

2.0 Existing Conditions

2.1 Public Issues and Concerns

Existing issues and concerns were solicited from the project committee members and a local concerns meeting held on April 25, 2006. Some of the existing major operations and safety issues mentioned included:

- ◆ VT Route 15 westbound morning traffic queues from “Five Corners” eastward through Educational Drive intersection.
- ◆ Occasionally in the AM peak period, the VT 15 / Educational Drive intersection is impeded with queuing traffic along Educational Drive from Educational Drive / Drury Drive / Central Street intersection. This is a result of combined traffic volumes and school crossings.
- ◆ There is limited corner sight distance looking west from Educational Drive along VT Route 15 due to slight crest on VT Route 15 west of Educational Drive. Sight distance is further restricted with the morning queues on VT Route 15.
- ◆ Pedestrians crossing VT Route 15 at the mid-block crossing east of VT 15 / Educational Drive Intersection have long delays due to minimal gaps in Route 15 traffic and non-yielding vehicles.
- ◆ The crossing guard at the Educational Drive / Central Street / Drury Drive intersection typically stops all approaches with crossing school children. This stopping is done frequently to readily accommodate the crossing school children. This intersection also realizes significant elementary school children crossing the Educational Drive approach and continue westward along Central Street to a neighboring elementary school.
- ◆ During school peak times, there is often significantly queuing traffic on the Educational Drive north approach as vehicles leave the school.
- ◆ Due to congestion of “Five Corners” intersection, traffic diverts to Drury Drive.

2.2 Traffic Conditions / Analysis

2.2.1 Traffic Volumes

Field observations during peak traffic periods, confirmed the issues described by the public and project committee members. This was further substantiated by the 2005 study of traffic volumes, intersection capacity analysis and signal warrant analysis. The 2005 peak hour intersection turning movement volumes are shown in Figure 4.

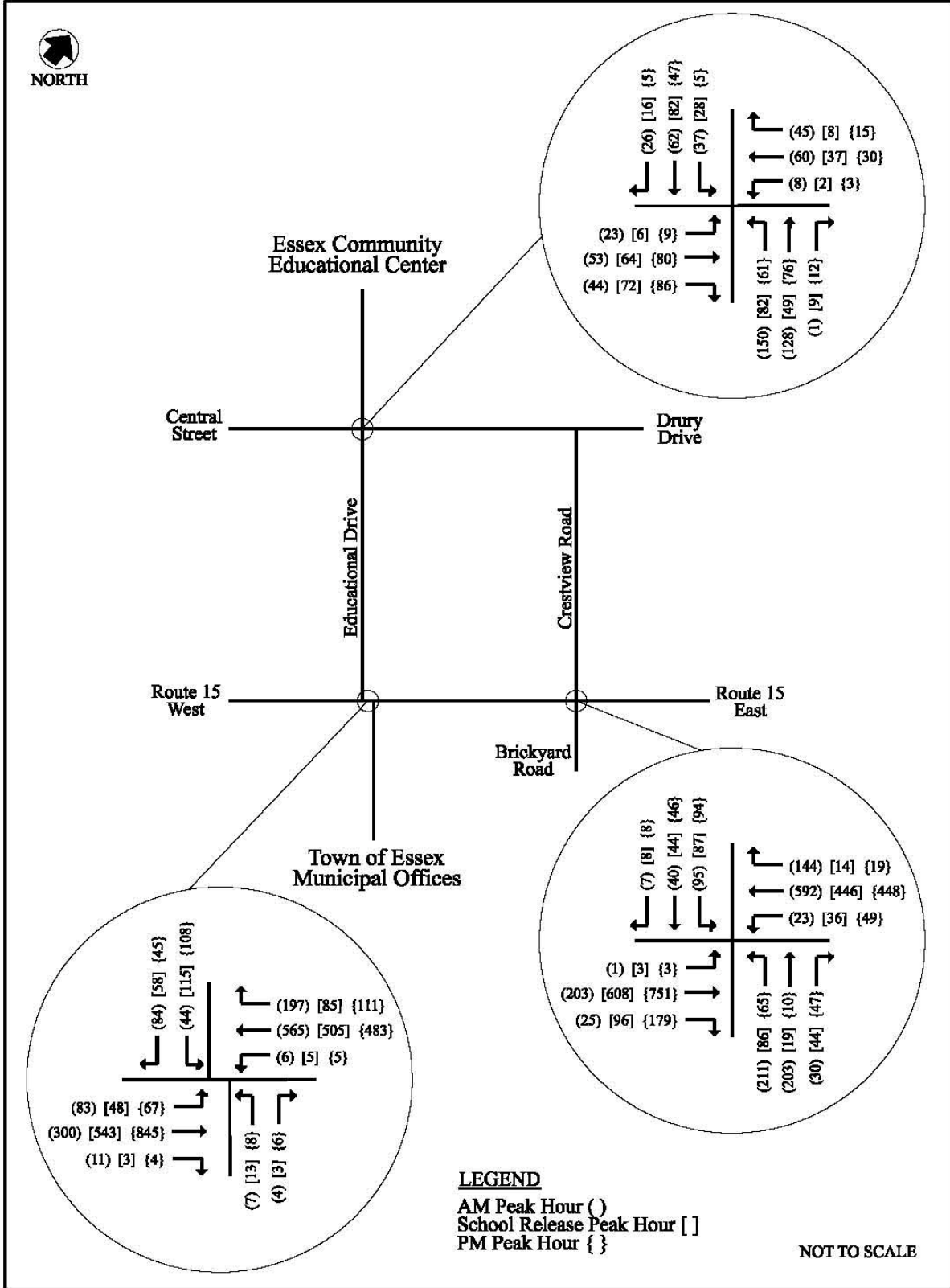


Figure 5: 2005 Peak Hour Volumes.

2.2.2 Signal Warrant Analysis

The signal warrant analysis, using 2005 average weekday volumes, indicated the VT Route 15 / Educational Drive Intersection meets warrant 2, the 4-hour vehicular volumes warrant, as described by the Manual on Uniform Traffic Control Devices (MUTCD). The Educational Drive / Central Street / Drury Drive intersection did not meet any signal warrant conditions.

2.2.3 Capacity Analysis

To substantiate existing traffic operation issues and to determine the value of potential intersection improvements, the 2005 study analyzed the following conditions.

1. VT Route 15 / Educational Drive: Unsignalized and signalized control.
2. Education Drive / Central Street / Drury Drive: 4-way Stop control, 2-way Stop control on Central Street and Drury Drive, and 4-way Stop control with a two-lane northbound approach, allowing for an exclusive left turn lane.

The results for these conditions are shown in the following tables. Concerning conditions are highlighted in bold. A complete analysis and results is in the Appendix.

2005 AM Peak Hour										
Route 15 / Educational Drive										
Analysis Criteria	EB (Route 15) Left		Thru		WB (Route 15) Thru - Right		SB (Educational Drive) Left		Right	
	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal
Delay	10.5	3.3		3.0		5.7	29.8	19.6	17.7	18.5
Level of Service (LOS)	B	A	free	A	free	A	D	B	C	B
Volume to Capacity (V/C)	0.14	0.34		0.30		6.8	0.29	0.37	0.29	0.07
Queue Length (ft) - 95th %	25	28		59		211	29	52	30	25

Table 1: 2005 AM Peak Capacity Analysis for Route 15/Educational Drive

2005 PM Peak Hour										
Route 15 / Educational Drive										
Analysis Criteria	EB (Route 15) Left		Thru		WB (Route 15) Thru - Right		SB (Educational Drive) Left		Right	
	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal	No Signal	With Signal
Delay	2.8	4.3		8.9		3.9	98.5	28.3	12.8	19.6
Level of Service (LOS)	A	A	free	B	free	A	F	C	B	B
Volume to Capacity (V/C)	0.19	0.81		0.76		0.52	0.87	0.70	0.11	0.04
Queue Length (ft) - 95th %	25	25		268		134	149	91	25	25

Table 2: 2005 PM Peak Capacity Analysis for Route 15 / Educational Drive

2005 AM Peak Hour Central / Drury / Educational Drive												
Analysis Criteria	EB (Central) LTR			WB (Drury) LTR			SB (Educ. Drive) LTR			NB (Educ. Drive) LTR		
	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way 2 Lane	2 Way Stop
Delay	9.9	9.7	23.5	10.2	9.9	20.2	11.42	11.55	7.6	13.4	10.5	8.2
Level of Service (LOS)	A	A	C	B	A	C	B	B	A	B	B	A
Queue Length (ft) 95 th %	78	73	48	88	85	35	225	225	25	350	125	25

Table 3: 2005 AM Peak Capacity for Central / Drury / Educational Drive. * 2-lane northbound approach

2005 PM Peak Hour Central / Drury / Educational Drive												
Analysis Criteria	EB (Central) LTR			WB (Drury) LTR			SB (Educ. Drive) LTR			NB (Educ. Drive) LTR		
	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way Stop*	2 Way Stop	4 Way Stop	4 Way 2 Lane	2 Way Stop
Delay	9.0	9.0	12.9	8.2	8.2	12.6	8.7	8.8	7.5	9.8	9.0	7.6
Level of Service (LOS)	A	A	B	A	A	B	A	A	A	A	A	A
Queue Length (ft) 95 th %	63	68	33	25	25	25	38	38	25	68	35	25

Table 4: 2005 PM Peak Capacity for Central / Drury / Educational Drive. * 2-lane northbound approach

For this study, the VT Route 15 2005 volumes were projected to 2018, using an urban growth factor of 1.07 for 2005 to 2018. The Educational Drive, Central Street and Drury Drive volume increase is anticipated to be minor and it is assumed the 2005 volumes remain applicable for the 2018 capacity analysis. A summary of results for VT 15 / Educational Drive capacity analysis are shown on the following tables. This analysis accounts for a pedestrian phase in the signal operation by including an average 10 second pedestrian phase.

2018 AM Design Hour Route 15 / Educational Drive							
	EB (Route 15)		WB (Route 15)		SB (Educational Drive)		
	Left	Thru	Thru	Right	Left	Right	
Volume	89	280	528	212	63	76	
Delay	12.7	9.8	44.9	2.3	27.5	25.1	
Level of Service (LOS)	B	A	D	A	C	C	
Volume to Capacity (V/C)	0.43	0.37	0.94	0.14	0.43	0.07	
Queue Length (ft) - 95 th %	36	115	450	10	60	33	

Table 5: Signalized Alternative for Route 15 / Educational Drive (2018 AM Design Hour).

2018 PM Design Hour						
Route 15 / Educational Drive						
	EB (Route 15)		WB (Route 15)		SB (Educational Drive)	
	Left	Thru	Thru	Right	Left	Right
Volume	61	682	402	101	121	41
Delay	9.8	25.2	18.6	1.4	44.0	25.2
Level of Service (LOS)	A	C	B	A	D	C
Volume to Capacity (V/C)	0.22	0.89	0.62	0.07	0.78	0.04
Queue Length (ft) - 95th %	30	383	272	9	99	19

Table 6: Signalized Alternative for Route 15 / Educational Drive (2018 PM Design Hour).

These analyses provide the following conclusions.

- ◆ Signal control at the VT 15 / Educational Drive intersection will reduce the delay and queuing of the Educational Drive approach, while the VT Route 15 approaches operate with minimal delays consistent with levels of services (LOS) A and B. The exception to this is the VT Route 15 westbound approach. A signal control reduces the delay for VT Route 15 eastbound left turning vehicles.
- ◆ Adding a left turn lane on the northbound approach of Educational Drive to Central Street / Drury Drive, significantly reduces the queues on this approach, and the likelihood of queues reaching VT Route 15 during the AM peak period.
- ◆ The signal installation and geometry improvements promote reducing diversion traffic on Drury Drive.

2.3 Pedestrian / Bicycle Facilities

As seen on the existing conditions plan, on page 4, sidewalks parallel most streets on both sides. Existing marked crosswalks are shown in red. With the exception of the VT Route 15 mid-block crossing east of Educational Drive, the crosswalks are serviced by school crossing guards during the school start and recess times. These crossings primarily service elementary school children going to the Summit Street and Thomas Fleming schools and high school students to the Essex Junction High School and Essex Junction Regional Technical Center.

The crossing guard operations of Educational Drive / Central Street / Drury Drive include one crossing guard servicing three crossings. Pedestrian counts taken March 17, 2005, are included in the Appendix. Typical crossing guard operations include stopping traffic on all approaches during most pedestrian crossings. Some pedestrians cross diagonally across the intersection.



Bicycle facilities include a shared use path network ending just east of the project area. VT Route 15 is not a designated bike route and bicycles are encouraged to use local streets as an alternate. For instance, using Drury Drive and Central Street as a preferred bicycle route vs. VT Route 15, which has approximately 2-foot wide shoulders in many locations.

2.4 Crash History

The Vermont Agency of Transportation's crash listing from 1999 to 2003 lists three reported crashes at the VT Route 15 / Educational Drive during these 5 years. All were "rear end" types resulting from "following too closely." This limited number of crashes does not suggest a crash prone issue. No crash data was obtained for the Educational Drive / Central Street / Drury Drive intersection.

2.5 Roadway Characteristics

VT Route 15 is a principal urban arterial with approximately 15,000 vpd. The posted speed is 25 mph and a mix of residences and commercial properties, typically with their own access, border VT Route 15.

The roadway width is approximately 36 to 38 feet curb to curb, containing 2 thru lanes (11' wide), and a center left turn lane (10') wide and 2' shoulders. Sidewalks parallel VT Route 15.

Educational Drive is a collector street with approximately 5,000 vpd. It serves as the south access to Essex Junction High School and Essex Regional Technical Center. The width varies from 24 to 36 feet wide and from two to three lanes. The posted speed is 25 mph.

2.6 Natural Resources

A field review and document research was done for the area to identify existing environmental resources. The findings of this review are in the Appendices. A summary is as follows:

- ◆ **Rare, Threatened and Endangered Species:** The rare plant species, Harsh Sunflower, is growing in the lawn adjacent to the town offices and beside the Reynolds lot drive. A review with the Nongame and Natural Heritage Program would be necessary before any impacting activities take place.
- ◆ **Wetlands:** No wetland areas were observed in the project limits.
- ◆ **Streams:** Indian Brook is just east of the project area.
- ◆ **Wildlife and Wildlife Habitat:** The Indian Brook corridor is a wildlife travel corridor. The remaining areas developed with limited wildlife.
- ◆ **Agricultural Land:** Project area is developed and has little to no agricultural value.

2.7 Land and Conservation Fund (LWCF) Sites

No LWCF sites in the project area listed in the Vermont Agency of Natural Resources LWCF list.

2.8 Hazardous Material Sites

One site, the Essex Town Offices, is listed on the Vermont Agency of Natural Resources hazardous materials site list.

2.9 Historic Sites and Structures

A Historic Resource Identification report was prepared and is included in the Appendix. Based on the field review and literature research two historic resources in the project area were noted:

- ◆ The Main Street Neighborhood State Register Historic District.
- ◆ 43 Center Street

2.10 Archaeological Sites

Given the anticipated limited construction required by alternatives, an archaeological resource assessment was not completed. In the instance the project design and construction is pursued further using Federal Funding this assessment will need to be completed.