



US 7 CORRIDOR STUDY **UPDATE 2007**

SAINT ALBANS, VERMONT



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PREPARED FOR:



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1. EXECUTIVE SUMMARY

1.1. Introduction

The purpose of this study is to update the 1996 US 7 Corridor Study completed by Resource Systems Group and Landworks. To reevaluate the intersection levels of service, update future projected traffic volumes, and account for new and proposed developments in addition to any changes made to the transportation infrastructure. The resulting study will be a culmination of the proposed growth in the Exit 20 area and a unified plan that will allow the Town of Saint Albans, Town of Swanton, and Regional Planning Commission to move forward with the necessary multimodal and roadway improvements along the US 7 corridor and VT 207.

The project study area lies primarily within the Town of Saint Albans and also covers a small portion in the Town of Swanton. The project study area begins at the intersection of US 7 and VT 105 and continues north along US 7 until the intersection of US 7 and Jewett Avenue and also includes a section of VT 207, which starts at the intersection of US 7 and VT 207 and ends at the intersection of VT 207 and Bushy Road.

This study, prepared by Hoyle, Tanner & Associates, Inc. for the Northwest Regional Planning Commission is to be used as a model to move the proposed development in the Exit 20 area forward along one unified plan.

1.2. Growth Projections

The Town of Saint Albans northern growth center is centralized in the vicinity of US 7. The average growth rate for the Town of Saint Albans has been approximately an 2% every year for the past 30 years; the Northwest Regional Planning Commission anticipates this growth rate to continue for the next 20 years. There are several projected developments that have already been permitted by the Town of Saint Albans. The predicted additional future traffic from these developments has been distributed through the existing transportation network assuming all the permitted developments will be completed by the 2027 planning year. The growth that has been proposed based on the proposed developments in the project study area is optimistic and is close to a full build out scenario for the Town of Saint Albans.

The Town of Swanton is currently working towards developing a growth center in the vicinity of Exit 20 along VT 207, which will be adjacent to the Town of Saint Albans northern growth center. The growth rate for the Town of Swanton has been approximately a 6% increase every 10 years and it is presumed that this rate will remain constant. It is anticipated that approximately 15% of Swanton's Growth Center could be developed by the planning year 2027; the projected growth was modeled assuming the maximum allowable parcel coverage rate of 30%, which is conservative and will generate the highest number of trips for the anticipated 15% build out.

1.3. Multimodal Transportation

There are currently no sidewalks, designated bike paths, or bike lanes within the project study area and in many places the shoulders on the roads are narrow or nonexistent, which endangers to bicyclists and pedestrians that travel within the project study area. Therefore it is recommended that immediate action be taken to construct designated bike lanes along both sides of US 7 and VT 207 until an adequate sidewalk network can be implemented.

It is also important to develop alternative modes of transportation in addition to sidewalks and bike lanes. Alternative modes of transportation could a way to reduce the number of passenger vehicle trips into the area and also provide transportation services to those who do not have any. There is currently a transit service based in the City of Saint Albans that services the Town of Saint Albans north until the Exit 20 area; it is recommended that the existing network be extended to include service to the Town of Swanton as part of the development of the area. It is also recommended that the possibility be considered of initiating a weekend routes to service the remote areas of the Town of Saint Albans and the Town of Swanton in addition to the routes that would operate once or twice a week to service the surrounding communities.

1.4. Corridor Alternatives

For this study various alternatives were investigated to address the future transportation needs of the Exit 20 area. The first approached attempts to mitigate transportation needs by adding capacity but not changing the character of the area, and minimizing the impact on surrounding businesses. The second approach focused on keeping the necessary improvements within the US 7 and VT 207 corridors. The third approach investigates creating roads to divide the vehicular traffic between the US 7 corridor and an adjacent road. In addition this study analyzed the possibility of using roundabouts at the project study intersections as a possible improvement.

Alternative A proposes minimal improvements to address the deficiencies created by the projected development in the project study area. All proposed work for Alternative A will remain within the right of way, and there would be no significant changes that would impact the adjacent property owners. It was found that with the future traffic volumes Alternative A could not meet required Levels of Service (LOS) for intersection improvements, and therefore is not a solution to he proposed growth.

Alternative B expands on Alternative A by increasing roadway capacity deficiencies and proposes improving the level of service at the intersections. Alternative B requires widening US 7 to six lanes in some places, which would impact surrounding businesses and utilities and also begin encroaching on the right of way. Ultimately, Alternative B resulted in individual approach LOS that were still failing and does not allow room for any growth in the area since the intersections are currently at capacity with only the 20 year planning period and there is little to no room for expansion within the available right-of-way.

Alternative C proposes to create a network of urban collector streets to split the traffic between to US 7 and the new roadway network. The effect of these new roads is significant for improving the intersection levels of service. Alternative C is the only proposed alternative that has all the intersections and their approaches with acceptable levels of service. Alternative C also proposes to construct the Federal Street Extension from Lower Newton Road through to Jewett Ave, in addition VT 207 would be extended west to Lower Newton Road. The creation of these additional roads will serve to divide traffic between US 7 and the new roadway network. With the new roadway network the improvements required on US 7 are less intrusive than with Alternative B.

Other improvements include two two-lane raindrop shaped roundabouts at the intersection of VT 207 and I 89 on/off ramps, slip ramps would be used for all right turn movements. This alternative proposes smaller intersections, therefore allows for the possibility of expanding the network beyond the planning year.

The final alternative that was considered was using roundabouts at the project study intersections based on the traffic volumes use in Alternative C, therefore the new roadway network would be required for all roundabout scenarios. Only some of the smaller intersections were found to be acceptable to include a single-lane roundabout in place of signalizing the intersection. All of the major intersections greatly exceeded the maximum capacity for a single-lane roundabout, therefore it was necessary to evaluate them as a multi-lane roundabout. Of the major intersections in the project study area the only intersections that would be considerations for the multi-lane roundabout was the VT 207/I 89 on/off ramps; all other project intersections either exceeded the capacity for a multi-lane roundabout, were too close to adjacent intersections and had interfering traffic, or had geometric constraints that would be unacceptable for a roundabout.

1.5. Summary

Alternative C was selected as the preferred alternative to be used as guidance document for the Town of Saint Albans, Town of Swanton, and Northwest Regional Planning Commission to move forward with planning for proposed improvements in the project study area. Alternative C not only addresses the deficiencies with the future traffic volumes by creating new roads and some additional traffic lanes, but allows for multimodal improvements, and leaves room in the right-of-way for bicycle lanes and sidewalks.

The future planning year of 2027 only includes a small portion of the development from the Swanton Growth Center. The Town of Saint Albans and Town of Swanton will need to have the ability improve the transportation network, by creating the new roadway network before the land is developed the location of the roads can be given a priority. Locating the new roads will allow the new roads to minimize their impact on any natural or cultural resources located in the land to the west of US 7.

Ultimately each of the proposed alternatives addresses the use of multimodal transportation in the project study area independently. The multimodal improvements are not specific to an alternative and would be part of any proposed improvements to the Exit 20 area. With future developments in the area, bicycle lanes should be

constructed along all major roads in the immediate future; sidewalks would follow as development of the area continues. Sidewalks are proposed along all major roads in the project study area, as well as connections into proposed developments. Improvements would be made to signalized intersection for pedestrians. Finally as development and demand for alternative transportation is needed bus routes would be expanded.

2. INTRODUCTION

The purpose of the US 7 Corridor Study update is to develop a multimodal transportation improvement plan for the US 7 and VT 207 corridors through two municipalities: the Town of Saint Albans and the Town of Swanton. At the conclusion of the study the outcome will be a comprehensive long-term vision for the US 7 and VT 207 corridors in this project study area. The report will include short-term and long-term improvements to the US 7 and VT 207 corridors that will allow the Town of Saint Albans, the Town of Swanton, and Northwest Regional Planning Commission to be able to meet their vision for the corridor. Improvements will address all transportation needs on the corridor including highway, pedestrian, bicycle, snowmobile, bus, and rail.

The corridor study update was commissioned by the Northwest Regional Planning Commission for the State of Vermont and is being prepared by Hoyle, Tanner & Associates, Inc. Funding for the study is provided by the following sources: 80% federal, 10% local, and 10% state. A steering committee was been established to provide policy guidance at critical junctions of the study and to review intermediate conclusions and proposals.

Background

The purpose of this study is to update the 1996 US 7 Corridor Study completed by Resource Systems Group and Landworks with new and proposed developments, update projected future traffic volumes and to reevaluate the levels of service in the I 89 Exit 20 area. Since the completion of that study, there have been several new developments along US 7 in the Town of Saint Albans. Several large developments are in the planning stages when this study was performed. In addition, the Town of Swanton is in the beginning stages of developing a second growth center at the boundary with the Town of Saint Albans along VT 207. The potential for several large developments exist in a relatively small area. This will tax the transportation network greatly, which is will not be adequate to handle the expected traffic volumes and transportation needs of the area. Therefore it is necessary to make improvements to the entire transportation network including bicycles, pedestrians, multimodal, and vehicles. The 2007 US 7 Corridor Study Update will develop a coordinated transportation and land use corridor plan, which will include short, medium, and long term strategies.

Project Study Area Overview

The project study area consists of 1.7 miles of US 7 from the intersection with VT 105 north to the intersection with Jewett Avenue. Included in the project study area is 0.8 miles of VT 207 from the intersection with US 7 to the intersection with Bushey Road.

3. EXISTING CONDITIONS

3.1. Origin and Destinations

The Town of Saint Albans in the project study area has changed significantly since the original corridor study was completed in 1996. There are several businesses that have relocated to the Exit 20 vicinity in Saint Albans. In addition to the new commercial developments, there has been growth in several residential areas in and around the Town of Saint Albans, Town of Swanton, City of Saint Albans and other surrounding communities in Franklin County, Grand Isle County and Canada, which have contributed to the steady commercial and industrial growth in and around Exit 20.

A wide variety of retail businesses, services, restaurants, and industry make up the development in the project study area. Many of the major destinations in the area serve both as tourist attractions as well as places of employment. The following are a list of major destinations in the Exit 20 area:

- **Highgate Commons:** Hannaford Supermarket, Staples, T.J. Maxx, Peebles, Hallmark, Pizza Hut, Radio Shack, Joann's Fabric, Lenny's Shoe and Apparel, Olympia Sports, as well as some other smaller retail and restaurants.
- **Fast Food Chains:** McDonald's, Burger King, Dunkin Donuts, KFC, Taco Bell, and Wendy's
- **Price Chopper Shopping Plaza:** Price Chopper Supermarket, Kinney Drugs, Blockbuster, H&R Block, Merchant's Bank, and a small takeout restaurant
- **Franklin Park West:** People's Trust Co., Paquin Ford & Chrysler, North Country Nissan, F.W. Webbs, Champlain Valley Equipment, St. Albans Mini Storage, Club Respite
- **Champlain Commons:** Thibault Appliances, Corporate Outfitters, City of Lights Ministry, Green Valley Locksmith, Allstate Insurance, Physical Therapy, Party Supply Store
- **Located off US 7 or VT 207:** Energizer Manufacturing, Advance Auto Parts, Sears, Aubuchons, Total Home Center, Tractor Supply Co., Handy Chevrolet, Warner's Snack Bar, Warner's Clothing, Progressive Auto Sales, Champs Driving Range
- **Other Business Types:** Theater, Gas Stations, Used Car Sales, Small Restaurants or Takeout Restaurants, Greenhouse, and Other specialty retail.

The Exit 20 area provides a balance of retail, employment, and other services, which draws residents from all the neighboring communities including Canada. The Exit 20 area is part of the regional growth center identified in the Northwest Regional Plan. Without the availability of services and goods in this area residents would likely travel to Burlington or Newport, Vermont or even to the City of Plattsburg, New York. There are several reasons to maintain the regional growth center as a hub of retail, services and industry.

- To preserve Saint Albans and Franklin County as a thriving economic community.

- To minimize the traffic commuting to the Burlington area, and minimize the traffic burden on the transportation network in the Burlington area.
- To encourage Vermont residents' to continue to support local businesses.
- To encourage additional development and attract businesses and industry to create new jobs and promote responsible growth.

The Exit 20 area is prepared for continued growth to the west of US 7 with a large retail establishment that is currently permitted by the Town and is in Act 250 review with the State of Vermont. Other businesses have also expressed an interest in the property available for development within the Town of Saint Albans' Growth Center. The Town of Swanton is also in the process of creating a Growth Center to the east of I 89, which will be nearly equal in size to the Saint Albans Growth Center in the Exit 20 area.

3.2. Transportation

The project study area covers approximately 1.6 miles along US 7 and 0.8 miles on VT 207 which includes 10 intersections. In order to accurately analyze the traffic within these corridors it is necessary to collect and review various types of data for US 7 and VT 207. This includes the existing characteristics of the roadway network, truck traffic and the impact on intersections as well as the origins and destinations for trucks, all vehicular traffic at intersections and roadway segments, roadway sufficiency, and high crash locations. The other important piece of information to consider is facilities for bicycles and pedestrian.

3.2.1. Corridor Characteristics

This study examined the existing features and geometry present within the project study area for each of the project study intersections and points within the corridor. Roadway widths, widths of travel lanes, location of signals, utilities and speed limit data were collected. Also the location of existing drives, businesses, and buildings were observed, along with shoulder widths, curb and pavement markings. All of the data that was collected was compiled and overlaid on aerial photographs of the project study area. The figures for the existing conditions within the project study intersections are included in Appendix H.

Within the project study area US 7 is a two-lane road with a small segment between the intersection of Price Chopper and Highgate Commons that includes a two-way center lane for left turns. VT 207 in the project study area is a three-lane road from the intersection of US 7 through the intersection of the I 89 NB on/off ramp, after which it becomes a two-lane road. There are three signalized intersections within the project study area; these include the intersections of US 7/Price Chopper, US 7/Highgate Commons, and US 7/VT 207.

There is a mix of commercial and residential drives along the corridors of US 7 and VT 207 with only three major developments that occur off the roadway front. These developments include Price Chopper, Franklin Park West, and Highgate Commons. The

nature of retail and residential drives along the Corridors are important when considering alternatives for future improvements and access in and out of these properties.

During the investigation existing pavement were observed to be in good condition throughout project study area. However, the existing pavement markings have been identified as being in poor condition for the entire project study area. Pavement markings serve to delineate travel lanes and channel traffic. Without clear markings navigating a roadway can be confusing and ultimately create an unsafe scenario. It is important that pavement markings be maintained on high traffic roads, multilane roads, and at intersections.

3.2.2. Truck Traffic

Truck traffic is important to consider as part of a transportation network. Trucks provide industrial and commercial businesses with goods, services and means of transport for their products. While truck traffic is an essential for supporting businesses in an area, they create challenges for the transportation network. Truck traffic requires special consideration for their turning radius, and delay at intersections.

Some of the major trucking operations in the Saint Albans and Swanton area include:

- **SB Collins:** a distributor of petroleum products in the City of Saint Albans located on 54 Lower Weldon Street servicing the local Mobil, Exxon, Shell, and Gulf stations in Franklin, Chittenden, and Grand Isle Counties.
- **St. Albans Cooperative Creamery, Inc.:** creamery in the City of Saint Albans located on 140 Federal Street servicing the local and interregional area.
- **CDL/Maple Pro Inc.:** farm services business in the Town of Saint Albans located on 39 Rewes Drive, which occasionally serves as an auction house for cattle.
- **Casella Waste Management Inc.:** garage in Highgate Center located near the intersection of VT 78 and VT 207 that services businesses in the surrounding areas such as the Town of Saint Albans.

In addition to the truck traffic generated trucking operations, truck traffic is also present to support retail and industrial businesses in the area. It is expected that all of the businesses in the area move goods in and out of their establishments by trucks. Therefore it is important to recognize that future development in the area will ultimately result in an increase in truck traffic. Some businesses that contribute higher volumes of truck traffic associated with their business include, supermarkets, large specialty free standing businesses, and fueling stations.

PM turning movement data provided by the Vermont Agency of Transportation (VTrans) was used to calculate the percentage of truck traffic for each intersection within the project study area. The percentages of trucks traveling during the PM hours maybe lower than during the AM hours since truck drivers often chose to travel at times during the day when the overall traffic volumes tend to be lower.

Truck traffic with percentages exceeding 10% was considered to be high; the highest percentage of truck traffic was concentrated on the northern side of the project study area in the vicinity of VT 207 and I 89, Exit 20. The only other location within the project study area where truck traffic exceeded 10% occurred at the intersection of US 7 and Seymour Road. The percentages of truck traffic and the locations are listed below as follows:

<u>Turning Movement</u>	<u>Truck Traffic</u>
VT 207 westbound to US 7 northbound	10.2%
US 7 southbound to VT 207 eastbound	11.3%
I 89 southbound off ramp to VT 207 eastbound	11.4%
VT 207 westbound to the I 89 northbound on ramp	12.9%
Seymour Road westbound to US 7 southbound	13.1%

The high percentages of truck traffic at the I 89 on/off ramps indicates that the interstate is a primary access point for trucks entering and exiting the project study area. Also a point of interest is the high percentage of trucks turning left off of Seymour Road leads to the conclusion that Seymour Road commonly serves as an access route for trucks destined south for the City of Saint Albans. Trucks currently use Seymour Road instead of VT 105 to turn south on US 7 due to the poor line of sight created by the geometry of US 7/VT 105; otherwise trucks would typically stay on major routes, such as VT 105 to make turns onto US 7.

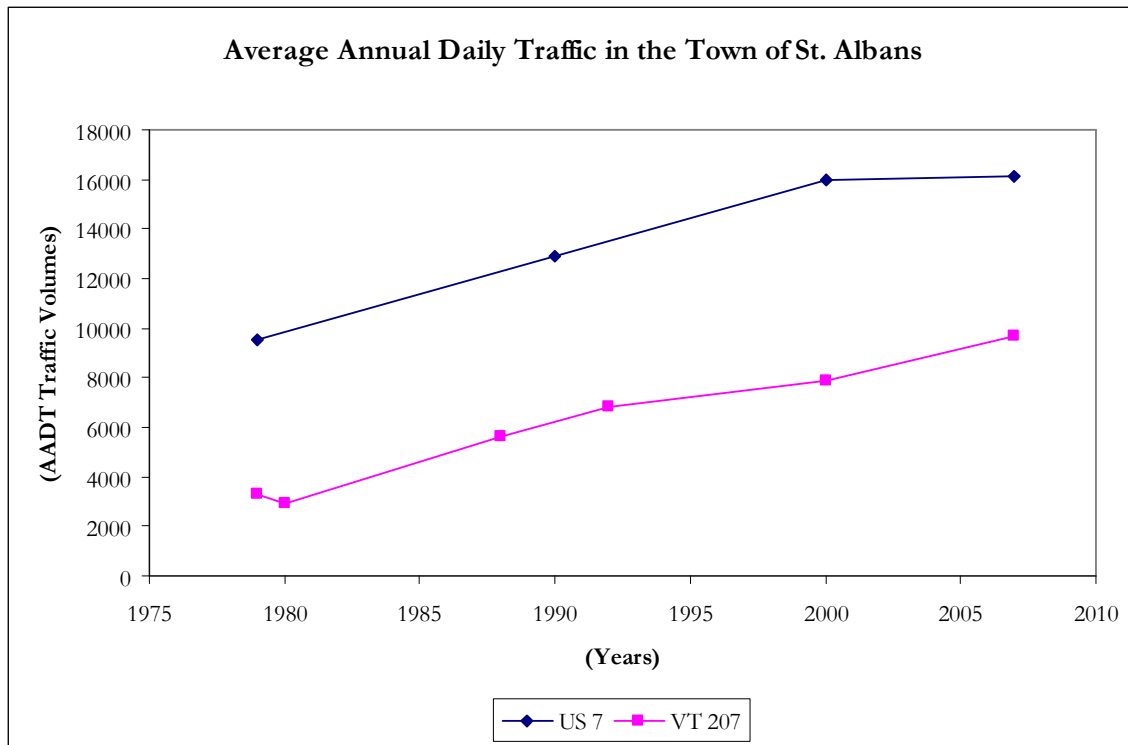
Trucks are larger and heavier than most vehicles, which results in slower movement for trucks through stop controlled and signalized intersections and causes an increase in traffic delays. In order to alleviate the increase in traffic delay the City of Saint Albans currently discourages truck traffic through the downtown and directs trucks to use alternative routes. However the Town of Saint Albans does not have alternative routes for trucks, therefore they must use US 7 north of the City. It would be ideal to add an alternative route to US 7 for the existing truck traffic and future truck traffic to use in the Town of Saint Albans. Separating truck traffic from passenger car traffic can improve the level of service of an intersection.

There are several proposed developments within the Town of Saint Albans all of which will contribute to increasing the volume of truck traffic in order to provide shipments and deliveries to the new developments. The increased traffic volumes have been accounted for in Section 6, Corridor Alternatives and the recommendations to accommodate the increased traffic volumes are covered in Section 8, Recommendations.

3.2.3. Traffic Volumes

Over the past 20 years, from 1987 to 2007 the Average Annual Daily Traffic (AADT) within the project study area has steadily increased by a considerable volume for both US 7 and VT 207. Below figure 3.1 graphically depicts the described increase in traffic volumes.

Figure 3.1



From 1987 to 2007 the AADT for US 7 has increased by approximately 4,500 vehicles or 46.4%. For VT 207 the AADT has increased by approximately 4,100 vehicles or 25.5%. With future development a similar increase in traffic volumes over the next 20 years is expected.

Table 3.1 2007 AADT Data

Route Name	Town	Beginning Reference	Ending Reference	Begin Mile Marker	End Mile Marker	*2007 AADT
US 7	St. Albans Town	St. Albans Town Line	VT 105 Approach	1.13	1.33	15,900
US 7	St. Albans Town	VT 105 Approach	Highgate Road	1.33	1.77	16,500
US 7	St. Albans Town	Highgate Road	Shopping Center	1.77	2.11	16,400
US 7	St. Albans Town	Shopping Center	VT 207 (to I 89)	2.11	2.24	14,600
US 7	St. Albans Town	VT 207 (to I 89)	Swanton Town Line	2.24	2.90	5,000
VT 207	St. Albans Town	US 7	I 89 Ramps A/C: Exit 20	0.00	0.22	9,900
VT 207	St. Albans Town	I 89 Ramps A/C: Exit 20	I 89 Ramps B/D: Exit 20	0.22	0.31	7,900
VT 207	St. Albans Town	I 89 Ramps B/D: Exit 20	Swanton Town Line	0.31	0.42	6,200
VT 207	Swanton	St. Albans Town Line	Woodshill Road	0.00	3.81	2,500
VT 105	St. Albans Town	St. Albans Town Line	VT 105 Approach	0.00	0.27	2,300

*The most recent AADT data available is from 2004; a growth factor of 1.03 has been applied to acquire the estimated values for 2007.

3.2.4. Roadway Sufficiency

The Vermont Agency of Transportation utilizes a rating system to evaluate the adequacy of specific roadway sections that is based on roadway classification and traffic volume throughout the state. The rating system is divided up into the following three weighted categories: structural condition with a maximum rating of 50 points, safety with a maximum rating of 25 points, and service with a maximum rating of 25 points. At the end of rating a roadway, an adjustment is made according to traffic volumes; the adjustment assigns a lower sufficiency rating to high volume roadways and a higher sufficiency rating to less traveled roadways.

Structural condition is based on roadway design and is a measure of the roadway's ability to carry certain traffic loads which include considerations such as the pavement and foundation condition, and the efficiency of the culverts and ditches. Safety focuses on the geometry of the roadway and takes into account features such as the widths of the roadway and travel lane, and stopping sight distance. Service evaluates the roadway's ability to serve the motorist and considers aspects such as speed limits and efficiency of traffic movement.

The following table includes sufficiency ratings for roadway segments within the project study area. The sufficiency ratings were obtained from the Vermont Agency of Transportation.

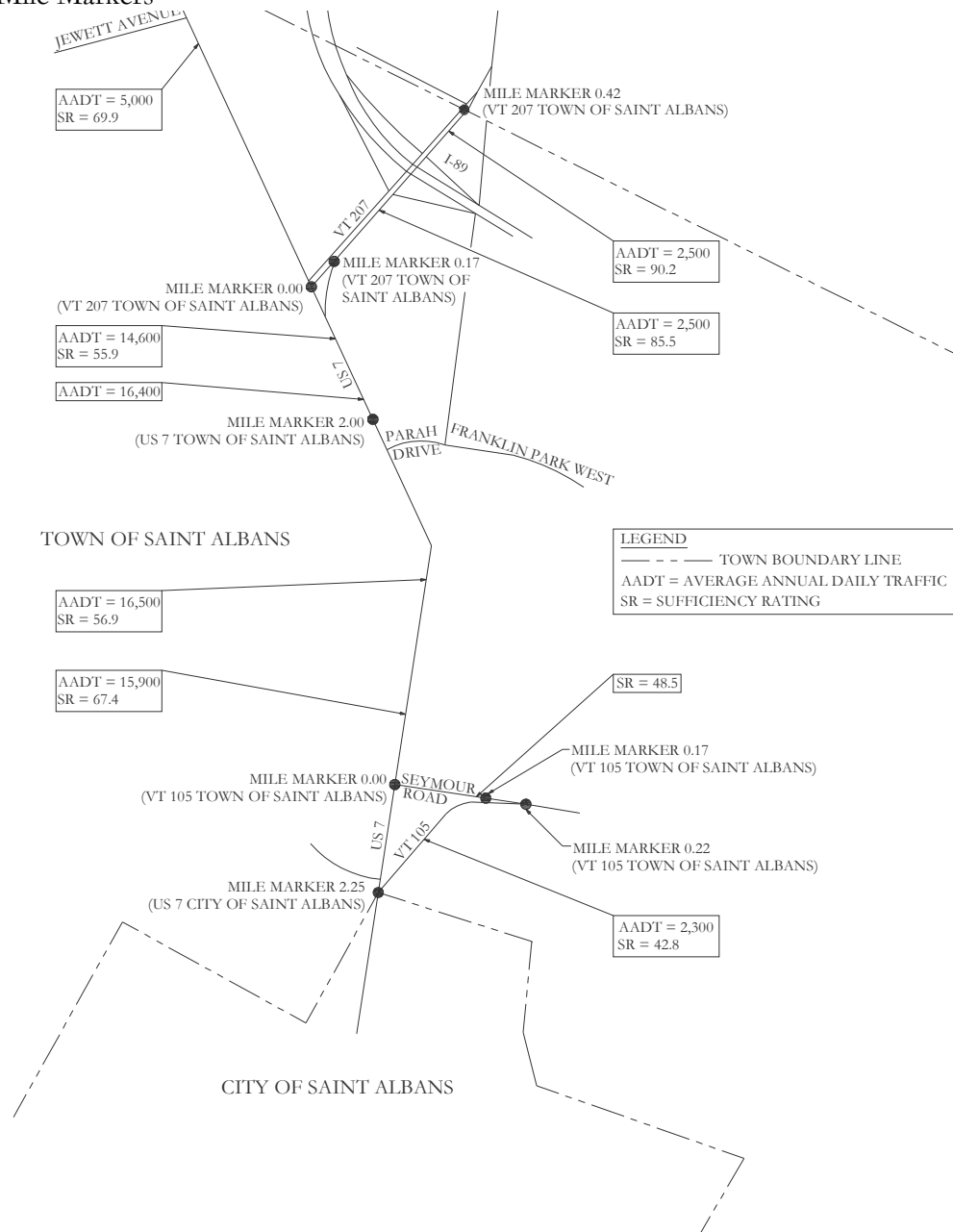
Table 3.2 – 2006 Sufficiency Ratings

Route Name	Begin Town	End Town	Begin Mile Marker	End Mile Marker	Sufficiency Rating
US 7	St. Albans Town	St. Albans Town	1.13	1.31	67.4
US 7	St. Albans Town	St. Albans Town	1.31	1.93	56.9
US 7	St. Albans Town	St. Albans Town	1.93	2.27	55.9
US 7	St. Albans Town	Swanton	2.27	1.23	69.9
VT 105	St. Albans Town	St. Albans Town	0.00	0.94	42.8
VT 105	St. Albans Town	St. Albans Town	0.00	0.17	48.5
VT 207	St. Albans Town	St. Albans Town	0.00	0.32	85.5
VT 207	St. Albans Town	Swanton	0.32	0.16	90.2
VT 207	Swanton	Highgate	0.16	0.30	37.6

To compare ratings and perform a qualitative analysis the following ranges have been defined: 0-60 = poor, 61-80 = satisfactory, and 81-100 good.

US 7 is in satisfactory condition near the intersection with VT 105 and at the northern end of the project study area, however it is in poor condition between Seymour Road and VT 207. VT 105 is in poor condition with sufficiency ratings around 50, and VT 207 is in good condition between US 7 and the I 89 Northbound on/off ramp but in poor condition east of the I 89 Northbound on/off ramp to the intersection of Bushey Road.

Figure 3.2 Mile Markers



3.2.5. High Crash Locations

The Vermont Agency of Transportation periodically publishes a report of all the high crash locations (HCL) in the state. The most recent HCL report was published in May 2007 for the years 2001 to 2005. The HCL locations are identified by either a 0.3 mile long roadway section or an intersection. A roadway section or intersection is identified as an HCL if five or more crashes have occurred in the last five years, (if there is an average

crash rate of one per year), and if the actual crash rate is equal to or greater than the critical crash rate determined statistically. An HCL is considered critical when its actual/critical accident ratio exceeds 2.00.

There are three HCLs, two of which are critical, within the project study area at the following locations:

- VT 105 the roadway section from mile marker 0.00 to 0.28 that begins at its intersection with US 7.
- US 7 the roadway section from mile marker 2.04 to 2.34 that is in the vicinity of the Highgate Commons Shopping Center.
- The intersection of VT 207 and I 89.

The HCL located on VT 105 had eight reported accidents with an actual/critical accident ratio of 1.06, which is not considered to be critical. After a review of the accident reports it was concluded that all were a result of inattention.

The HCL located on US 7 had 43 reported accidents with an actual/critical accident ratio of 3.00, which is considered to be critical. Six accidents were due to poor weather conditions, 16 were due to inattention, five were rear end collisions, and 16 were a result of failure to yield right-of-way. The majority of the accidents occurred in an area where there is a high level of turning activity and a large number of curb cuts, which is between the intersection of US 7 and the Highgate Commons Shopping Center entrance, and the intersection of US 7 and the Price Chopper entrance.

In 2005, efforts were made to improve the intersection of US 7 and the Highgate Commons Shopping Center by extending the island just north of the intersection to prevent vehicles from turning left out of the northern Mobil station entrance only. In addition adjustments were made to improve the signal timing, which include: making left turns protected for vehicles turning off of US 7 and making left turns protected and permitted for vehicles turning out of the Highgate Commons Shopping Center and the Mobil station. Of the 43 accidents reported between 2001 and 2005 for this HCL, seven occurred in the second half of 2005, which is presumed to be after the improvements were made. Therefore this location would still be considered an HCL since more than five accidents occurred at the same location within the past five years. It is important that additional improvements are made to address the other deficiencies at this location.

Six of the accidents caused by failure to yield right-of-way occurred in front of the Colonial Mart. A proposed improvement for this area is to remove the retaining wall in order to design rear access to the Colonial Mart, which would allow vehicles to exit via the Highgate Commons signal. Four of the accidents caused by failure to yield right-of-way and two of the rear end collisions occurred at the intersection of US 7 and the Highgate Commons Shopping Center.

The HCL located at the intersection of VT 207 and I-89 had 13 reported crash accidents with an actual/critical ratio of 1.37. VTrans was only able to locate 12 of the 13 accident

reports for review and from the 12 accident reports, two were a result of poor weather conditions, one was due to inattention, four were caused by failure to yield right-of-way on VT 207, and five were caused by failure to yield right-of-way by vehicles turning off the I 89 northbound off ramp. This HCL is not considered to be critical because the actual/critical accident ratio is less than 2.00 although, because a high percentage of the accidents occurred at the same location and are of the same nature, it is important to investigate these accidents to determine if there is a possible roadway deficiency. It has been determined that there is poor sight distance at the I 89 northbound off ramp for vehicles turning onto VT 207; the piers for the overpass structure for I 89 are located to the west of the off ramp, which is a major contributor to the poor sight distance.

Formerly there were two eastbound lanes on VT 207 near the intersection with I 89 and, in recent years, it has been reduced to one wide lane. A projected benefit of the lane reduction was better sight distance for vehicles turning off of the I 89 northbound off ramp because theoretically all traffic would then be traveling in the center of the road and at a further distance from the piers, which would increase sight distance. However, often through traffic on VT 207 eastbound has been observed to pass cars waiting to turn left onto I 89 northbound on the right, which again reduces sight distance. The right hand eastbound lane on VT 207 was removed between 2002 and 2004. However, based on the actual accident data there was no reduction in the number or types of accidents. Therefore, it will be necessary to use alternative traffic control measures at this location.

The poor sight distance at this location should be addressed because of the high number of similar accidents. Some proposed alternatives would include: reducing the speed limit, adding a traffic signal, changing the intersection to a three-way stop, considering a roundabout for this intersection, or curbing the abandoned eastbound lane on VT 207 to prevent motorists from passing stopped vehicles on the right. Alternatives for this intersection are outlined in Section 6.2.

3.2.6. Bicycle and Pedestrian Facilities

In the Town of Saint Albans there are no designated bike lanes; therefore, most bicycling takes place along the existing network of streets. Because of the absence of sidewalks, these streets also function as pedestrian routes. In a number of locations the shoulders are either narrow or nonexistent. Many of these roads were not designed with bicyclists and pedestrians in mind so there are functional and safety issues that need to be addressed. There have been several bicyclists and pedestrians observed traveling along side US 7 in various locations within the project study area who are at risk and need to be better accommodated.

Providing adequate facilities to pedestrians and bicyclists can be accomplished by constructing sidewalk extensions and designated bicycle lanes outlined in Section 5.3, Multimodal Transportation. Since the original US 7 Corridor Study published in 1996 there has been an emphasis by the Town for the inclusion of sidewalks within new developments as a result many recent developments have included sidewalks such as

Price Chopper off of US 7, the Vermont Federal Credit Union off of US 7, and West Villa Estates off Seymour Road.

The Missisquoi Valley Rail Trail is a shared-use path, which begins at the southern end of the project study area. The entrance to the Rail Trail parking area is located on US 7, just north of the VT 105 intersection, opposite Rewes Drive. The trail is located on a rail bank corridor that was converted to multi-season/multi-use trail in 1993. The Rail Trail is owned by VTRANS and managed by the Northwestern Vermont Rail Trail Council. The trail head is north of Seymour Road and the parking area for Rail Trail users is south of Seymour Road.

During the summer months the trail is used by walkers, runners, and bicyclists. In the winter the trail is open to walking, snowshoeing, cross-country skiing, and snowmobiling. In the winter there is a network of snowmobile trails that cross farming fields and connect with the Rail Trail. One of these trails extends west from Rewes Drive towards Lake Champlain; therefore, snowmobiles are required to cross US Route 7 to access other trails in the network.

3.3. Utilities

US 7 in the project study area has a variety of utilities located within the roadway or right-of-way. These utilities include underground water, sewer, drainage, gas, fiberoptic, and cable. Overhead utilities consist of electric, phone, and cable. It is important to identify the extent of the utilities in the project study area as any proposed improvements would have an impact on several of these services.

3.3.1. Water

There are several water mains within the project study area; one water main parallels the Rail Trail and there are two that parallel to the east side of US 7. One of the water mains that parallels US 7 terminates approximately 300 feet before the entrance to Franklin Park West and the other continues north for the entire length of the project study area. At the northern side of the Price Chopper entrance and in front of the Wendy's restaurant there are water mains that cross the road to tie into businesses on the west side of US 7. There is one short water main that commences on the north side of the Highgate Commons entrance and runs parallel to US 7 for approximately 50 feet and then crosses the road in the vicinity of the Mobil gas station.

3.3.2. Sewer

There are several gravity sewer lines, connections and force mains in the project study area. An inventory of their locations within the right-of-way has been outlined in this section.

Sewer in the vicinity of the US 7 and VT 105 intersection

There are sewer structures present on the northeast and northwest corners of the US 7 and VT 105 intersection. A sewer pipe crosses US 7 between these structures. At the sewer structure on the northwest corner, sewer pipes extend south across Rewes Drive toward the City of Saint Albans.

Manhole in vicinity of Bond Auto Parts near the US 7 and VT 105 intersection

There is a sewer manhole located just north of the Bond Auto Parts store to the west of US 7, which is connected to a force main and a gravity sewer line.

- The force main runs north parallel to US 7 until it reaches a pump station in front of the Thibault Appliance store approximately 280 feet south of the intersection of US 7 and Jewett Avenue. There are two manholes along the gravity sewer line one is in the vicinity of the proposed Wal-Mart entrance across from the Saint Albans drive in theatre and one in front of the Senesac Auto Body Repair.
- The gravity sewer line runs north parallel to US 7 for approximately 210 feet before connecting into another manhole (*Manhole approximately 210 feet north of Bond Auto Parts*).

Manhole approximately 210 feet north of Bond Auto Parts

This manhole connects to four pressure sewer lines.

- Two of the pressure sewer lines come from the northwest direction, one from Price Chopper and one from Dunkin Donuts.
- One pressure sewer line runs north parallel to US 7 for about 120 feet until it makes a 90 degree turn to cross US 7 to the east.
- The fourth pressure sewer line runs north parallel to US 7 until just north of the Highgate Commons entrance; at this point, it makes a 90 degree turn to cross US 7 to run parallel with the Highgate Commons entrance drive. There is a pressure sewer line that ties it in in front of the Wendy's restaurant and crosses US 7 to the east. 15 feet north of this connection is a manhole and another 275 feet north, there is a manhole that is connected to a pressure sewer line that runs to the west.

Manhole in the vicinity of the Shoe Outlet

There is a manhole just south of the Shoe Outlet that connects to a gravity sewer line, which runs north until it reaches the pump station in front of the Thibault Appliance store approximately 280 feet south of the intersection of US 7 and Jewett Avenue. There are 19 manholes along this sewer line; the distance from manhole to manhole varies from 150 feet to 300 feet. There are four manholes that make connections to the gravity sewer that cross US 7.

- One of the connections to the gravity sewer is located just north of the Burger King entrance and connects to a manhole directly across US 7.
- One connection is approximately 250 feet south of the proposed Wal-Mart entrance across from the Saint Albans Drive In Theatre and connects to a manhole directly across US 7.
- One connection is in front of the Senesac Auto Body Repair and connects to a manhole directly across US 7, which then connects to another gravity sewer line that runs south approximately 120 feet parallel to US 7 to connect to another manhole.

- One connection is about 90 feet south of the pump station in front of the Thibault Appliance store approximately 280 feet south of the intersection of US 7 and Jewett Avenue and connects to a manhole directly across US 7, which connects to another gravity sewer line that runs approximately 280 feet north to connect to another manhole.

Sewer in the vicinity of Highgate Commons

There is another sewer line just north of the Highgate Commons entrance that crosses the road.

3.3.3. Natural Gas

Natural gas pipes in the southern end of the project study area are located along the west side of US 7, the south side of Rewes Drive, and the east side of VT 105. In addition the natural gas pipes which continue north parallel to US 7, on the east side of US 7 until it terminates just south of the US 7 and VT 207 intersection.

There is a natural gas pipe that runs behind Highgate Commons along the northeast side of the new Handy Chevy in Franklin Park East, and crosses VT 207 to provide service to the Tractor Supply Company.

3.3.4. Other Utilities

The other major utilities in the area include:

Fiber optic line:	Comcast
Telephone:	Verizon
Electric:	Central Vermont Public Service (CVPS)
Cable:	Comcast Communications

There is one fiber optic line within the project study area that was observed on the east side of I 89 and runs along VT 207 on east side of the road for an undetermined distance; which is owned by Comcast.

Verizon utilities in the project study area are located within the overhead wires, and in a system of underground wires, which can be located by contacting Dig Safe System, Inc. prior to construction.

CVPS has two types of power lines in the area: transmission and distribution. The transmission lines pass through the area connecting different distribution areas; the distribution lines provide power to individual residents and businesses in the distribution area. Transmission lines enter the study area on the south side of Rewes Drive, cross US 7 and connect with a three foot diameter steel utility pole; at this point the transmission lines take a 120° turn north and run parallel to the Rail Trail. At the intersection of US 7 and Seymour Road. The distribution lines in the area run north and south along US 7, which are on the west side of US 7 starting at the south end of the project study area until just north of the northern entrance to Energizer where the lines switch to the east

side of US 7. In addition there are distribution lines in the vicinity of the Handy Chevy dealership, which is part of Franklin Business Park. They come from fields in the southwest direction and begin to parallel VT 207 to the north and east at the intersection of VT 207 and Town Highway 57.

Comcast cable lines in the study area are generally located overhead on the CVPS utility poles, as well as the other utilities mentioned in this section can be located by Dig Safe System, Inc. prior to construction.

3.4. Natural Resources

3.4.1. Wetlands

There are two wetlands that are located within right-of-way in the project study area. The Army Corps of Engineers is unable to determine the classification of these wetlands since there are no recent wetland maps for the area, and any existing wetland data is approximately twenty years old. New wetlands mapping and determination will be required to establish the exact size, location, and classification; although they are assumed to be either class II or class III. The first wetland area is located on the southeast corner of the US 7/VT 207 intersection; the wetlands stretch approximately the entire length of the right turn approach and have an area of 0.21 acres. The other wetland is located on the northeast corner of the intersection of VT 207 and the I 89 northbound on/off ramps; the wetland approximately covers 0.03 acres.

Wetlands and other natural resources are located in the undisturbed land to the west of US 7. If the Town of Saint Albans hopes to utilize this land to create additional roads to support their future traffic needs it is important to layout where the future right-of-ways should be to minimize any impacts to the natural resources that exist on this land. By working with the Army Corps of Engineers and State of Vermont early in the planning process, the land for the proposed transportation network can be reserved, and minimize future resource mitigation that might be necessary to create an adequate transportation network. Planning for future roads and right-of-ways will require developers to create site plans that work around the future transportation network, and the resources in the area.

3.4.2. Hazardous Waste

There are 5 registered hazardous waste sites within the project study area at the following locations: Energizer, Franklin Lamoille Bank, Colonial Mart, Mobil North, and Cobb Auto. Energizer is a hazardous waste site because there was contamination in the plating room; the decontamination is complete although there is ongoing groundwater monitoring. Contamination from dry cleaners caused the Franklin Lamoille Bank to become a hazardous waste site; remediation took place by way of soil vapor extraction and annual groundwater monitoring is performed. The Colonial Mart is a hazardous waste site as a result of the removal of an underground storage tank; there was limited groundwater contamination and the site is currently being monitored for natural attenuation. The removal of an underground storage tank resulted in contamination and

caused the Mobil North to become a hazardous waste site; monitoring wells were placed and there is annual sampling performed. Cobb Auto is a hazardous waste site as a result of the closure of an underground storage tank; additional work is needed to determine the extent of the contamination.

3.4.3. Historical/Archaeological

There is one historic building located within the project study area that is located across from the intersection of US 7 and VT 207, which is a French Second Empire building built in 1880. The Historic Sites and Structures Survey for this area was conducted in 1985. It would have to be investigated to determine if there are any buildings that have become eligible for the register since the survey was conducted 22 years ago.

3.4.4. Other Resources

There have been no endangered species identified within the project study area and currently there are no flood plains present within the project study area. No archaeological review of the corridor was performed as part of this study. However, it is recommended that an archaeological review be performed during the conceptual design phase for the selected alternative.

4. GROWTH PROJECTIONS

4.1. Land Use

US 7 in the Town of Saint Albans is located in the heart of the Town's designated Northern Growth Center, which has been the focus of continued commercial and industrial expansion for more than 10 years. As discussed in Section 3.1 Origins and Destinations, several businesses have opened since the original US 7 Corridor Study in 1996. The Town of Saint Albans is working with developers and property owners within the Northern Growth Center to develop responsible growth plans for their anticipated projects.

Also within the project study area the Town of Swanton has begun the process of designating a new growth center within their Town in the Exit 20 vicinity along VT 207. The Swanton Growth Center, which is still in the planning stages, will compliment the Northern Growth Center on the east side of I 89.

4.1.1. Quality of Life

A community has the opportunity to mold and shape its growth through planning. One of the greatest assets of the State of Vermont is the large green lush countrysides. Franklin County consists mainly of forest and agricultural land. It is the responsibility of the community leaders to design its growth in order to protect these precious areas. It is important to develop Town/City growth plans to maintain the current quality of life that the individuals know today. Growth plans need to be developed to include infrastructure for the future that minimize the impacts to the citizen's lifestyles, health, safety, and convenience. By performing this US 7 Corridor Study Update, it provides infrastructure to allow development in a more centralized area thus allowing the surrounding areas to be maintained as forest and agricultural land. During the development of the infrastructure within the US 7 corridor it is important to be conscious of safety, lifestyle, pollution, health and well being of the users.

The proposed alternative will have ample area to develop and establish a lush green strip that would include a landscape area to provide visually and aesthetically pleasing environments. During the implementation of the US 7 Corridor Study Update the governing body should make a conscious effort to incorporate landscape areas within the Corridor to improve the aesthetics and visual impacts of the area. This could be accomplished by providing landscape islands at the intersections, landscaping along the edge of the road at intersections, and installing street trees along the corridor.

The landscaping would accomplish several things including:

- Provide a natural noise barrier
- Reduce the air pollution along the corridor
- Allow the residential and small commercial establishments along US 7 to have a barrier between their property and US 7

The corridor's only impact on the Missisquoi Valley Rail Trail would be at the intersection of US 7 and VT 105. The proposed changes at this intersection will only enhance and make the Missisquoi Valley Rail Trail head more accessible to the public. The US7 corridor improvements will all typically be within the right-of-way (ROW). In some alternatives it might be necessary to acquire ROW to allow for the expansion of the transportation network. These local connector roads will allow public greater access to open areas.

The impact on the watershed has not been determined at this stage. The amount of impervious surface area will increase for the project area and there will need to be some stormwater measures incorporated in the design in order to minimize the watershed impacts. There are areas along the US 7 Corridor that have a closed drainage system and there are areas that have an open drainage system. Within the corridor stormwater measures should be incorporated in the design to treat the stormwater runoff and reduce the number of impacts on the watershed area within the project study area. There is an opportunity here as well to incorporate attractive detention ponds that will eventually grow in to wetlands, and a habitat for other wildlife.

4.1.2. Town of Saint Albans

The Town of Saint Albans has experienced steady growth since the original US 7 Corridor Study completed in 1996. The average growth rate in the Town of Saint Albans since 1970 is 16.2% every 10 years, an average annual growth rate of almost 2% for the past 30 years. Population projections from the Northwest Regional Planning Commission, *Plan for the Northwest Region 2004-2009* do not indicate that the growth rate will slow in the next 15 to 20 years. Therefore it is important to plan for the anticipated growth in population with improvements to the transportation infrastructure, commercial and industrial businesses, schools and education, government, as well as other services that are needed to create a self-sustaining community.

The Town of Saint Albans has not only managed to become self-sustaining for residents in their community but also provide essential services, goods, and employment for many of the neighboring communities. If the Town Saint Albans wants to remain a vital economic hub in the Northwest they will need to maintain their plan for responsible growth, and work to improve their entire transportation network to accomodate the growth planned in the Northern Growth Center.

Projected development within the Town of Saint Albans in the next 20 years that has either been permitted through the Town of Saint Albans or Act 250 is outlined in Table 4.1 along with other anticipated development that was identified by a Steering Committee formed during the *Exit 20 Transportation Improvement Financing Plan*.

Table 4.1 Projected Developments in Saint Albans Town

Franklin Park West	Commercial/Industrial businesses in free standing structures with individual parking lots	1,294 trips (PM Peak)
Village of Franklin Park	92 Unit Adult Community; single family, duplex, or triplex structures	38 trips (PM Peak)
Franklin Business Park	Commercial/Industrial businesses in free standing structures with individual parking lots	665 trips (PM Peak)
JLD Properties PUD	146,755 sq. ft. Wal-Mart, and future commercial/multifamily residential development	1,119 trips (PM Peak)
Murphy/Redstone	Parcel previously permitted by a large home improvement store	313 trips (PM Peak)
Seymour Property	Commercial/Residential, currently has one commercial building with an individual parking lot and 4 of the proposed 42 townhouses constructed	59 trips (PM Peak)
Poquette Property	Commercially zoned parcel with anticipated development of a shopping center similar to Highgate Commons	624 trips (PM Peak)
Dexter Property	Commercial/Residential zoned parcel with anticipated development of retail and multifamily housing	217 trips (PM Peak)

Trips that were identified by these proposed developments were distributed throughout the existing transportation network in the Exit 20 vicinity based on their location and available connection to adjacent destinations. See Section 6.2 Levels of Service for the distribution of projected development trips.

It is important to note that while the Exit 20 region has seen significant growth over the last 30+ years, it is improbable that all the developments that are currently listed in Table 4.1 would be constructed by 2027 as indicated in other transportation studies. The projected development resembles more of a full build out scenario for the Town of Saint Albans. However this study has been completed with the assumption that the developments listed in Table 4.1 would occur in the 20 year planning period since many of the developments have already been proposed or permitted. Only two developments on the list do not have specifics about what the property would become, simply that the owners have made their intentions clear about developing their parcels beyond the current uses. Therefore this study will analyze the worst case scenario for the transportation impacts in the project study area.

4.1.3. Town of Swanton

The Town of Swanton has also experienced significant growth in the last 30 years averaging approximately 6% increase in population every 10 years, which is anticipated to continue for the next 15-20 years. The current proposal for the Swanton Growth Center within the project study area outlines three districts as a method of defining the types of growth to be allowed; the Core Overlay District, Resource Overlay District and General Growth Center. Maps and Information

provided by the Northwest Regional Planning Commission and Town of Swanton were used to estimate the area identified as the Swanton Growth Center, and the area of each of the three districts to determine the development that would be possible by 2027.

Table 4.2 outlines the analysis of the areas within the growth center and applies the theory that development of the parcels in the growth center could use the maximum allowable coverage for a building of 30% as defined by the Town of Swanton's current zoning for the area. Since it is unlikely that new developments would use that maximum coverage of 30% the estimated trips will be a conservative estimate, resulting in the highest possible trips from this area. It is anticipated that by 2027 approximately 15% of the Swanton Growth Center could be developed.

For example in Table 4.2 for the Large Footprint developments in the Core Overlay District the 2027 Build-Out would be determined by using the total acres for the specified land use multiplied by the 30% maximum allowable building coverage. The 30% coverage was then multiplied by 15% to determine the acres of land that would be covered by a structure in 2027. This acreage was converted into square feet, resulting in a possible 313,632 square feet of commercial building space that would be constructed in 2027.

Table 4.2	Total Acres	Max 30% Structure Full Build-Out		2027 Build- Out (~15%)	
<u>Core Overlay District</u>		Acres	Sq. Ft.	Acres	Sq. Ft.
Mixed Use - Large Footprint	160	48	2,090,880	7.2	313,632
Mixed Use - Commercial/Hospitality	130	39	1,698,840	5.85	254,826
Residential	85	25.5	1,110,780	382.5	166,617
<u>Resource Overlay District</u>					
Residential	145	43.5	1,894,860	6.525	284,229
<u>General Growth Center</u>					
Residential	44	13.2	574,992	1.98	86,248.8

The 15% build-out square footages for the proposed districts were then divided into various land uses based on the current zoning information from the Town of Swanton. The division of the land uses is outlined in Table 4.3. Dividing the districts into the individual land uses is necessary to calculate the anticipated trips that will be generated from the growth center. The land uses and square footage identified in Table 4.3 were then applied to the Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th Edition trip generation rates for the land uses in each district to calculate the P.M. peak trips between 4-6 p.m. on adjacent street. Table 4.4 outlines the generation of trips for the Swanton Growth Center for 15% build-out.

Table 4.3 – Division of Square Footage for Growth Center**Core Overlay Area**

Mixed Use - Large Footprint	100%	313,632	Sq. Ft.
<i>Shopping Center</i>	<i>75%</i>	<i>235,224</i>	<i>Sq. Ft.</i>
<i>Business Park</i>	<i>15%</i>	<i>47,044.8</i>	<i>Sq. Ft.</i>
<i>Garden Center</i>	<i>10%</i>	<i>31,363.2</i>	<i>Sq. Ft.</i>

Mixed Use - Commercial/Hospitality	100%	254,826	Sq. Ft.
<i>Financial Institute</i>	<i>5%</i>	<i>12,741.3</i>	<i>Sq. Ft.</i>
<i>Daycare Center</i>	<i>5%</i>	<i>12,741.3</i>	<i>Sq. Ft.</i>
<i>Shopping Center</i>	<i>60%</i>	<i>152,895.6</i>	<i>Sq. Ft.</i>
<i>General Office</i>	<i>30%</i>	<i>76,447.8</i>	<i>Sq. Ft.</i>

Residential - Building Structure		166,617	Sq. Ft.
<i>Condo/Townhouse – 1800 Sq. Ft.</i>		<i>92.565</i>	<i>Units</i>

Resource Overlay Area

Residential - Building Structure		284,229	Sq. Ft.
<i>Single Family - 2500 Sq. Ft.</i>		<i>113.6916</i>	<i>Units</i>

General Growth Center

Residential - Building Structure		86,248.8	Sq. Ft.
<i>Single Family - 2000 Sq. Ft</i>		<i>43.1244</i>	<i>Units</i>

The trips that were calculated for the Swanton Growth Center were distributed throughout the transportation network in the Exit 20 vicinity along VT 105 and US 7. The impacts of the trips generated by this growth center are identified in Section 6.2 Levels of Service. The Town of Swanton is still working with the Northwest Regional Planning Commission to develop rules, regulations, and designations within the new growth center that will be inline with the Northwest Regional Planning Commission's plan for the Exit 20 area.

Table 4.4 – Trip Generation for 15% Swanton Growth Center Build-Out

ITE Landuse Code	Land Use Description	Average Rate PM 4-6		Directional Distribution		Proposed Size	Number of Trips		
			per	Enter	Exit		Enter	Exit	Total
565	Daycare	13.18	1000 sqft	47%	53%	12,741.3	79	89	168
210	Single Family	1.01	Unit	63%	37%	156.816	100	59	158
230	Condo/ Townhouse	0.52	Unit	67%	33%	92.565	32	16	48
710	General Office	1.49	1000 sqft	17%	83%	76,447.8	19	95	114
817	Garden Center	1.99	1000 sqft	50%	50%	31,363.2	31	31	62
820	Shopping Center	3.75	1000 sqft	48%	52%	388,119.6	699	757	1,455
912	Drive In Bank	45.74	1000 sqft	50%	50%	12,741.3	291	291	583
770	Business Park	1.29	1000 sqft	23%	77%	47,044.8	14	47	61
							1,266	1,384	2,650

4.2. Saint Albans Planning & Zoning

Currently the Town of Saint Albans has designated land surrounding Exit 20 and extending to the south as their Northern Growth Center. This growth center is composed of Commercial (COM), Commercial/Residential (C/R), Light Industrial (LIND), and Heavy Industrial (HIND). This mix of zoning allows for various types of office, retail, service and industrial development as well as multiunit residential structures. The Town of Saint Albans Zoning Department recently released updated rules and regulations in 2006. The updated rules and regulations provide clear guidance as to the allowed or conditional uses of the land, minimum parcel sizes, and maximum lot coverage. It would also be important to establish growth goals and ideal community character. This could be used to encourage smart growth, walkable neighborhoods, and establish goals of combining commercial and residential uses within a development.

The Northern Growth Center is surrounded by large areas of residentially zoned land, where single family dwellings or multifamily units are permitted. There is a good balance between the land zoned for commercial/industrial purposes and residential land to support the commercial/industrial land.

4.3. Swanton

The Town of Swanton has realized an opportunity in the growth that has taken place in the Exit 20 vicinity in the Town of Saint Albans and created a growth center along the southern border of the Town of Swanton in the Exit 20 vicinity. The Swanton Growth Center will provide a balance on each side of I 89 between the two growth centers.

The Town of Swanton is focusing growth in their growth center to be a mix of large footprint stores and businesses, smaller stores and businesses, single/multi family housing, childcare centers, and hospitality businesses. The Town is considering three designations within the growth center:

- Core Overlay District: larger footprint structures and dense development
- Resource Overlay District: smaller footprint structures to minimize impact to natural resources in the area
- Southern Growth District: all land in the growth center that does not fall within the boundaries of the other two districts.

The Town of Swanton is encouraging the development of a self-sustaining community with the designation of growth districts and types of commercial/residential development that is permitted or conditional.

4.4 Limiting Factors on Growth

The City of Saint Albans wastewater treatment plant is close to capacity and without upgrade it will be difficult to accommodate all the proposed growth; therefore sewer and water allocations will control the growth in the area until improvements are made. The City and Town are currently in the preliminary phase of having the wastewater treatment plant reviewed.

Future developments within the City and Town of Saint Albans may be limited and development will be dependent on the approval of an enhancement and expansion project for the existing wastewater treatment plant.

A sewer allocation commitments list was obtained from the City of Saint Albans for projects currently permitted to make a connection to the local wastewater treatment plant. The projects within the project study area that have been approved by the design review board and are included on the commitments list are listed as follows:

<u>Development</u>	<u>Project Description</u>
JLD Properties PUD	Construction of a 146,755 sq. ft. Wal-Mart on US 7.
Village of Franklin Park	Construction of a 92 unit elderly housing development.
Franklin Business Park	Construction of a proposed 75 room hotel.
Franklin Park West	Construction of lots 13-18, 20-23, and 29-33 and construction of a 3,840 sq. ft. automotive sales and service business.

5. TRAFFIC ANALYSIS OF CORRIDOR

5.1. Road Functionality/Capacity

5.1.1. Road Functionality

Roadways are classified as either rural or urban depending on the region's characteristics, which are primarily associated with land use, population density, and travel patterns.

Roadways are further divided into three functional classes: arterial, collector, or local that are categorized by the level of mobility and the accessibility to the adjacent land. The functional class of a roadway is important for determining funding eligibility and for roadway design, and to assist in the selection of certain roadway characteristics such as the dimensions and speed.

Arterial roads provide the greatest mobility by spanning long distances at high speeds although they supply limited access to the adjacent land. Arterial roads are subdivided into two groups: principal or minor; principal arterial roads are comprised of high traffic volumes while minor arterial roads have lower traffic volumes and often serve as the connection to the principal arterial roads.

Collector roads have comparable levels of mobility and accessibility that cover shorter distances at lower speeds. Collector roads connect the traffic from the local roads to the arterial roads and are classified as major or minor, which is dependent on traffic volumes.

Local roads consist of any road not classified as either an arterial or collector, which have low mobility and a high degree of access, primarily to land with little or no through movement.

The functional classes of the roadways within the project study area are as follows:

<u>Roadway</u>	<u>Functional Class</u>
US 7 (South of Seymour Road)	Major Collector
VT 105	Minor Collector
Seymour Road	Minor Collector
VT 207	Major Collector
I 89	Principal Arterial
Jewett Avenue	Local Road
Bushey Road	Local Road

5.1.2. Road Capacity

Road capacity is the maximum number of vehicles that the roadway can acceptably handle for a specific time period, which is often expressed as passenger cars per hour (pc/h). The Highway Capacity Manual published in 2000 states that the maximum capacity for a two-lane highway is a flow rate of 3200 pc/h. There is no place within the project study area where the actual flow rate exceeds the maximum capacity; the highest

flow rate occurs during the peak hour at the southern end of the project study area between the intersection of VT 105 and Seymour Road and is a total of 1762 pc/h for the future base traffic. Therefore within the project study area the number of travel lanes in each direction will be controlled by the intersection levels of service.

5.2. Access Management

The key to effective access management is linking appropriate access design to roadway function. Successful access management protects and enhances property values while preserving the public investment in our roads.

The primary design techniques used in access management focus on the control and regulation of the spacing and design of the following:

- Driveways and streets
- Medians and median openings
- Traffic signals
- Freeway interchanges

There are six basic principles to assist in achieving the benefits of access management.

- Limit the number of conflict points
- Separate conflict points
- Separate turning volumes from through movements
- Locate traffic signals to facilitate traffic movement
- Maintain a hierarchy of roadways to function
- Limit direct access on higher-speed roads

Good access management practices incorporated in the zoning by-laws by the local municipalities allow for the access management plan to succeed. The Town of Saint Albans has placed access management requirements into their zoning by-laws. They have provided the developer an opportunity to gain bonuses by meeting and exceeding the access management requirements.

There are several design standards that will need to be met during the design implementation of the study. The VTRANS places roads into several access management categories; a map of the northwest region of Vermont with each road labeled with the appropriate access management category and a list of the different categories and their descriptions are available on the VTrans Access Management website. According to the map the entire project study area is considered to be an access management category 3; a copy of the map showing the access management category for the project study area and a copy of the section from the *access management program guidelines* for category 3 have been included in Appendix E.

In the 1996 US 7 Corridor Study the Consultant recommended connecting some of the businesses along US 7 to one common access road. A good example of this is the

construction of Merchants Bank, Kinney Drugs, Blockbuster Plaza, and Wendy's which have entrance and egress through the Price Chopper access road. Hoyle, Tanner & Associates, Inc. would recommend continued encouragement of access roads for multiple establishments with smaller businesses and egresses off the access road instead of directly onto US 7.

In addition, Hoyle, Tanner & Associates, Inc. has a detailed understanding of the project study area through various projects and frequent visits as consultants and residents. Several locations have been observed where implementing some access management practices would alleviate some of the high crash locations.

One such location is at the McDonalds, which is just north of the intersection of Price Chopper and Franklin Park West on the east side of the road. It is suggested to convert the current exit from this business into a right hand exit only and have all other vehicles exit through Highgate Commons at the signalized intersection.

It is also recommended to create an exit for the Colonial Mart into Highgate Commons in order to reduce the amount of traffic accidents in front of the Colonial Mart. There is about a two foot elevation change created by a retaining wall at the west edge of the Colonial Mart. It is suggested to build a ramped connection between the Colonial Mart into Highgate Commons, and to force exiting vehicles through the lighted intersection at Highgate Commons and eliminate any left hand turns out of the Colonial Mart.

It is also recommended to implement access management practices at the Snack Bar near Jewett Avenue. It is suggested to reduce to a two lane access and move the Snack Bar access to the north and try to align with Jewett Avenue.

The Vermont Agency of Transportation implemented access management practices at the Mobil Station near the Highgate Commons intersection by constructing a median on US 7 north of Highgate Commons to prevent left turns from the northern Mobil Station entrance to US 7 northbound. They are currently investigating an extension of this median to increase the southbound left turn lane and to create a longer divided highway between the Highgate Commons intersection and VT 207. Hoyle, Tanner & Associates, Inc. would recommend connecting the access road for Sears with the future Loop Road to alleviate traffic congestion on US 7. The vehicles that need to travel north from the Mobil station can exit to the access road for Sears and use the traffic light.

5.3. Multimodal Transportation

5.3.1. Taxi Service

Taxi service is available to the Town of Saint Albans through privately owned businesses, which mainly accept calls for service within the Saint Albans area and will leave the Saint Albans area on a limited basis. There are currently no designated areas for taxis to wait along roadways or at the major shopping centers.

5.3.2. Snowmobiles

There are several snowmobiling trails located within the Town of Saint Albans, which are maintained by the Vermont Association of Snow Travelers (VAST). The trails are exclusively available to VAST members during the winter months unless granted special authorization. The VAST organization is a proprietary club and the exact location of the trails is a privilege to their members. However, VAST trails have been identified along Rewes Drive, which connects to the Missisquoi Valley Rail Trail.

5.3.3. Rail

There was formerly a rail bank corridor within the project study area in the vicinity of the intersection of US 7 and VT 105 although in 1993 it was converted into a multi-season/multi-use trail, which is now the Missisquoi Valley Rail Trail. There is an Amtrak station located on Federal Street in the City of Saint Albans, which is south of the project study area.

5.3.4. Transit Service

The Northwest Vermont Public Transit Network, Inc. was formed in 1991 to serve the counties of Franklin and Grand Isle with transportation services such as general public fixed routes that are available to the entire population, which follow defined alignments and operate on specific schedules; in Saint Albans the route is concentrated within the City and extends north to the Town on US 7 until it reaches Exit 20 just south of the intersection of US 7 and VT 207. It is proposed to expand the route further north to include the Town of Swanton with the following suggested stops:

- Post Office located at 21 Grand Avenue.
- Grand Union located at 139 First Street.
- Giordano Manor Community Care located at 34 Canada Street.
- Hi-Swans Senior Center Inc. located at 47 Church Street.

It is proposed to initiate a weekend bus route to service the more remote areas of the Town of Saint Albans and the Town of Swanton to provide access to services within the Town of Saint Albans once the Town grows to become an economically sustainable community.

It is also recommended to create alternative routes to service the surrounding communities once or twice a week, which would include the following destinations:

- Enosburg/Sheldon
- Fairfield/Bakersfield
- Grand Isle
- Georgia/Fairfax/Milton

The low-density rural development pattern in Vermont makes it difficult to meet all the mobility needs of a community therefore specialized services have been created for individuals with specific mobility needs such as Medicaid transportation, elderly and disabled transportation, and Vermont Rideshare/ride match programs.

- The Medicaid transportation is provided by volunteer drivers and is available to Medicaid recipients for transportation to medical appointments.
- The elderly and disabled transportation provides transportation to the transportation-disadvantaged population for access to employment, medical offices, grocery stores, community events, senior meal locations, and Club Respite, an adult day program located in Franklin Park West.
- Vermont Rideshare/ride match programs were developed to provide commuters with applicable transportation resources such as carpooling and employer-based rideshare.

5.3.5. Chittenden County Transportation Authority (CCTA)

The CCTA was chartered in 1973 by the Vermont General Assembly and is Vermont's first and only transit authority. The CCTA offers many different services such as: fixed route transportation, commuter shuttles, and curb-to-curb services for people with disabilities.

In October 2005 the CCTA created an inter-regional route that connects Saint Albans to the CCTA network located in the Greater Burlington Area named the Saint Albans Link Express. The Link Express travels from Burlington to Saint Albans twice in the morning and twice in the afternoon every weekday. The main goal of the Saint Albans Link Express is to provide commuters from each region with access to employment, shopping, and other services. The Link Express is eighty percent federally funded through a three year program, which will end in October 2008. Currently the route is not profitable and if this persists the route will be discontinued in October 2008.

In order to increase the number of riders it is recommended that the existing schedule be revised. For commuters traveling from Saint Albans to Burlington the bus arrives in Burlington at 7:40 am and 8:40 am and departs at 4:50 pm and 5:30 pm; it is anticipated that there would be greater use of the Link Express if the schedule was revised to accommodate people who need to be to work earlier or leave later.

The Link Express is most commonly used by workers from Franklin County seeking access to employment in the Burlington area. Large employers often stagger their shift start times to help alleviate traffic congestion. It was observed that several riders disembark at the FAHC stop, Fletcher Allen Health Care (FAHC) is one of the largest employers in the Burlington area with shifts commencing at 7:00 am, 7:30 am,

8:00 am, and 8:30 am. The 7:00 am shift employs a large number of people although the current Link Express schedule primarily caters to the 8:00 am shift.

Also many commuters that could utilize the Link Express finish their day up to an hour before the departure times; and therefore end up having to wait. It is recommended that a survey of employees at FAHC and other prominent businesses be performed to aid in the adjustment of the existing schedule; rather than only surveying existing riders.

Since the CCTA is based in Burlington it would be difficult for drivers to arrive in Saint Albans any earlier or leave any later. For the long term commuter bus route to be successful the services would originate within the local community and connect to other communities such as Burlington.

5.3.6. Connectivity to Multimodal Transportation Facilities

It is imperative to provide the means for pedestrian movement within the Town of Saint Albans and to make a connection to the existing sidewalk network within the City of Saint Albans. Improved bicycle and pedestrian networks can reduce the need for parking facilities, support existing community centers, reduce sprawl, and play a central role in Vermont's movement toward a multimodal transportation system.

The Saint Albans Traffic Circulation Study completed in 2002, the Sidewalk Master Plan produced for the Town of Saint Albans in 2003, and the Saint Albans Town Plan of 2005 all make recommendations to extend the existing sidewalks in the City of Saint Albans that terminate just south of the intersection of US 7 and VT 105 at the southern end of the project study area to the northern end of the project study area in the Town of Saint Albans.

The Sidewalk Master Plan divides the proposed sidewalk for the project study area into two segments: Segment A-1 and Segment A-2. Segment A-1 proposes a sidewalk to the east of US 7 from the Saint Albans City/Town line to the intersection of US 7 and Parah Drive, which is zoned for commercial use although currently there is little development. This segment would require the City of Saint Albans to construct approximately 800 feet of sidewalk in the City to make the connection between the City and the Town. Segment A-2 proposes sidewalks on both sides of US 7 from the intersection of US 7 and Parah Road to a point beyond VT 207.

Sidewalks that are connected to public transportation facilities increase the use of the sidewalks as well as public transportation. It is logical to connect public transportation to sidewalks in order to provide the public transit users with easy access to the services. Currently the public transit provider makes stops at Price Chopper and the Highgate Shopping Center. The recommended sidewalk extension would play a major role in making a connection to the existing bus stops as well as to the community as a whole.

The most practical and efficient way to provide safe and accessible routes is to include sidewalks and bike lanes in the construction of new roadways and improve the existing network. Sidewalks and bicycle facilities are integral to the transportation system to provide direct links to destinations. The Town of Saint Albans has acknowledged this and has implemented requirements to include sidewalks within certain residential and commercial projects, but not along roadways where the town would be required to be a co-applicant.

The Saint Albans Traffic Circulation Study completed in 2002 recommends connecting the Missisquoi Valley Rail Trail to development in the Exit 20 area; it is necessary to link the existing transportation networks to present and future developments to work towards achieving a complete transportation network.

The Missisquoi Valley Rail Trail currently connects into a new senior living community called the Village of Franklin Park West. This development has constructed a small picnic area along the Rail Trail and public rest room facilities. The future Swanton Growth Center is also bordered by the Rail Trail and has the possibility of making a connection in the area at this point. It is not practical to extend the Rail Trail or bike path from VT 105 north along US 7 due to limited roadway widths. However with the construction of the Federal Street Extension and connection north of VT 105 to the Loop Road at VT 207 there is the possibility of including a major pedestrian access into the Price Chopper/ JLD PUD developments.

5.3.7. Improvements to Multimodal Transportation Facilities

In the US Route 7/VT Route 105 Intersection Alternative Alignment Study performed by Hoyle, Tanner & Associates, Inc. in 2004 several improvements were recommended for the vicinity of the Missisquoi Valley Rail Trail to increase the level of safety for the Rail Trail users. The recommended improvements include:

- The conversion of Seymour Road into a dead-end road to reduce traffic volumes and decrease vehicle speeds.
- The proposed intersection realignment of US 7 and VT 105 with Rewes Drive to be signalized with a phase for pedestrians or snowmobiles to allow for a safe crossing of US 7.
- The parking lot expansion to accommodate more users and vehicles with snowmobile trailers.

Additionally, the Saint Albans Traffic Circulation Study completed in 2002 recommends the development of multimodal transportation facilities within the City and Town of Saint Albans. Multimodal transportation facilities should be designed to connect the various transportation networks and popular destinations. Some of the goals of a multimodal center are to centralize facilities, encourage all modes of transportation, to alleviate traffic congestion in the area, and to make appropriate information available to the public regarding their variety of transportation options.

The study also proposed the conversion of the existing Amtrak station located in the City of Saint Albans on Federal Street into a multimodal center. Two appropriate locations for a multimodal transportation facility within the Town of Saint Albans would be in the Price Chopper Plaza or Highgate Commons Shopping Center because both are frequent travel destinations and already serve as bus stops.

Turning movement data provided by VTrans includes data for pedestrian movements. Several pedestrians have been recorded at the following intersections: US 7 and VT 105, US 7 and Seymour Road, and US 7 and Highgate Commons. There was no pedestrian movement data available for the intersection of US 7 and Price Chopper although the intersection is in close proximity to the intersection of US 7 and Highgate Commons. Therefore it can be assumed that both of the intersections have similar pedestrian movement.

Currently there is no pedestrian phasing at the signalized intersections or crosswalks elsewhere in the project study area. It is extremely difficult for pedestrians to find a long enough gap in the traffic flow to cross the US 7 or VT 207. It is recommended that the existing signal timing be modified to include a phase for pedestrians, painted crosswalks be constructed, and a pedestrian actuated signal be provided at the intersections when the warrants for a pedestrian phase have been met. Once the criteria have been met for the proposed signal at the intersection of US 7 and VT 105 in addition to the inclusion of sidewalks it is recommended that a phase in the signal timing for pedestrians be included along with installing pedestrian actuated push buttons. For the intersection of US 7 and Seymour Road it has been proposed that Seymour Road be converted into a dead end road, which would decrease the pedestrian vehicle conflict at the intersection. Therefore the recommended improvements are minimal, which include the installation of a crosswalk and the construction of sidewalk along Seymour Road.

It is recommended that immediate action be taken to improve pedestrian mobility along US 7 and VT 207; at a minimum it is recommended that 4-foot bike lanes be constructed with adjacent curbs for each side of US 7 and VT 207 for the entire length of the project study area. The proposed bike lanes would provide a place for bicyclists and a safer place for pedestrians until an adequate sidewalk network can be established.

Prior to the construction of the proposed designated bicycle lanes in order to make motorists aware of the existence of bicyclists and to alert them to use greater caution it is recommended that bicycle warning signs be placed along US 7 and VT 207, such signs display a picture of a bicycle on one sign with a sign below it, which reads "Share the Road". After the construction of the proposed designated bicycle lanes it is recommended that the bicycle/"Share the Road" signs be replaced with bicycle lane signs in addition to placement of the necessary pavement markings to designate the bicycle lanes.

Currently there is limited street lighting along US 7, which presents a dangerous situation for pedestrians and the ability for motorists to see pedestrians that are traveling along US 7 where there are little or no shoulders. Therefore it is also

recommended that additional street lighting along US 7 be provided for the entire length of the project study area.

6. CORRIDOR ALTERNATIVES

6.1. Previous Transportation Studies

6.1.1. Exit 20 Transportation Financing Plan, January 2006

In 2006 Resource Systems Group (RSG) completed a study with the purpose of determining how to finance all the roadway improvements proposed by the various transportation studies in recent years. Roadway improvements need to be made in the I 89 Exit 20 area in the Town of Saint Albans to accommodate the future projected traffic volumes; RSG developed three alternatives A, B, and C, which were the considered alternatives for the necessary improvements.

Alternative A proposes to upgrade the existing roadway by the addition of new through lanes and turning lanes at each of the study intersections, which include: US 7 and VT 105, US 7 and Seymour Road, US 7 and Price Chopper Drive/Franklin Park West, US 7 and Highgate Commons, US 7 and VT 207, US 7 and the proposed JLD Properties PUD access, US 7 and Jewett Avenue, and VT 207 and I 89 southbound and northbound on/off ramps at 207. Alternative A was not chosen as the recommended alternative because there are two intersections that have a level of service of E, which fails to meet the assumed performance target level of service of D or better.

Alternative B proposes the addition of four roads that connect to US 7 from the west, one that is just north of the proposed JLD Properties PUD access, one that connects to the proposed JLD Properties PUD access, one that is a direct extension to VT 207, and one that connects into the intersection of Price Chopper and US 7. All intersections in the study area for this alternative have achieved acceptable levels of service.

Alternative C is the same as Alternative B with an addition to the Federal Street extension, which would connect the four west side connector roads to the northern end of the Federal Street extension. For Alternative C all the intersections function at an acceptable level of service.

Alternative B is the recommended alternative because it has acceptable levels of service and meets the needs of the project study with a lower cost of construction than Alternative C. Future economic growth within the study area may make Alternative C a necessary alternative.

6.1.2. Federal Street Corridor Study – 2005 Update:

This study evaluates a proposed extension to Federal Street that would convert it into an urban collector road, which would improve truck access and help relieve existing and future traffic congestion along US 7 in the City of Saint Albans. There are five proposed segments that would constitute Federal Street and its extension, two of which have proposed alternatives. The first alternative proposes a road to connect Rewes Drive near the intersection of US 7 and VT 105 to Lower Newton

Street. The second alternative proposes a road to connect Kingman Street to Lower Weldon Street although for the purpose of this study the Kingman Street to Lower Weldon Street alternative is not considered since it is completely outside of our project study area.

This study recommends extending Federal Street up to Rewes Drive to make the connection of the Federal Street Extension to VT 105.

6.1.3. US Route 7/VT Route 105 Intersection Alternative Alignment Study:

Four alternatives were considered for the US Route 7/VT Route 105 Intersection Alternative Alignment Study completed by Hoyle, Tanner & Associates Inc.

- Alternative A assumed no build.
- Alternative B proposes the realignment of the intersection of US 7 and VT 105 with the intersection of US 7 and Seymour Road, the signalization of US 7 and Seymour Road, and the addition of turning lanes.
- Alternative C proposes the realignment of the intersection of US 7 and VT 105 with Rewes Drive, the installation of a 4-way signalized intersection, the conversion of Seymour Road into a dead-end road, the addition of turning lanes, the relocation of the entrance to the Missisquoi Valley Rail Trail from US 7 to Seymour Road, and the expansion of the Rail Trail parking lot.
- Alternative D proposes the signalization of US 7, Seymour Road, and VT 105 that allows drivers to choose which way to go either to the intersection of US 7 and VT 105 or to the intersection of US 7 and Seymour Road. It is also proposed to add turning lanes after the construction of the Federal Street extension and to add a second entrance to the Rail Trail on VT 105.

Alternative A does not improve safety or promote future commercial and industrial development. Alternative B has the highest cost of construction, it diverts traffic away from the existing businesses along US 7 and VT 105, and it does not promote future development of land to the west of US 7 along Rewes Drive. Alternative C is the recommended alternative because it promotes future development to the west of the study area without being dependent on the construction of the Federal Street extension, it increases safety for the Rail Trail users, and it allows traffic flow to continue to pass by the existing businesses along US 7 and VT 105. In alternative D the capacity remained the same and therefore would not accommodate the projected increase in vehicles.

6.1.4. Traffic Impact Assessment JLD Properties of Saint Albans PUD

The study by Lamoureux & Dickinson Consulting Engineers evaluates the anticipated traffic from the proposed Wal-Mart and planned unit development (PUD) located to the west of US 7 just north of VT 207. The proposed PUD

consists of a Wal-Mart with a garden center, future commercial or retail development, and future residential housing.

The study recommends several roadway improvements to accommodate the future projected traffic. Recommendations include:

- Signalization of the proposed US 7/PUD access intersection and the construction of left and right turn only lanes onto US 7.
- Installation of a signal at the I 89 Exit 20 northbound off ramp and widening to include a left turn lane and two right turn lanes northbound.
- For the US 7/VT 207 intersection it is recommended to include the installation of a second left turn lane on US 7 for southbound traffic, a second right turn lane on US 7 for northbound traffic, and a second left turn lane for westbound traffic on VT 207. In addition, remove the existing right turn lane slip ramp to provide room for the additional proposed lanes and the necessary signal modifications.
- For the intersection of US 7/Price Chopper/Franklin Park West (FPW) it is recommended to extend the existing northbound right through lane 200 feet to the south.
- Widen US 7 from VT 207 south to Price Chopper in order to include an additional southbound through lane.
- Changing the signal phasing from protected to protected, plus permitted for the intersections of US 7 and Price Chopper and US 7 and Highgate Commons for both the northbound and southbound directions.

6.1.5. Saint Albans Circulation Study, May 2002

The study was prepared for the Northwest Regional Planning Commission by Lamoureux & Dickinson Consulting Engineers to determine the present and future transportation needs for the City and Town of Saint Albans. There were several recommendations made as part of this study, most of which have been iterated in other past studies that have been described within this section; or within this study and the proposed alternatives.

6.2. Levels of Service (LOS)

Levels of service were calculated for all intersections in the project study area along US 7 and VT 207. Level of service is based on the average delay that a vehicle will experience while waiting at a signal for a light to change, or while waiting at a stop sign for a safe opening on the main route. The Vermont Agency of Transportation (VTrans) outlines LOS criteria for signalized and unsignalized intersections which are presented in Table 6.2.1. VTrans also identifies that intersections in heavily developed urban areas should

operate at a LOS of D, however an overall LOS of E may be acceptable in some cases. If all the planned development occurs in the project study area it should be considered a highly developed area.

Table 6.2.1 – VTrans Level of Service for Intersections

LOS	DESCRIPTION	UNSIGNALIZED DELAY (SEC)	SIGNALIZED 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	≥50.1	≥80.1

All intersections were analyzed using Synchro (v6) traffic analysis software by Trafficware; the software is capable of performing LOS analysis on signalized and unsignalized intersection; as well as analyzing corridors. The software can be highly customized for various intersection scenarios and allow inputs for truck traffic, lane widths, specialized signal phasing. The analysis will calculate the required queue length for each approach of an intersection as well as the volume to capacity ratio of each approach and the overall intersection. The volume to capacity ratio represents the degree of saturation of a lane or an approach to the intersection; it is ideal to v/c ratios of 0.9 or less. It is also necessary for some intersection improvement funding sources to have a v/c ratio of 0.9 or less, and even a v/c ratio of 0.8 or less. Section 7.2 outlines the requirements of various funding sources for transportation improvement projects.

For the unsignalized intersections and roundabout analyses Synchro will use the Intersection Capacity Utilization (ICU) method for calculating levels of service for an intersection. Table 6.2.2 lists the ICU levels of service, delays associated with the LOS and a description of the LOS at an intersection.

Table 6.2.2 – Level of Service Descriptions for Intersections

LOS	Intersection Capacity Utilization Delay (sec)	LOS Description
A	less than 10.0	The intersection has no congestion. All traffic should be served on the first cycle. (Excellent)
B	between 10.0 and 20.0	The intersection has very little congestion. Almost all the traffic will be served on the first cycle. (Very Good)
C	between 20.0 and 35.0	The intersection has no major congestion. Most traffic should be served on the first cycle. Traffic fluctuations, accidents, and lane closures may cause some congestion. (Good)

D	between 35.0 and 55.0	The intersection normally has no congestion. The majority of traffic should be served on the first cycle. Traffic fluctuations, accidents, and lane closures can cause significant congestion. (Acceptable)
E	between 55.0 and 80.0	The intersection is right on the verge of congested conditions. Many vehicles are not served on the first cycle. Minor traffic fluctuations, accidents, and lane closures can cause significant congestion.
F	greater than 80.0	The intersection is over capacity and likely experiences congestion periods of 15 to 60 minutes per day. Residual queries at the end of green are common. Minor traffic fluctuations, accidents, and lane closures can cause increased congestion. (Unacceptable)
G	between 1.10 and 1.20	The intersection is 10% to 20% over capacity and likely experiences long congestion periods of 60 to 120 minutes per day. Long queries are common. Motorists may be choosing alternate routes, if they exist, or making fewer trips during peak hour. (Unacceptable)
H	greater than 1.20	The intersection is 20% over capacity and could experience congestion periods of over 120 minutes per day. Long queries are common. Motorists may be choosing alternate routes, if they exist, or making fewer trips during peak hour. (Unacceptable)

6.2.1. Traffic Analysis Scenarios

For the US 7 Corridor Study Update several traffic scenarios were analyzed to determine the levels of service with various build/no build conditions and to determine how different developments contribute to the increase in trips during the p.m. peak hour. The traffic scenarios that were analyzed are as follows:

- **2007 No Build** – This scenario analyzes the traffic that is currently part of the existing transportation network and establishes a base to compare future traffic analyses too.
- **2027 No Build** – This scenario analyzes the existing traffic projected to the future year, there are no development trips added to this scenario beyond what is currently part of the 2007 trips.
- **2027 Build, With Proposed Improvements** – This scenario is designed to develop alternatives to address the deficiencies in the transportation network in the future year with all traffic scenarios considered to be part of the network. The proposed improvements will highlight various levels of improvements that will need to be considered to address and achieve acceptable levels of service in the future year.

6.2.2. 2007 Existing Traffic

Traffic data was collected for all the major intersections within the study area for the base study year in 2007, these intersections are identified as:

US 7/VT 105/Rewes Drive	US 7/Jewett Drive
US 7/Seymour Road	VT 207/I 89 Southbound
US 7/Pricer Chopper/FPW	On/Off Ramps
US 7/Highgate Commons/Mobil	VT 207/I 89 Northbound
US 7/VT 207	On/Off Ramps
US 7/JLD PUD (constructed by 2016)	VT 207/Bushey Road

Currently only the intersections of US 7/Pricer Chopper/FPW, US 7/Highgate Commons/Mobil, and US 7/VT 207 are signalized. All the other intersections in the project study area are stop controlled on the minor approaches.

Recently traffic control improvements have been made to the existing signalized intersections by making all left turns off of US 7 protected and all left turns onto US 7 protected and permitted.

Information collected for these intersections includes the existing roadway geometries, lane widths, shoulders, medians as presented in the figures in Section 3.2.1; as well as the turning movement counts from VTrans or as performed by Hoyle, Tanner & Associates, Inc. Each intersection was analyzed based on turning movement counts that have been factored up to 2007, where necessary. LOS results for the 2007 turning movement volumes are represented in the following table. Based on existing traffic volumes many of the intersections in the project study area meet and exceed the VTrans LOS guidelines.

The only intersection not currently operating at an acceptable LOS is US 7/Seymour Rd. However it should be noted that there are some intersection approaches that are currently operating at an LOS of F, but due to outstanding performance other approaches at the same intersection the overall LOS for the intersection averages much higher than the one failing approach. The two approaches to note is the WB approach of US 7/VT 105/Rewes Dr. and the NB approach of VT 207/I 89 NB On/Off Ramps. The delay at this stopped control intersections is significantly higher than the 60 seconds which classifies the approach as an LOS of F.

2007 No Build	Overall		Northbound - US 7			Southbound - US 7			Eastbound Approach			Westbound Approach		
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)
US 7 Corridor														
VT 105*	8.0	C	0.1	A	0	0.3	A	1	--	--	--	282.3	F	127
Seymour Rd.*	7.8	F	0	A	0	3.7	A	12	--	--	--	82.3	F	135
Price Chopper/FPW	19.8	B	15.2	B	315†	19.6	B	258	33.5	C	144†	16.5	B	49
Highgate Commons/Mobil	10.5	B	8.5	A	150	10.4	B	109	12.7	B	47	13.7	B	85
VT 207	11.8	B	9.2	A	109	10.9	B	64	--	--	--	16.5	B	124
Jewett Ave.*	3.3	B	2.3	A	7	0.2	A	1	14.8	B	22	22.3	C	7
	Overall		Northbound Approach			Southbound Approach			Eastbound Approach			Westbound Approach		
VT 207 Corridor														
I89 SB On/Off Ramp*	1.6	A	--	--	--	13.2	B	22	0	A	0	1.1	A	3
I89 NB On/Off Ramp*	63.4	B	194.8	F	437	--	--	--	4	A	0.16	0	A	0
Bushey Rd. - E/W Road*	1.7	A	0	A	0	0	A	0	--	--	--	15.5	C	21
*Stop Controlled Intersection														
† Volume Exceeds Capacity, Queue May Be Longer														

Based on the data used to model the existing traffic conditions at the intersections of US 7/Price Chopper, US 7/Highgate Commons, and US 7/VT 207 the overall LOS result in a 'B'. However based on observations during the PM peak and comments received during the public meeting it is unlikely that the intersections are actually operating at a LOS of B. What currently happens at these intersections is the queue from one intersection will cause traffic to backup into adjacent intersections and therefore inhibit vehicles from making their desired movement when they receive green time.

So one explanation for the discrepancy between the analyses using VTrans count data and the actual scenario is that the turning movement counts can only account for the movements that were actually allowed by the signals and not the movements that were desired by vehicles during their green time. Therefore the grid lock condition as observed and experienced is skewing the data collection by not allowing vehicle movements to occur in the volumes that are being demanded.

Detailed data will need to be collected to determine actual queue lengths, delays, and desired vehicle movements for an accurate design of the corridor through this area.

6.2.3. 2027 No Build

The 2027 No Build analysis uses growth factors from VTrans to move the existing turning movement counts for 2007 forward to the 2027 planning year. The purpose of this analysis is to determine the effect of natural growth of the base traffic over 20 years on the existing transportation network. This will highlight deficiencies in the existing transportation network that would need to be address regardless of the proposed growth in the Town of Saint Albans and Town of Swanton growth

centers. For the analysis all signal phasing, lane configurations, signalization, and geometries were kept the same. The only change made from the 2007 No Build analysis to the 2027 No Build analysis is the signal timings. A summary of the results can be found in the table below and a complete analysis can be found in Appendix B. It should be noted that the analysis does not include Rewes Drive or the JLD PUD intersection since they were not included in the 2007 No Build analysis.

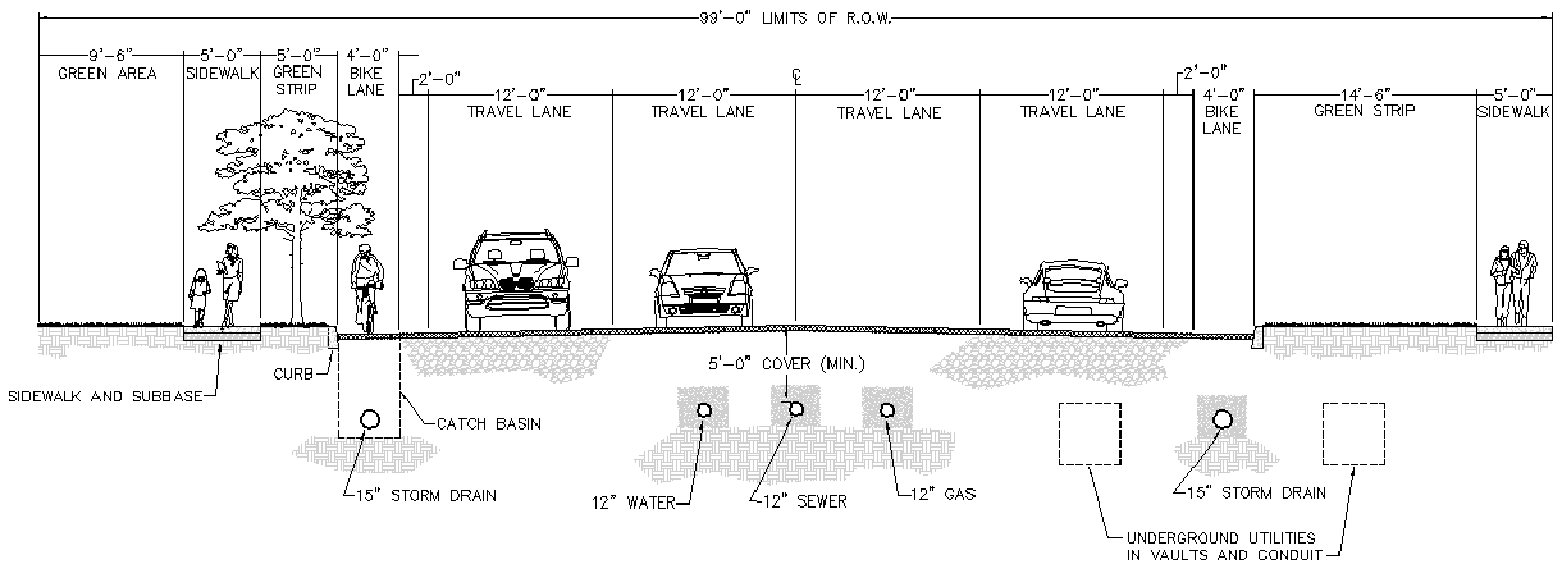
From the summary it can be determined that the overall LOS for the intersection for growth of the background traffic, in the project study area, will remain within acceptable levels of service throughout the 20 year planning period. The only areas of concern that arise are the LOS for individual intersection approaches such as VT 105, Seymour, and the I 89 NB off ramp. All of these approaches are experiencing delays that result in a LOS of F, and delay times that approach 3-5 minutes in the future. The deficiency of these approaches would need to be addressed by 2027 regardless of any additional development that would occur in the growth centers. Similar to with the 2007 analysis of the US 7/Price Chopper, US 7/Highgate Commons, and US 7/VT 207 should be reanalyzed with traffic counts that observe actual conditions. Such an analysis would likely change the LOS for these intersections in 2027.

2027 No Build	Overall		Northbound - US 7			Southbound - US 7			Eastbound Approach			Westbound Approach		
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)
US 7 Corridor														
VT 105*	9.5	A	0.5	A	1.0	0.6	A	1.0	--	--	--	318.7	F	134.0
Seymour Rd.*	19.1	C	0.0	A	0.0	3.7	A	12.0	--	--	--	215.6	F	233.0
Price Chopper/FPW	21.0	C	15.6	B	148†	20.1	C	335†	23.3	C	123.0	52.4	D	94†
Highgate Commons/Mobil	20.2	C	13.7	B	291.0	26.0	C	195.0	26.0	C	77.0	32.6	C	71.0
VT 207	11.4	B	7.5	A	193.0	9.5	A	62.0	--	--	--	18.5	B	204.0
Jewett Ave.*	4.1	C	2.4	A	7.0	0.3	A	1.0	23.5	C	11.0	17.9	C	31.0
	Overall		Northbound Approach			Southbound Approach			Eastbound Approach			Westbound Approach		
VT 207 Corridor														
I89 SB On/Off Ramp*	2.0	B	--	--	--	16.0	C	31.0	0.0	A	0.0	1.2	A	3.0
I89 NB On/Off Ramp*	77.5	D	238.6	F	492.0	--	--	--	4.1	A	15.0	0.0	A	0.0
Bushey Rd. - E/W Road*	2.5	A	0.0	A	0.0	0.5	A	1.0	--	--	--	13.8	B	20.0
*Stop Controlled Intersection														
† Volume Exceeds Capacity, Queue May Be Longer														

6.2.4. 2027 With Proposed Developments and Improvements

All of the alternatives presented widen US 7 and VT 207 to four lanes at some point in the project study area. Below is a typical section of a four lane road with bike lanes, shoulders, green space and sidewalks that would occur along US 7 and VT 207 between intersections. The following figure highlights two different options for locating a sidewalk along US 7 or VT 207. The sidewalk can either be located close to the road separated by a small green strip, or it can be located on the edge of the right-of-way limits creating a large separation between

the roadway and sidewalk. There is also available room for additional turning lanes in the cross section. The typical section where US 7 or VT 207 will be four lanes will allow for a large green strip for landscaping or street trees. All utilities have been located underground to improve the aesthetics of the streetscape and minimize conflicts with utility poles. All which can exist within the 99 foot right-of-way that has been defined by VTrans for US 7 and VT 207.



6.2.4.1. Alternative A

This alternative is a minimal effort in improving some of the deficiencies in the transportation network associated with the project study area and proposed growth. This alternative aims to address many of the safety issues within the project study area, as well as increase roadway and intersection capacities where there is currently room within the existing right-of-way and will not require major changes for adjacent property owners. Only the intersection of US 7/VT 105/Rewes Drive will require major changes to the adjacent parcels in order to realign the intersection and provide the capacity that is required. It is important to note that the changes that will occur at US 7/VT 105/Rewes Drive are less intrusive to surrounding parcels than a similarly sized intersection would be if VT 105 was realigned along Seymour Road, see Section 6.1 for more information.

Improvements suggested in Alternative A are listed below and illustrated in the figures in Appendix H:

US 7/VT 105/Rewes Drive – Signalizing the intersection and construct left, through, and combined through/right turn lanes on US 7 NB, US 7 SB and VT 105 will see dedicated right, left and through lanes, and Rewes Drive will have two dedicated left turn lanes and a combined through/right lane. Rewes Drive would also serve as a connection to the Federal Street Extension Project. Beginning at this intersection and continuing north, US 7 is widened to a 4 lane road.

US 7/Seymour Road – Seymour Road would become a dead end road at the intersection of Seymour Road/VT 105. Closure of Seymour significantly reduces the number of trips turning off of US 7. US 7 through this intersection would be widened to 4 lanes.

US 7/Price Chopper/FPW – This intersection would be expanded with the expansion of US 7 to be 4 lanes, in addition dedicated left and right turn lanes would be added to the Price Chopper and FPW drives.

US 7/Highgate Commons/Mobil – This intersection sees minor expansion with the continuation of the US 7 expansion to 4 lanes, the dedicated right turn lane NB becomes a through/right lane, also an additional through lane is added SB. The Highgate Commons approach will have dedicated right, through, and left turn lanes.

US 7/VT 207 – This intersection experiences major changes in capacity with the addition of the Loop Road, and several turn and through lanes in all directions. The Loop Road is only a connection between the proposed developments on the west side of US 7 between the US 7/Price Chopper/FPW intersection and US 7/JLD PUD; the Loop Road does not connect to the proposed Federal Street Extension and is not considered a major road in this alternative. Besides the addition of turn lanes, the sweeping NB right approach ramp is removed and two right turn lanes are added closer to the intersection and controlled by the signal. The southbound expansion of US 7 into two lanes begins at this intersection.

US 7/JLD PUD (constructed by 2016) – This intersection will be constructed by the JLD PUD after the base year and before the future year analysis, construction will include signaling the intersection. However this intersection will require improvements as a result of almost 10 years of growth in the base traffic as well as additional trips from other developments. As part of this alternative a total of two NB left turn lanes are required as well as a double entrance lane into the development. The expansion of US 7 terminates with this intersection, one NB lane transitions into a dedicated left into the development and one lane continues through.

US 7/Jewett Drive – Improvements to this intersection will include signalization, as well as adding a NB left turn lane.

VT 207/I 89 Southbound On/Off Ramps – Improvements to this intersection will be signaling the intersection, creating separate left and right turns for the SB off ramp and reopening the second EB through lane just past this intersection.

VT 207/I 89 Northbound On/Off Ramps – To the east of this intersection the right hand through lane will be reopened. The intersection will be signaled, and the NB off ramp approach will be separated into right and left turn lanes.

On VT 207 the EB approach will have a dedicated left and through lane and the WB approach will have a dedicated through lane and combined right/through lane. To the east of the intersection VT 207 will be expanded to a 4 lane road until the intersection with the proposed Swanton Growth Center.

VT 207/Bushey Road – This intersection will see minimal improvements other than realigning the intersection to be perpendicular with VT 207 and adding a traffic signal to improve the LOS on Bushey Road.

The level of service results for the proposed changes in Alternative A are outlined in table below. A quick review of level of services that resulted from improvements associate with Alternative A illustrate that the changes made to accommodate the future traffic and development trips is inadequate in achieving an acceptable LOS throughout the corridor. Only three of the intersections achieve an acceptable LOS based on VTrans guidelines.

2027 Alternative A	Overall		Northbound - US 7			Southbound - US 7			Eastbound Approach			Westbound Approach		
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)
US 7 Corridor														
VT 105/Rewes	60.3	E	37.8	D	521†	59.7	E	1020†	85.7	F	556†	59.0	E	161†
Seymour Rd.*		F	--	--	--	8.3	A	8.0	--	--	--	1479.0	F	142.0
Price Chopper/FPW	153.2	F	295.9	F	1534†	67.0	F	1052†	64.0	E	300.0	61.0	E	438†
Highgate Commons/Mobil	98.8	F	147.3	F	1330†	51.0	D	721.0	46.3	D	121.0	86.1	F	368†
VT 207	442.0	F	182.1	F	614.0	49.0	D	381.0	1606.9	F	1493†	429.3	F	2483†
JLD PUD	10.6	B	5.8	A	126.0	13.4	B	212.0	11.7	B	76.0	26.0	C	87.0
Jewett Ave.	6.4	A	4.4	A	107.0	4.4	A	92.0	17.3	B	63.0	15.1	C	17.0
	Overall		Northbound Approach			Southbound Approach			Eastbound Approach			Westbound Approach		
VT 207 Corridor														
I89 SB On/Off Ramp	225.0	F	--	--	--	150.8	F	264†	188.9	F	1198†	287.7	F	595†m
I89 NB On/Off Ramp	196.0	F	35.5	D	254†	--	--	--	392.7	F	487†m	26.0	C	487†
Bushey Rd. - E/W	36.8	D	27.7	C	864†	5.1	A	113.0	--	--	--	103.3	F	412†
* Stop Controlled Intersection (LOS BY ICU)					m - Upstream signal influencing queue length									
† Volume Exceeds Capacity, Queue May Be Longer														

The results of Alternative A indicated that for the proposed traffic in 2027 with all the possible developments and growth of the existing traffic more significant improvements will need to be made.

6.2.4.2. Alternative B

This alternative reexamines locations where there are roadway capacity deficiencies in Alternative A and proposes improvements that will improve the LOS at the intersections within the project study area to a LOS of C or D. Many of these proposed improvements widen US 7 by several lanes at the intersections, as well as the approaches to the intersections to achieve the

necessary capacities at signalized intersection. Widening the roadway cross section up to 7 lanes in some areas will have significant impacts on surrounding businesses, utilities, and start to encroach on the limits of the right-of-way. In addition, the creation of the extra impervious surface will have new requirements dictated by the Vermont Agency of Natural Resources.

Figures for the intersection improvements can be found in Appendix H for Alternative B. The improvements suggested for Alternative B include all recommended improvements from Alternative A as well as the following:

US 7/VT 105/Rewes Drive – Same as Alternative A.

US 7/Seymour Road – Same as Alternative A.

US 7/Price Chopper/FPW – This intersection would be expanded with the expansion of US 7 to be 4 lanes and dedicated right and left turn lanes would be created in the northbound and southbound directions. In addition dedicated left, left/through, through, and right turn lanes would be required for the Price Chopper and Franklin Park West (FPW) approaches.

US 7/Highgate Commons/Mobil – To achieve acceptable levels of service at this intersection it is necessary to add several turning lanes to the minor approaches and some on US 7 to accommodate all the vehicles at the intersection. US 7 is widened to 4 lanes through the intersection, and a dedicated northbound right turn lane would be required. On the minor approaches individual right, through, and left lanes are a necessity, with the exit of Highgate Commons requiring a double left turn lane for the westbound approach.

US 7/VT 207 – This intersection experiences significant increases in the number of turning lanes. Double right turn lanes are proposed for both the northbound and westbound approaches, and double left turn lanes on the westbound and southbound approaches. US 7 is widened to have two through lanes in each direction, and Loop Road will continue to serve as a local access road to developments west of US 7 but not as a major thoroughfare. Besides the addition of turn lanes, the sweeping NB right approach ramp is removed. Leaving the ramp would create safety issues for vehicles looking to merge onto VT 207 since VT 207 would only have two eastbound lanes. Therefore the right turn movement would always need to be controlled by the intersection.

US 7/JLD PUD (constructed by 2016) – Similar to Alternative A, however US 7 southbound becomes two lanes at this intersection.

US 7/Jewett Drive – Same as Alternative A.

VT 207/I 89 Southbound On/Off Ramps – Improvements to this intersection beyond Alternative A include the addition of another southbound right turn lane, and widening VT 207 to 6 lanes under the interstate overpasses. With the anticipated traffic volumes at the interstate intersection the queue for

eastbound left turns at the adjacent intersection will back up through the southbound intersection.

Since the current I 89 bridges over VT 207 only allow for 4 lanes under the overpass, modifications would be required to the bridge piers and abutments to allow for the 6 lanes that were analyzed.

VT 207/I 89 Northbound On/Off Ramps – Similar to the southbound on/off ramp in this alternative, VT 207 will become 6 lanes under I 89, and 4 lanes east of this intersection. The northbound approach will consist of two left turn lanes and two right turn lanes. This intersection also experiences a back up through the intersection from the westbound queue waiting to turn left at the adjacent intersection.

VT 207/Bushey Road – Similar to Alternative A, this intersection will be realigned and signalized. The difference is the termination of VT 207 being 4 lanes wide.

The following table summarizes the levels of service achieved as a result of signalizing the intersections, adding several turning lanes, and widening of US 7 and VT 207. There are several approaches that experience long delays or failing levels of service, however when the overall intersection level of service is calculated it results in an A, B, C, or D which are acceptable given the volumes of traffic experienced at the intersection in the project study area.

2027 Alternative B	Overall		Northbound - US 7			Southbound - US 7			Eastbound Approach			Westbound Approach		
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)
US 7 Corridor														
VT 105/Rewes	48.9	D	30.1	C	415.0	39.1	D	960†	89.0	F	516†	46.7	D	143†
Seymour Rd.*		E		A			A		--	--	--	832.2	F	126.0
Price Chopper/FPW	53.8	D	59.2	E	886†	32.1	C	492†	52.2	D	293†	102.6	F	467†
Highgate Commons/Mobil	28.2	C	30.3	C	318†m	14.4	B	211†m	75.0	E	189†	48.9	D	221†
VT 207	33.4	C	16.2	B	174m	63.9	E	222†	64.9	E	294†	29.6	C	636†
JLD PUD	10.4	B	9.9	A	141m	11.7	B	92.0	7.2	A	48.0	24.8	C	63.0
Jewett Ave.	7.3	A	6.4	A	236.0	6.3	A	161.0	11.4	B	56.0	19.0	B	32.0
	Overall		Northbound Approach			Southbound Approach			Eastbound Approach			Westbound Approach		
VT 207 Corridor														
I89 SB On/Off Ramp	25.0	C	--	--	--	53.4	D	99†	28.8	C	845†m	17.2	B	398†m
I89 NB On/Off Ramp	29.5	C	63.1	E	290†	--	--	--	8.2	A	259m	37.5	D	730†
Bushey Rd. - E/W	8.1	A	4.4	A	112m	7.3	A	103.0	--	--	--	23.0	C	115.0
* Stop Controlled Intersection (LOS BY ICU)					m - Upstream signal influencing queue length									
† Volume Exceeds Capacity, Queue May Be Longer														

Several lane configurations, signal timings, and phasing alternatives were investigated to eliminate the failing levels of services at certain approaches

however there were no practical solutions that existed within the current roadway network and right-of-ways that were available. The maximum delay at any of the failing LOS approaches is between 1-2 minutes.

At the intersection of US 7 and Seymour Road the 832.2 second delay is a result of the left turn movement onto US 7 southbound. It is possible to eliminate this movement by making Seymour Road a one-way street eastbound and changing Seymour to a one-way out onto VT 105. This would move the vehicles looking to go southbound on US 7 out onto VT 105 and down to the signalized intersection of US 7 and VT 105.

6.2.4.3. Alternative C

Addition of the number of lanes, and turning lanes presented in Alternative B is not an attractive solution to the potential traffic deficiencies in the project study area. Creation of several lanes of traffic along US 7 and VT 207 is not the ideal roadway section that the State of Vermont, Regional Planning Commissions, and Towns are trying to create. Therefore it is necessary to address the fundamental deficiency in the project study area that is created as a result of the project development. The lack of collector and connector roads between the proposed developments in the project study area and the adjacent communities that are the origins of the project related trips.

Alternative C strives to layout US 7 as a major collector road, with a network of urban collector streets that connect to US 7, and a network of local roads that support the collector streets. The creation of a transportation network that supports US 7 will significantly improve the LOS at the major intersections as well as alleviate trips between the various proposed developments through the



collector streets and local roads. The figure on the previous page outlines general locations for the supporting roadway network west of US 7.

For this alternative, Loop Road would be at least a two lane road that connects directly to Lower Newton Road in the Town of Saint Albans, as well as provide a connection for the Federal Street Extension to tie into Rewes Drive. In addition, a collector road would extend to the north and connect with Jewett Drive. Supporting the network of collector roads are local roads that link the proposed developments of JLD PUD, Murphy Property, Poquette Property, Price Chopper and associated businesses, and the Mobil/Sears/Aubuchon Hardware.

It is also important to create multiple entrances to major shopping centers to eliminate bottlenecks at the entrances. Having multiple entrances will help to distribute the directional trips to different entrances and allows for the opportunity to perform maintenance or improvements on one of the entrances when necessary without blocking access to the destination. This alternative proposed the addition of an access into the back of the Highgate Commons Plaza via Parah Road. These new entrances will help to bypass some of the trips on US 7 by providing direct access to adjacent origins and destinations.

Figures for the intersection improvements can be found in Appendix H for Alternative C. The improvements suggested for Alternative C are as follows:

US 7/VT 105/Rewes Drive – Similar to Alternative A, however no additional lanes are required for VT 105 on the westbound approach, and realignment of this approach is necessary for Alternative C.

US 7/Seymour Road – Same as Alternative A.

US 7/Price Chopper/FPW – Similar to Alternative A, however there are combined through/right turn lanes on US 7 for the northbound and southbound approaches, which allows for the through lanes to be solely for through cars.

US 7/Highgate Commons/Mobil – Improvements to this intersection will include widening US 7 to 4 lanes with a dedicated left turn lane, through lane and combined through/right lane in the northbound and southbound directions on US 7. The eastbound and westbound approaches will each have dedicated left, and combined through/right turn lanes. The level improvements at this intersection falls between the levels of improvements proposed in Alternative A and proposed in Alternative B.

US 7/VT 207 – This intersection becomes the hub of splitting traffic between US 7 and the new roadway network to the west of US 7; therefore this intersection larger than Alternative B with one additional lane on the southbound approach. This results in the following lane configurations:

US 7 Northbound: 1 Left, 2 Through, 2 Right
US 7 Southbound: 2 Left, 2 Through, 1 Right

VT 207 Eastbound: 2 Left, 2 Through, 1 Right
VT 207 Westbound: 1 Left, 2 Through, 2 Right

US 7 just north of this intersection will narrow from 4 lanes to 2 lanes within the distance that is safe to allow vehicles to merge together.

US 7/JLD PUD (constructed by 2016) – This intersection has the potential to be smaller than proposed in the original JLD PUD Act 250 Traffic Impact Study with the addition of the transportation network to the west of US 7. This intersection would only need a single lane for each approach dedicated to left, through, and right movements.

US 7/Jewett Drive – This intersection would require fewer improvements than in Alternative A, only a single lane is needed for each approach, for the to left, through, and right movements.

VT 207/I 89 Southbound On/Off Ramps – This intersection would be converted into a raindrop shaped two-lane roundabout with slip ramps provided for right turns on the eastbound and southbound approaches. VT 207 would remain a 4 lane road under the I 89 overpasses, with a median maintained between the raindrop roundabout at the southbound on/off ramps and the northbound on/off ramp raindrop roundabout.

The goal of Alternative C is to create an intersection configuration at the on/off ramps for I 89 that does not require widening of VT 207 at the overpasses.

VT 207/I 89 Northbound On/Off Ramps – Similar to the southbound on/off ramp in this alternative, a raindrop shaped two-lane roundabout would be used to move vehicles through the intersection. Slip ramps would be provided for the right turns on the northbound and westbound approaches.

VT 207/Bushey Road – Similar to Alternative A, this intersection will be realigned and signalized. The difference is the termination of VT 207 expansion to 4 lanes wide.

The following table summarizes the analysis of Alternative C and proposed improvements. All of the signalized intersections have an overall level of service of D or better in most cases. The full intersection analyses can be found in Appendix B. Alternative C has also eliminated the failing level of service at all approach intersections with the exception of Seymour Road which could be resolved with the one-way road scenario discussed under Alternative B.

2027 Alternative C	Overall		Northbound - US 7			Southbound - US 7			Eastbound Approach			Westbound Approach		
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)	Delay (sec/veh)	LOS	Queue (95th %)
US 7 Corridor														
VT 105/Rewes	26.6	C	19.6	B	223.0	19.3	B	570†m	41.5	D	237†	62.6	E	235†
Seymour Rd.*		C		A			A		--	--	--	84.5	F	49.0
Price Chopper/FPW	23.8	C	20.3	C	430†m	15.7	B	265†m	37.0	D	230†	37.3	D	271†
Highgate Commons/Mobil	35.4	D	35.4	D	607†m	16.6	B	115†m	75.0	E	159†	70.3	E	314†
VT 207	35.9	D	21.6	C	190m	46.5	D	145†m	64.6	E	244†	36.3	D	409†
JLD PUD	17.1	B	20.6	C	399†	5.5	A	91.0	15.4	B	168†	56.1	E	92†
Jewett Ave.	8.9	A	4.8	A	99.0	5.1	A	136.0	30.2	C	105.0	20.7	C	27.0
	Overall		Northbound Approach			Southbound Approach			Eastbound Approach			Westbound Approach		
VT 207 Corridor														
I89 SB On/Off Ramp ®		H	--	--	--	v/c ratio = 1.55			v/c ratio = 2.70			v/c ratio = 1.73		
I89 NB On/Off Ramp ®		H	v/c ratio = 2.57			--	--	--	v/c ratio = 1.72			v/c ratio = 3.01		
Bushey Rd. - E/W	9.5	A	6.7	A	166.0	9.5	A	108.0	--	--	--	18.5	B	156†
* Stop Controlled Intersection (LOS BY ICU)					m - Upstream signal influencing queue length									
† Volume Exceeds Capacity, Queue May Be Longer					® Roundabout Controlled Intersection									

The intersections of VT 207/I 89 on/off ramps result in an ICU rating of H, which represents a significant delay for vehicles utilizing this intersection. It is important to recognize that the projected growth for the Town of Saint Albans was an aggressive estimate for what could be expected in 20 years. It is likely that the proposed raindrop two-lane roundabouts would operate at an adequate level of service well beyond the 2027 planning year.

6.3. Roundabouts

This study investigated roundabouts at the following intersections:

- US 7 & VT 105
- US 7 & Price Chopper
- US 7 & Highgate Commons
- US 7 & VT 207
- US 7 & JLD PUD
- US 7 & Jewett Ave
- VT 207 & I 89
- VT 207 & Bushey Road

It is important to consider single-lane and multi-lane roundabouts as part of the corridor study and for the individual intersection alternatives. A roundabout can alleviate certain traffic deficiencies better than a signal or a stop controlled intersection can and similarly for certain applications a signalized intersection can be the better alternative. Some of the advantages of roundabouts are as follows:

- Roundabouts have been proven to reduce the number of fatal/injury resulting accidents primarily due to the lower vehicle speeds experienced within a roundabout versus an intersection.
- There are lower maintenance costs since there are no traffic controller or loop detectors.
- Vehicle delays can also be reduced since the entrance to a roundabout will typically be controlled by a yield sign.
- Any reduction in vehicle delays will have a direct result on the amount of fuel consumed by vehicles waiting to negotiate through the intersection.
- Roundabouts manage high left turn approach volumes better than a signalized intersection.

It is important to recognize that a roundabout is not appropriate for every application. In order for a four legged roundabout to function efficiently a vehicle trying to enter the roundabout needs to be able to enter in a gap in between the vehicles going through the roundabout. For example, if a roundabout is placed in the middle of US 7 in Saint Albans and there are two perpendicular legs going to commercial drives. The traffic volume using the roundabout as a through lane far exceeds the volume of the commercial legs. The vehicles trying to enter the roundabout from the commercial location will have a hard time finding a gap between vehicles; therefore they will experience long delays. This is a basic explanation of how roundabouts are to function. The best scenario for a four legged roundabout is four legs with equal volume of traffic entering an intersection. In addition intersections that are in close proximity to each other would all need to be converted to roundabouts otherwise there could be issues with signalized intersection approach queues backing up into the roundabout causing the intersection to fail.

6.3.1. Single-Lane Roundabouts

Operational analyses of the potential roundabouts were performed using the *Highway Capacity Manual* and the *Roundabouts: An Informational Guide*. The Highway Capacity Manual states the operational capacity analysis is based on a precise set of geometric conditions and traffic flow rates defined for a 15-minute analysis period for each roundabout entry. The turning movement data provided by VTrans and counts performed by Hoyle, Tanner & Associates, Inc. were used to determine the 15-minute analysis period. The v/c ratios were then established from the calculations that are included in Appendix C of this report. *The Highway Capacity Manual* states that circulation flow of 1200 veh/hr is the maximum volume for a one lane roundabout. The VTrans recommended v/c ratio for an intersection is 0.9 or less.

From the operational analysis, there are a few candidates for roundabouts in their 2007 existing conditions. The intersections of US 7 & VT 207 and US 7 & JLD PUD (If build in 2016) have v/c ratios less than 0.9 and circulation flow less than 1200 veh/hr. Once the growth projections and build-out traffic volumes were added into the roundabout operational analysis all the roundabouts did not meet the v/c ratio or the 1200 veh/hr circulating flow maximum.

In general the intersections in the project study area are not well balanced, which is necessary for a roundabout to operate properly. If the roundabout approaches can not be balanced then it is important that there are adequate gaps between vehicles to allow other vehicles to enter the roundabout.

A single lane roundabout requires a diameter ranging from 80 ft to 180 ft. A two lane roundabout requires a diameter ranging from 130 ft to 200 ft. At the proposed intersections there is little room to construct a large roundabout that would be necessary for the intersection to function properly. In addition with the approaches of the intersection being unbalanced, the roundabouts would need to have larger diameters in order to provide large enough gaps in the circulation flow to allow vehicles to enter into the roundabout.

The only intersections in the project study area that could operate with a single-lane roundabout are:

US 7/Jewett Avenue
US 7/JLD PUD
VT 207/Bushey Road

The Synchro analysis for these intersections can be found in Appendix B under Alternative D. All other intersections in the project study area exceed the maximum capacity for a single-lane roundabout.

6.3.2. Multi-Lane Roundabouts

Many of the intersections in the project study area exceeded the maximum capacities for a single-lane roundabout, therefore it was necessary to check if they could be analyzed as a multi-lane roundabout. Details of the analyses for the major intersections can be found in Appendix B under Alternative D.

The intersections of US 7/VT 207, US 7/Highgate Commons, and US 7/Price Chopper will not function as multi-lane roundabouts. These intersections are too close together and their approach queue backs up in to adjacent roundabouts. In addition the volume of vehicles circulating around the roundabout results in an unacceptable level of service. Therefore these intersections are not good candidates for roundabouts based on the future traffic volumes.

As discussed in Alternative C the intersection of VT 207/I 89 is proposed for two raindrop shaped two-lane roundabouts with slip ramps for all right turn movements.

Finally the intersection of US 7/VT 105 was reviewed for a multi-lane roundabout and again the volume of vehicles that would circulate around the roundabout results in a failing level of service. There are other factors that make this intersection less than ideal for a roundabout. There are several businesses in close proximity to US 7 along this section of the corridor, a multi-lane roundabout would be difficult to place at this location. The eastbound approach of Rewes Drive has an approach grade

greater than 6%, and the westbound approach of VT 105 also has a grade that is less than ideal for a roundabout approach. Finally, the VT 105 approach geometrically is off line with the center of the roundabout. It is necessary to have the centerline of an approach point at the centroid of the roundabout or be off center in the direction of circulation. The centerline VT 105 approach would enter the roundabout off center but in the direction opposite of the circulation. This would be considered an unacceptable condition based on guidance from the Federal Highway Administration.

The review of the project study intersections for a roundabout alternative has concluded that most of the intersections would not function as a single-lane roundabout. This was determined after a simple analysis was performed and results compared to existing guidelines and standards published by the Federal Highway Administration. Therefore it was necessary to review the intersections for their possibility as a multi-lane roundabout which is more difficult to model and ideally requires specialized software and additional data collection. Preliminary analyses were performed for the project study intersections that exceeded the criteria for a single-lane roundabout, which indicated that most of the intersections remain less than ideal candidates for a roundabout. However it is recommended that a more detailed analysis be performed focusing on the roundabout alternative for the intersections before this alternative is eliminated as a possibility.

7. COST ESTIMATE

7.1. Alternative Estimates

At this point the analysis the cost estimates are only conceptual, it is difficult to accurately estimate construction costs without fully designing an alternative. This estimate is meant to compare the costs for each alternative which are similar. Therefore the estimates compare costs for new roadway, resurfacing, the proposed intersection improvements and improvements to pedestrian facilities such as sidewalks and bicycle lanes.

Alternatives	Estimated Cost
Alternative A	\$11 Million
Alternative B	\$30 Million
Alternative C	\$30 Million

These estimates are based on the following assumptions:

- Approximately \$750,000.00 per lane per mile for roadway cost
- Existing roadway base will not need to be reconstructed
- Does not include Right-of-Way purchasing
- Does not include landscaping
- Does not include permitting costs
- Does not include utility relocation costs

As presented in the Table the estimated costs for Alternative B and C are the same therefore to select a preferred alternative it will be necessary to look at the quality of the solution presented in an alternative. A breakdown of the costs for the proposed Alternatives is included in Appendix G; in addition the estimate for Alternative C has been broken down into costs for phasing construction.

7.2. Funding Sources

Surface Transportation Program (STP) The STP funds may be used for highway, transit, and non-motorized facility construction and improvements. The project must be classified by the State as eligible for Federal-Aid up to 80%. The non-Federal match is 20%. For projects that are completely on the state system, the state typically covers 20% match. When local roads are involved the local match is anywhere in between 10% to 20%.

Projects funded under STP will need to be administered by VTtrans and must adhere to the project development process. The project development process takes several years to complete. If the project time line is 5 years or less than this funding source is not recommended.

Transportation Enhancements (TE) The TE funds are a Federally funded transportation source for transportation-related improvements. The TE funds are awarded through a competitive process by VTrans. The regional planning commissions rank the projects and then turn their rankings into VTrans and VTrans then performs their own ranking. The federal funds are dispersed to the awarded TE applicant projects. The TE fund applications are submitted every year.

Transportation and Community and System Preservation Program (TCSP) A Federal Highway Administration (FHWA) funding sources for innovative programs link transportation related projects. The current TCSP is nicknamed “Safety-Lu” the concentration is on “Safety” and economical enhancement projects.

North America’s SuperCorridor Coalition, Inc. (NASCO) is a non-profit organization dedicated to developing the world’s first international, integrated and secure, multimodal transportation system along the International Mod-Continent Trade and Transportation Corridor to improve both the trade competitiveness and quality of life in North America.

Vermont Municipal Bond Bank (VMBB) is a quasi-state agency administered by a board of directors that includes four members appointed by the Governor and the State Treasurer.

VMBB bonds interest rate is determined at the date of the sale. The Bond payback terms would mostly likely be 20 years.

Vermont State Infrastructure Bank (SIB) To be eligible for SIB financing a proposed project must be eligible for funding under Title 23 (Federal Highway Program) or Title 49 (Federal Transit Program) of the United States Code. The project must be submitted through the Northwest Regional Planning Commission as part of the annual Transportation Improvement Program (TIP). The project would then have to be in the VTrans Capital programming. The local match for this project is 20% and could be reduced to 10% under special circumstances.

Tax Increment Financing (TIF) A municipality can create a Tax Increment Financing (TIF) District in accordance with Vermont Law. The Vermont State Statutes Title 24, Chapter 53 Section 1897 allows municipalities the ability to create a tax incremental Financing District to provide revenue for the payment of the principal of and interest on bonds issued for improvements contained wholly or partially within the district. The TIF district is created by a vote of a majority of all eligible voters within the municipality.

There are a few TIF districts in Vermont primarily to serve redevelopment efforts of downtowns and to promote job creations.

USDA Rural Development Community Development Programs (OCD) – Low interest loans provided to rural communities. The program strives to achieve self-sustaining, long-term economic and community development.

Local Options Sales Tax (LOST) Vermont State Statute Section 138 of Title 24, passed in 1998 and amended in 1999, enables municipalities to collect local options sales taxes. Since the Law was originally designed to offset cost of property tax adjustment of Act 60 and Act 68.

The State of Vermont allows the following taxes to be collected as part of the Local Options Sales Tax:

- A one percent sales tax
- A one percent meals and alcoholic beverages tax
- A one percent rooms tax

Of the taxes collected, 70% of the total sum will be returned to the municipality, with the remaining 30% used by the State in the payment-in-lieu-of-taxes fund.

Impact Fees - The State of Vermont Statutes Title 24, Chapter 131 Section 5203 establishes the ability for the municipality to create Impact Fees to provide revenue for capital projects pursuant with the established capital budget plan.

Through impact fees, new developments pay a ‘fair-share’ of the costs related to updating and improving infrastructure based on the amount of ‘impact’ the development would have on that infrastructure.

The law requires the adoption of a capital budget, and a local impact fee ordinance, which stipulates the specific formula used in calculating the impact fee. The impact fees collected can only be used to fund improvements to infrastructure system caused by increased growth.

Special Project Tax District - Special project tax districts are political subdivisions created to provide new public improvements to specific projects and to allow for those persons directly benefiting to directly pay for these public infrastructure improvements.

The security of the bonds issued by Special Tax District is the special tax levied on the property within the district. These bonds are non-recourse to the issuer and to the developer. The property within the district is the security for the payment of principal and interest on the bonds. The normal debt-to-value ratio for a residential development will generally be a maximum of thirty three percent, and once the project reaches full build out this will decline to ten percent.

8. RECOMMENDATIONS

8.1. Implementation Plan

The implementation plan will develop a plan for the prioritizing strategies for the proposed improvements. The implementation plan will serve as a guide for the corridor study steering committee along with the Northwest Regional Planning Commission in carrying out the recommendations of the plan. There are five steps involved in the implementation plan are listed below:

- Identify thresholds/triggers to undertake specific strategies
- Identify implementation steps and responsibilities for each recommended strategy
- Identify interagency/intergovernmental relationships for agreements necessary to implement and monitor the plan
- Establish incentives and contingencies
- Identify monitoring activities and data sources

Identify thresholds/triggers:

Hoyle, Tanner & Associates, Inc. recommends using the VTrans performance targets as thresholds/triggers and they are the following:

VTrans Performance Targets		
Criterion	Performance Threshold-Policy Level	Source
LOS to maintain for design period of roadway improvements	LOS C (normally) LOS D or E (allowed in build-up/urban areas or on a case-by-case basis)	Traffic Impact Evaluation
Maximum volume-to-capacity (v/c) ratio on state highways	0.9: Urban area downtowns 0.7: Rural corridors 0.8: Other (small towns/villages, suburban corridors, growth areas)	Vermont Highway System Policy Plan
Minimum crash rate to definite High-Crash location	More than five crashes in a five-year period and crash rate significantly greater than the average for that class of roadway	Vermont Agency of Transportation

Implementation Recommendations				
Area	Purpose	Need	Recommendations	Comments/Next Steps
US 7 & VT 105	Improve intersection safety and efficiency for pedestrians, bicyclists, snowmobiles, and motorists	LOS E currently exists on VT 105 and US 7; LOS will worsen as traffic on US 7 and VT 105 increases.	Short-term <ul style="list-style-type: none"> Reconfigure intersection Long-term <ul style="list-style-type: none"> Add additional turning lanes to reduce the LOS to an acceptable level Construct pedestrian facilities to assist with crossing US 7 Construct Federal Street Extension to alleviate vehicle volume 	<ul style="list-style-type: none"> An intersection study was completed recently, this study will need to be updated for future developments Important to increase bicycle/pedestrian access to MVRT head located accessed at this intersection.
US 7 & Price Chopper	Maintain a reasonable level of mobility for through traffic and improve local circulation options	Projected traffic volume will approach large numbers. Vehicles will have long delays at the signal	Short-term <ul style="list-style-type: none"> Manage access for parcels directly adjacent to US 7 Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> Provide new street connections between adjacent properties to create a local network accommodating vehicles, pedestrians, and bicyclists Add additional turn lanes to reduce the LOS to an acceptable level 	<ul style="list-style-type: none"> Revisit the access management guidelines in the Town of Saint Albans zoning and subdivision regulations Town of Saint Albans should map easements to explore possible connections. Evaluate traffic impacts of providing connections
US 7 & Highgate Commons	Improve intersection safety and efficiency for pedestrians, bicyclists, and motorists	Projected traffic volume will approach large numbers. Vehicles will have long delays at the signal	Short-term <ul style="list-style-type: none"> Manage access for parcels directly adjacent to US 7 Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> Provide new street connections between adjacent properties to create a local network accommodating vehicles Construct pedestrian facilities that connect to surrounding services Add additional turn lanes to reduce the LOS to an acceptable level 	<ul style="list-style-type: none"> Revisit the access management guidelines in the Town of Saint Albans zoning and subdivision regulations Town of Saint Albans should map easements to explore possible connections. Evaluate traffic impacts of providing connections

US 7 & VT 207	Maintain a reasonable level of mobility for through traffic and improve local circulation options	Projected traffic volume will approach large numbers. Vehicles will have long delays at the signal	Short-term <ul style="list-style-type: none"> Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> Widen VT 207 and add additional turn lanes as the developments are completed to maintain an acceptable level of service. Construct the Loop Road to alleviate some of the vehicle turning movements Construct pedestrian facilities that connect to surrounding services 	An intersection study was completed recently, will need to implement the recommended solutions and monitor the intersection performance.
US 7 & JLD PUD	Provide access management practices for Wal-Mart and surrounding businesses	Projected traffic volumes will approach large numbers. Vehicles will have long delays at full build-out in 2027	Short-term <ul style="list-style-type: none"> Construct intersection with JLD PUD development Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> Widen access and add additional turn lanes as the developments are completed to maintain an acceptable level of service. Connect to the Loop Road or the Federal Street Extension to alleviate traffic on US 7 Construct pedestrian facilities that connect to surrounding services 	An intersection study was completed recently, will need to be implemented the recommended solutions and monitor the intersection performance.
US 7 & Jewett Avenue	Maintain a reasonable level of mobility for through traffic and improve local circulation options	Projected traffic volume will approach large numbers. Vehicles will have long delays at intersection	Short-term <ul style="list-style-type: none"> Manage access for parcels directly adjacent to US 7 Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> Add additional turn lanes to reduce the LOS to an acceptable level Construct pedestrian facilities that connect to surrounding services 	<ul style="list-style-type: none"> Revisit the access management guidelines in the Town of Saint Albans zoning and subdivision regulations Town of Saint Albans should map easements to explore possible connections. Evaluate traffic impacts of providing connections

VT 207 & I 89	Maintain a reasonable level of mobility for through traffic and improve the on and off ramps to I 89 as well as the circulation options.	Projected traffic volumes will exceed the current configuration of VT 207 in 2027.	Short-term <ul style="list-style-type: none"> • Address safety deficiency by implementing alternative intersection control • Manage access for parcels directly adjacent to VT 207 • Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> • Reconfigure the on and off ramps for I 89. 	<ul style="list-style-type: none"> • Major project to reconfigure the on and off ramps to I 89 to a cloverleaf system in order to handle the volume of traffic • Alternative intersection control can include lowering the speed limit, or adding barriers to mark the lane reduction
VT 207 & Noname Road	Improve intersection safety and efficiency for pedestrians, bicyclists, and motorists	Projected traffic volume will approach large numbers. Vehicles will have long delays at intersection	<ul style="list-style-type: none"> • Reconfigure intersection to a T intersection • Construct bicycle lanes in both directions 	Improve safety by improving the geometry of the intersection prior to Swanton build-out
VT 207 & Bushey Road	Maintain a reasonable level of mobility for through traffic and improve local circulation options	Projected traffic volumes will approach large numbers. Vehicles will have long delays at full Swanton full build-out.	Short-term <ul style="list-style-type: none"> • Intersection is ok until Swanton begins build-out • Construct bicycle lanes in both directions Long-term <ul style="list-style-type: none"> • Reconfigure the intersection from a Y to a T intersection and implement improvements recommended by the preferred alternative 	Improve safety by improving the geometry of the intersection prior to Swanton build-out

Implementation of some of the stated items will require working partnership of several entities. There should be some written Memorandum of Understanding (MOU) established between the partnerships after the US 7 Corridor Study Update 2007 is accepted. The working partnerships should be between the following entities:

- Town of Saint Albans
- Town of Swanton
- Vermont Agency of Transportation
- Agency of Natural Resources
- And any other proposed developer that will have a substantial impact on the project study area
- Northwest Regional Planning Commission
- Franklin Park Developer
- JLD PUD Developer
- Swanton Developer

This MOU would establish who will be responsible for improvements, where, and when. The volume of traffic that is projected to be seen by this project study area in 2027 is large, and will have devastating affects on the regional growth, if the infrastructure is not improved along with the developments for bicycle, pedestrians, and vehicles.

Within this MOU there should be some incentives and contingencies built in to the agreements. There should also be a mechanism to monitor the roads and intersections effectiveness and set some conditions that need to be obtained or improvements must be made to obtain those conditions.

9. SUMMARY

This report is a culmination of several studies and reports that have been produced in recent years to study the growth of various areas within the project study area that has been defined for this US 7 Corridor Study Update in 2007. One of the challenges that face the Town of Saint Albans and Town of Swanton is the potential for growth in the area surrounding Exit 20. There is the potential to increase the PM peak volume of traffic by 400% with all the proposed development in the area by 2027.

The goal of this update is to provide the Town of Saint Albans, Town of Swanton, and Northwest Regional Planning Commission with a single plan that considers the many different influencing factors on the transportation network. Therefore this study reviews not only the vehicular traffic in the area and the impact to the roadway network but also the bicycle/pedestrian facilities and other multimodal opportunities that can be utilized to create a community in the Exit 20 area.

9.1. Multimodal Improvements

After reviewing the existing bicycle and pedestrian facilities in the project study area it is clear that with the planned development significant improvements need to be made in the facilities that exist as well as the means and methods of creating these facilities. The Town of Saint Albans and Town of Swanton need to take an active role in making sidewalks in the growth centers a priority when upgrades or new projects occur in the area as part of the town plans, and during the design review process for new projects. There is not a strong need for a complete sidewalk network in the Exit 20 area in 2007 since pedestrian movements have been relatively low. However there will be many more by the planning year of 2027; therefore any reconstruction or capacity improvements to the existing roadways should incorporate sidewalks. As with roadway capacity, it is much easier to plan for such facilities before there is a critical need and to incorporate them into the initial projects to reduce disruption in the corridor and maximize efficiencies in construction.

While the need for sidewalks is not currently critical, there is a need for adequate shoulders and/or bicycle lanes through the project study area. Currently the existing shoulders do not meet VTrans standards based on classification of the roadway or design speeds. It is critical to provide adequate separation and space for the increasing number of bicyclists traveling through the area. Providing bicycle lanes will serve a dual purpose in providing pedestrians who currently travel through the area a safer place to travel that is not in the vehicle travel lane. While this is not a final solution for pedestrians it bridges the gap between having no facilities and completion or implementation of a sidewalk network.

Finally other modes of multimodal transportation such as a public transit system should be established to alleviate some of the trips that will be generated by the proposed developments. A public transit system could be sustainable with the proposed growth, and potential that lies in the Swanton Growth Center. It is also important to consider as part of municipal plans the encouragement of creating walkable communities that locate

residences within walking distance of services, potential places of employment and sources of entertainment.

Implementing these facilities, services and practices is a minimum level of effort into starting a community that focuses on multimodal transportation. Initiating these practices from the start will strengthen the potential for more advanced multimodal types of transportation during future planning and growth.

9.2. Growth Potential

There is a wide open potential for growth in the project study area. There are several large parcels that are currently undeveloped, this creates an enormous potential for an increase in traffic during the 20 year planning period. One of the greatest challenges that faces the Town of Saint Albans is several of these large open parcels currently have owners with plans to develop the parcel all with the goal of moving forward with development within the 20 year planning period. This has created a scenario that resulted in traffic for developments in Saint Albans Town that would resemble a full build out scenario rather than 20 years of growth. However without a clear plan from the Town of Saint Albans it is difficult to discern which of these potential developments, many of which are currently in the permitting phase, will become a reality by 2027.

It would also be wise for the Town of Saint Albans and the Town of Swanton to better define the character and nature of future developments that are desired in their communities. Each of the Towns has the opportunity to encourage smart sustainable development that mixes commercial and residential development within one project.

9.3. Intersection Improvements

Several different analyses were performed for the intersections in the study area to determine the best long range plan for the transportation network. Two approaches were investigated for the first was for transportation improvements within the existing roadway networks; the second was to develop a plan that would utilize a network of supporting roads to help manage future traffic volumes. Ultimately it was determined that with the future growth in the Exit 20 area will not be able to support their future traffic only along US 7 and VT 207. It will be necessary to create roads parallel to US 7 and VT 207 to support the future transportation needs in the area.

This conclusion is highlighted by looking at the individual approach levels of service at the project study intersections. A significant effort was made to eliminate all intersection approaches with a LOS of F from Alternative B; however this was not possible within the existing right-of-way. Therefore the only alternative that manages the proposed developments in the project study area, and creates a network that is not currently at the brink of failure is Alternative C.

Alternative C, has intersections along US 7 that are all smaller than those proposed in Alternative B, with the exception of US 7/VT 207 where there is one additional turning lane beyond that which is proposed in Alternative B. Therefore, Alternative C not only proposes a transportation network capable of managing the 2027 planning year traffic

but also allows for the possibility of expanding the network for growth that will occur beyond the planning year.

In conclusion, it must be considered that this update to the US 7 Corridor Study considers growth up to 2027 and possibly beyond, it only includes approximately 15% of the potential growth in the Swanton Growth Center. Infrastructure changes proposed in Alternative C are solutions that will be required for the long term growth and build-out of the entire Exit 20 area. It will be easier to implement new infrastructure in the early planning stages while land for necessary transportation facilities is available; and impacts to natural/cultural resources can be minimized. Planning ahead for the growth will also provide an opportunity to use financial resources from proposed developments which can be used to implement the necessary upgrades.



AVIATION ♦ HIGHWAY/STRUCTURES ♦ ENVIRONMENTAL ♦ SITE/CIVIL