	33
Internal Link Dist (ft)	331			653	882	
Turn Bay Length (ft)			75			130
Base Capacity (vph)	434	414	470	1201	921	844
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.15	0.18	0.74	0.56	0.14

Intersection Summary

Area Type: Other

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



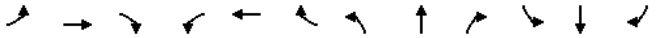
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		130	200		0
Storage Lanes	1		0	0		1	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		254			261			912			733	
Travel Time (s)		5.8			7.1			20.7			16.7	
Lane Group Flow (vph)	188	103	0	0	215	230	0	727	159	77	495	0
v/c Ratio	0.88	0.26			0.75	0.45		0.90	0.19	0.26	0.43	
Control Delay	80.3	18.8			45.4	7.4		24.5	0.9	3.7	4.1	
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	80.3	18.8			45.4	7.4		24.5	0.9	3.7	4.1	
Queue Length 50th (ft)	78	26			86	2		95	1	1	4	
Queue Length 95th (ft)	#218	73			#217	72		m#499	m0	m5	3	
Internal Link Dist (ft)		174			181			832			653	
Turn Bay Length (ft)									130	200		
Base Capacity (vph)	224	408			302	519		810	843	293	1142	
Starvation Cap Reductn	0	0			0	0		0	0	0	0	
Spillback Cap Reductn	0	0			0	0		0	0	0	0	
Storage Cap Reductn	0	0			0	0		0	0	0	0	
Reduced v/c Ratio	0.84	0.25			0.71	0.44		0.90	0.19	0.26	0.43	

Intersection Summary

Area Type: Other

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	130		0	50		100
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		363			553			357			912	
Travel Time (s)		8.3			12.6			8.1			20.7	
Lane Group Flow (vph)	0	60	67	0	117	117	134	968	0	45	452	32
v/c Ratio		0.30	0.25		0.61	0.38	0.21	0.80		0.17	0.39	0.03
Control Delay		31.3	10.6		43.8	10.1	4.7	22.2		8.6	16.5	8.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay		31.3	10.6		43.8	10.1	4.7	22.2		8.6	16.5	8.8
Queue Length 50th (ft)		24	0		48	0	16	~396		11	132	2
Queue Length 95th (ft)		63	39		#128	52	35	#792		m21	m210	m13
Internal Link Dist (ft)		283			473			277			832	
Turn Bay Length (ft)						100	130			50		100
Base Capacity (vph)		222	288		211	329	641	1209		264	1152	992
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0
Storage Cap Reductn		0	0		0	0	0	0		0	0	0
Reduced v/c Ratio		0.27	0.23		0.55	0.36	0.21	0.80		0.17	0.39	0.03

Intersection Summary

Area Type: Other

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	14	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	75		0	0		130
Storage Lanes	1		0	0		1	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			406			733			962	
Travel Time (s)		9.3			9.2			16.7			21.9	
Lane Group Flow (vph)	384	116	0	0	52	88	137	1249	0	0	583	153
v/c Ratio	1.36	0.31			0.21	0.24	0.28	0.94			0.97	0.15
Control Delay	704.0	14.9			44.2	10.3	6.2	16.3			72.6	2.8
Queue Delay	0.0	0.0			0.0	0.0	0.0	123.7			0.0	0.0
Total Delay	704.0	14.9			44.2	10.3	6.2	140.0			72.6	2.8
Queue Length 50th (ft)	~391	15			35	0	32	498			403	7
Queue Length 95th (ft)	#677	84			82	57	m30	m462			#806	42
Internal Link Dist (ft)		331			326			653			882	
Turn Bay Length (ft)							75					130
Base Capacity (vph)	283	379			250	365	493	1325			602	1016
Starvation Cap Reductn	0	0			0	0	0	156			0	0
Spillback Cap Reductn	0	0			0	0	0	0			0	0
Storage Cap Reductn	0	0			0	0	0	0			0	0
Reduced v/c Ratio	1.36	0.31			0.21	0.24	0.28	1.07			0.97	0.15

Intersection Summary

Area Type: Other

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		130	200		0
Storage Lanes	1		0	0		1	0		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		254			261			912			733	
Travel Time (s)		5.8			7.1			20.7			16.7	
Lane Group Flow (vph)	235	93	0	0	218	232	0	1124	162	73	613	0
v/c Ratio	1.19	0.22			0.70	0.50		1.19	0.17	0.49	0.50	
Control Delay	437.8	25.5			57.2	21.3		358.3	4.9	25.9	7.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0	0.4	
Total Delay	437.8	25.5			57.2	21.3		358.3	4.9	25.9	8.1	
Queue Length 50th (ft)	~220	36			157	64		~1069	12	18	117	
Queue Length 95th (ft)	#443	95			#316	178		m#1096	m12	m32	m157	
Internal Link Dist (ft)		174			181			832			653	
Turn Bay Length (ft)									130	200		
Base Capacity (vph)	197	420			310	463		948	977	151	1232	
Starvation Cap Reductn	0	0			0	0		0	0	0	233	
Spillback Cap Reductn	0	0			0	0		0	0	0	0	
Storage Cap Reductn	0	0			0	0		0	0	0	0	
Reduced v/c Ratio	1.19	0.22			0.70	0.50		1.19	0.17	0.48	0.61	

Intersection Summary

Area Type: Other

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	130		0	50		100
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		363			553			357			912	
Travel Time (s)		8.3			12.6			8.1			20.7	
Lane Group Flow (vph)	0	66	90	0	147	156	198	1373	0	57	556	38
v/c Ratio		0.63	0.37		1.03	0.52	0.32	1.02		0.38	0.43	0.03
Control Delay		80.9	14.9		232.9	14.6	4.1	95.2		18.9	10.1	2.4
Queue Delay		0.0	0.0		0.0	0.2	0.0	188.9		0.0	0.0	0.0
Total Delay		80.9	14.9		232.9	14.8	4.1	284.1		18.9	10.1	2.4
Queue Length 50th (ft)		50	0		~122	0	28	~1162		8	225	1
Queue Length 95th (ft)		#140	64		#297	88	50	#1710		m35	309	m6
Internal Link Dist (ft)		283			473			277			832	
Turn Bay Length (ft)						100	130			50		100
Base Capacity (vph)		105	243		143	300	637	1340		152	1282	1100
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0
Spillback Cap Reductn		0	0		0	10	0	130		0	0	0
Storage Cap Reductn		0	0		0	0	0	0		0	0	0
Reduced v/c Ratio		0.63	0.37		1.03	0.54	0.31	1.13		0.38	0.43	0.03

Intersection Summary

Area Type: Other

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	14	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	75		0	0		130
Storage Lanes	1		0	0		1	1		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			406			733			962	
Travel Time (s)		9.3			9.2			16.7			21.9	
Lane Group Flow (vph)	384	116	0	0	52	88	137	1249	0	0	583	153
v/c Ratio	0.90	0.22			0.13	0.17	0.38	0.59			0.74	0.19
Control Delay	66.9	9.2			26.8	6.7	10.6	9.6			29.0	6.2
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	66.9	9.2			26.8	6.7	10.6	9.6			29.0	6.2
Queue Length 50th (ft)	227	10			24	0	28	150			301	15
Queue Length 95th (ft)	#461	62			60	44	m67	245			#589	62
Internal Link Dist (ft)		331			326			653			882	
Turn Bay Length (ft)							75					130
Base Capacity (vph)	462	562			426	541	356	2121			789	806
Starvation Cap Reductn	0	0			0	0	0	0			0	0
Spillback Cap Reductn	0	0			0	0	0	0			0	0
Storage Cap Reductn	0	0			0	0	0	0			0	0
Reduced v/c Ratio	0.83	0.21			0.12	0.16	0.38	0.59			0.74	0.19

Intersection Summary

Area Type: Other

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		130	200		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		254			261			912			733	
Travel Time (s)		5.8			7.1			20.7			16.7	
Lane Group Flow (vph)	235	93	0	0	218	232	125	999	162	73	613	0
v/c Ratio	0.90	0.19			0.60	0.42	0.36	0.55	0.19	0.23	0.69	
Control Delay	83.5	15.2			38.4	10.0	8.6	10.4	1.2	13.5	21.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	83.5	15.2			38.4	10.0	8.6	10.4	1.2	13.5	21.5	
Queue Length 50th (ft)	142	23			119	27	13	103	1	17	154	
Queue Length 95th (ft)	#297	66			210	106	m26	310	m4	m38	m#560	
Internal Link Dist (ft)		174			181			832			653	
Turn Bay Length (ft)							100		130	200		
Base Capacity (vph)	326	606			454	645	352	1810	867	347	891	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.72	0.15			0.48	0.36	0.36	0.55	0.19	0.21	0.69	

Intersection Summary

Area Type: Other

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	130		0	50		100
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		363			553			357			912	
Travel Time (s)		8.3			12.6			8.1			20.7	
Lane Group Flow (vph)	0	66	90	0	147	156	198	1373	0	57	556	38
v/c Ratio		0.29	0.28		0.68	0.42	0.36	0.62		0.21	0.51	0.04
Control Delay		39.6	9.9		56.6	9.4	6.7	14.0		9.6	22.6	10.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay		39.6	9.9		56.6	9.4	6.7	14.0		9.6	22.6	10.7
Queue Length 50th (ft)		38	0		89	0	33	274		11	269	5
Queue Length 95th (ft)		83	51		169	69	75	471		m30	444	m19
Internal Link Dist (ft)		283			473			277			832	
Turn Bay Length (ft)						100	130			50		100
Base Capacity (vph)		298	395		286	445	553	2231		269	1099	945
Starvation Cap Reductn		0	0		0	0	0	0		0	0	0
Spillback Cap Reductn		0	0		0	0	0	0		0	0	0
Storage Cap Reductn		0	0		0	0	0	0		0	0	0
Reduced v/c Ratio		0.22	0.23		0.51	0.35	0.36	0.62		0.21	0.51	0.04

Intersection Summary

Area Type: Other

m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 6: Milton Shopping Ctr North & US 7

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	255	51	91	508	368	151
Average Queue (ft)	120	23	39	179	143	38
95th Queue (ft)	199	44	81	350	274	107
Link Distance (ft)	364	364		634	888	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			75			130
Storage Blk Time (%)			0	14	7	0
Queuing Penalty (veh)			4	12	8	0

Intersection: 7: Milton Shopping Ctr Mid & US 7

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	LT	R	L	TR
Maximum Queue (ft)	222	147	184	156	843	155	171	279
Average Queue (ft)	148	55	100	64	540	86	34	104
95th Queue (ft)	241	113	178	133	997	199	90	217
Link Distance (ft)	203	203	171	171	823			634
Upstream Blk Time (%)	15	0	5	1	8			
Queuing Penalty (veh)	0	0	12	2	85			
Storage Bay Dist (ft)						130	200	
Storage Blk Time (%)					39	0		1
Queuing Penalty (veh)					62	1		1

Intersection: 8: Milton Shopping Ctr South & US 7

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	TR	L	T	R
Maximum Queue (ft)	124	35	290	125	155	305	75	258	121
Average Queue (ft)	45	16	115	75	58	240	33	153	18
95th Queue (ft)	98	32	274	143	141	356	75	246	73
Link Distance (ft)	315	315	518			287		823	
Upstream Blk Time (%)						11			
Queuing Penalty (veh)						111			
Storage Bay Dist (ft)				100	130		50		100
Storage Blk Time (%)			10	10	0	23	3	25	0
Queuing Penalty (veh)			12	11	0	31	13	19	0

Intersection: 9: Haydenberry Dr & US 7

Movement	EB	WB	NB	NB	SB	SB
Directions Served	R	LR	L	TR	LT	R
Maximum Queue (ft)	120	58	255	504	240	56
Average Queue (ft)	45	16	70	126	14	4
95th Queue (ft)	87	47	201	435	105	28
Link Distance (ft)	290	101		558	287	
Upstream Blk Time (%)				2	0	
Queuing Penalty (veh)				28	3	
Storage Bay Dist (ft)			290			80
Storage Blk Time (%)			0	5	1	0
Queuing Penalty (veh)			0	10	1	0

Intersection: 16: Hourglass South & Railroad St

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	140	168	170
Average Queue (ft)	77	61	68
95th Queue (ft)	122	137	131
Link Distance (ft)	171	1702	1743
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 427

Intersection: 6: Milton Shopping Ctr North & US 7

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	TR	LT	R
Maximum Queue (ft)	389	282	84	88	100	558	859	155
Average Queue (ft)	377	56	29	29	45	301	369	64
95th Queue (ft)	402	169	68	65	94	528	778	168
Link Distance (ft)	364	364	336	336		633	878	
Upstream Blk Time (%)	85	1				0	1	
Queuing Penalty (veh)	0	0				2	8	
Storage Bay Dist (ft)					75			130
Storage Blk Time (%)					1	18	28	0
Queuing Penalty (veh)					19	24	43	1

Intersection: 7: Milton Shopping Ctr Mid & US 7

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	LT	R	L	TR
Maximum Queue (ft)	231	189	176	144	842	155	162	192
Average Queue (ft)	206	50	100	52	596	70	36	88
95th Queue (ft)	254	125	180	102	1057	189	108	172
Link Distance (ft)	203	203	160	160	823			633
Upstream Blk Time (%)	49	3	6	0	14			
Queuing Penalty (veh)	0	0	15	0	198			
Storage Bay Dist (ft)						130	200	
Storage Blk Time (%)					40	5	1	1
Queuing Penalty (veh)					64	55	5	0

Intersection: 8: Milton Shopping Ctr South & US 7

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	TR	L	T	R
Maximum Queue (ft)	212	85	539	125	154	304	75	358	62
Average Queue (ft)	79	25	412	113	50	211	24	101	6
95th Queue (ft)	197	54	685	158	125	354	61	233	31
Link Distance (ft)	315	315	518			287		823	
Upstream Blk Time (%)	1		44			12			
Queuing Penalty (veh)	0		0			185			
Storage Bay Dist (ft)				100	130		50		100
Storage Blk Time (%)			65	21		21	2	12	0
Queuing Penalty (veh)			102	31		41	13	11	0

Intersection: 9: Haydenberry Dr & US 7

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	T	R	LR	L	TR	LT	R
Maximum Queue (ft)	102	261	43	247	441	296	39
Average Queue (ft)	10	91	15	63	137	29	6
95th Queue (ft)	101	223	41	190	496	158	26
Link Distance (ft)	290	290	71		558	287	
Upstream Blk Time (%)	1	7			5	2	
Queuing Penalty (veh)	0	0			84	13	
Storage Bay Dist (ft)				290			80
Storage Blk Time (%)				0	8	4	
Queuing Penalty (veh)				0	26	3	

Intersection: 16: Hourglass South & Railroad St

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	145	137	412
Average Queue (ft)	70	59	89
95th Queue (ft)	138	112	284
Link Distance (ft)	160	1702	589
Upstream Blk Time (%)	9		3
Queuing Penalty (veh)	26		7
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Hourglass North & Railroad St

Movement	EB	NB	SB
Directions Served	LR	LTR	LTR
Maximum Queue (ft)	154	102	166
Average Queue (ft)	52	21	10
95th Queue (ft)	103	68	112
Link Distance (ft)	336	589	1082
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 976

Intersection: 6: Milton Shopping Ctr North & US 7

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	TR	LT	R
Maximum Queue (ft)	391	300	83	74	100	338	366	893	155
Average Queue (ft)	321	58	29	31	62	141	169	528	74
95th Queue (ft)	459	154	69	66	114	276	311	948	185
Link Distance (ft)	364	364	324	324		628	628	878	
Upstream Blk Time (%)	33	0						5	
Queuing Penalty (veh)	0	0						39	
Storage Bay Dist (ft)					75				130
Storage Blk Time (%)					3	31		45	0
Queuing Penalty (veh)					17	42		69	1

Intersection: 7: Milton Shopping Ctr Mid & US 7

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	R	L	TR
Maximum Queue (ft)	218	120	159	111	124	171	189	115	224	630
Average Queue (ft)	141	43	90	47	37	63	71	15	35	203
95th Queue (ft)	218	92	159	89	82	131	143	67	115	431
Link Distance (ft)	203	203	148	148		825	825			628
Upstream Blk Time (%)	2		3							0
Queuing Penalty (veh)	0		6							3
Storage Bay Dist (ft)					100			130	200	
Storage Blk Time (%)					0	2	1	0	0	12
Queuing Penalty (veh)					1	2	1	0	0	9

Intersection: 8: Milton Shopping Ctr South & US 7

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	R
Maximum Queue (ft)	89	72	348	124	114	174	157	67	480	125
Average Queue (ft)	39	25	124	80	40	69	81	26	185	15
95th Queue (ft)	78	53	271	147	84	137	146	65	361	69
Link Distance (ft)	315	315	505			288	288		825	
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)				100	130			50		100
Storage Blk Time (%)			17	1		1		1	25	0
Queuing Penalty (veh)			26	1		1		8	24	0

Intersection: 9: Haydenberry Dr & US 7

Movement	EB	WB	NB	SB	SB
Directions Served	R	LR	L	LT	R
Maximum Queue (ft)	264	42	101	292	60
Average Queue (ft)	78	12	43	32	7
95th Queue (ft)	178	37	79	176	32
Link Distance (ft)	290	60		288	
Upstream Blk Time (%)	0	0		3	
Queuing Penalty (veh)	0	0		19	
Storage Bay Dist (ft)			290		80
Storage Blk Time (%)				4	0
Queuing Penalty (veh)				3	0

Intersection: 16: Hourglass South & Railroad St

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	131	126	103	295
Average Queue (ft)	41	24	53	66
95th Queue (ft)	84	75	87	186
Link Distance (ft)	148	148	1690	589
Upstream Blk Time (%)	0	2		
Queuing Penalty (veh)	0	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 19: Hourglass North & Railroad St

Movement	EB	NB	SB
Directions Served	LR	LTR	LTR
Maximum Queue (ft)	125	138	139
Average Queue (ft)	48	59	64
95th Queue (ft)	88	99	104
Link Distance (ft)	324	589	1082
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 273

APPENDIX C

TRIP DISTRIBUTION METHODOLOGY

RSG INC.
RESOURCE SYSTEMS GROUP, INC.

TRIP DSITRIBUTION METHODOLOGY

1.0 FUTURE LAND USE TRIP GENERATION VOLUME

River Street Planning and Development with Transportation Concepts and Elabd Architectural Illustration estimated the growth in land use (square feet) by zoning district and general land use category in the August 2007 *Route 7 Land Use and Transportation Study.*

The Town of Milton further refined these numbers to represent growth by 2025, as shown in **Error! Reference source not found.**, based on existing development trends in Milton. The full buildout estimated in the River Street Planning study is dependent on future market forces.

Table 1 summarizes the number of internal and external trips by zoning district expected to be generated by 2025.

Table 1: Internal and External Trip Generation by Zoning District and General Land Use Category[1]

		Internal Trips		External Trips	
Zone	Zoning District Name	Enter	Exit	Enter	Exit
DB1	Downtown	83	83	287	523
M1	MCMP Center	2	2	28	17
M2	MCMP West	0	0	14	8
M4	Checkerberry	171	171	996	857
M5	Old Towne	1	1	15	9
R3	Low Density Residential	0	0	202	113
I2	General Industrial	111	111	680	1,218
C1	Interstate Commercial	28	28	110	116
	Total	396	396	2,331	2,862

External trips were distributed through the road network based on background traffic flows and 2000 Census Journey-to-Work[2] data.

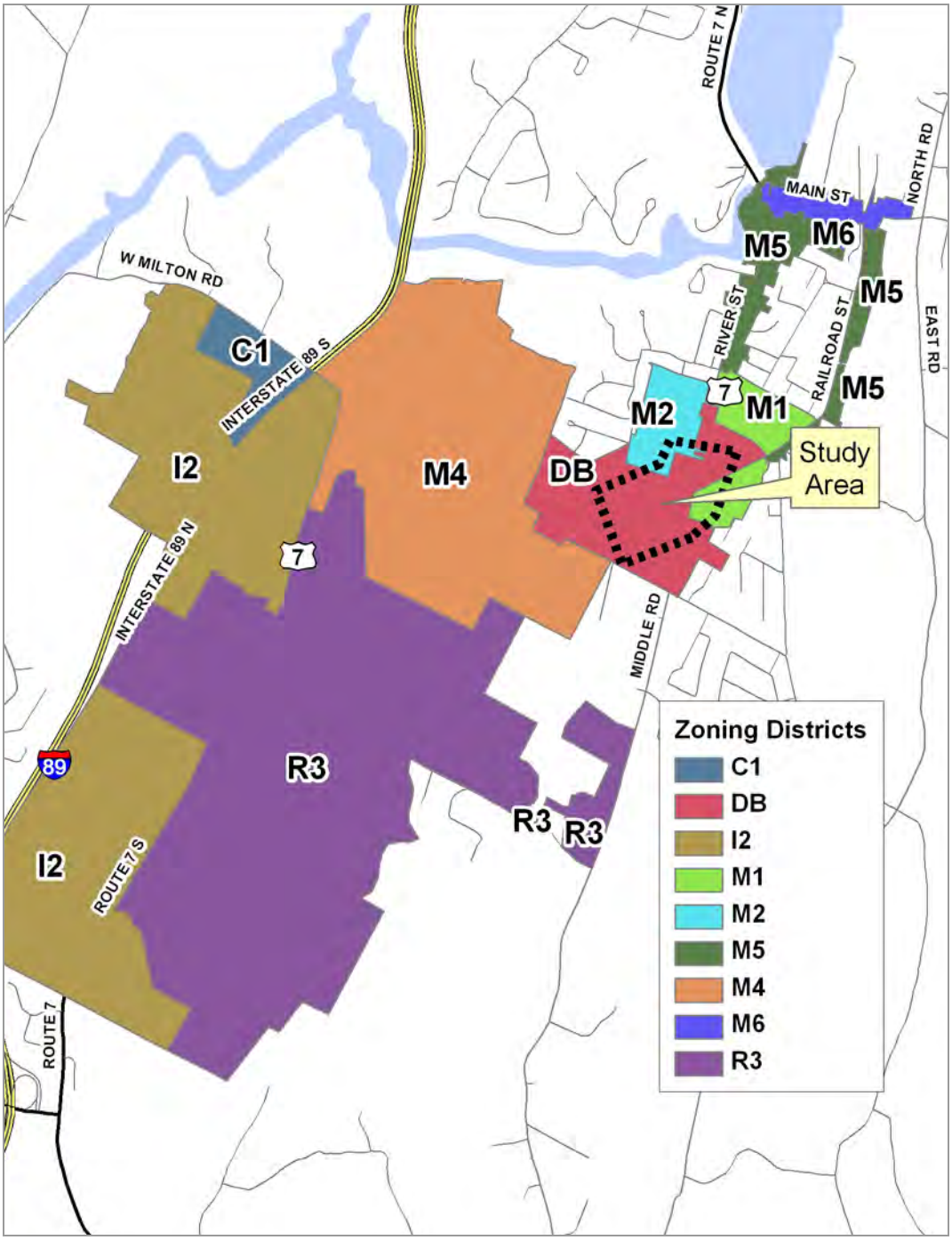
2.0 FUTURE LAND USE TRIP DISTRIBUTION

Two methodologies were utilized for distributing trips generated by future land use estimates based on whether the study area was within each zoning district. Figure 1 shows the location of the study area relative to the zoning districts.

[1] Numbers vary by 0.2% due to rounding error.

[2] US Census Bureau. This data provides estimates of where people work and live.

Figure 1: Zoning District Map



2.1 Zoning Districts Within the Study Area

For trips generated by zoning districts within the study area (DB1, M1, M2, M5), trips were distributed to study intersections in proportion to turning movement volumes. Trips were then distributed among the different movements at each intersection in proportion to existing traffic patterns.

2.2 Zoning Districts Outside the Study Area

For trips generated by zoning districts outside of the study area (M4, I2, R3, C1), trips were distributed using Census 2000 Journey-to-Work data. The Journey-to-Work data tells us the number of commuters traveling from Milton to other municipalities, the number of workers coming to Milton from other municipalities, and the number of workers from Milton that work in Milton. The various municipalities were divided into three categories:

1. North of Milton – commuters from or headed to municipalities where the main route would head north out of Milton
2. South of Milton – commuters from or headed to municipalities where the main route would head south out of Milton
3. Internal – commuters that live and work within Milton

Trips generated by each zoning district outside the study area were divided in proportion to the three categories above and routed through the study area based on existing traffic patterns.

Internal trips were distributed among intersections in proportion to overall volumes.