

Office of Highway Safety

Road Safety Audit Review

| | | | |
|---------------|-------------------|-----------------------|--|
| Town: | Montgomery | Date Reviewed: | May 6, 2019 |
| Route: | VT 118 and VT 242 | Mile points: | VT 118 MM 5.58-5.66 VT 242 MM 0.00-0.04 |

Location Map



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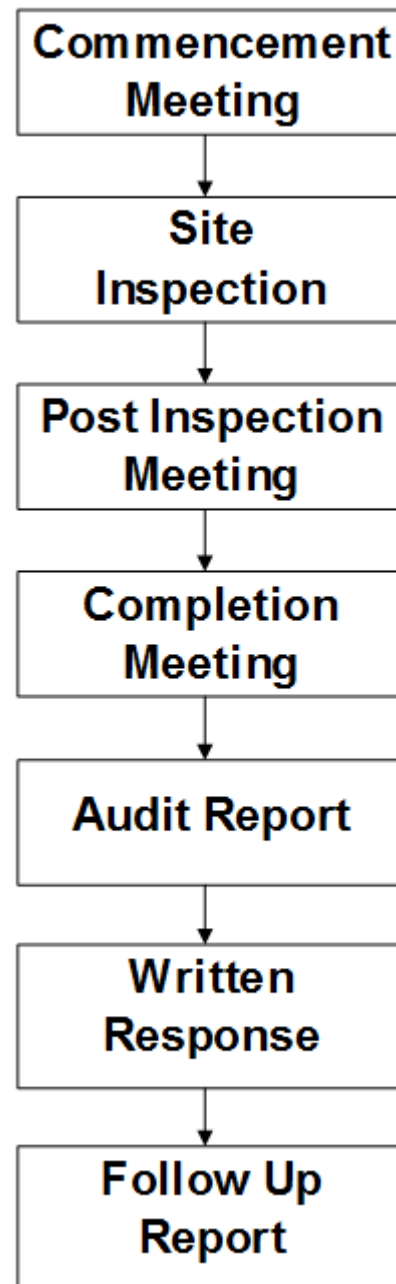
RSAR Process

A Road Safety Audit Review (RSAR) is a formal examination of an existing road in which an independent, multi-discipline 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 is composed of several steps as shown in Figure 1. The 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. The Audit Team will usually drive through the location of interest to “get a feel” for the area, traveling through each approach in the case of intersections. The team is to then drive at a slower speed to make observations. If needed, the team will also walk 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. A RSAR report (Written Report) is prepared.

Figure 1 - Road Safety Audit Process



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The Written Report identifies safety concerns and proposes guidance. These issues and solutions are presented in a tabular format associated to each 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 VTrans design section, the local town, the local police or the local RPC.

Site for the RSAR

The location of this RSAR is the three-way intersection of VT 118 and VT 242 in Montgomery Center.

Purpose of the RSAR

This RSAR was conducted at the request of the Town of Montgomery to address the following local concerns:

- Confusing geometry and traffic flow
- Motorists on either side of VT 118 have a difficult time seeing each other
- Many motorists are tourists and unfamiliar with the intersection (high season traffic and pedestrian demand)
- Increased traffic volumes through the center and increased pedestrian traffic associated with business growth and the new arts center
- Safety of those crossing from Sylvester's Market/MCA/Snowshoe Lodge & Pub

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.

RSAR Participants

Mario Dupigny-Giroux from the Office of Highway Safety, VTrans, was the RSAR coordinator.

The other participants were:

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| | |
|------------------|-----------------------------|
| Mike Chrastina, | Dist 8, VTrans |
| Ian Degutis, | Traffic Ops, VTrans |
| Ross Gouin, | MAB, VTrans |
| Michael Lacroix, | Traffic Design, VTrans |
| Ed Pierce, | Permitting, VTrans |
| Ben Tietze, | Traffic Design, VTrans |
| | |
| Darren Drevik, | Town of Montgomery |
| | |
| Mike Aamodt | VSP |
| | |
| Bethany Remmers, | Northwest Regional Planning |

Information Reviewed

Location

The intersection of VT 118 and VT 242 is a three-way intersection that is controlled by stop signs on VT 242. It is defined by VTrans on VT 118 between mile points 5.58 and 5.66 and on VT 242 from mile point 0.00 to mile point 0.04. The center of the intersection is at mile point 5.62 on VT 118 and at mile point 0.00 on VT 242. VT 118 runs south to north and VT 242 runs west to east.

Land Use

The Snowshoe Lodge & Pub is located on the northwest corner of the intersection and opens daily from 2:00 pm.

The Sylvester's Market is a grocery store that is located on the northeast corner of the intersection. It opens from 7:00 am.

The Montgomery Center for the Arts (MCA) is located on the southeast side of the intersection. A number of classes and other cultural events are held in this building.

Geometry

VT 118 has eleven-foot lanes with five-foot shoulders north of the intersection. Bridge #15 is located south of the intersection on VT 118 on the south approach of the intersection. The travel lanes on the bridge are eleven feet wide. The southbound shoulder is four feet wide while the

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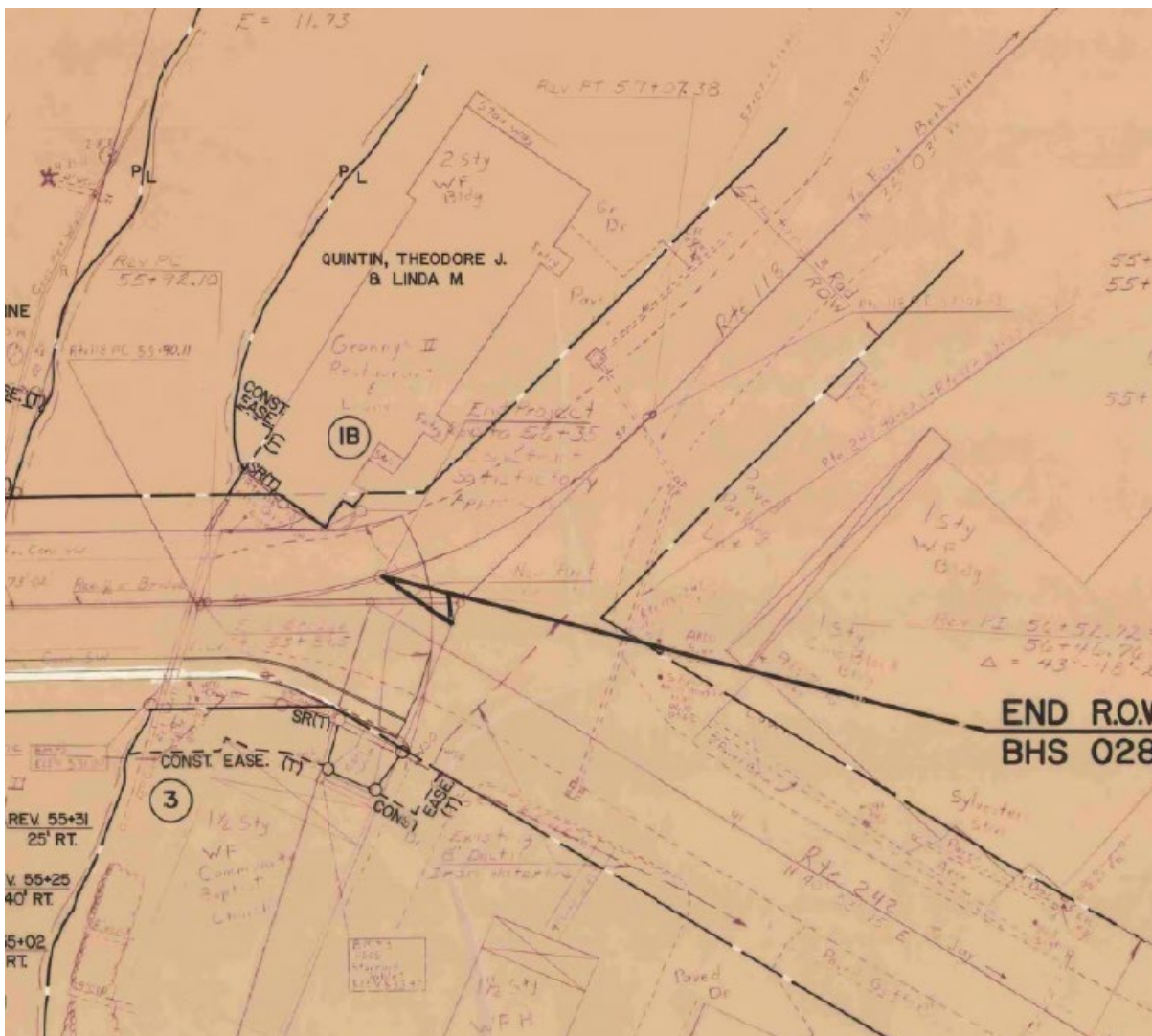
northbound shoulder is two feet wide. There is a sidewalk on the bridge in the northbound direction that ends at the MCA.

VT 242 has eleven-foot lanes with three-foot shoulders.

At this intersection, VT 118 follows a 38-degree horizontal curve. According to paving plans, this curve is designed for a 30 mph design speed.

Right-of-Way

The right-of-way on VT 118 and VT 242 is three rods (25 feet from the centerline on each side). The available right-of-way from plans from project BHS 0283(6)S is shown below.



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Speed

The speed limit on both VT 118 and VT 242 is 30 mph. There is currently an advance horizontal alignment warning sign on VT 118 when traveling southbound with the associated advisory speed of 20 mph.

The consultant team for the sign replacement project, STPG SIGN(65), performed ball banking with a Honda sedan. With this vehicle, they concluded that warning signs and an advisory speed was not required for this curve. They also performed ball banking with a truck as a comparison against the sedan. For this curve, the readings obtained for the truck indicate that a 20 mph advisory speed is required in both directions. These results are shown in the table below.

| ROUTE | Posted Speed Limit | Existing Sign | Honda Accord BB Adv Speed | Recommendation Based on BB Reading | Chev Truck BB Adv Speed | Recommendation Based on BB Reading |
|-------|--------------------|------------------------|---------------------------|------------------------------------|-------------------------|------------------------------------|
| NB | 30 | NO | - | NO | 20 | MOD. LT Turn/ 20 mph |
| SB | 30 | MOD RIGHT CURVE/20 MPH | - | NO | 20 | MOD. LT Turn/ 20 mph |

The road safety audit team also performed ball banking around this curve in both directions. The vehicle used was a Subaru Impreza Sedan. The recorded ball bank readings are shown in the table below in the white rows. Comparing the readings obtained in the field against the maximum reading shown for each speed category indicates that the advisory speed in both directions would be 20 mph.

| Direction | Travel Speed (MPH) | | |
|-----------|--------------------|----|----|
| | 20 | 25 | 30 |
| | Maximum Reading | | |
| | 16 | 14 | 14 |
| SB | 14 | 15 | 17 |
| NB | 12 | 15 | |

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Pedestrian counts from each approach were also captured as part of the June 2015 count. An interpretation of the count indicates that during that count, eight pedestrians crossed VT 242, four crossed the north approach of VT 118 and four others, the approach of VT 118 south of the intersection.

The Town representative present at the road safety audit indicated that traffic at this intersection was seasonally driven with higher volumes of vehicles and pedestrians occurring during winter and summer. This statement was substantiated with the review of a video taken during winter by the audit team that distinctively showed high demand pedestrian movements between the Snowshoe Lodge & Pub and the Sylvester's Market as well as some movements across VT 242 from the MCA. Pedestrian activity from VT 242 eastbound to VT 118 northbound was also observed but to a lesser degree.

From the June 2015 count, the peak hours were identified as being from 7:45 to 8:45 am, 11:00 am to 12:00 pm and from 4:45 pm to 5:45 pm.

Additional Traffic Data can be found in Appendix A.

Traffic Control Devices

The standard guide signs to let motorists know that they are approaching the intersection of VT 118 and VT 242 are present on each approach as are the appropriate destination boards on VT 118.

The intersection is controlled by stop signs that are installed on both sides of the road on VT 242. Motorists are warned of the stopping condition in advance of the intersection by stop ahead signs that are also installed on both sides of the VT 242. Pavement markings supplement both sets of signs with STOP AHEAD word markings at the stop ahead signs and STOP markings at the intersection (these markings along with the stop bar at VT 242 are very faded as per the May 6, 2019 site visit. Note that these markings were also observed to be faded in the July 5, 2018 Mapillary video log).

There is currently a 30" x 30" curve sign with a side road shown on it accompanied by a 20 mph advisory speed plaque on VT 118 in the southbound direction.

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On the VT 118 northbound approach following the JCT 242 sign, there is a reduced speed limit ahead sign (30 mph) followed by a 30 mph speed limit sign.

Pictures of the existing signage obtained from July 5, 2018 Mapillary video log are displayed in Appendix B.

Pavement Surface

The pavement surface is rated as good on both VT 118 and VT 242 (VTransparency 04/24/2019). The year of last work was 2013 for VT 242 and 2016 for VT 118.

Lighting

There is street lighting at this intersection. A luminaire is located on a pole to the west of the MCA, on the VT 242 approach. The luminaire points towards the center of the intersection.

Past Planning and Traffic Investigations

In April 2005, VTrans received a letter from the Montgomery Selectboard requesting that the Agency review the intersection of VT 118 and VT 242 for the possible change to all-way stop control. The Traffic Operations Section concluded from preliminary observations that the presence of the bridge and buildings could make all-way stop control at this intersection an appropriate solution. It was also speculated that curbing on the southbound VT 118 approach may be required to protect a stop sign on this approach. In May 2005, the Montgomery Selectboard informed VTrans that it did not want the all-way stop alternative to be pursued (because of concerns about the effect on local businesses).

In August 2018, VTrans was contacted by the Montgomery Selectboard to investigate once more all-way stop control and crosswalks at this intersection.

In fall 2018, the Vermont Council on Rural Development (VCRD) completed a three-month Community Visit process in Montgomery ([view the report here](#)). One of the priority areas identified by community members is to improve village and center traffic flow and pedestrian safety. A task force developed action items that include streetscape and sidewalk improvements as well as traffic calming and pedestrian safety strategies. Ensuring the safety of the 3-way MCA/Sylvester's/Snowshoe Lodge & Pub intersection by improving traffic control and including crosswalks was also mentioned.

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Past Projects

STP SURF(3) was for the overlaying of VT 118 with a thin wearing surface and the installation of durable white lines and yellow markings. This project was substantially completed on August 11, 2016.

STP 2906(1) was for the resurfacing of VT 242. The project included the installation of durable white lines and yellow markings as well as STOP and STOP AHEAD durable markings. This project was substantially completed on November 6, 2013.

STP 2125(1) was for the resurfacing of VT 118. This project also replaced the stop signs on VT 242. No other signs were replaced within the boundaries of this road safety audit. This project was completed on December 4, 2007.

Future Projects

STP CRAK(37) is for crack sealing on VT 118 and VT 242. The anticipated constructed date is between August and November 2019.

STPG SIGN(65) is for the replacement of signs on VT 118 from Belvidere to Berkshire. The planned construction date is between July 2019 and December 2019. This project will replace most signs at the same locations. The exceptions are:

In the northbound direction, the destination boards currently at mile point 5.472 are being relocated before the speed limit 30 mph sign, to mile point 5.346.

In the northbound direction, the route markers currently at mile point 5.497 are being relocated to mile point 5.537.

In the southbound direction, the curve sign assembly with side road and 20 mph advisory speed is being removed.

Crash History

The section of VT 118 between mile markers 5.514 and 5.814 was a high crash location as defined by VTrans for the 2010-2014 reporting period as well as for the 2012-2016 reporting one (latest available HCL report).

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There are five crashes specifically listed for the intersection for the period 2013 to about now. The majority of the crashes are happening between November and February. Many of the crashes are happening during the afternoon peak hour.

Of the five crashes, two took place in the Sylvester's Market parking area and one other in the Snowshoe Lodge & Pub parking area. The other two crashes were single vehicle crashes involving run off the road vehicles due to slippery road conditions.

For the crashes at the Sylvester's Market parking area, in one case, a vehicle drove over the curb and struck a support beam of the building while in the other case, both vehicles were trying to back out at the same time and hit each other.

During the commencement meeting for this road safety audit, the Town mentioned the occurrence of near misses with pedestrians.

The crash data is further summarized in Appendix C.

Identified Safety Concerns

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.

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):

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1. Confusing Geometry
2. Safety of those crossing from Sylvester's Market/MCA/Snowshoe Lodge & Pub
3. Obstructions caused by Delivery Vehicles or Snowbanks on the Sylvester's Market Property Create a Potential Safety Conditions
4. Conflict point on the north approach created by entering vehicles leaving the Snowshoe Lodge & Pub and the Sylvester's Market as well as by other vehicles slowing down to enter these businesses
5. Potential of Losing Control around the Curve on VT 118
6. Obstruction to the Left caused by the Bridge Railing for a Vehicle that is Coming out of the MCA driveway

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| Potential Safety Enhancements Summary Table | | | | | | | | | | |
|--|-----------------|---|---|---|---|---|---|---|--------------|------|
| | Safety Concerns | | | | | | Potential Responsibility | Safety Payoff ¹ | Time Frame | Cost |
| Safety Enhancement | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| Refresh the stop bar and stop word markings | X | | | | | | VTrans District 8 | | Now | Low |
| Recess all the markings at the intersection | X | | | | | | VTrans OHS via Low Cost HSIP Project | | Short to Mid | Med |
| Consider mountable surfaces | X | | | | | | VTrans via an "existing" project | | Mid to Long | Med |
| Consider changing the traffic control to all-way stop (must be done with access control + ped amenities) | X | | | | | X | VTrans Traffic Ops (pending implementation of access control and ped amenities by Town) | 48% reduction, All Crashes (CMF ID 315) | Mid to Long | 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.

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Potential Safety Enhancements Summary Table

| Safety Enhancement | Safety Concerns | | | | | | Potential Responsibility | Safety Payoff ¹ | Time Frame | Cost |
|--|-----------------|---|---|---|---|---|---|----------------------------|--------------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| Conduct a pedestrian crossing and facility study | | X | | | | | Town with assistance from NRPC | | Short to Mid | Low to Med |
| Implement the preferred alternative resulting from the ped study if done | | X | | | | | Town (with assistance from NRPC for grant) via ped grant and Section 1111 permit ² | | Mid to Long | Med |
| Make the owner of the Sylvester's Market aware of this safety concern | | | X | | | | VTrans District 8 | | Short | Low |

² <https://vtrans.vermont.gov/planning/permitting>

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Potential Safety Enhancements Summary Table

| Safety Enhancement | Safety Concerns | | | | | | Potential Responsibility | Safety Payoff ¹ | Time Frame | Cost |
|--|-----------------|---|---|---|---|---|--|---|------------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| Manage speeds on VT 118 approaching the intersection by using a speed cart | | X | | X | | X | Town (with the assistance of the Franklin Sheriff) | 45-73% reduction # of vehicles traveling 5 and 10 mph over the speed limit ³ | Now | Low |
| Manage speeds on VT 118 near the intersection by installing a portable speed radar feedback sign | | X | | X | | X | Town (via ped grant and Section 1111 permit) | 45-73% reduction # of vehicles traveling 5 and 10 mph over the speed limit | Short | Low |

³ https://safety.fhwa.dot.gov/speedmgmt/ref_mats/rural_transition_speed_zones.cfm

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| Potential Safety Enhancements Summary Table | | | | | | | | | | |
|--|-----------------|---|---|---|---|---|---|----------------------------|--------------|------------|
| Safety Enhancement | Safety Concerns | | | | | | Potential Responsibility | Safety Payoff ¹ | Time Frame | Cost |
| | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| Maximize the utilization of the parking area next to Montgomery Grange Hall by repaving and stripping it | | | | X | | | Town | | Short to Mid | |
| Develop angle parking or on-street parking schemes | | | | X | | | Town | | Long | Low to Med |
| Provide access control via curbing if implementing all-way stop control with crosswalks | | | | X | | | Town (from implementation of ped study) via ped grant and Section 1111 permit | | Mid to Long | Med |
| Develop a long-term parking plan for this area | | | | X | | | Town & NRPC | | Long | Low to Med |

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| Potential Safety Enhancements Summary Table | | | | | | | | | | |
|---|-----------------|---|---|---|---|---|--------------------------|----------------------------|------------|------|
| | Safety Concerns | | | | | | Potential Responsibility | Safety Payoff ¹ | Time Frame | Cost |
| Safety Enhancement | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| Install a horizontal alignment/intersection turn sign with the appropriate advisory speed (20 mph) in both directions | X | X | | X | X | X | VTrans via STPG SIGN(65) | | Short | Low |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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Concern 1: Confusing Geometry

This intersection is within a horizontal curve. Because of the curve and the fact that the building of the Snowshoe Lodge & Pub is located in the inside of the curve, motorists on either approach of VT 118 have a difficult time seeing each other. Southbound VT 118 traffic that is making a left turn onto VT 242 must yield to northbound traffic. VT 118 traffic that is making the left turn onto VT 242 was observed by the audit team to cut the corner in the path of approaching VT 242 vehicles. There are high demands of seasonal motorists and pedestrians who are unfamiliar with the intersection.

Safety Enhancements:

Short Term

- Refresh the stop bar and STOP word markings on the VT 242 approach.

Mid to Long Term

- Consider recessing all markings at this intersection
- Consider mountable surfaces to improve the geometry of the intersection by reducing pavement area and the intersection width. (See the diagram to the right as an example).



- Consider changing the traffic control at this intersection to all-way stop (must be done in conjunction with access control and other pedestrian considerations)

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Although VTrans Traffic Research Unit determined that the traffic volumes at the VT 118 and VT 242 intersection did not meet the volume requirements listed in Section 2B.07 of the 2009 MUTCD for the installation of an all-way stop, there are other factors that are listed in Section 2B.07 of the 2009 MUTCD that are applicable to the VT 118 and VT 242 intersection and that can be considered in support of the installation of all-way stop control at this intersection.

These factors include:

- ✓ The need to control left-turn conflicts (in this case, left turns from VT 118 southbound onto VT 242 and the VT 118 northbound through movement).
- ✓ The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes (for example in our case, potential conflicts with northbound vehicles around the blind corner created by the building and pedestrian movements between the Snowshoe Lodge & Pub and Sylvester's Market).
- ✓ Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop (occasions for this condition to happen are during winter when there is a snowbank on the Sylvester's Market property or when a delivery is being made and a vehicle on VT 242 is continuing straight across the intersection).

Concern 2: Safety of those crossing from Sylvester's Market/MCA/Snowshoe Lodge & Pub

Crossing at this intersection by pedestrians is perceived to be hazardous, especially during high tourist season. To make a crosswalk viable on the VT 118 north approach, the audit team foresee that curbing on both sides of the road would have to extend up to the drain inlets.

Safety Enhancements:

Short to Mid Term

- Conduct a pedestrian crossing/facility study at this intersection to determine how crosswalks can be added at this intersection. Crosswalks in conjunction with all-way stop

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control would improve the safety of this intersection. However, the crosswalks must connect to pedestrian facilities such as curbing and bulb-outs (or paved shoulder 3-6 feet wide with no parking or other vehicular conflicts) to provide a clear pedestrian connection at this intersection. The Town should consider applying for a VTrans bike/ped grant which could be used to conduct a study for this purpose. The application deadline for the upcoming round of VTrans bike/ped grants is June 28, 2019 (This is the link to the application: <https://vtrans.vermont.gov/highway/local-projects/bike-ped>)

Mid to Long Term

- If a pedestrian crossing/facility study is pursued by the Town, implement the preferred alternative resulting from this study. The Town may have to apply for a second VTrans bike/ped grant to construct the proposed curbing, bulbouts and/or islands. Once completed, VTrans would issue work orders to install the stop signs and the crosswalks. Alternatively, the construction of this improvement could be done as part of a future project such as a paving project (in 10+ years).

Concern 3: Obstructions caused by Delivery Vehicles or Snowbanks on the Sylvester's Market Property Create a Potential Safety Conditions

The snowbank on Sylvester's Market Property could prevent a motorist on VT 242 who wants to continue straight on VT 118 from seeing oncoming southbound traffic. Similarly, it could also prevent a motorist who is making a right turn from VT 242 from seeing a vehicle that is entering VT 118 from the Sylvester's Market parking area. Such a situation is illustrated in the next two pictures. The first picture shows a VT 242 vehicle that is making a right turn as a vehicle is backing out of the Sylvester's Market. The second picture shows the VT 242 vehicle applying the breaks to let the backing vehicle complete its maneuver.

Delivery vehicles could create a similar situation. The third picture in this series illustrate this.

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Safety Enhancements:

Short Term

- Make the owner of the Sylvester's Market aware of this safety concern (District 8 suggested that they could bring the snowbank issue to the attention of the owner via a letter).

Concern 4: Conflict point on the north approach created by entering vehicles leaving the Snowshoe Lodge & Pub and the Sylvester's Market as well as by other vehicles slowing down to enter these businesses

The two pictures below exemplify this issue.

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Safety Enhancements:

Immediate

- Manage speeds on VT 118 approaching the intersection by using a speed cart (contact the Franklin County Sheriff to have one deployed. The Town or the agency that owns the

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speed cart, will need to get a Section 1111 permit from VTTrans in order to place the cart within the ROW of the state highway).

Short Term

- Manage speeds on VT 118 near the intersection by installing a speed radar feedback sign (make it portable and switch location at either end)

Short to Mid Term

- Maximize the utilization of the parking area next to the Montgomery Grange Hall by repaving and stripping it
- Develop angle or on-street parking schemes

Mid to Long Term

- Provide access control via curbing if implementing all-way stop control with crosswalks

Long Term

- Develop a long-term parking plan for this area

Concern 5: Potential of Losing Control around the Curve on VT 118

The horizontal curve on VT 118 is not drivable at the 30-mph posted speed limit. There is a high proportion of unfamiliar drivers in this area.

Safety Enhancements:

Short Term

- Install a horizontal alignment/intersection turn sign with the appropriate advisory speed (20 mph) in both directions

The advisory speed was determined via ball banking to be 20 mph in both directions. As per Section 2C.06 of the 2009 MUTCD, because the speed differential between the

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speed limit and the advisory speed that was determined is 10 mph, the advance warning sign along with the advisory speed plaque are both required.

Concern 6: Obstruction to the Left caused by the Bridge Railing for a Vehicle that is Coming out of the MCA driveway

As shown in the picture below, the bridge railing reduces the visibility of the traffic coming out of the bridge for a motorist that is waiting to enter the intersection from the MCA driveway.



Safety Enhancements:

The suggested improvements for this issue are a repeat of previous countermeasures that were mentioned previously. These improvements aim at reducing the speed of the approaching vehicles on VT 118 or stopping the vehicles.

Immediate

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- Managing speeds on VT 118 approaching the intersection by using a speed cart would help with this issue (contact the Franklin County Sheriff)

Short Term

- Managing speeds on VT 118 near the intersection by installing a speed radar feedback sign (making it portable and switch location at either end) would help with this issue
- Installing a curve sign with the appropriate advisory speed (20 mph) would help with this issue

Mid to Long Term

- Implementing all-way stop control at this intersection would help with this issue

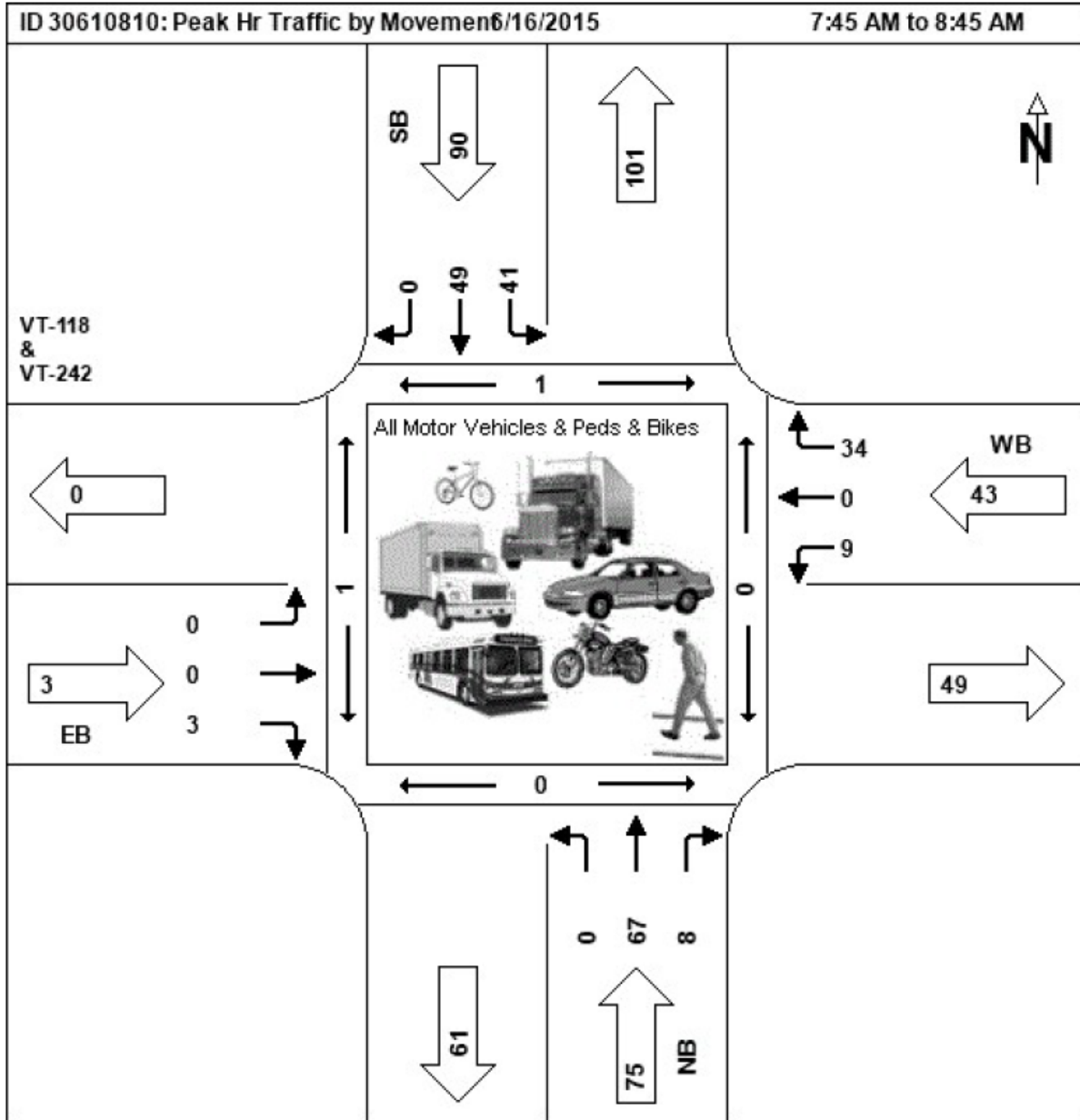
Appendix A

Traffic Data

**AM Peak Hour
06/16/2015**

| Start Time | NB | | | | App Total | EB | | | | App Total | SB | | | | App Total | WB | | | | App Total | Int Total |
|--------------|------|------|-------|-----|-----------|------|------|-------|-----|-----------|------|------|-------|-----|-----------|------|------|-------|-----|-----------|-----------|
| | Left | Thru | Right | Ped | | Left | Thru | Right | Ped | | Left | Thru | Right | Ped | | Left | Thru | Right | Ped | | |
| 7:45 AM | 0 | 16 | 3 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 13 | 9 | 0 | 0 | 22 | 2 | 0 | 16 | 0 | 18 | 59 |
| 8:00 AM | 0 | 13 | 1 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 10 | 19 | 0 | 0 | 29 | 0 | 0 | 5 | 0 | 5 | 48 |
| 8:15 AM | 0 | 20 | 1 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 9 | 8 | 0 | 0 | 17 | 4 | 0 | 8 | 0 | 12 | 50 |
| 8:30 AM | 0 | 18 | 3 | 0 | 21 | 0 | 0 | 3 | 0 | 3 | 9 | 13 | 0 | 1 | 22 | 3 | 0 | 5 | 1 | 8 | 54 |
| Total | 0 | 67 | 8 | 0 | 75 | 0 | 0 | 3 | 0 | 3 | 41 | 49 | 0 | 1 | 90 | 9 | 0 | 34 | 1 | 43 | 211 |
| PHF | | 0.84 | 0.67 | | 0.89 | | | 0.25 | | 0.25 | 0.79 | 0.64 | | | 0.78 | 0.56 | | 0.53 | | 0.60 | |
| HV % | | 22 | 13 | | | | | 0 | | | 5 | 22 | | | 0 | | 6 | | | | |

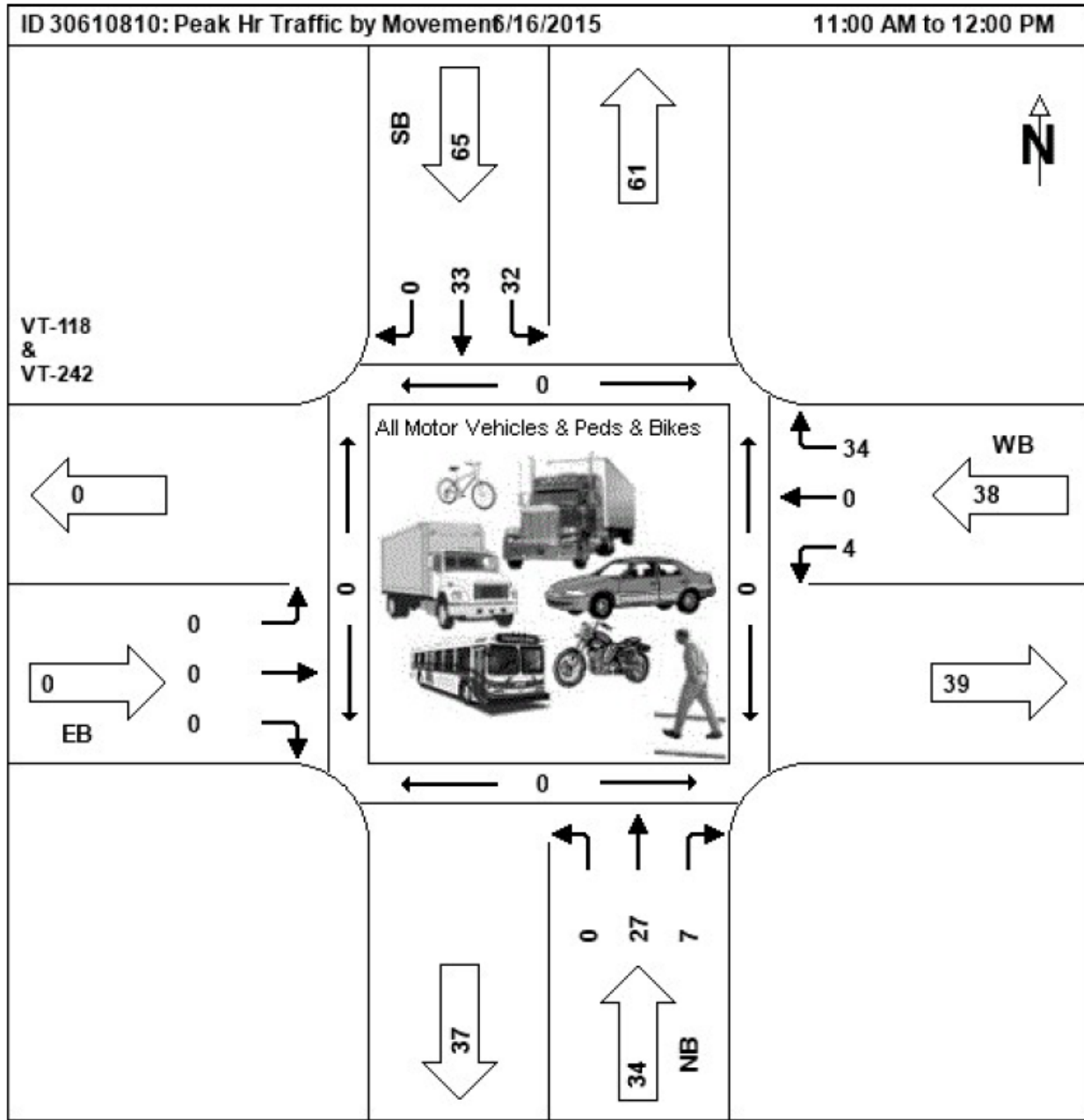
Cars Trucks Pedestrians Bikes



Midday Peak Hour 06/16/2015

| Start Time | NB | | | | EB | | | | SB | | | | WB | | | | App Total | Int Total | | |
|--------------|------|------|-------|-----|------|------|-------|-----|------|------|-------|-----|------|------|-------|-----|-----------|-----------|------|-----|
| | Left | Thru | Right | Ped | Left | Thru | Right | Ped | Left | Thru | Right | Ped | Left | Thru | Right | Ped | | | | |
| 11:00 AM | 0 | 5 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 16 | 1 | 0 | 8 | 0 | 9 | 32 |
| 11:15 AM | 0 | 6 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 6 | 10 | 0 | 0 | 16 | 1 | 0 | 8 | 0 | 9 | 34 |
| 11:30 AM | 0 | 9 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 8 | 0 | 0 | 18 | 1 | 0 | 9 | 0 | 10 | 38 |
| 11:45 AM | 0 | 7 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 7 | 0 | 0 | 15 | 1 | 0 | 9 | 0 | 10 | 33 |
| Total | 0 | 27 | 7 | 0 | 34 | 0 | 0 | 0 | 0 | 32 | 33 | 0 | 0 | 65 | 4 | 0 | 34 | 0 | 38 | 137 |
| PHF | | 0.75 | 0.58 | | 0.85 | | | | | 0.80 | 0.83 | | | 0.90 | 1.00 | | 0.94 | | 0.95 | |
| HV % | | 4 | 0 | | | | | | | 3 | 6 | | | 0 | | 9 | | | | |

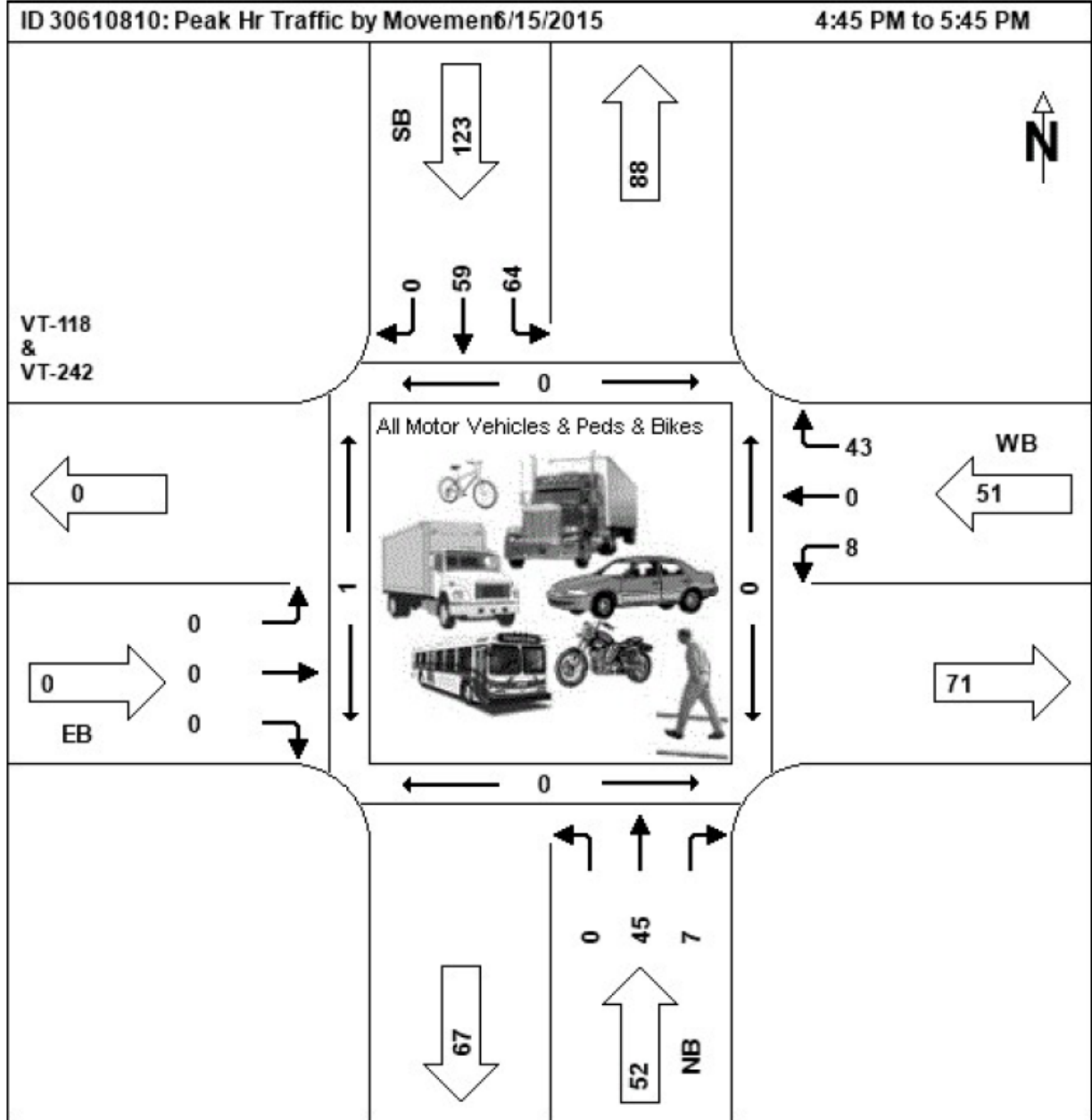
Cars
 Trucks
 Pedestrians
 Bikes



**PM Peak Hour
06/15/2015**

| Start Time | NB | | | | App Total | SB | | | | App Total | WB | | | | App Total | Int Total | |
|------------|------|------|-------|-----|-----------|------|------|-------|-----|-----------|------|------|-------|------|-----------|-----------|--|
| | Left | Thru | Right | Ped | | Left | Thru | Right | Ped | | Left | Thru | Right | Ped | | | |
| 4:45 PM | 0 | 12 | 1 | 0 | 13 | 14 | 10 | 0 | 1 | 24 | 1 | 0 | 11 | 0 | 12 | 49 | |
| 5:00 PM | 0 | 10 | 1 | 0 | 11 | 16 | 14 | 0 | 0 | 30 | 1 | 0 | 9 | 0 | 10 | 51 | |
| 5:15 PM | 0 | 12 | 2 | 0 | 14 | 18 | 16 | 0 | 0 | 34 | 2 | 0 | 12 | 0 | 14 | 62 | |
| 5:30 PM | 0 | 11 | 3 | 0 | 14 | 16 | 19 | 0 | 0 | 35 | 4 | 0 | 11 | 0 | 15 | 64 | |
| Total | 0 | 45 | 7 | 0 | 52 | 64 | 59 | 0 | 1 | 123 | 8 | 0 | 43 | 0 | 51 | 226 | |
| PHF | 0.94 | 0.58 | | | 0.93 | 0.89 | 0.78 | | | 0.88 | 0.50 | | | 0.90 | 0.85 | | |
| HV % | 2 | 0 | | | 2 | 5 | | | 0 | 0 | | | 0 | | | | |

Cars Trucks Pedestrians Bikes



Appendix B

Existing Signage

(July 5, 2018

Mapillary video log)

VT 118
Southbound



VT 118 Northbound







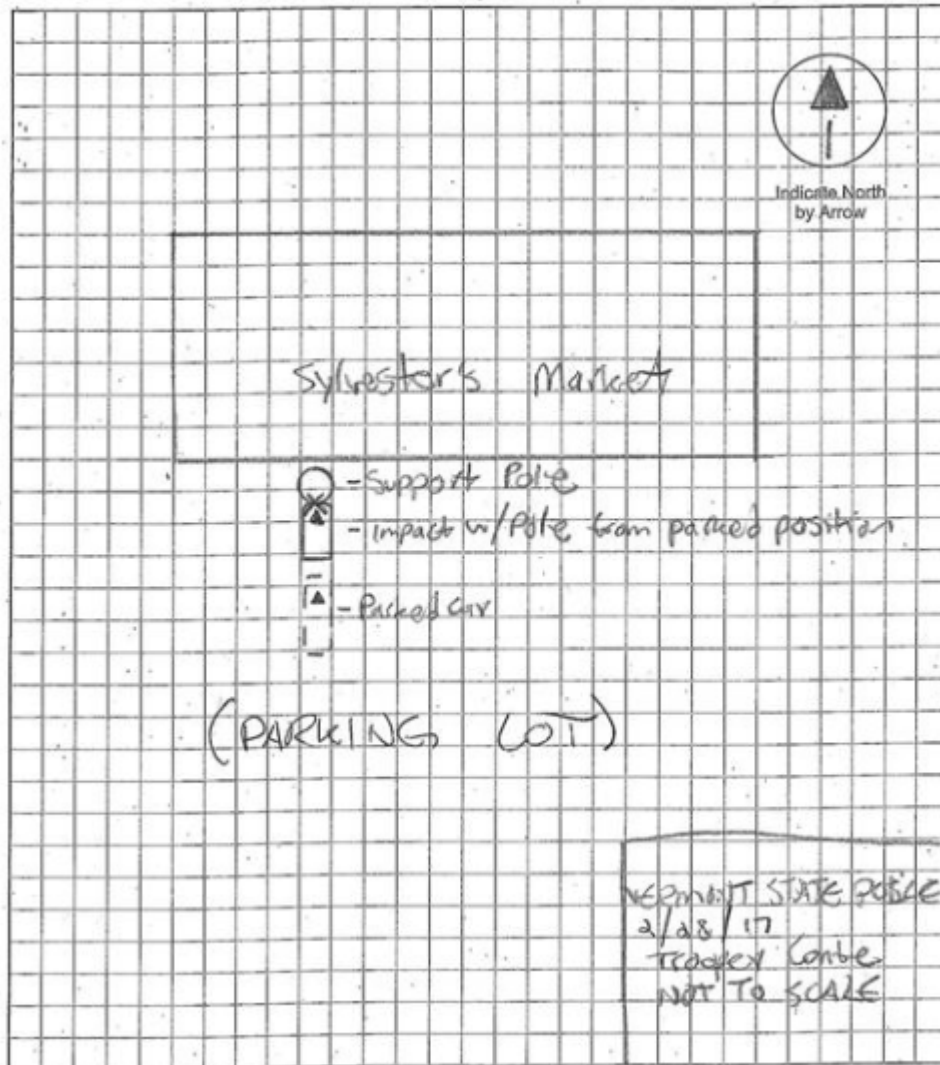
Appendix C

Crash Data

| Crash Number | Route | Report Number | Mile Marker | Crash Date | Time | Weather | Direction of Collision | Number of Injuries | Number of Fatalities | Number of Untimely Deaths |
|--------------|--------|---------------|-------------|------------|---------|--------------|---|--------------------|----------------------|---------------------------|
| 5 | VT-118 | 13A205331 | 5.58 | 12/1/2013 | 6:10 PM | [No Weather] | Car slid off the road. Slippery roads | 0 | 0 | 0 |
| 4 | VT-118 | 15A205536 | 5.62 | 11/24/2015 | 9:31 AM | [No Weather] | Vehicle off the road | 0 | 0 | 0 |
| 2 | VT-118 | 13A202218 | 5.63 | 5/21/2013 | 3:47 PM | [No Weather] | Car hit in Snowshoe parking lot | 0 | 0 | 0 |
| 3 | VT-118 | 18A200408 | 5.63 | 1/20/2018 | 4:12 PM | [No Weather] | Two vehicles backing out of the Sylvester's store lot | 0 | 0 | 0 |
| 1 | VT-118 | 17A200994 | 5.64 | 2/26/2017 | 9:30 AM | [No Weather] | Sylvester's parking, trying to park | 0 | 0 | 0 |

Note: THIS DOCUMENT IS EXEMPT FROM DISCOVERY OR ADMISSION UNDER 23 U.S.C. 409

17A200994 (in a parking lot, 20 Main Street)1



On February 26th, 2017 at 1154 hours at 20 Main Street in the town of Montgomery. This address is also known as Sylvester's Market. The complainant stated that at approximately 0930 hours in the morning, a vehicle in the parking lot in front of the store drove over the curb and struck a support beam of the building.

13A202218 2

Crash Date: May 21, 2013 3:47 PM
Street Address: VT-118 (13 Main St.)

Crash Type:

Direction of Collision: Car hit in Snowshoe parking lot. No police response.

Note: THIS DOCUMENT IS EXEMPT FROM DISCOVERY OR ADMISSION UNDER 23 U.S.C. 409

18A200408 3

Crash Date: January 20, 2018 3:12 PM

Street Address: 1 Block MAIN ST

Crash Type:

Direction of Collision: Two vehicle crash in which both vehicles were trying to back out of the Sylvester's store lot at the same time and backed into each other.

15A205536 4

Crash Date: November 24, 2015 8:31 AM

Street Address: VT-118

Crash Type:

Direction of Collision: Vehicle off the road. Trooper wrote that they had a difficult time getting there due to poor roads.

13A205331 5

Crash Date: December 01, 2013 5:10 PM

Street Address: VT-118

Crash Type:

Direction of Collision: Car slid off the road and was removed prior to VSP arrival. Slippery roads.

Appendix D

VTrans Guidance for Crosswalks at Unsignalized Intersections

[VTrans Guidelines for Pedestrian Crossing Treatments – January 2015 Page 9](#)

Criteria at a Glance

For each of the items below, all of the conditions mentioned should be present.

All Crosswalks:

Sidewalks and curb ramps with detectable warning surfaces on each end of the crossing, or paved shoulder 3-6 feet wide with no parking or other vehicular conflicts. (Wider shoulders may allow for parking activity, unless within an established no-parking zone.)

2.2 Unsignalized Intersections – Stop or Yield Sign Controlled Approaches:

Figure 2: Stop or Yield controlled approach

2.2.1 Criteria for installation:

A crosswalk may be placed across an approach controlled by a stop or yield sign if a sidewalk exists on both sides of the roadway approach controlled by the stop or yield sign. Crosswalks should not be installed in the absence of sidewalks unless adequate shoulders exist for use by pedestrians. The determination of adequate shoulder should be based upon an assessment of traffic volumes, adjacent land use patterns and other site specific conditions. The shoulder shall be a minimum of three feet wide, and a maximum of six feet wide (in order to minimize potential conflicts with parking activities.) In general, installation of 'parallel' crosswalks across the throat of driveways or minor side roads is not recommended unless there is a high potential for vehicle/pedestrian conflict that will be mitigated by a marked crosswalk.

2.2.2 Installation of Stop or Yield Line:

When a crosswalk is installed at a stop or yield controlled approach, a stop or yield line should also be installed. In accordance with the MUTCD, stop or yield lines should be marked a minimum of 4 feet in advance of the nearest crosswalk line, as measured by the gap between the stop bar and the closest crosswalk marking.

2.2.3 No parking zone:

In accordance with state law, parking spaces shall not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking.

2.2.4 Pedestrian Warning Signs:

There shall be no pedestrian crossing signs installed at the marked crosswalks nor shall advance pedestrian warning signs be installed on the stop or yield controlled approaches to an intersection.