

## CHAPTER 3 – INITIAL TRANSPORTATION SCREENING AND ALTERNATIVES DEVELOPMENT

### 3.1 Introduction

The purpose of this chapter of the Report is to present the initial transportation screening methodology and evaluation of the long-list of alternative transportation concepts developed through the scoping process. This chapter describes the alternative transportation concepts in detail and summarizes how the initial transportation screening was performed. As a result of this initial screening effort (described in Sections 3.2 and 3.4), a total of 15 conceptual alternatives, along with the No Build alternative, were identified as meeting the criteria to be advanced to the comprehensive transportation and environmental screening assessments. As described in Section 3.4, eight additional alternatives were identified after the initial transportation screening resulted in the initial 15 alternatives.

It should be noted that the initial transportation screening effort does not involve environmental screening. Because of the large number of alternative transportation concepts developed through the scoping process, the first level of screening focuses on determining whether the concepts, either on their own or in combination with other concepts, meet the project's Purpose and Need, i.e., address the existing and projected transportation deficiencies in the project area sufficiently to be advanced as viable alternatives for further study. Environmental screening is conducted after those conceptual alternatives have been advanced and engineered to a level necessary for the screening analysis.

### 3.2 Long List of Alternative Transportation Concepts

As noted in Chapter 2, the alternative concepts derived from the scoping process were divided into six major categories: 1) Transportation Demand Management (TDM), 2) Public Transportation, 3) Pedestrian/Bicycle, 4) Freight Movement, 5) Improve Existing Roadways, and 6) Construct New Roadways. These alternative concepts are considered the "long list of alternative transportation concepts" and are described in detail in the following sections.

#### 3.2.1 Transportation Demand Management (TDM)

TDM is a management tool used to alleviate congestion through alternative transportation measures. TDM strategies are developed to reduce the dependence on single-occupancy vehicles. Potential TDM measures considered for the project area include transportation management association (TMA) development, ridesharing, flexible work schedules, high occupancy vehicle (HOV) lanes, park-and-ride lots, and congestion pricing, each of which is further described below. TDM strategies typically reduce trips on a roadway network and decrease vehicle miles traveled (VMT), thus decreasing congestion.

##### **Transportation Management Association (TMA) for VT 2A Businesses**

To discourage single-occupancy vehicles, regional non-profit public/private organizations may be set up to provide services such as carpool matching, vanpools, or commute options. TMAs provide a platform for cooperation between private businesses and local governments. TMAs generally offer ridesharing and transit alternatives to single-occupancy vehicles and provide commuter option information on bicycling/walking, carpools, vanpools, flexible ways to work, and ride matches to a specified service area. In addition to ride sharing programs (carpooling, vanpooling) and guaranteed-ride-home programs, TMAs can provide consulting services for

customized TDM plans, connections to and from public transportation, parking management, bicycling and walking trips, regional and community travel information services (information on road closures, accidents, construction transmittals via fax or e-mail), and on-site promotions to educate employees about commute choices.

### **Ridesharing**

To discourage single-occupancy vehicles, area-wide regional ridesharing programs may be implemented through employers or other local programs. Ridesharing can take the form of carpools, vanpools, public transportation, etc. Ridesharing may be encouraged through the following methods: HOV lanes, park-and-ride lots, guaranteed ride home programs, parking pricing, preferred parking incentive programs, and the like.

### **Flexible Work Schedules**

Work hour switching strategies may be implemented in an effort to reduce congestion at peak commuting times. Flextime programs allow an employee to choose what time he/she will arrive at work in order to spread out peak period congestion. Staggered work hour programs aim to reduce or spread out peak-period congestion through the shifting of employee start and finish times. A compressed work week (e.g., four days instead of five) allows an employee to work fewer days, but still work full-time hours, thereby reducing the number of trips commuting to work and possibly commuting outside the normal peak hours. Telecommuting permits an employee to work from home on a part-time or full-time basis, thus reducing the number of commuting trips on the traffic network. Flexible work schedules are generally inexpensive to implement, may be used in both public and private sectors, and may have a significant and immediate impact on peak period traffic. These strategies require coordination among employers.

### **HOV Lanes**

HOV lanes are specially designated travel lanes reserved for buses, vans and cars that have a certain number of passengers, typically two or more. Vehicles that use an HOV lane often have the benefit of faster traveling than those that use congested lanes. An HOV lane can be constructed especially for that purpose and use, or a lane of an existing facility can be designated as such through signage and pavement markings at certain times of day. Other variations of the HOV lane include reversible lanes, in which a center lane is designated an HOV lane in one direction during certain hours and in the opposite direction during other hours.

### **Park-and-Ride Lots**

Park-and-ride lots provide parking in areas that are convenient to several modes of transportation. Park-and-ride lots are commonly located adjacent to train stations, or are serviced by bus lines. Lots are also located alongside HOV lane facilities. Park-and-ride lots may encourage transit use and ridesharing and may decrease vehicle miles traveled.

### **Congestion Pricing**

This strategy is generally used to control peak period use of transportation facilities by charging a fee or a higher fee during peak period use than for off-peak use of a facility. This initiative could take the form of traditional tolling at fixed points or electronic tolling at cordon locations on Interstate highways and local arterials. The tolling could be similar in structure to the system recently implemented in London, England and could use the electronic toll collection (ETC) technology, such as EZ-Pass.

### 3.2.2 Public Transportation

The second category of alternative concepts is Public Transportation, which was further subdivided into bus, rail (commuter rail on existing rail lines) and ferry concepts. Each of these public transportation alternatives were considered for the entire project area. The objective of public transportation services is to reduce the number of trips on project area roadways, reduce VMT in the project area, and generally reduce congestion.

#### **Bus Service**

Public bus service was considered for various routes throughout the project area in various forms including traditional fixed-route service, flex-route service, bus rapid transit (regional service) and rapid bus services (regional service). These are each described below.

- **Fixed-Route Bus Service**

A fixed-route bus service operates on a fixed route and time schedule throughout a designated area. Buses make predetermined stops and run on a regulated time frame. Potential traditional fixed-route bus service options would include improvements to existing services, and the implementation of new local and commuter routes.

- **Flex-Route Bus Service**

An alternative to traditional fixed-route bus service would be flex-route service, which is a hybrid of traditional fixed-route service and demand responsive service. At one or both ends, buses would provide curbside pick-ups and drop-offs within designated flex-route service areas on a demand-responsive basis. In at least one point, or along certain segments, flex-route service would operate on a fixed schedule in the same manner as traditional bus service. Flex-routes are a method of providing more flexible service to areas such as the project area where population and employment densities make traditional fixed-route service difficult. The demand-responsive feature of the service allows a larger area to be served and improves the attractiveness of public transportation.

- **Bus Rapid Transit (BRT)**

As the term is now used, BRT applies to a wide variety of fast bus services, which range from ones that operate in a rail-like manner in exclusive busways to ones that operate on regular roads with special priority at traffic signals and other BRT features. BRT alternatives considered for the project area include high-speed bus services that operate predominantly in exclusive rights-of-way and/or on limited access highways. Rapid bus service, which would consist of new bus services on existing roadways coupled with on-street BRT features, could provide many of the same benefits as “full” BRT services. In the project area, measures that could be used to make bus service faster would primarily consist of signal priority and queue jump lanes at intersections and in congested areas.

#### **Rail Service**

Rail service could be operated to, from, and within the study area in the Vermont Railway and New England Central Railroad corridors. Potential rail service could be in the form of traditional passenger rail, light rail, or personal rail transit. Potential services could operate along all or part of the following lines:

- Charlotte – Essex Junction/IBM via Burlington.
- St. Albans – Burlington via Essex Junction.
- Montpelier – Burlington via Essex Junction.

### **Ferry Service**

Ferry service is also a form of public transportation under consideration to serve the project area. A potential ferry service on Lake Champlain could connect Charlotte to Burlington.

### **3.2.3 Pedestrian/Bicycle**

Walking or bicycling as a form of transportation to work or other destinations can be encouraged through community-wide improvements to pedestrian and bicycling facilities. Pedestrian facility enhancements and improvements in pedestrian access generally include increasing of pavement widths or providing walking paths such as sidewalks segregated from motor vehicle traffic. Bicycle facilities generally include designated bicycle lanes, multi-use paths, and/or wide shoulders on existing roadways. Other measures that can encourage bicycle use include the provision of bicycle lockers and showers at workplaces or transit stops. Local municipalities can plan pathways within the rights-of-way (ROW) of existing or proposed roads. Bicycle compatible lanes may also be designed and constructed in shoulder lanes along a roadway.

The 2025 Chittenden County Metropolitan Transportation Plan (MTP) recommends an extensive network of the pedestrian and bicycle improvements, including an extensive network of dedicated and shared routes that would serve the project area in the future. Since these proposed pedestrian and bicycle facilities would be included as part of the No Build condition, the number of additional pedestrian and bicycle concepts that could be developed in the project area are limited. Three such alternative concepts were developed including: 1) multi-use pathways and crossings along a proposed Circ right-of-way, 2) multi-use pathways in lieu of a Circ right-of-way, and 3) multi-use pathways along any new roadways in the project area. These are further described below.

#### **Pathways and Crossings along a Proposed Circ ROW**

This concept would include a multi-use pathway parallel to a Circ roadway within its ROW, if it were to be constructed. It would also include pedestrian and bicycle crossings of the roadway, which could be either at-grade or grade-separated, depending on what the configuration of a constructed roadway might be.

#### **Pathways in lieu of the Circ**

This concept would include a multi-use path or paths through the Circ ROW in lieu of the roadway, if it were not constructed.

#### **Pathways along any new or Upgraded Roadways**

This alternative concept could include pedestrian and bicycle paths parallel to the alignment of any new or upgraded roadways that may be proposed in the project area. This concept could also include pedestrian and bicycle crossings, either at-grade or grade separated, for any new or upgraded roadways proposed in the project area.

### **3.2.4 Freight Movement**

The movement of freight through the project area on local roads by trucks has been identified in the Purpose and Need as a concern and a problem by the residents of Chittenden County. Several concepts to address freight movement have been developed, including a switch in mode from trucks to rail and the implementation of truck restrictions on specified local loads in the project area. The truck restrictions could be implemented either only during peak hours or 24 hours a day.

### **Rail Freight**

Rail freight is currently carried to, from, and within the project area in the Vermont Railway and New England Central Railroad corridors. This concept would attempt to decrease the volume of freight carried by truck and increase the volume of freight carried by rail through the project area. Freight service could be potentially increased on the following lines:

- Charlotte – Essex Junction/IBM via Burlington.
- St. Albans – Burlington via Essex Junction.
- Montpelier – Burlington via Essex Junction.

### **Truck Restrictions**

The truck restrictions concept aims to separate trucks from passenger vehicles and pedestrians. Restrictions may prohibit trucks from traveling on certain roadways and may call for weight restrictions on certain bridges. Regulations and restrictions on large truck routes in some states prohibit large or oversized trucks from using local roadways as through routes or short cuts between interstates and designated truck routes. Truck restrictions could be implemented either during peak periods or 24 hours a day.

## **3.2.5 Improve Existing Roadways**

The goal of this group of alternative concepts is to reduce congestion, improve the operational efficiency of traffic flow, and improve safety by increasing roadway capacity and improving roadway geometrics on existing roadways without constructing new roads. Changes in roadway geometrics should involve intersection and corridor lane improvements that pay close attention to potential effects in traffic flow and volume. Changes in traffic flow and volume may often result from an increase or decrease in the number of lanes along a corridor. Roadway geometric changes may include, among others, an increase or decrease in the number of lanes, the modification of inclines and curves, and the modification of interchanges and ramps. Operational improvements may be consistently applied throughout/along the roadway, such as a consistent number of lanes throughout a corridor.

This section first describes the two types of improvements (Transportation System Management and Cross-Section Improvements), then describes how these improvements might be implemented at various transportation facility locations in the project area.

### **Transportation System Management (TSM)**

Examples of TSM intersection strategies that could be applied within the project area include:

- **Signal Optimization**

This measure is commonly used to improve traffic flow, reduce queue lengths, and reduce congestion and delay by adjusting the signal timing and phasing, upgrading existing traffic signal and detection equipment, providing traffic signal system coordination, and providing pedestrian signals. Signalization may aid in addressing capacity problems at intersections that operate at poor service levels.

- **Channelization**

Channelized turning bays can aid in the accommodation of turning movements on a given roadway and can also separate traffic movements to improve safety.

- **Turning Lane Improvements**

Turning lane improvements include the addition of turning lanes to an intersection in order to improve safety and capacity. Lane striping and lane delineation are safety devices that may aid in controlling traffic flow.

- **Roundabouts**

Roundabouts are circular unsignalized intersections that may consist of one or two travel lanes. Traffic flow through a roundabout is continuous except that entering vehicles must yield to traffic already in the roundabout. Although generally designed for four approaches, roundabouts can accommodate up to six approaches. The approaches to a roundabout are channelized to streamline traffic flow and to deflect entering vehicles, forcing them to navigate at slower speeds. The geometric features of a roundabout generally reduce speeds to 30 miles per hour (mph) or less. Design guidelines for roundabouts have been established by FHWA which differ in design from older traffic rotaries. In some contexts, roundabouts may be contrasted to “traditional” TSM intersection treatments.

### **Cross-Section Improvements**

Examples of cross-section improvement strategies that could be applied within the project area include:

- **Roadway Widening**

This measure involves the widening of the mainline roadway to accommodate more travel lanes along a corridor, and improve pedestrian access. It could also include the addition of a two-way turning lane (TWTL) that could be used by vehicles traveling in either direction to complete left turns.

- **Roadway Realignment**

The reconfiguration or realignment of approaches that operate at poor levels of service would allow for improved traffic flow. In addition, geometric improvements including wider travel lanes, changes in turning radii, perpendicular alignment of approaches, and the removal of obstructions will help to improve safety and capacity.

- **Access Management**

Coordination of access points to available development sites along a corridor allows for less interference in traffic flow. This measure may be effective along mainline segments of a highway that operate poorly. Access management can include limiting access during rush hours (AM and PM peak hours), other time periods of high levels of congestion, or throughout the day. Access management improves safety and reduces congestion by limiting the number of friction/conflict points within a corridor. Access management can be accomplished by turn restrictions, medians, or limiting the number of driveways.

### **Potential Improvements to Transportation Facilities within Project Area**

This section identifies specific transportation facilities within the project area where potential TSM and cross-section improvements could be made.

- **VT 2A Corridor**

Several improvement alternatives are possible for the section of VT 2A between Five Corners in Essex Junction and I-89 in Williston. One potential cross-section concept includes a boulevard with a landscaped median and sidewalks. VT 2A would be configured to provide between two and six travel lanes. Alternately, the VT 2A concept could include a three- or five-lane configuration including a continuous two-way turning lane (TWTL). Another option for the cross-section of VT 2A provides a two-lane roadway with a median and turning lanes at the intersections. Intersection improvements for this corridor could include signal optimization, channelization, roundabouts, and additional turning lanes.

- **VT 117 Corridor**

Two cross-section concepts could be considered for the section of VT 117 between US 2 in Richmond and Five Corners in Essex Junction. The concepts include the retention of the current two-lane configuration that could be upgraded or an expansion to four travel lanes. In addition, intersection improvements could include signal optimization, channelization, roundabouts and additional turning lanes.

- **North Williston Road Corridor**

Cross-section alternatives for the North Williston Road corridor between I-89 in Williston and VT 117 in Essex include upgrading the existing two-lane geometry or creating a four-lane cross-section.

- **US 2 Corridor**

TSM improvements are among the alternatives considered for the US 2 corridor between Industrial Avenue in Williston and I-89 in Richmond. Possible intersection improvements include signal optimization, channelization, roundabouts and additional turning lanes.

- **VT 15 Corridor**

Two sections of VT 15 are being considered for widening to provide a three-lane cross-section. These sections are located between Five Corners in Essex Junction and VT 289 in Essex and between VT 289 in Essex and the Underhill town line.

- **Susie Wilson Road Corridor**

TSM improvement alternatives for the Susie Wilson Road corridor between VT 15 and VT 2A in Essex could include signal optimization, channelization, roundabouts and additional turning lanes.

- **Brownell Road Corridor**

TSM improvement alternatives along the Brownell Road corridor between I-89 and Industrial Avenue in Williston could include signal optimization, channelization, roundabouts and additional travel/turning lanes.

- **I-89 Exit 12 Interchange**

Three concepts are considered for improvements to the I-89 (Exit 12) northbound and southbound ramp intersections with VT 2A. The first concept would include the rebuilding of the two separate intersections at this interchange as one single point urban interchange (SPUI). The second concept would include the construction of separate roundabouts at each of the intersections. The third concept would include signal timing improvements at both intersections.

### **3.2.6 Construct New Roadways**

The goals of the construct new roadways alternative concepts are to reduce congestion, improve the operational efficiency of traffic flow, and improve safety by increasing roadway capacity. This would be accomplished through the construction of new road links and connections in the project area. The new roadway concepts include the existing Circ A/B ROW, Circ connections to I-89, and other roadway locations, each of which is described below.

#### **Circ A/B**

The previously acquired Circ A/B ROW generally follows a north-south alignment between Redmond Road and Old Stage Road, and connects I-89 and the current southern terminus of VT 289 at VT 117. The Circ A section of the ROW, as contemplated on historical plans, is located between I-89 and Mountain View Road. The Circ B section is located between

Mountain View Road and the southern terminus of VT 289 at VT 117. The following concepts would utilize the existing Circ ROW for the construction of a new roadway.

- **Circ A/B Limited Access Highway**

This concept would include the construction of a new limited access highway between I-89 and the southern terminus of VT 289 at VT 117 within the Circ A/B ROW. This concept could be constructed as either a two- or four-lane cross-section. Three interchanges would be constructed along the Circ A/B ROW including I-89, Mountain View Road, and VT 117 as part of this concept. It would also include the construction of a Winooski River crossing.

- **Circ A/B Boulevard**

This concept would include the construction of a new boulevard between I-89 and the southern terminus of VT 289 at VT 117 within the Circ A/B ROW. This alternative would be constructed at-grade with either a two- or four-lane cross-section. A total of two interchanges would be constructed as part of this concept, including at I-89 and VT 117. At-grade intersections could be constructed at several locations, including at US 2 and at Mountain View Road. This concept would also include the construction of a Winooski River crossing.

- **Circ A Partial (Circ Street)**

This concept would include the construction of either a limited access highway or a new boulevard-type street between I-89 and Mountain View Road within the Circ A ROW. This concept would be constructed with a two-lane cross-section. An interchange would be constructed at I-89. Either at-grade intersections or interchanges could be constructed at several locations, including at US 2 and at the proposed terminus located at Mountain View Road. This concept would not include the construction of a Winooski River crossing.

- **Circ Local Road**

This concept would include the construction of a new boulevard-type street between US 2 and Mountain View Road within the Circ A ROW. This concept would be constructed at-grade with a two-lane cross-section. Additional at-grade intersections could be constructed at several locations along the ROW. This concept would not include the construction of a Winooski River crossing.

- **Circ B Limited Access Highway**

This concept would include the construction of a new limited access highway between Mountain View Road and the southern terminus of VT 289 at VT 117 within the Circ B ROW. This concept could be constructed with a two-lane cross-section. A total of two interchanges (at Mountain View Road and VT 117) would be constructed as part of this concept. It would also include the construction of a Winooski River crossing.

- **Circ Connection to US 2**

As part of all concepts that include Circ A located between I-89 and Mountain View Road, three options are considered for the proposed connection at US 2. The options include a grade-separated crossing with no connections, a grade-separated interchange, or an at-grade intersection.

### **Circ Connections to I-89**

This group of concepts focuses on variations in the configuration of the connection between I-89 and Circ A. A total of three concepts were developed to address this connection:

- **Conventional Interchange**

For this concept, a conventional interchange would be constructed for the Circ connection between I-89 and Circ A. This would include the construction of direct on- and off-ramps between northbound and southbound I-89 with Circ A.

- **Interchange with Collector/Distributor Roads Connecting to Exit 12**

Because of the relative proximity of a proposed interchange between I-89 and Circ A, a set of two lane collector/distributor (C/D) roads would be constructed parallel to northbound and southbound I-89. The C/D roads would be physically separated from the I-89 mainline. The C/D roads would accommodate all entering and exiting vehicles at Exit 12, all entering and exiting vehicles at the proposed I-89 and Circ A interchange, and vehicles traveling between these interchanges. This would eliminate all weaving movements associated with these interchanges.

- **Hurricane Lane Tie-in**

Hurricane Lane is a local street that parallels southbound I-89 to the south of I-89 with no direct connection to I-89. For this concept, all traffic destined for southbound I-89 and northbound Circ A from VT 2A would enter from Hurricane Lane. This would eliminate cars from southbound I-89 between VT 2A and Circ A and would eliminate all weaving movements associated with these interchanges on southbound I-89.

### **Other New Roadway Locations**

This section describes potential new roadways at other locations in the project area.

- **New Circ A/B Alignment**

A new Circ alignment could be developed between I-89 and the southern terminus of VT 289 at VT 117 parallel and east of the current Circ A/B alignment. Consideration was given to an alignment west of the existing Circ A/B alignment. However, a more westerly A/B alignment in a new location was rejected because it would provide less transportation benefit since it would be in closer proximity to I-89 Exit 12 or potential future Exit 12B (Hinesburg Road). The roadway network and land development to the west is also denser, and more displacement would be expected to occur from construction of a new roadway in this area. As a result, a more easterly alignment would not have the same property issues as a westerly alignment. Old Stage Road was considered as the easternmost limit of a new alignment since it was projected that the transportation benefit would be diminished further to the east because of the relative proximity of Exit 11. The proposed roadway could function as either a limited access highway or as a boulevard with connections to the local roadway network. This concept would also include the construction of a Winooski River crossing.

- **New Interchange at Oak Hill Road and I-89**

This concept would include the construction of a conventional interchange at Oak Hill Road and I-89.

- **New Interchange at Brownell Road and I-89**

This concept would include the construction of a conventional interchange at Brownell Road and I-89.

- **Mountain View Road Connector**

Under this concept, a new two-lane cross-section limited access roadway would be constructed between Mountain View Road and the southern terminus of VT 289 at VT 117 within a new ROW. The alignment of this concept would connect to Mountain View Road closer to VT 2A and Industrial Avenue (further west) than would the Circ B alignment. This concept would also

include the construction of a Winooski River crossing. This concept could also include the construction of Circ B between Mountain View Road and the southern terminus of VT 289 at VT 117 within the Circ B ROW.

- **Allen Martin Parkway Extension**

This new roadway would be constructed between Sand Hill Road and VT 289 with a two-lane cross-section.

### 3.3 Initial Transportation Screening

An initial transportation screening matrix (see Tables 3-1(a) through 3-1(c) at the end of this chapter) was developed to summarize the rating of how the long-list of alternative transportation concepts met the categories of the project's Purpose and Need: 1) relieving congestion on VT 2A and Five Corners; 2) addressing the mobility needs between Williston and Essex; and 3) improving safety along VT 2A and at Five Corners. Table 3-1(a) is the initial screening matrix for the TDM, public transportation, pedestrian/bicycle, and freight concepts. Table 3-1(b) is the initial screening matrix for the improve existing roadways concepts. Table 3-1(c) is the initial screening matrix for the construct new roadways concepts.

Each concept was rated with respect to the three categories using the following system: concept **likely meets** the Purpose and Need, concept **may meet** the Purpose and Need, and concept **does not meet** the Purpose and Need. It should be noted that these qualitative designations were of a preliminary nature.

The primary objective of the initial transportation screening was to use the preliminary assessment of meeting the Purpose and Need to separate the concepts into one of four distinct categories: (1) advance for further screening as a stand-alone alternative; (2) advance for further screening in combination with other concepts; (3) possibly reintroduce during the detailed EIS analysis to complement a short-listed alternative (such concepts were not considered alternatives for screening); and (4) eliminate the concept from any further consideration. In other words, the alternatives in the first two categories were considered to pass the basic qualifications for testing in the comprehensive screening step.

At this stage, only information and data obtained during the scoping and initial screening phases of the Circ-Williston EIS process provided the foundation/basis for evaluating the alternatives. Although considerable information and data were collected in connection with other NEPA documents for the previous Circumferential Highway project, including the Final Reevaluation, that information was not considered here nor referred to in evaluating the Circ A/B or other alternatives. Because of the practical limitations on screening such a large number of concepts, this initial round of screening used an intuitive or rational approach to make judgments about the potential of the long list of concepts to meet the project's Purpose and Need. The results were used only to eliminate concepts with very low potential or to set aside concepts for later consideration if they did not directly address the Purpose and Need. If a concept was in doubt, it was advanced to detailed screening. In other words, because the criterion of improving safety was based primarily upon the implementation of physical improvements on VT 2A, an alternative that involves physical improvements to VT 2A was rated a likely meeting the Purpose and Need for this criterion.

No ranking is implied, nor should ranking be inferred, from the initial transportation screening. Since the comprehensive screening (see Chapters 4 and 5 of this Report) was more quantitative, thorough, and rigorous than the initial transportation screening, its results supersede those of the initial transportation screening.

### 3.3.1 Initial Transportation Screening Rating Criteria

Individual alternative concepts were rated for each category based upon the following criteria:

#### **Relieving Congestion**

This criterion was based upon the direct or indirect reduction of traffic volumes on VT 2A and at Five Corners. This category would include concepts that remove traffic volumes from the VT 2A corridor and Five Corners. Physical improvements that provide additional capacity such as additional travel or turning lanes were also considered under this category. Alternative concepts were rated as follows:

- **Likely meets** the Purpose and Need – would provide a significant reduction in traffic volumes on VT 2A and at Five Corners and/or additional capacity.
- **May meet** the Purpose and Need – would provide some measurable reduction in traffic volumes on VT 2A or at Five Corners. Minor improvements in capacity were also considered here.
- **Does not meet** the Purpose and Need – would not provide some measurable reduction in traffic volumes on VT 2A or at Five Corners or any capacity improvements.

#### **Increasing the Mobility Needs between Williston and Essex**

This criterion was based upon the implementation of physical improvements in the project area that would promote travel and improve mobility between Williston and Essex. Alternative concepts were rated as follows:

- **Likely meets** the Purpose and Need – would include physical improvements that directly facilitate mobility between Williston and Essex.
- **May meet** the Purpose and Need – would include physical improvements or regional transportation measures that partially facilitate mobility between Williston and Essex.
- **Does not meet** the Purpose and Need – would not include physical improvements or regional transportation measures that would facilitate mobility between Williston and Essex.

#### **Improving Safety**

This criterion was based primarily upon the implementation of physical improvements on VT 2A and at Five Corners that have specific safety benefits and secondarily on the direct or indirect reduction of traffic volumes on VT 2A and at Five Corners. In other words, because physical improvements to VT 2A would more directly address the safety problems on this road, it is rational to give such improvements a higher score than concepts that do not involve physical improvements to VT 2A. Alternative concepts were rated as follows:

- **Likely meets** the Purpose and Need – would provide the implementation of physical improvements on VT 2A and at Five Corners.
- **May meet** the Purpose and Need – would provide a significant reduction in traffic volumes or isolated physical improvements on VT 2A or at Five Corners.
- **Does not meet** the Purpose and Need – would not provide a significant reduction in traffic volumes or implementation of physical improvements on VT 2A or at Five Corners.

### 3.3.2 Alternative Concept Assignment

Based on the initial transportation screening, 15 conceptual alternatives were advanced for comprehensive screening. Alternative concepts that did not qualify as stand-alone alternatives

were combined with one or more of the 15 conceptual alternatives. Following is a description of the four possible assignments for the alternative concepts and a listing of which alternative concepts were assigned to each category, using the initial transportation screening methods described above.

#### **Advanced as a Stand-alone Alternative**

Based upon the results of the initial transportation screening evaluation, alternative concepts that rated **likely meet** the Purpose and Need in any category were advanced for comprehensive screening.

#### **Advanced in Combination with Other Concept(s) as an Alternative**

Alternative concepts that did not rate a **likely meet** the Purpose and Need in any category but rated at least one **may meet** the Purpose and Need in a category were combined with at least one other concept, as appropriate, to create an alternative or alternatives for comprehensive screening.

The 15 conceptual alternatives that were assigned to these two categories and, therefore, were advanced to comprehensive screening, include the following:

- Combined TDM and Public Transportation Concepts (Alternative 1)
- Improve Existing Roadway Alternatives
  - VT 2A Corridor Improvements with Traditional TSM (Alternative 2)
  - VT 2A Corridor Improvements with Roundabouts (Alternative 3)
  - VT 117 Corridor Improvements (Alternative 4)
  - North Williston Road Corridor Improvements (Alternative 5)
  - Multi-Corridor (VT 2A, North Williston Road, VT 117) Improvements with Traditional TSM (Alternative 6)
  - Multi-Corridor Improvements with Roundabouts (Alternative 7)
  - Brownell Road Corridor Improvements (Alternative 8)
- Construct New Roadway Alternatives
  - Circ A/B Limited Access Highway (Alternative 9)
  - Circ A/B Boulevard (Alternative 10)
  - Circ Limited Access Highway East Alignment (Alternative 11)
  - Circ Boulevard East Alignment (Alternative 12)
  - Circ A Partial (Circ Street) (Alternative 13)
  - Circ B Limited Access Highway (Alternative 14)
  - Mountain View Road Connector (Alternative 15)

#### **Potentially Reintroduce as a Complementary Concept to a Short-listed Alternative**

Individual concepts that rated **do not meet** the Purpose and Need in all categories were not advanced for comprehensive screening either as a stand-alone alternative or in combination with other concepts. Based on input received during the public forums and interagency meetings, it was confirmed that not assigning such concepts for the comprehensive screening step was appropriate. However, the public and interagency input suggested that many such concepts should not be eliminated outright but could be reintroduced in Step 3 of the EIS process to either “enhance” a short-listed alternative or mitigate traffic impacts that might result from implementing a short-listed alternative, as appropriate. The seven alternative concepts that were assigned to this category include the following:

- **Pedestrian/Bicycle** – The proposed pedestrian/bicycle concepts do not meet the Purpose and Need for relieving congestion since they would not provide any measurable reduction in traffic volumes or include the implementation of physical improvements on

VT 2A or at Five Corners. Physical improvements or regional transportation measures that would facilitate mobility between Williston and Essex would not be part of this concept and would not meet the Purpose and Need for mobility. The pedestrian/bicycle concept would not significantly reduce traffic volumes or implement physical improvements on VT 2A or at Five Corners and would not meet the Purpose and Need for safety. However, certain pedestrian/bicycle concepts could be reintroduced as complementary concepts to one or more short-listed alternatives.

- **Susie Wilson Road Corridor** – The Susie Wilson Road Corridor concept may meet the Purpose and Need for relieving congestion and improving safety since a measurable reduction in traffic volumes could be realized at the Five Corners intersection. This concept would not meet the Purpose and Need for facilitating mobility between Williston and Essex since it would not include physical improvements or regional transportation measures that would promote this. It is possible that an alternative could have adverse traffic-related impacts on Susie Wilson Road and that some improvements may ultimately be deemed necessary as mitigation of such impacts.
- **Circ Connection to US 2** – The Circ Connection to US 2 concept does not provide any measurable reduction in traffic volumes, implementation of physical improvements on VT 2A or at Five Corners, or include regional transportation measures. Thus, it would not relieve congestion or improve safety on VT 2A or at Five Corners, nor facilitate mobility between Williston and Essex. As a result, this concept would not meet the Purpose and Need for these three categories. Nonetheless, it could be reintroduced as a complementary concept to one or more short-listed alternatives.
- **Circ Connections to I-89** – These concepts involve variations in the configuration of the interchanges connecting Circ new roadway alternatives to I-89. They do not in themselves provide any measurable reduction in traffic volumes, implementation of physical improvements on VT 2A or at Five Corners, or include regional transportation measures that would relieve congestion or improve safety on VT 2A or at Five Corners or facilitate mobility between Williston and Essex. As a result, these concepts taken alone would not meet the Purpose and Need for these three categories. Nonetheless, one or more of these concepts could be reintroduced as a complementary concept to one or more short-listed alternatives.
- **Allen Martin Parkway Extension** – The Allen Martin Parkway Extension concept does not provide any measurable reduction in traffic volumes, implementation of physical improvements on VT 2A or at Five Corners, or include regional transportation measures that would relieve congestion or improve safety on VT 2A or at Five Corners or facilitate mobility between Williston and Essex. As a result, this concept would not meet the Purpose and Need for these three categories. Nonetheless, it could be reintroduced as a complementary concept to one or more short-listed alternatives.
- **US 2 Corridor** – The US 2 Corridor concept does not provide any measurable reduction in traffic volumes, nor does it include implementation of physical improvements on VT 2A or at Five Corners, or include regional transportation measures that would relieve congestion, improve safety, or facilitate mobility between Williston and Essex. As a result, this concept would not meet the Purpose and Need for these three categories. However, since it is possible that an alternative could have adverse traffic-related impacts on US 2, some improvements on US 2 may ultimately be deemed necessary as mitigation of such impacts.

- **VT 15 Corridor** – The VT 15 Corridor concepts between Five Corners and VT 289 and the Underhill town line do not meet the Purpose and Need for relieving congestion, increasing mobility between Williston and Essex, and improving safety since there would be no measurable reduction in traffic volumes on VT 2A or at Five Corners, no implementation of physical improvements on VT 2A or at Five Corners, and no inclusion of regional transportation measures. However, since it is possible that an alternative could have adverse traffic-related impacts on VT 15, some improvements on VT 15 north of VT 289 may ultimately be deemed necessary as mitigation of such impacts.

### **Concepts Eliminated from Further Consideration**

The alternative concepts that rated **do not meet** the Purpose and Need, and were deemed not suitable for possible reintroduction as complementary concepts, were eliminated from further consideration in the EIS process. These alternative concepts include the following:

- **Ferry Service** – The proposed ferry concept does not meet the Purpose and Need for relieving congestion since it would not include at least some measurable reduction in traffic volumes or include the implementation of physical improvements on VT 2A or at Five Corners. In addition, physical improvements or regional transportation measures that would facilitate mobility between Williston and Essex would not be part of this concept and thus would not meet the Purpose and Need. Because the ferry concept would not significantly reduce traffic volumes or implement physical improvements on VT 2A or at Five Corners, it would not, therefore, meet the Purpose and Need for safety. Thus, the ferry service concept was eliminated from further consideration.
- **Circ Local Road** – The Circ Local Road concept would not provide any measurable reduction in traffic volumes, nor would it implement physical improvements on VT 2A or at Five Corners. It also does not include regional transportation measures that would relieve congestion, improve safety, or facilitate mobility between Williston and Essex. As a result, this concept would not meet the Purpose and Need for these three categories, and was eliminated from further consideration.

## **3.4 Additional Alternatives Developed for Comprehensive Screening**

Subsequent to the initial transportation screening and based on input provided through interagency coordination meetings, eight additional alternatives were identified for comprehensive screening. These alternatives represent logical combinations of some of the 15 conceptual alternatives and a wider range of alternatives intended to improve the potential to meet the Purpose and Need, and are listed below:

- Circ A/B Limited Access Highway with VT 2A Spot Improvements (Alternative 16)
- Circ A/B Boulevard with VT 2A Spot Improvements (Alternative 17)
- VT 2A Corridor Improvements with Traditional TSM and Circ A Partial (Circ Street) (Alternative 18)
- VT 2A Corridor Improvements with Roundabouts and Circ A Partial (Circ Street) (Alternative 19)
- North Williston Road Improvements with Circ B Connector and VT 2A Spot Improvements (Alternative 20)
- Brownell Road Corridor Improvements with Mountain View Road Connector and VT 2A Spot Improvements (Alternative 21)
- VT 2A – Williston Improvements with Roundabout at Five Corners (Alternative 22)

- VT 2A – Williston Improvements with Roundabout at Five Corners and Circ A Partial (Circ Street) (Alternative 23)

Thus, a total of 23 alternatives were advanced to comprehensive screening. Detailed descriptions of the 23 conceptual alternatives are provided in the next chapter, Chapter 4 Comprehensive Transportation Screening.

Table 3-1(a) Long List of Transportation Alternative Concepts: TDM, Public Transportation, Pedestrian/Bicycle & Freight			Relieve Congestion on VT 2A and at Five Corners	Meet Williston-Essex Mobility Needs	Improve Safety on VT 2A and at Five Corners	Recommended Action
<b>Transportation Demand Management (TDM)</b>						
TDM	(1) Transportation Management Association (TMA) for Route 2A businesses		○	○	-	△
	(2) Ridesharing		○	○	-	△
	(3) Flexible Work Schedules		○	○	-	△
	(4) HOV Lanes		○	-	-	△
	(5) Park and Ride Lots		○	-	-	△
	(6) Congestion Pricing (e.g. tolls)		○	○	-	△
<b>Public Transportation</b>						
Bus	(1) Traditional Fixed Route Service	(a) Increased service on existing routes	○	○	-	△
		(b) New local routes				
		(c) New regional commuter routes				
	(2) Flex-Route Service	(a) Local	○	○	-	
	(b) Regional commuter					
	(3) Bus Rapid Transit – Regional Service	○	○	-		
	(4) Rapid Bus Service – Regional Service	○	○	-		
Rail (commuter rail on existing rail lines)	(5) Charlotte to Montpelier via Burlington & Essex Junction		○	-	-	△
	(6) St. Albans to Burlington via Essex Junction		○	-	-	
Ferry	(7) Charlotte to Burlington on Lake Champlain		-	-	-	✘
<b>Pedestrian/Bicycle</b>						
Pathways	(1) Pathway and crossings along CIRC ROW		-	-	-	◁▷
	(2) Pathway in lieu of CIRC		-	-	-	◁▷
	(3) Pathway along any new or upgraded roadways		-	-	-	◁▷
<b>Freight Movement</b>						
Freight	(1) Rail Freight Improvements		-	-	-	◁▷
	(2) Truck Restrictions		○	-	○	△
<p>● Likely Meets Purpose and Need      ○ May Meet Purpose and Need      - Does Not Meet Purpose and Need</p> <p>▲ Advance as a Long List Alternative      △ Advance as a Long List Alternative in Combination with Other Concepts</p> <p>◁▷ May Be Reintroduced as a Complementary Concept with the Short List Alternatives      ✘ Eliminate Concept from Further Consideration</p>						

Note: Initial screening assessments were made prior to definition of alternatives for comprehensive screening and without quantitative assessment or reliance on prior studies. Congestion ratings are based on judgments of extent to which a concept would significantly reduce traffic volumes in the VT 2A corridor or substantially increase capacity. Safety ratings are based primarily on whether the concept makes physical safety improvements to the corridor, and secondarily on whether it would reduce traffic volumes in the corridor. Mobility ratings are based primarily on whether the concept includes physical improvements that directly improve mobility and secondarily on measures that facilitate travel (see Report section 3.3.1)

Table 3-1(b) Long List of Transportation Alternative Concepts: Improve Existing Roadways				Relieve Congestion on VT 2A and at Five Corners	Meet Williston- Essex Mobility Needs	Improve Safety on VT 2A and at Five Corners	Recommended Action
Improve Existing Roadways							
Corridors	(1) VT 2A Corridor	(a) Cross Section Improvements	(i) Boulevard (Landscaped Median, Sidewalks, 2 to 6 Lane Cross Section)	●	●	●	▲
			(ii) 3-Lane/5-Lane				
			(iii) Median/Access Control				
		(b) Intersection Improvements	(i) Signal Optimization				
			(ii) Channelization				
			(iii) Roundabouts				
	(2) VT 117 Corridor	(a) Cross Section Improvements	(i) 2 Lanes with Upgraded Geometry	●	●	○	▲
			(ii) 4 Lanes				
			(i) Signal Optimization				
		(b) Intersection Improvements	(ii) Channelization				
(iii) Roundabouts							
(iv) Add Lanes/Capacity							
(3) North Williston Road Corridor	(a) Cross Section Improvements	(i) 2 Lanes with Upgraded Geometry	○	○	○	△	
		(ii) 4-Lane Cross Section					
(4) US 2 Corridor	(b) Intersection Improvements	(i) Signal Optimization	-	-	-	◁▷	
		(ii) Channelization					
		(iii) Roundabouts					
		(iv) Add Lanes/Capacity					
(5) VT 15 Corridor	(a) Five corners to VT 289 segment (3 lane)	-	-	-	-	◁▷	
	(b) VT 289 to Underhill segment (3 lane)	-	-	-	-	◁▷	
(6) Susie Wilson Road Corridor		○	-	○	○	◁▷	
(7) Brownell Road Corridor (between I-89 and Industrial Avenue)		○	○	○	○	△	
Other Locations	(8) I-89 Exit 12	(a) Rebuild Interchange (single point)	○	-	○	△	
		(b) Roundabouts					
		(c) Signal Timing Improvements					

● Likely Meets Purpose and Need	○ May Meet Purpose and Need	- Does Not Meet Purpose and Need
▲ Advance as a Long List Alternative	△ Advance as a Long List Alternative in Combination with Other Concepts	
◁▷ May Be Reintroduced as a Complementary Concept with the Short List Alternatives	✘ Eliminate Concept from Further Consideration	

Note: Initial screening assessments were made prior to definition of alternatives for comprehensive screening and without quantitative assessment or reliance on prior studies. Congestion ratings are based on judgments of extent to which a concept would significantly reduce traffic volumes in the VT 2A corridor or substantially increase capacity. Safety ratings are based primarily on whether the concept makes physical safety improvements to the corridor, and secondarily on whether it would reduce traffic volumes in the corridor. Mobility ratings are based primarily on whether the concept includes physical improvements that directly improve mobility and secondarily on measures that facilitate travel (see Report section 3.3.1)

Table 3-1(c) Long List of Transportation Alternative Concepts: Construct New Roadways			Relieve Congestion on VT 2A and at Five Corners	Meet Williston- Essex Mobility Needs	Improve Safety on VT 2A and at Five Corners	Recommended Action
<b>New Roadways</b>						
CIRC ROW	(1) CIRC A/B – Limited Access Highway (VT117 to I-89) <sup>1</sup>	(a) 4-Lane	●	●	○	▲
		(b) 2-Lane	●	●	○	▲
	(2) CIRC A/B – Boulevard (VT 117 to I-89) <sup>2</sup>	(a) 4-Lane	●	●	○	▲
		(b) 2-Lane	●	●	○	▲
	(3) CIRC A Partial “CIRC Street” (I-89 to Mountain View Road)	(a) Grade-separated highway	○	-	○	▲
		(b) Boulevard	○	-	○	▲
(4) CIRC Local Road (US 2 to Mountain View Road – 2 lanes)		-	-	-	✘	
(5) CIRC B – Limited Access (Mountain View Road to VT 289 – 2 lanes)		○	-	○	▲	
(6) CIRC A/B Connection to US 2	(a) With interchange	-	-	-	◁▷	
	(b) Without interchange	-	-	-	◁▷	
“Connection” to I-89 (between CIRC A and I-89)	(7) Conventional Interchange		-	-	-	◁▷
	(8) Interchange with C/D roads connecting to Exit 12		-	-	-	◁▷
	(9) Hurricane Lane Tie-in		-	-	-	◁▷
Other Locations	(10) New Alignment (VT 289 at VT 117 to I-89 parallel and east of the current CIRC A/B alignment)	(a) Limited Access Highway	●	●	○	▲
		(b) Boulevard	●	●	○	▲
	(11) New Interchange at Oak Hill Road and I-89		○	○	○	△
	(12) New Interchange at Brownell Road and I-89		○	○	○	△
	(13) Mountain View Road Connector (Limited Access Roadway) <sup>3</sup>	(a) New bridge with CIRC B	○	-	○	▲
		(b) New bridge without CIRC B	○	-	○	▲
(14) Allen Martin Parkway Extension (Sand Hill Road to VT 289)		-	-	-	◁▷	

<sup>1</sup> This alternative would include the construction of a new limited access roadway between the southern terminus of VT 289 at VT 117 and I-89.

<sup>2</sup> This alternative would include the construction of a new local roadway between the southern terminus of VT 289 at VT 117 and I-89.

<sup>3</sup> This alternative would include the construction of a new limited access roadway between the southern terminus of VT 289 at VT 117 and Mountain View Road.

● Likely Meets Purpose and Need	○ May Meet Purpose and Need	- Does Not Meet Purpose and Need
▲ Advance as a Long List Alternative	△ Advance as a Long List Alternative in Combination with Other Concepts	
◁▷ May Be Reintroduced as a Complementary Concept with the Short List Alternatives		✘ Eliminate Concept from Further Consideration

Note: Initial screening assessments were made prior to definition of alternatives for comprehensive screening and without quantitative assessment or reliance on prior studies. Congestion ratings are based on judgments of extent to which a concept would significantly reduce traffic volumes in the VT 2A corridor or substantially increase capacity. Safety ratings are based primarily on whether the concept makes physical safety improvements to the corridor, and secondarily on whether it would reduce traffic volumes in the corridor. Mobility ratings are based primarily on whether the concept includes physical improvements that directly improve mobility and secondarily on measures that facilitate travel (see Report section 3.3.1)