Road Safety Audit Review

VT 15 and North Wolcott Rd, Wolcott

September 23, 2020

Vermont Agency of Transportation
Operations & Safety Bureau

Operations & Safety Bureau

Road Safety Audit Review

RSAR Process

A road safety audit review (RSAR) is a formal examination of an existing road in which an independent, multi-disciplinary team (the audit team) reports on potential safety issues. According to the Federal Highway Administration (FHWA), the purpose of a RSAR is to determine which elements of the road may present a safety concern, to what extent and under what circumstances, as well as to identify opportunities to mitigate the identified safety concerns.

The RSAR process starts with a commencement meeting during which the audit team reviews data and gathers community concerns. A site inspection is then performed by the audit team. The site visit involves the identification of safety deficiencies as seen in the field by driving and walking the location. Following the site inspection, the audit team holds a post inspection meeting. It is during this meeting that the team members discuss their observations and identify safety issues. The team is to reach a consensus on the importance of each safety issue mentioned. Only those issues for which a consensus is reached are included in the RSAR findings which are presented in this report.

This report identifies safety concerns and proposes guidance. These issues and solutions are presented in a tabular format associated to a responsible entity for ease of reporting. The responsible entities are any groups who own a roadway feature or who are responsible for making an improvement or for initiating further studies. These could include for example, the Agency of Transportation (VTrans), the local town, the local police or the area Regional Planning Commission (RPC).

Location

The location of this RSAR is the intersection of VT 15, North Wolcott Rd and Corley Rd in Wolcott. The center of North Wolcott Rd in located on VT 15 at mile point 2.017 and the center of Corley Rd is located at mile point 2.026.

VT 15 is a minor arterial and North Wolcott Rd is major collector and a class II road.

Purpose of the RSAR

This RSAR was conducted at the request of the Town of Wolcott. The primary safety concerns reported are limited line of sight to the west from North Wolcott Rd and high travel speeds.

RSAR Participants

Mario Dupigny-Giroux from the Operations & Safety Bureau Data Unit, VTrans, was the RSAR coordinator.

The other participants were:

Rob Moore	Lamoille County Planning Commission (LCPC)
Nicholas Bredice	Highway & Safety VTrans
Michael Chrastina	Dist 8 VTrans
Jacqui DeMent	Policy and Planning VTrans
Bill Jenkins	Operations & Safety VTrans
Steffanie Lemieux	Operations & Safety VTrans
Erin Parizo	Highway & Safety VTrans
Dillan Cafferkey	Town of Wolcott (Road Foreman)
Lucian Gravel	Town of Wolcott (Road Commissioner)
Linda Martin	Town of Wolcott (Selectboard)

Information Reviewed

Geometry

VT 15 has 11-foot travel lanes and 5-foot shoulders. VT 15 follows a downgrade from west to east approaching the intersection.

North Wolcott Rd approaches VT 15 on a downgrade and intersects VT 15 at about a 30-degree angle. Corner sight distance when looking west from the North Wolcott Rd approach is limited.

Corley Rd intersects VT 15 at a 90-degree angle.

There are centerline rumble strips on VT 15 near the intersection. The first section starts at mile point 1.664 and ends at 1.775, while the second section starts at mile point 2.039 and continues to mile point 2.160.

Paved Surface

The paved surface condition on VT 15 at the North Wolcott Rd intersection was rated as very poor in 2019 (VTransparency). This section received an overlay in 2019.

Speed Limit

The speed limit on VT 15 within the RSAR area is 50 mph.

LCPC collected speed data with pneumatic tubes between July 28 and August 4, 2020. The study site was located 600 ft east of the North Wolcott Rd intersection. The results showed that the mean speed was 55 mph and that the 85th percentile speed of the traffic was 60.2 mph (meaning that 85% of the traffic travels at a speed of 60.2 mph or less). In addition, the range of speeds that encompasses the highest proportion of vehicles, called the 10-mph pace, was found to be between 50 and 59 mph.

Enforcement

The Town has a contract with the Sheriff for twenty hours of enforcement per week within the town.

Traffic Calming Devices

There are no known forms of traffic calming devices being used such as a speed cart.

Traffic Volumes

The 2018 Average Annual Daily Traffic (AADT) on VT 15 east of the intersection was 5200 vehicles per day and it was 6600 vehicles per day west of the intersection. On North Wolcott Rd, the 2018 AADT was 1700 vehicles per day.

The vehicle classification derived from the speed study done by LCPC shows that passenger vehicles represent the majority of the traffic with 79.1% and that single-unit trucks account for 18.9 % while tractor trailers and other heavy vehicles represent 2.0%.

Turning Movement Counts were performed by VTrans in 2015. The twelve-hour diagrams (6:00 am to 6:00 pm) for all vehicle types and for trucks alone are displayed in Appendix B.

The raw counts show that the majority of the traffic on North Wolcott Rd make a right turn onto VT 15 (90% of the VT 15 entering traffic). The raw counts also show that twenty-three percent of the eastbound traffic on VT 15 is making a left turn onto North Wolcott Rd. In contrast, the raw counts indicate that right turns from VT 15 east onto North Wolcott Rd are not very prominent and represent about 2.6% of the VT 15 westbound approaching traffic.

Traffic Control Devices

Motorists are warned of the intersection in both directions by an advance modified crossroad sign combined with a street name plaque below it. These assemblies are located in the eastbound direction at mile point 1.940 and in the westbound direction at mile point 2.080. The assemblies are 406 ft and 332 ft from the intersection respectively. The modified crossroad signs are 36” x 36”.

The double-yellow centerline on North Wolcott Rd was faded at the approach at the time of the road safety audit.

Crash History

This intersection is not a high crash location.

Crashes were reviewed for the period ranging from 2015 to 2019. During this period, a total of four crashes were reported in the VTrans database. There are no crashes to date in 2020.

The only crash type at this intersection during the reporting period is a rear-end crash. This crash pattern is evident on both North Wolcott Rd southbound and on the west approach of VT 15 in the eastbound direction.

There were two crashes of this type on VT 15. In both cases, the vehicle that got rear-ended was stopped and waiting to make a left turn onto North Wolcott Rd.

There were also two rear-end crashes on North Wolcott Rd in the southbound direction. The crashes happened at the stop sign. The snowy road conditions may have been a factor in one crash. In the second crash, the motorists who rear-ended the car in front said that he thought that the vehicle had moved and entered VT 15.

A summary table of the crash data is presented in Appendix A along with a collision diagram.

Local Safety Concerns

The local representatives present at the road safety audit mentioned the following local safety concerns:

Drivers who perform the North Wolcott Rd left turn movement onto eastbound VT 15 have a short line of sight to the right due to the vertical geometry.

VT 15 traffic often seems to be exceeding the 50 mph posted limit. This accentuates the problem of the short line of sight mentioned above but also creates unsafe situations when an eastbound vehicle is stopped waiting to turn left onto North Wolcott Rd because the vehicles

behind only have a short distance to react to the stopped vehicle due to the downhill grade on VT 15.

Trucks and large vehicles that turn right from westbound VT 15 onto North Wolcott Rd must cross the yellow line on VT 15 in order to make the turn because making this movement requires a wide swing due to the angle of the intersection. This westbound right turn movement is also very hard for plow trucks.

Smaller westbound vehicles that make this same movement usually hug the shoulder and constantly kick the stones on the side of the road onto VT 15. These stones in the roadway, in turn, create a hazard to motorcycles and bicyclists.

North Wolcott Rd is very popular for bike tour groups, and with the upcoming completion of the Lamoille Valley Recreation Trail (LVRT) in Wolcott (located a short distance on Corley Rd), providing safe bike-ped access from North Wolcott Rd to LVRT is very important for local residents.

Past Projects

Project MORRISTOWN-WOLCOTT STP FPAV(22) was for the paving of VT 15 from Morristown to mile point 4.550 in Wolcott. The project was substantially completed in October 2019.

Future Projects

There are no known future projects.

Identified Safety Concerns

The RSAR herein has sought to identify potential safety hazards and physical features which may affect road user safety. However, it is possible that not every deficiency has been identified. It should further be recognized that the implementation of the guidance in this report might contribute to improve the level of safety of the facility reviewed but not necessarily remove all the risks.

The areas of safety concern identified by the audit team along with the potential safety enhancements suggested by the team are summarized in the table below. These concerns and remedial actions are further discussed in the section following the table.

In the table, the entities listed under the column called “Potential Responsibility” are suggested groups that could possibly implement some of the countermeasures. These groups (or any other entities not listed) are not obligated to implement the suggestions mentioned in this report. They are expected to evaluate the feasibility of the suggestions and determine how the suggestions fit within their current processes and priorities.

For each suggested countermeasure, its safety effectiveness is mentioned in the table if an industry measure is available or a brief description of its purpose is provided.

In formulating suggested remedial actions, time frames and costs were qualified as follows: Short term, < 1 year; mid-term 1-3 years; long term > 3 years; low cost, < $15,000; medium cost, $15,001 - $75,000; high cost, > $ 75,001.

The following safety concerns were identified by the audit team (the concerns are not necessarily listed in order of importance):

1. Eastbound vehicles waiting to turn left onto North Wolcott Rd run the risk of getting rear-ended

2. The corner sight distance is limited from the North Wolcott Rd approach when looking to the west

3. Making the westbound right turn onto North Wolcott Rd is difficult for large vehicles

4. Stones dislodged by vehicles that make the westbound right turn onto North Wolcott Rd roll onto VT 15 and are a hazard to motorcycles and bicyclists

5. There are instances of rear-end crashes on the North Wolcott Rd approach

6. Traveling speeds are high on VT 15.

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Potential Safety Enhancements Summary Table

	Safety Concerns						**Potential Responsibility**	**Purpose/ Safety Payoff[1]**	**Time Frame**	**Cost**
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider an EB left turn lane	X						LCPC (prioritize project for region); VTrans AMB (new project prioritization process, leading to scoping if high ranking)	44% crash reduction[2]	Mid Constru-ction (Long)	Low Construc-tion (High)
Consider updating the sheeting of the existing warning signs to type IV or type IX	X	X					VTrans (Traffic Ops)	Make signs more visible	Short	Low

[1] The CMF Clearinghouse explains that the star quality rating indicates the quality or confidence in the results of the study producing the CMF. The star rating is based on a scale (1 to 5), where a 5 indicates the highest or most reliable rating. The review process considers five categories for each study: study design, sample size, standard error, potential bias, and data source.

[2] http://www.cmfclearinghouse.org/detail.cfm?facid=253

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	Safety Concerns						**Potential Responsibility**	**Purpose/ Safety Payoff[1]**	**Time Frame**	**Cost**
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider adding a 40 mph advisory plaque on the EB assembly	X	X				X	VTrans (Traffic Ops)	Slow traffic	Short	Low
Consider adding a stop bar (four feet from the edge of the road)		X					Town	Show proper stopping location to maximize corner sight distance	Short	Low
Consider refreshing the yellow centerline markings on North Wolcott Rd			X				VTrans	Better define the approach	Short	Low

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	Safety Concerns						Potential Responsibility	Purpose/ Safety Payoff[1]	Time Frame	Cost
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider refreshing the edgeline markings around the radii			X	X			Town	Better define the approach	Short	Low
Consider evaluating the realignment of the intersection		X	X		X		LCPC (prioritize project for region); VTrans AMB (new project prioritization process, leading to scoping if high ranking)	See traffic better & enter road safely, 5% crash reduction[3]	Mid Constru-ction (Long)	Low Construc-tion (High)
Consider widening the North Wolcott Rd approach by cutting into the bank			X				Town	Improve turning	Mid to Long	Mid to High

[3] Improve sight distance in 1 quadrant, page 8, https://cdn.ymaws.com/www.azace.org/resource/resmgr/imported/CrashReductionIntersectionIssueBrief.pdf

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	Safety Concerns						**Potential Responsibility**	**Purpose/ Safety Payoff[1]**	**Time Frame**	**Cost**
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider providing ditching along the edge of pavement (N Wolcott Rd NE corner)				X			Town	Prevent stones from rolling onto the roadway	Short	Low to Medium
Consider mountable curbing as an alternative to ditching				X			Town	Prevent stones from rolling onto the roadway	Short	Medium
Consider keeping monitoring crashes on the North Wolcott Rd approach					X		VTrans (Data Unit O&S)	Assess the magnitude of the issue	Mid	Low

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Potential Safety Enhancements Summary Table										
	Safety Concerns						**Potential Responsibility**	**Purpose/ Safety Payoff[1]**	**Time Frame**	**Cost**
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider the periodic use of a speed cart						X	Town via Sheriff or District 8	45-73% reduction # of vehicles traveling 5 and 10 mph over the speed limit[4]	Now to Short	Low
Consider the recurring enforcement of the high-risk drivers (>=65 mph)						X	Town via contracts	Serve as deterrent	Short	Medium

[4] https://safety.fhwa.dot.gov/speedmgt/ref_mats/rural_transition_speed_zones.cfm

Potential Safety Enhancements Summary Table

	Safety Concerns						Potential Responsibility	Purpose/ Safety Payoff[1]	Time Frame	Cost
Safety Enhancement	1 EB left turn (rear-end)	2 Poor corner sight (west)	3 WB right turn large trucks	4 stones in road-way	5 Rear-end cra-shes NWR	6 High speed VT 15				
Consider managing speeds using a portable speed radar feedback sign						X	Town	45-73% reduction # of vehicles traveling 5 and 10 mph over the speed limit, 5% crash reduction[5]	Short	Medium

[5] http://www.cmfclearinghouse.org/detail.cfm?facid=6885

Discussion of Safety Concerns

This section lists and discusses the areas of safety concern identified by the audit team during the site inspection and from the analysis of available data. This section also reports the potential safety enhancements suggested by the audit team. The concerns are not listed in order of importance.

Concern: Eastbound vehicles waiting to turn left onto North Wolcott Rd run the risk of getting rear-ended

Discussion:

There is some evidence in the crash data that there is a risk for vehicles waiting to make a left turn to get rear-ended by eastbound vehicles. There were two crashes of this type during the reporting period.

Local representatives explained that, because of the vertical crest and the high travel speeds, eastbound vehicles that are approaching the intersection have little time to react if a vehicle is stopped ahead waiting to turn left onto North Wolcott Rd.

Safety Enhancements:

Short Term

The short-term countermeasures discussed later for the safety issue about the corner sight distance may also help with the eastbound left turn rear-end concern as are the countermeasures suggested under the concern about high travel speeds.

Long Term

- Consider evaluating a left turn lane as a single improvement or as part of a redesigned intersection.

VTrans Traffic Research Unit completed left-turn lane warrant analyses for this intersection. The analyses were based on 85% of year 2020 and year 2030 Design Hour Volumes. The results show that a VT 15 eastbound left-turn lane is warranted for years 2020 and 2030.

Assuming a construction cost of $800,000 and taking the crash reduction as 44%, the benefits-to-costs ratio of constructing a left turn lane would be 0.18. Because the ratio is significantly below one, the cost of the project outweighs the crash reduction benefits that would be obtained. Based on the above assumptions and current crash history, this shows that a stand-alone safety project for a left turn lane would not be cost-effective at this location. Further investigation is needed to fully evaluate this alternative.

Concern: The corner sight distance is limited from the North Wolcott Rd approach when looking to the west

Discussion:

The corner sight distance to the right (looking west) for making a left turn onto VT 15 is limited due to the vertical curve on VT 15. The available corner sight distance is estimated at about 475 ft. The American Association of State Highway and Transportation Officials (AASHTO) recommends, in their “Green Book”, 555 ft for a design speed of 50 mph and 665 ft for 60 mph (60 mph is the 85th percentile speed near this intersection). When adjusted for the skew angle of the intersection, the recommended value at 50 mph becomes 590 ft.

Safety Enhancements:

Short Term

- Consider updating the sheeting of the existing modified crossroad sign and of the street name plaque (in both directions) to type IV or type IX (the signs inventory lists these signs having type III sheeting).

- Consider adding a 40 mph advisory plaque (W13-1) on the eastbound intersection sign assembly.

The purpose of the advisory plaque is to suggest motorists the appropriate speed for the existing conditions. A speed of 40 mph provides 445 ft of intersection corner sight distance. The distance that is currently available is about 475 ft (this available distance would be too short for a 45 mph plaque since 500 ft is required for that speed).

- Consider (Town) adding a stop bar (four feet from the edge of the road) to maximize corner sight distance and ensure that the stop bar is visible and refreshed on a yearly basis as needed.

Long Term

- Consider evaluating the realignment of the intersection to improve corner sight distance.

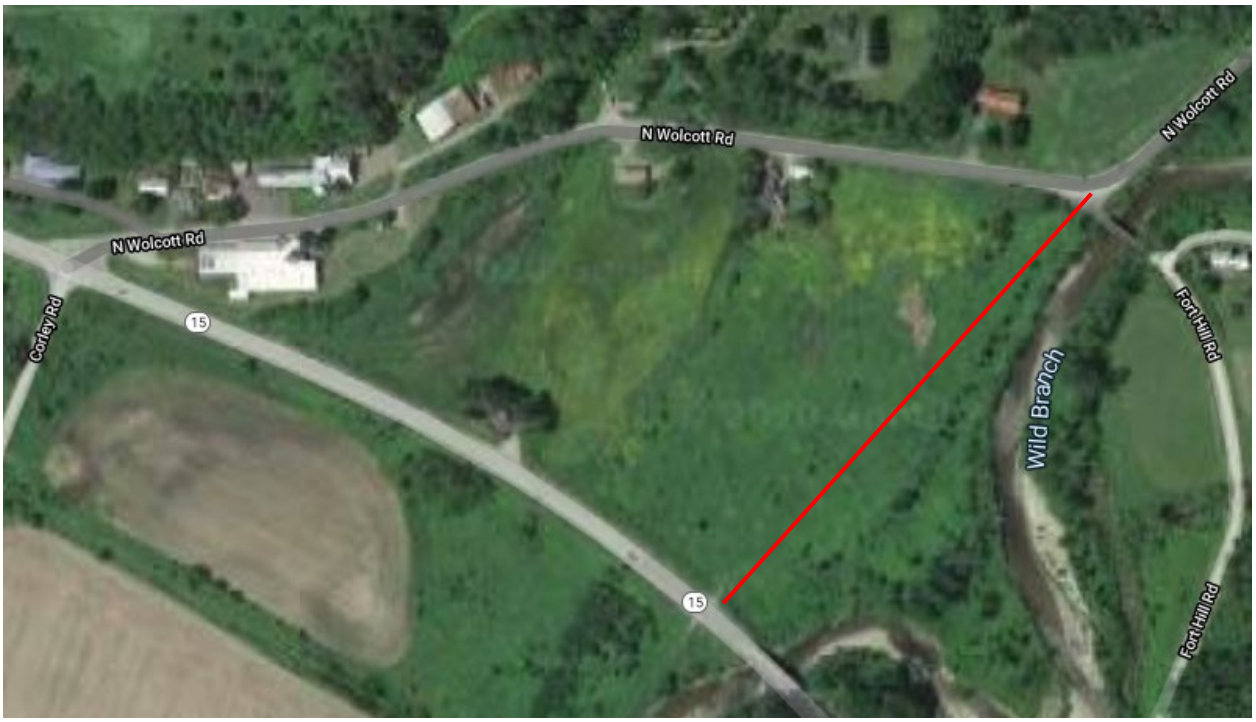
Realigning the intersection by aligning it at 90-degree with Corley Rd so that that the intersection is truly a four-way intersection is one option.

Assuming a construction cost of $1,000,000 and assuming that the crash reduction would be obtained by improving corner sight distance in one corner (a 5% crash reduction), the benefits-to-costs ratio for realigning the intersection would be 0.02. Because the ratio is significantly below one, the cost of the project outweighs the crash reduction benefits that would be obtained.

Considering an eastbound left turn lane along with a realignment project, the combined crash reduction factor would be 46.8% and a benefits-to-costs ratio would be equal to 0.09 (with an assumed combined construction cost of $1,800,000). In this case as well, the benefits obtained over the life of the project would be less than the cost of the project.

Based on the above assumptions and current crash history, these quick economic analyses show that a safety project for the realignment of the intersection or for a realignment project that would also include a left turn lane would not be cost-effective at this location. Further investigation is needed to fully evaluate these alternatives.

Alternatively to realigning the intersection at its current location, one of the local representatives suggested the conceptual idea of constructing a new road east of the intersection. The red line in the map below shows one option that would go through land currently owned by the Vermont Department of Forests, Parks and Recreation.



Concern: Making the westbound right turn onto North Wolcott Rd is difficult for large vehicles

Discussion:

The audit team observed several mid-sized trucks and personal trucks with trailers make turning movements in several directions, in and out of North Wolcott Rd and saw the crossing of the yellow centerline and the treading on shoulder that was mentioned by the local representatives during the commencement meeting.

The audit team also observed tire tracks in the grass off of the shoulder which illustrates that truck- trailers go sometimes off the road to make this turn.

This intersection is a key intersection for truck traffic in Wolcott. There are currently no practical alternate routes for trucks since the bridge on Fort Hill Rd has been removed and because the bridge on Gulf Rd is narrow and has a low weight limit.

Safety Enhancements:

Short Term

- Consider (VTrans) refreshing the centerline markings[6] and the white edgeline markings on the North Wolcott Rd approach.

Refreshing the markings will help better define the approach. However, it will not necessarily help large vehicles making safer turns.

Long Term

- Consider evaluating the realignment of the intersection.

A physical change at this intersection is needed in order for large trucks and buses to turn more safely (see the previous discussion about a major construction project).

- An alternative could be to consider widening the North Wolcott Rd approach by cutting into the bank.

Concern: Stones dislodged by vehicles that make the westbound right turn onto North Wolcott Rd rolled onto VT 15 and are a hazard to motorcycles and bicyclists

Discussion:

The existing grade of the stone-lined area adjacent to the northeast corner matches the grade of the pavement. Because of this, the stones are easily thrown onto the roadway when a vehicle cuts off the corner.

[6] Following the road safety audit, the road safety audit coordinator followed up with the District and the Town. The District indicated that the Town should send them a descriptive email with the details of the striping need on their class 2 roads, and that upon receipt, the District would coordinate with the person in charge of the statewide contracts to let the contractor know.

Safety Enhancements:

Short Term

- Consider (Town) refreshing the white edgeline markings around the radii to help vehicles stay in the travel lane.
- Consider (Town) providing ditching along the edge of pavement.
- Consider mountable curbing as another alternative to ditching.

If mountable curbing is considered, it should be engineered to ensure that no water flows into VT 15 and creates a new safety issue.

Concern: There are instances of rear-end crashes on the North Wolcott Rd approach

Discussion:

There were two rear-end crashes on this approach during the five-year reporting period. There is not enough data to suggest that snow events and the downgrade on the North Wolcott Rd approach are risk factors.

There is a stop ahead sign on North Wolcott Rd.

Safety Enhancements:

Mid Term

- Consider monitoring crashes on this approach.

Long Term

- A major construction project, as discussed previously, may help with this issue

Concern: Traveling speeds are high

Discussion:

The speed limit in this section of VT 15 is 35 mph.

The speed data collected by LCPC about 600 ft east of North Wolcott Rd showed that the 85th percentile speed was 60.2 mph.

The corner sight distance to the west while on the North Wolcott Rd approach is estimated at around 475 ft.

The AASHTO Green Book suggests a corner sight distance of 665 ft when mainline traffic travels at 60 mph.

Safety Enhancements:

Enforcement related

Short Term

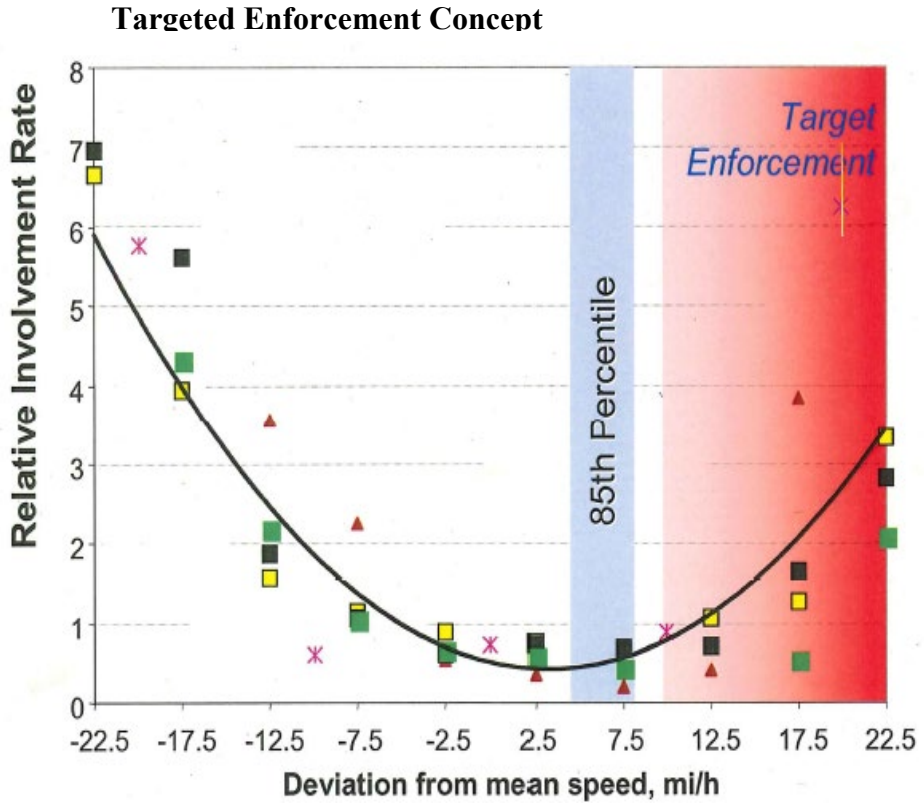
- Conduct (Town) recurring speed limit enforcement campaigns for the high-risk drivers (as per the discussion below, target drivers at or above 65 mph).

By delegating set hours of enforcement to this location, daily commuters will become familiar that this zone is enforced regularly.

In providing enforcement, consider the following concept suggested by the National Highway Traffic Safety Administration (NHTSA). As shown in the next graph, the crash involvement rate increases as traveling speeds deviate from the 85th percentile speed. This means that targeting motorists that are traveling above the 85th percentile speed will apprehend motorists that are more likely to cause a crash. Crash involvement starts to

increase more drastically 5 mph above the 85th percentile speed or around the 90th percentile speed.

Applying this concept to this section of VT 15 means that the focus should be put on vehicles that are traveling at or above 65 mph (5 mph above the 85th percentile).



Traffic Calming Related

Short Term

- Contact (Town) the Sheriff or the District and have them place a speed cart periodically.
- Consider (Town) installing a portable speed radar feedback sign that could be moved to two or three locations (the Town will have to make the request to VTrans and would be responsible for acquiring and maintaining the equipment).

  This could be done in conjunction with addressing speeding issues at the East Hill Rd intersection. The same speed radar feedback sign could be moved within the corridor to manage speeds at both intersections.

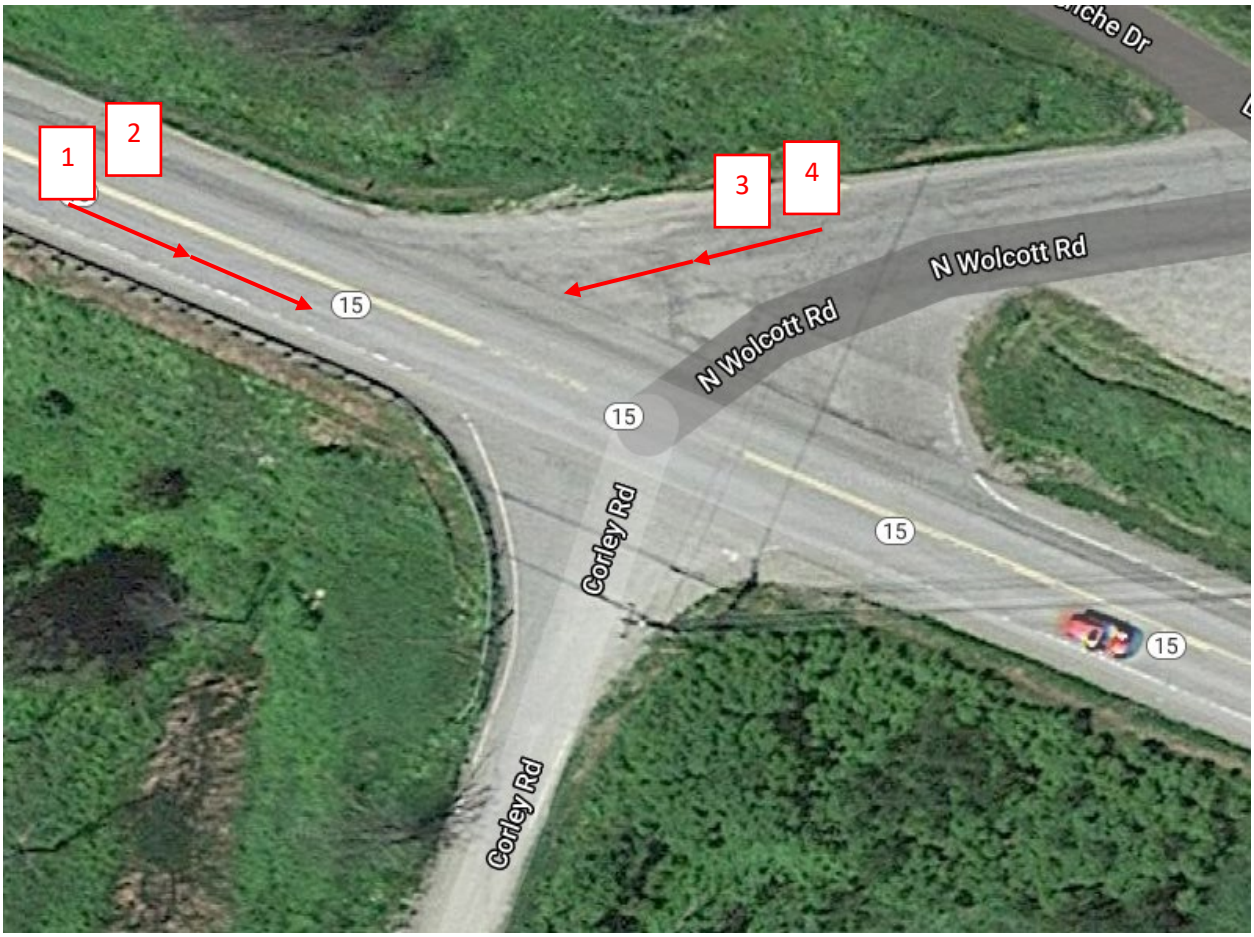
Appendix A

Crash Data

(2015 – 2019)

Crash Data 2015-2019

Crash #	Incident #	Date	Time	Weather	Contributing Circumstances	Collision Type	# Injuries	# Fatalities	Narrative
1	16LC004486	10/03/16	7:21	Rain	Driving too fast for conditions- Followed too closely- No improper driving	Rear End	3	0	Operator #2 stated she was stopped at the intersection, waiting to turn left onto N. Wolcott Rd from VT RT 15, when her vehicle was rear ended by vehicle #1. Witness #1 stated she was stopped on N. Wolcott Rd, waiting to turn left onto VT RT 15. Advised vehicle #2 was at a complete stop, and had been for a little bit of time, when vehicle #1 rear ended vehicle #2.
2	15LC004766	11/02/15	16:58	Cloudy		Rear End	0	0	Operator #1, stated that he was traveling approximately 45-50 mph EBd on VT 15, when he collided with the rear-end of vehicle #2, which was stopped in the EB lane. Operator #2 stated that she was stopped in the EB lane of VT 15, attempting to make a left-hand turn onto North Wolcott Rd. Advised that there was a long line of traffic in the WB lane of VT15, and that she had to wait at the intersection before making the turn
3	19LC000128	01/08/19	8:43	Cloudy	Followed too closely	Rear End	0	0	Operator 1 was traveling south on the N. Wolcott Road, He was following an orange colored Subaru and approaching the stop sign at the intersection of VT 15. As the car in front of him stop at the stop sign, he applied his brakes and thought they went right to the floor, when he applied them a second time the pedal felt normal, but he did not have enough time to stop his vehicle on the partially covered snowy road. His vehicle then collided with the back end of the orange Subaru in front of him. Operator 2 was traveling south on N. Wolcott Road. He stopped at the stop sign at the intersection of VT 15 to wait for traffic to clear, when he was rear ended by the vehicle that had been following him all the way down the N. Wolcott Road.
4	19LC000192	01/12/19	10:22	Clear	No improper driving- Inattention	Rear End	0	0	Operator 2 was traveling south on the N. Wolcott Road. She came to a complete stop at the intersection of the N. Wolcott Road and VT Route 15 at the stop sign, waiting on traffic. The truck that was behind her at on the N. Wolcott Road, did not stop completely and hit her car in the rear. Operator 1 informed me that he was traveling south on N. Wolcott Road, following the Toyota Rav. Both vehicles came to a complete stop at the intersection of VT Route 15. The vehicle ahead of him started to go, so he started also, when the other vehicle again stopped. He was looking left at traffic when this happened


1
2
3
4
15
N Wolcott Rd
N Wolcott Rd
15
Corley Rd
15
Corley Rd
15

Appendix B

Raw Turning Movement Count

(2015)

Vermont Agency of Transportation

Traffic Research Highway Division
Turning Movement Report

Counter: TU 1845
Counted by: GK
Weather: Sunny
Town: 15-12.3 Wolcott

File Name : Not Named 1
Site Code : 30810805
Start Date : 5/21/2015
Page No : 1

Groups Printed- Auto - Medium - Heavy

	N. Wolcott Rd from Craftsbury From North			VT 15 from Hardwick From East			Corley Rd from Foss Rd From South			VT 15 from Morristown From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	20	0	2	0	43	0	0	0	0	0	13	1	79
06:15 AM	19	0	1	1	35	0	0	0	0	0	17	5	78
06:30 AM	15	0	3	1	57	1	1	0	0	0	31	6	115
06:45 AM	29	0	3	1	62	0	0	0	2	0	24	5	126
Total	83	0	9	3	197	1	1	0	2	0	85	17	398
07:00 AM	19	0	4	2	58	0	1	0	1	0	52	8	145
07:15 AM	36	0	6	0	68	0	0	0	1	1	40	5	157
07:30 AM	39	0	4	2	99	0	2	0	0	0	41	8	195
07:45 AM	29	0	2	3	103	0	1	0	0	0	30	12	180
Total	123	0	16	7	328	0	4	0	2	1	163	33	677
08:00 AM	19	0	1	0	71	0	0	0	3	0	27	3	124
08:15 AM	21	0	0	0	61	1	0	0	0	0	50	16	149
08:30 AM	15	0	4	4	66	0	0	0	2	1	37	7	136
08:45 AM	22	0	0	2	55	1	0	0	0	1	32	7	120
Total	77	0	5	6	253	2	0	0	5	2	146	33	529
09:00 AM	23	0	1	3	42	0	0	0	1	0	43	12	125
09:15 AM	16	0	1	1	37	2	1	0	2	1	48	6	115
09:30 AM	15	1	2	1	43	0	0	0	1	2	45	12	122
09:45 AM	15	0	3	2	48	1	0	0	0	0	44	8	121
Total	69	1	7	7	170	3	1	0	4	3	180	38	483
10:00 AM	15	0	1	2	36	0	1	0	1	1	40	14	111
10:15 AM	15	1	1	1	53	0	0	0	1	1	41	12	126
10:30 AM	23	0	1	2	50	1	0	0	1	0	46	13	137
10:45 AM	12	0	0	2	56	1	0	0	0	0	53	16	140
Total	65	1	3	7	195	2	1	0	3	2	180	55	514
11:00 AM	22	0	2	0	37	0	0	0	0	0	45	15	121
11:15 AM	8	0	0	3	43	0	0	0	1	3	45	16	119
11:30 AM	19	0	1	2	58	0	0	0	0	1	51	9	141
11:45 AM	16	0	2	1	41	0	0	0	1	1	46	11	119
Total	65	0	5	6	179	0	0	0	2	5	187	51	500
12:00 PM	15	0	3	0	32	1	0	0	0	1	37	9	98
12:15 PM	5	0	2	1	43	0	0	0	1	0	57	12	121
12:30 PM	10	0	4	1	26	0	0	0	0	3	38	10	92
12:45 PM	7	0	1	0	36	1	0	0	0	0	45	16	106
Total	37	0	10	2	137	2	0	0	1	4	177	47	417
01:00 PM	16	1	0	1	42	1	0	0	3	0	41	8	113
01:15 PM	9	0	0	0	44	0	0	0	0	1	44	10	108
01:30 PM	14	0	0	1	50	0	0	0	1	0	33	8	107
01:45 PM	17	0	0	0	52	1	0	0	0	0	28	12	110
Total	56	1	0	2	188	2	0	0	4	1	146	38	438
02:00 PM	7	0	1	0	34	0	0	1	1	2	51	13	110
02:15 PM	12	0	1	0	45	0	0	0	0	0	47	20	125

Vermont Agency of Transportation

Traffic Research Highway Division
Turning Movement Report

Counter: TU 1845
Counted by: GK
Weather: Sunny
Town: 15-12.3 Wolcott

File Name : Not Named 1
Site Code : 30810805
Start Date : 5/21/2015

Groups Printed- Auto - Medium - Heavy

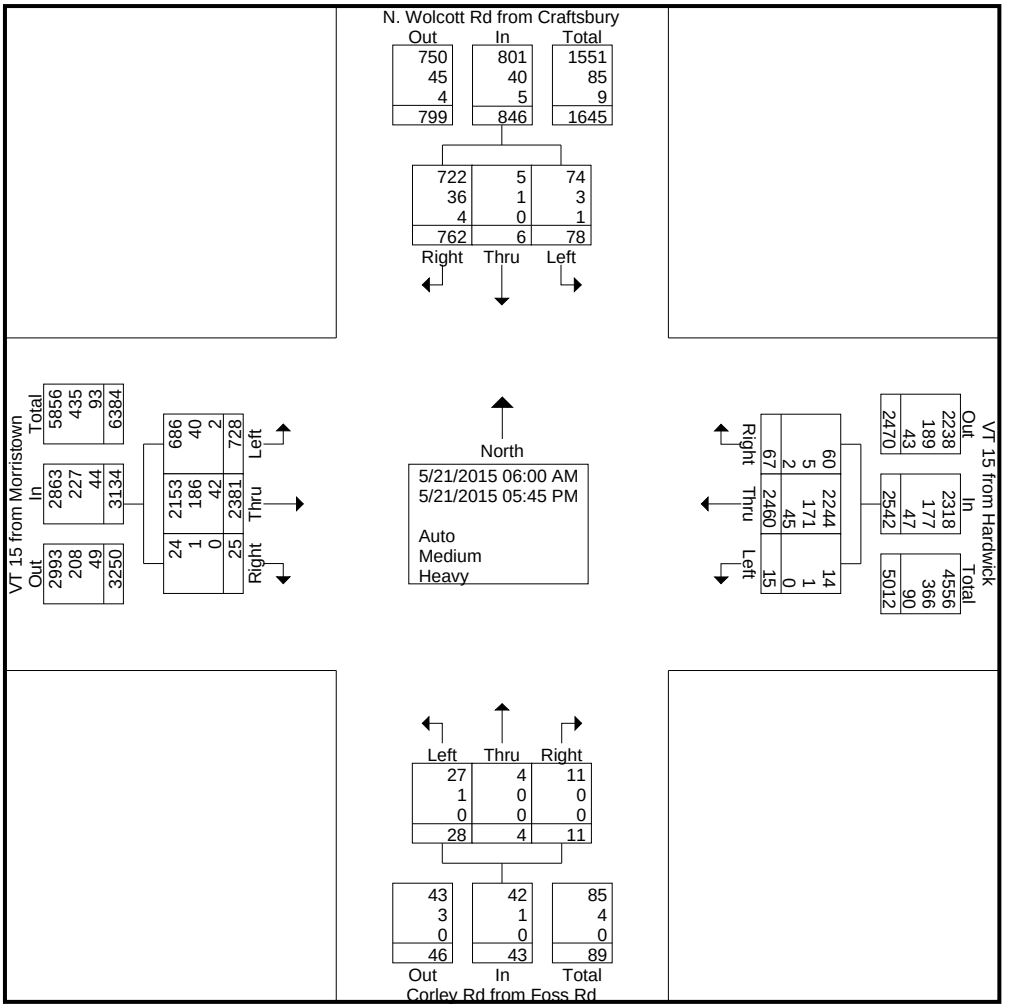
	N. Wolcott Rd from Craftsbury From North			VT 15 from Hardwick From East			Corley Rd from Foss Rd From South			VT 15 from Morristown From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
02:30 PM	10	0	0	1	50	0	0	0	1	0	40	12	114
02:45 PM	13	0	0	2	35	0	0	0	0	1	55	20	126
Total	42	0	2	3	164	0	0	1	2	3	193	65	475
03:00 PM	17	1	2	1	51	0	0	1	0	0	58	16	147
03:15 PM	11	0	1	2	64	0	0	0	0	1	58	20	157
03:30 PM	14	0	2	1	53	0	0	0	0	0	76	32	178
03:45 PM	7	0	3	1	42	1	1	1	0	0	62	24	142
Total	49	1	8	5	210	1	1	2	0	1	254	92	624
04:00 PM	11	1	1	1	52	0	0	0	0	0	73	30	169
04:15 PM	12	0	1	4	57	0	1	0	1	0	88	32	196
04:30 PM	13	0	3	3	62	0	0	0	1	2	102	29	215
04:45 PM	8	0	0	2	69	0	1	0	0	0	90	31	201
Total	44	1	5	10	240	0	2	0	2	2	353	122	781
05:00 PM	21	0	3	1	49	0	0	0	0	1	84	36	195
05:15 PM	14	0	3	4	58	1	1	0	0	0	107	36	224
05:30 PM	8	0	1	1	44	1	0	1	1	0	67	42	166
05:45 PM	9	1	1	3	48	0	0	0	0	0	59	23	144
Total	52	1	8	9	199	2	1	1	1	1	317	137	729
Grand Total	762	6	78	67	2460	15	11	4	28	25	2381	728	6565
Apprch %	90.1	0.7	9.2	2.6	96.8	0.6	25.6	9.3	65.1	0.8	76	23.2	
Total %	11.6	0.1	1.2	1	37.5	0.2	0.2	0.1	0.4	0.4	36.3	11.1	
Auto	722	5	74	60	2244	14	11	4	27	24	2153	686	6024
% Auto	94.8	83.3	94.9	89.6	91.2	93.3	100	100	96.4	96	90.4	94.2	91.8
Medium	36	1	3	5	171	1	0	0	1	1	186	40	445
% Medium	4.7	16.7	3.8	7.5	7	6.7	0	0	3.6	4	7.8	5.5	6.8
Heavy	4	0	1	2	45	0	0	0	0	0	42	2	96
% Heavy	0.5	0	1.3	3	1.8	0	0	0	0	0	1.8	0.3	1.5

Vermont Agency of Transportation

Traffic Research Highway Division
Turning Movement Report

Counter: TU 1845
Counted by: GK
Weather: Sunny
Town: 15-12.3 Wolcott

File Name : Not Named 1
Site Code : 30810805
Start Date : 5/21/2015
Page No : 3



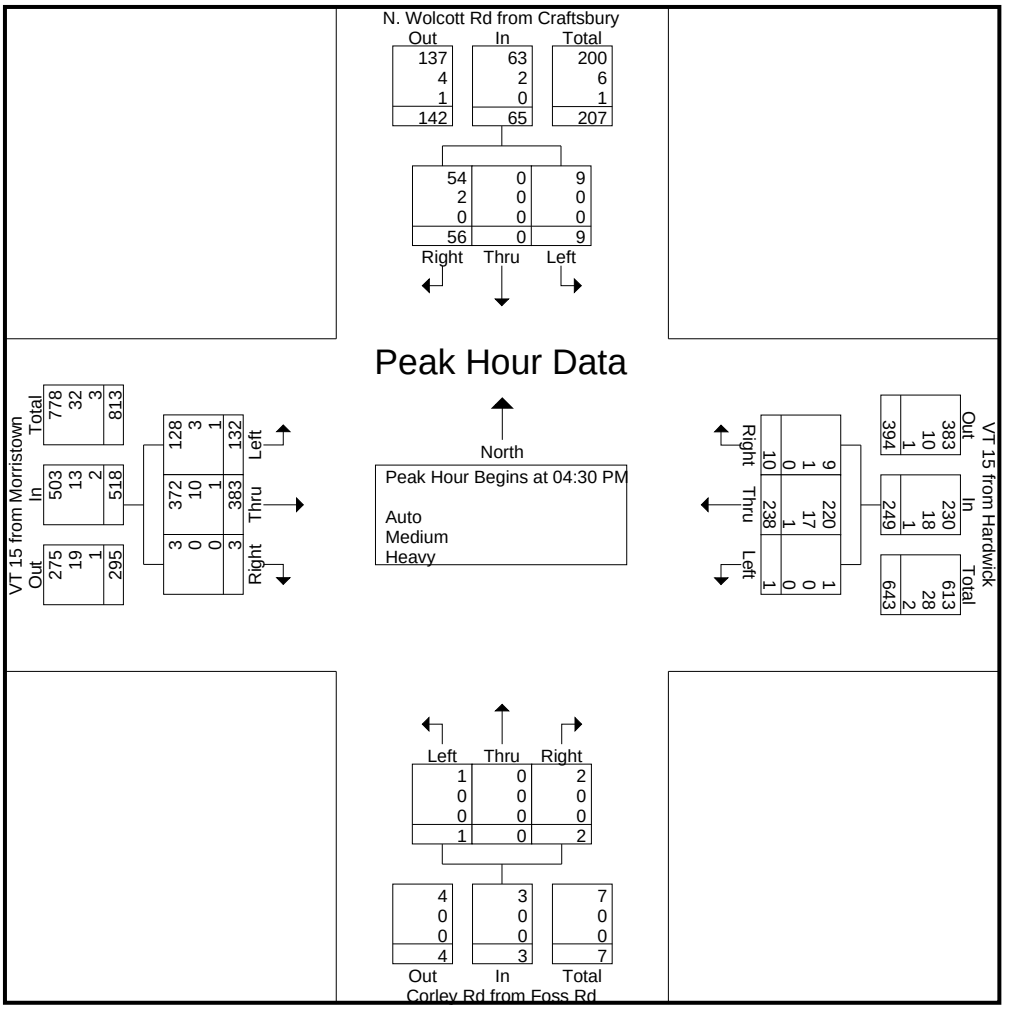
Vermont Agency of Transportation

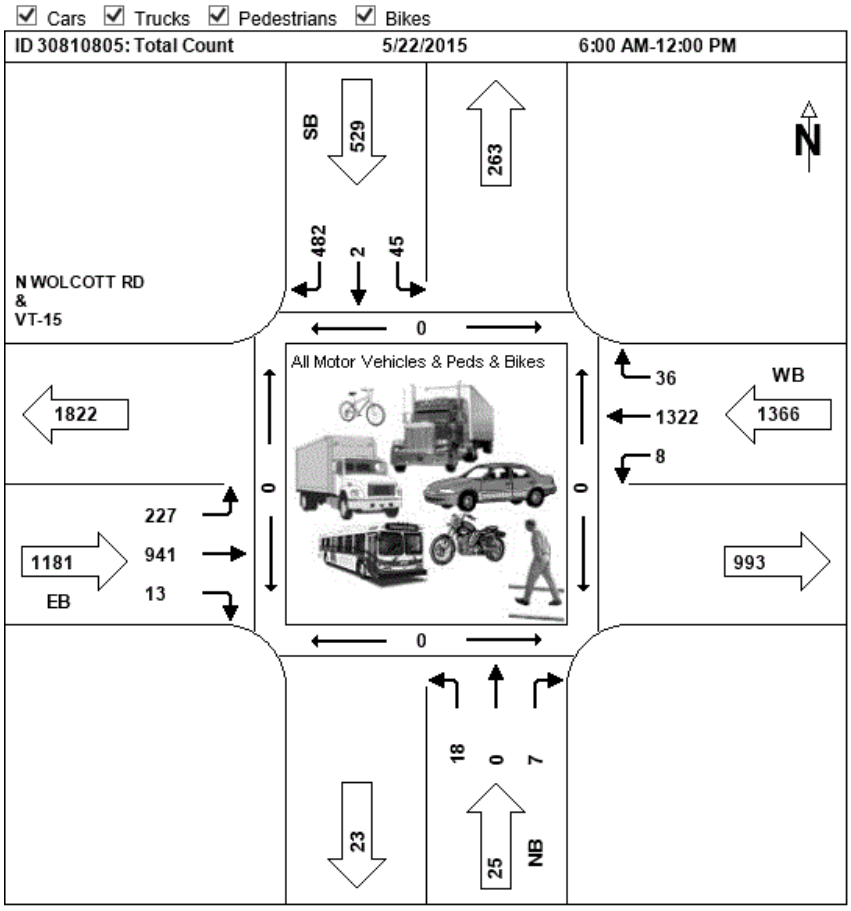
Traffic Research Highway Division
Turning Movement Report

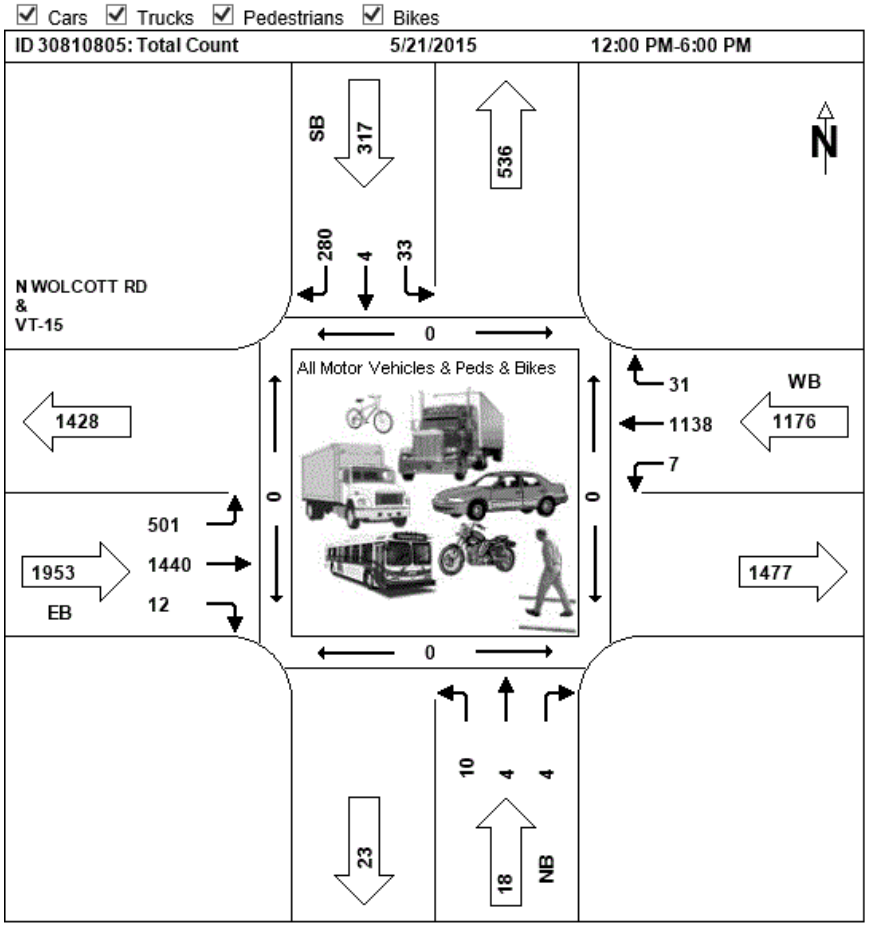
Counter: TU 1845
Counted by: GK
Weather: Sunny
Town: 15-12.3 Wolcott

File Name : Not Named 1
Site Code : 30810805
Start Date : 5/21/2015
Page No : 4

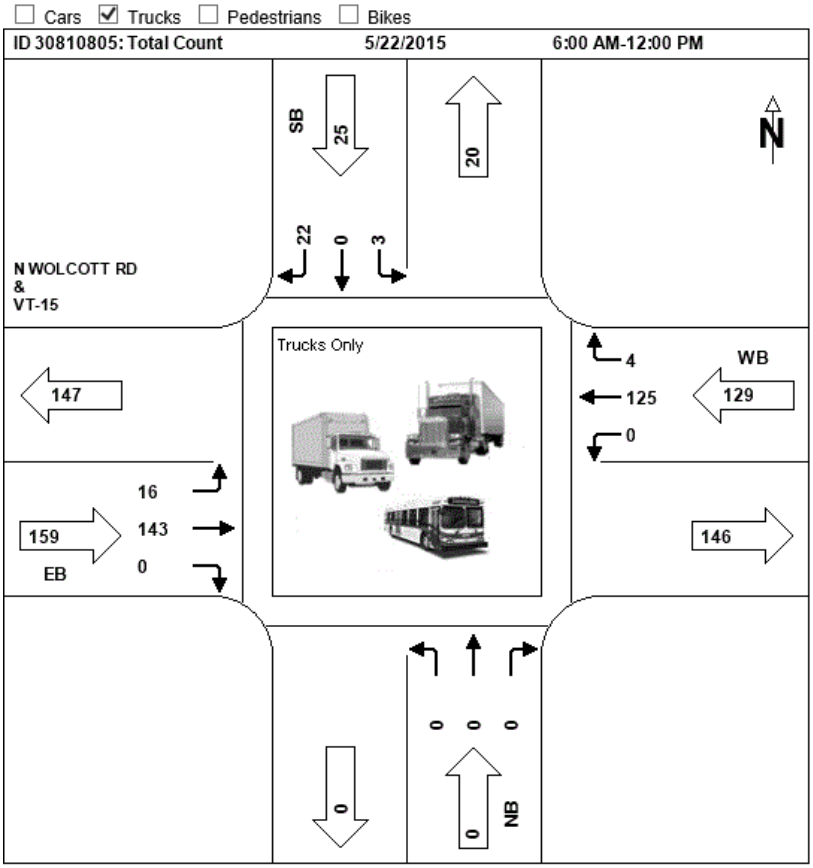
	N. Wolcott Rd from Craftsbury From North				VT 15 from Hardwick From East				Corley Rd from Foss Rd From South				VT 15 from Morristown From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	13	0	3	16	3	62	0	65	0	0	1	1	2	102	29	133	215
04:45 PM	8	0	0	8	2	69	0	71	1	0	0	1	0	90	31	121	201
05:00 PM	21	0	3	24	1	49	0	50	0	0	0	0	1	84	36	121	195
05:15 PM	14	0	3	17	4	58	1	63	1	0	0	1	0	107	36	143	224
Total Volume	56	0	9	65	10	238	1	249	2	0	1	3	3	383	132	518	835
% App. Total	86.2	0	13.8		4	95.6	0.4		66.7	0	33.3		0.6	73.9	25.5		
PHF	.667	.000	.750	.677	.625	.862	.250	.877	.500	.000	.250	.750	.375	.895	.917	.906	.932
Auto	54	0	9	63	9	220	1	230	2	0	1	3	3	372	128	503	799
% Auto	96.4	0	100	96.9	90.0	92.4	100	92.4	100	0	100	100	100	97.1	97.0	97.1	95.7
Medium	2	0	0	2	1	17	0	18	0	0	0	0	0	10	3	13	33
% Medium	3.6	0	0	3.1	10.0	7.1	0	7.2	0	0	0	0	0	2.6	2.3	2.5	4.0
Heavy	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	2	3
% Heavy	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0	0.3	0.8	0.4	0.4




Cars Trucks Pedestrians Bikes
ID 30810805: Total Count
5/22/2015
6:00 AM-12:00 PM
SB
529
263
482
2
45
N WOLCOTT RD
&
VT-15
0
All Motor Vehicles & Peds & Bikes
36
WB
1322
1366
8
1822
227
941
1181
EB
13
993
0
0
0
18
0
7
23
25
NB


Cars Trucks Pedestrians Bikes
ID 30810805: Total Count
5/21/2015
12:00 PM-6:00 PM
SB
317
536
280
4
33
N WOLCOTT RD
&
VT-15
0
All Motor Vehicles & Peds & Bikes
31
WB
1138
1176
7
1428
501
1440
1953
EB
12
1477
0
0
0
10
4
4
23
18
NB

☐ Cars ☑ Trucks ☐ Pedestrians ☐ Bikes



☐ Cars ☑ Trucks ☐ Pedestrians ☐ Bikes