

# Office of Highway Safety

## Road Safety Audit Review

<b>Town:</b>	Hartford	<b>Date Reviewed:</b>	October 5, 2016
<b>Route:</b>	US 5 US 4 South Intersection	<b>Mile points:</b>	US-5 MM 3.49-3.66 US-4 MM 9.29-9.35

### Location Map



### 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.

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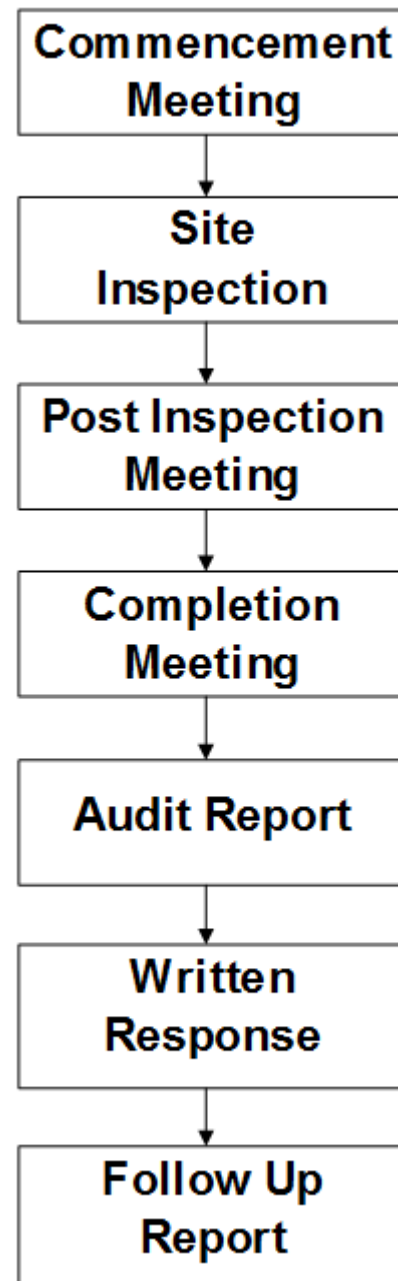
## Road Safety Audit Review

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.

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.

Figure 1 - Road Safety Audit Process



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### **Location**

The location of this RSAR is the intersection of US 5 and US 4 in Hartford (near I-91).

### **Purpose of the RSAR**

This RSAR was conducted as part of VTrans Highway Safety Improvement Program (HSIP). The locations selected for this HSIP effort were originally identified as high crash locations and subsequently ranked in terms of fatal and injury crash rate.

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 may 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:

Mike Blakslee,	District 4, VTRANS
Erin Lewis,	Traffic Design, VTRANS
Pat McManamon,	DMV, VTRANS
Marcos Miller,	TSMO, VTRANS
Kelsi Record,	Traffic Design, VTRANS
Simon Keeling,	Hartford PD
Tom Lyman,	Hartford PD
Allyn Ricker,	Hartford Highway Department
Rita Seto,	TRORC

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### Information Reviewed

#### Geometry

This intersection is a three-way stop controlled intersection with overhead flashing beacons. The stop sign is on the US 4 approach and controls traffic that is making a left turn onto US 5 northbound. US 4 traffic that is going southbound on US 5 uses a slip lane controlled by a yield sign.

There are two slip lanes on the US 4 approach. One for traffic entering US 4 from US 5 northbound and one for traffic entering US 5 southbound from US 4.

There are two lanes of traffic in each direction on US 5. In addition, US 5 also has a northbound left turn lane. There is also a right turn lane for the traffic to access the westbound US 4 slip lane.

Northbound and southbound traffic on US 5 is divided by raised concrete islands.

South of the intersection, there is a 7.7 percent vertical down grade when traveling towards the intersection and there is also an 8-degree horizontal curve.

Intersection sight distances were roughly measured while conducting the road safety audit to be between 550 and 650 feet in the northbound direction and 750 feet southbound.

The pavement surface on US 5 is rated as poor in the area of the intersection with the year of last work being 1994. The pavement surface is rated as fair on US 4 also with 1994 as being the year of last work. (VTransparency, December 2016).

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### Speed Limit

The posted speed limit on US 5 in the area of the intersection is 40 mph. The range of the 40 mph speed limit is from about just past Airport Road to just past Lantern Lane. The speed limit north of this zone is 35 mph and the speed limit south of this zone is 30 mph.

An 85<sup>th</sup> percentile speed estimate is available from a volume count that was done in May 2016. The count location was at mile point 3.2 on US 5.

From this count, the 85<sup>th</sup> percentile speed of the traffic traveling in the northbound direction on US 5 was determined to be 41 mph (meaning that 85% of the traffic travels at a speed of 41 mph or less). The 85<sup>th</sup> percentile speed of the traffic traveling in the southbound direction on US 5 was estimated to be 43 mph.

The 10-mph pace, which is defined as the range of speeds that encompasses the highest proportion of vehicles, was also determined from this count to be between 30 and 40 mph for northbound traffic and between 35 to 45 mph in the southbound direction.

On US 4, the approach speed limit is 45 mph.

### Traffic Volumes

The 2014 Average Annual Daily Traffic on US 5 was 9000 vehicles per day south of the intersection and it was 8400 vehicles per day west of the intersection. On US 4, west of the intersection, the Average Annual Daily Traffic was 4400 vehicles per day.

The latest 12-hour turning movement count was done in July 2012.

Seventy-two percent of the traffic traveling from either the south or the north on US 5 is continuing through the intersection. From the south, twenty-six percent of the traffic is turning left onto US 4 while twenty-eight percent of the traffic on the north approach is turning right onto US 4.

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From US 4, a slightly higher proportion of the traffic is making a left turn onto US 5 to travel north on US 5. Specifically, fifty-two percent of the motorists are making a left turn onto US 5 north, while forty-seven percent are making a right turn to travel south on US 5.

### Traffic Signs

On all three approaches, the traffic signs consist of the usual typical intersection related signs: junction sign, destination boards, lane assignment sign, advance route markers and route markers at the intersection.

The intersection is controlled with gate posted stop signs that are located on the US 4 approach. There is also a stop ahead sign on US 4. This stop ahead sign is located east of the underpass for I-91.

### Traffic Studies

VTrans Traffic Research Unit completed a signal warrant analysis as well as an all-way stop warrant analysis based on the 2009 edition of the Manual on Unified Traffic Control Devices in December 2016.

These analyses were based on a VTrans 2012 12-hour turning movement count. The morning half of the count (6:00 AM – 12:00 PM) was conducted on June 27, 2012. The afternoon half of the count (12:00 PM – 6:00 PM) was done on June 26, 2012. Seasonal adjustment factors and annual growth factors were applied to estimate 2017 Annual Average Weekday Daily Traffic.

Four intersection configurations were evaluated. The first was with the existing geometry, the second was with the US 4 slip lane removed while the third and fourth was with one lane of travel on US 5 in each direction with and without the US 4 slip lanes.

The results of these evaluations are as follows: With the current number of travel lanes on US 5, if the US 4 EB to US 5 SB slip-lane stays in place and the right turning traffic is not included in the signal warrant analysis, then the intersection does not meet any of the warrants. Similarly,

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none of the warrants are met if the US 4 EB to US 5 SB slip lane is eliminated and the right turning traffic is rerouted through the intersection via a designated right-turn lane.

Signal warrants are also not met if US 5 is reduced to one lane of travel in each direction and the slip ramps remain in place. On the other end, if the US 4 EB to US 5 SB slip lane is eliminated then Warrants 1 and 2 are met.

For the multi-way warrant, only one MUTCD criteria is met (criteria A) and only when the number of lanes on US 5 is changed to one in each direction and that the US 4 to US 5 slip lane is removed.

The table below summarized the results of the signal warrant analysis and the multi-way stop evaluation.

Scenario: Single travel lanes on US 5				Scenario: Dual travel lanes on US 5			
Signal Warrants Met	Multi-Way Stop Criteria Met	Slip Ramp		Signal Warrants Met	Multi-Way Stop Criteria Met	Slip Ramp	
		US4 EB to US5 SB	US5 SB to US4WB			US4 EB to US5 SB	US5 SB to US4WB
none	none	In Place	In Place	none	none	In Place	In Place
none	none	In Place	Removed	none	none	In Place	Removed
1, 2	A	Removed	In Place	none	none	Removed	In Place
1, 2	A	Removed	Removed	none	none	Removed	Removed

### Past Projects

Project CM-RS 0113(52) was for the resurfacing of US 5. This project was completed in 1994.

Project STP 9411(1)S was for the resurfacing of US 4. It was completed in 1994.

In March 2010, VTrans directed the Listen Center (located on the east side of the intersection) to remove their newly entry and exit signs because of traffic concerns that were developing on US 4 and US 5. Under the configuration, traffic was entering from the south US 5 entrance and exiting from the north US 5 exit. One problem was that there was a left turn lane to enter the site from the north and that motorists who were in that left turn lane to enter the site were told by the



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do no enter sign not to enter this way. Another problem was that people who were entering the site from the south access when not able to see clearly northbound traffic due to vehicles waiting in the left turn lane to US 4.

### Future Projects

No upcoming projects were identified in VTransparency or QueryDB.

### Crash History

The crash history was reviewed at the intersection for the five-year period covering the years 2011 to 2015. A total of sixteen crashes occurred at this intersection during this period. Summary of crash narratives are provided at the end of this report along with a collision diagram.

Of these sixteen crashes, eleven of them were property damage only crashes (69%), two were non-incapacitating injury crashes (13%) and three were possible injury crashes (19%).

There is a clear crash pattern at this intersection. Left turn crashes off US 4 represents fifty-six percent of all the crashes at this intersection. For this crash pattern, sixty-six percent involved a US 4 vehicle that collided with a northbound US 5 vehicle and forty-four percent involved a US 4 vehicle and a US 5 southbound vehicle.

The majority of the US 4-to-US 5 northbound left turners at fault indicated that they had not seen the other US 5 vehicle when entering the intersection. In the case of the left turners at fault who were involved in a collision with a vehicle that was traveling southbound on US 5, the reasons for the crash were more varied and included not seeing the other vehicle, seeing the other vehicle and thinking that there was enough time to complete the left turn, and seeing the other vehicle and thinking that this upcoming vehicle was making a right turn.

These left turn crashes of US 4 are happening around noontime or during the afternoon peak hour. More specifically, for the crashes involving a US 5 northbound vehicle, sixty percent took place between 11:00 am and 12:00 pm and forty percent between 4:00 pm and 5:00 pm.

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When a US 5 southbound vehicle is involved, seventy-five percent of the crashes are happening during the afternoon peak hour between 3:00 pm and 5:30 pm.

### Current Local Concerns

A number of comments were made during the commencement meeting:

1. The view to US 5 northbound vehicles for left turners off US 4 looking south on US 5 could potentially be blocked by US 5 motorists that are waiting in the US 5 northbound left turn lane to turn onto US 4.
2. The pole in the grass island on US 4 could block the view of oncoming traffic from the south.



3. Motorists who are making a left turn from US 4 have to cross many lanes.
4. Motorists coming down the hill during winter could be an issue.
5. There is a lot of truck traffic.

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6. It is anticipated that the roundabout at Sykes Avenue, which will be constructed in 2018, will have an effect on the travel speed coming down the hill on US 5.

### Economic Evaluation of Potential Alternatives

A roundabout option, a signal traffic option and a road safety diet option (the elimination of a lane) were evaluated in terms of the safety benefits that they would produce if constructed.

Recent roundabout project bids resulted in an average estimated construction cost of \$1,474,900. Using this figure as a planning cost generates a B/C ratio of 0.42. Since this is well below 1, the safety benefits of doing this project do not exceed the costs. This indicates that the construction of a roundabout is not justifiable in terms of safety at this location.

Assuming a project cost of \$300,000, the B/C ratio for converting the intersection from a stop controlled intersection to a signalized intersection is 0.24. This ratio is below 1 and does not justify from a safety perspective the conversion to a traffic signal.

Road diet, in terms of eliminating a through travel lane on US 5 in each direction, could potentially reduce crashes by twenty-nine percent (CMF 199, all crashes). If \$100,000 project costs are assumed, the B/C ratio obtained is 4.14. This would justify an investment in terms of safety. It was determined that, to obtain a B/C ratio of above 1 at this location, the limiting project costs would have to be no more than \$415,000.

### Identified Safety Concerns

This section lists 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.

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Concern: Occurrence of Right Angle Crashes

The major crash pattern at this intersection are right angle crashes between a vehicle coming off US 4 and a northbound or southbound vehicle on US 5.

A traffic signal or a roundabout are two types of traffic control that would help achieve a reduction in this type of crashes. However, crash severity at this intersection is usually low or crashes have no injuries and the safety benefits of constructing a traffic signal or a roundabout are in turn low and do not support their construction (as the B/C ratios are well below 1).

Travel speeds are perceived to be a factor in the crashes at this intersection as well as visibility and overall geometry.

Safety Enhancements:

Short to Mid Term (interim actions)

Install a temporary radar speed feedback sign on US 5 north of the jug handle (just past it).

Make a request to the Traffic Committee for a reduction in speed limit from 40 mph to 35 mph.

Add backplates to the overhead beacons to make the beacon indications more conspicuous.

Mid Term

Relocate the pole on the grass island of US 4 about seven feet back.

Consider eliminating the left turn movement off US 4 and directing all left turning traffic to the jug handle south of the intersection on US 5.

Longer Term

Review the geometry of US 5 and reduce the number of travel lanes if possible (The current Annual Average Daily Traffic of about 9000 vehicles on US 5 is well below the typical maximum volume thresholds for this type of conversion and its implementation would not affect capacity).

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If the number of lanes is reduced and the US 4 to US 5 slip lane was removed, the intersection could also be converted to an all-way-stop. A study to determine the resulting delay and intersection level of service resulting from this alternative needs to be performed.

Although the overall safety benefits in monetary value would be lower than the construction costs (as explained previously), it would be worthwhile to consider the construction of a roundabout.

### **Summary of Safety Enhancements**

The safety concerns and potential actions that were identified in the previous sections are further summarized in the next table. These potential enhancements will be presented to the respective parties for further consideration.

## Potential Safety Enhancements Summary Table

Safety Concern	Safety Enhancement	Responsibility	Safety Payoff	Time Frame	Cost
Occurrence of Right Angle Crashes (potentially due to Speeding & Geometry)	Install a temporary radar speed feedback sign on US 5 north of the jug handle (just past it)	Town of Hartford	Low (5% reduction)	Short	Low
	Make a request to the Traffic Committee for a reduction in speed limit from 40 mph to 35 mph	Town of Hartford	Mid (10% red PDO, 15% Inj <sup>1</sup> )	Short	Low
	Add backplates to the overhead beacons	VTrans (TSMO work order)	~10% crash reduction <sup>2</sup>	Short-Mid	Low
	Relocate the pole on the grass island of US 4 about seven feet back	VTrans (TSMO work order?)	Mid-High (11% PDO, 48% Inj) reduction <sup>3</sup>	Mid	Mid (Max costs \$560,000 to get B/C =1)
	Consider eliminating the left turn movement off US 4 and directing all left turning traffic to the jug handle south of the intersection on US 5.	VTrans (District)	Mid (20% reduction <sup>4</sup> )	Mid	Low-Mid
	Review the geometry of US 5 and reduce the number of travel lanes	VTrans (AMP)	Mid-High (29% reduction <sup>5</sup> )	Mid-Long	Mid-High
	Consider a Roundabout (although the B/C ratio is below 1)	VTrans (AMP)	Mid-High (39% reduction <sup>6</sup> )	Long	High \$1,474,900, B/C ratio=0.57

<sup>1</sup> CMF # 145 for Injury crashes, #146 for PDO crashes

<sup>2</sup> CMF # 1446, not rated. CMF was for the installation of backplates at traffic signals. May not be applicable to an overhead beacon.

<sup>3</sup> CMF # 307 for Injury crashes, # 308 for PDO crashes

<sup>4</sup> CMF # 351

<sup>5</sup> CMF #199 (this is for conversion from 4 to 2 of an undivided road, CMF may not apply)

<sup>6</sup> CMF #233

# COLLISION DIAGRAM

Key Number =

MUNICIPALITY: <u>Hartford</u>	COUNTY: _____	FILE: <u>hartforUS4US5B</u>
INTERSECTION: <u>US-5</u>		CASE #: _____
PERIOD: <u>5</u> YEARS <u>0</u> MONTHS	FROM <u>1/1/2011</u> TO <u>12/31/2015</u>	BY: _____ DATE: <u>12/29/2016</u>



<p>SYMBOLS</p> <p>→ MOVING VEHICLE</p> <p>↪ TURNING VEHICLE</p> <p>↔ BACKING VEHICLE</p> <p>▭ PARKED VEHICLE</p> <p>999 RECORD NUMBER</p> <p>P PEDESTRIAN</p> <p>B BICYCLIST</p> <p>A ANIMAL</p> <p>▣ FIXED OBJECT</p> <p>■ Fatal</p>	<p>MANNER OF COLLISION</p> <p>↔ REAR END</p> <p>↪ LEFT TURN</p> <p>↪ LEFT TURN</p> <p>→ OVERTAKE</p> <p>⚡ OUT OF CONTROL</p> <p>↔↔ HEAD ON</p> <p>↪↔ RIGHT TURN</p> <p>↪↔ RIGHT TURN</p> <p>↪↔ RIGHT ANGLE</p> <p>↪↔ SIDE SWIPE</p>
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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
1	US 5	3.54	1/20/2011	17:23	Clear	0	0	No Turns- Thru moves only- Broadside ^<	Inj 5 Two vehicle crash with no injuries. The area where the collision took place is at the "t" intersection of the Woodstock Road and North Main Street. There were no disfigurements to the road surface that would have contributed to this crash. The weather at the time of the crash was cold, the ground was wet and approximately 20 degrees with good visibility in all directions. Op #1 advised that she was traveling east on the Woodstock Road and approached the intersection of North Main Street and advised that upon approaching the intersection she came to a full and complete stop at the red flashing light and observed Veh #2 traveling south towards her direction. Op #1 advised that she believed that she had enough time to proceed through the intersection, turn left and begin traveling north on North Main Street. Op #1 advised that she misjudged how fast Veh #2 was approaching and entered the intersection without enough time to avoid a collision with V#2. Op #1 advised that she entered the intersection at approximately 5 miles per hour when Veh #2 traveling south on North Main Street made contact with her vehicle. Passenger of Veh #1 provided the same account of the incident. Op #2 advised he was traveling south on North Main Street and approached the intersection of the Woodstock Road. He advised that he observed Veh #1 approach the intersection and come to a full and complete stop at the red flashing light. Op #1 advised that as he entered the intersection Veh #1 pulled into the intersection and attempted to turn left to proceed north on North Main Street. Op #2 advised that he fully applied his brakes but he was unable to come to a complete stop before making contact with Veh #1. Op #2 advised that he made contact with Veh #1 at approximately 10 miles per hour.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
2	US 5	3.54	3/17/2011	11:56	Clear	0	0	Left Turn and Thru- Same Direction Sideswipe/Angle Crash vv--	Inj 5 Two vehicle crash with no injuries. The area of the crash was in the northbound travel lane of US#5. Woodstock Road (US-4) is controlled by a stop sign as well as a flashing red light. There was no disfigurement to the road surface that would have contributed to the crash. The weather at the time of the crash was daylight, sunny and wet at approximately 43 degrees with good visibility. Op #1 advised she had just pulled out from Woodstock Road and was turning northbound on North Main Street (US-5) and did not see that Veh #2 was traveling northbound in the right lane. Op #1 stated that she pulled into the right lane and heard a loud noise, but did not feel the impact of Veh #2. Op #1 stated that she was traveling approximately 20 to 25 miles per hour when the crash occurred. Op #2 advised that he was traveling north on North Main Street in the right lane and saw Veh #1 pull out onto North Main Street. Op #2 stated that he tried to brake to avoid the collision, but Veh #1 sideswiped his van on the driver's side fender, tire and door. Investigation showed that Veh #2 was traveling northbound on North Main Street in the right lane. Veh #1 pulled out and crossed over the left lane and into the right lane, sideswiping Veh #2. When Veh #1 pulled into lane number 2, Veh #2 struck the passenger side doors and rear quarter panel with the driver side front fender, tire and door in a side swiping motion. This caused damage to the passenger side doors and quarter panel of Veh #1. Veh #2 had damage to the driver's side fender and door.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
3	US 5	3.54	7/7/2011	12:15	Clear	1	0	Left Turn and Thru- Head On ^v--	Inj 4 Two vehicle crash with injury. There was no disfigurement to the road surface that would have contributed to the crash. The weather was clear and sunny, and the road surface was dry and clean. It was approximately 80 degrees with excellent visibility. Officer determined it appeared that Op #1 had failed to yield the right of way and had pulled out in front of Op #2. Op #2 advised that she was heading south on North Main Street when Op #1 pulled out in front of her from the Woodstock Road. She stated, "She just took off. I just couldn't miss her." Op #1 advised that she "saw her car coming, I thought she was going to turn. That is why I pulled out. I thought she had her turn signal on. I took my eye off the car for a second. I really do not know what happened." Investigation revealed that Veh #1 was traveling east on the Woodstock Road and came to a stop at the "t" intersection where it meets North Main Street. After stopping, Op #1 then pulled out into the southbound lane of North Main Street in front of Veh #2. Vehicle #2 was traveling south on North Main Street when Veh #1 pulled out in front of her. Op #1 failed to yield to the oncoming Veh #2 and caused the crash to occur. Veh #1 had damage at the driver side fender, grill and hood from where it impacted Veh #2.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
4	US 5	3.54	8/23/2012	18:42	Clear	1	0	No Turns- Thru moves only- Broadside ^<	Inj 4 At the time of the collision the highway was dry and free from any obstructions. The weather was partly cloudy and warm. Both operators were present, one claiming of a possible injury. Op #1 stated that while making the turn, he did not see the other driver approaching until it was too late. Op #2 stated that he was traveling south on Route 5 when the other driver turned in front of him. A witness to the crash stated that she observed a vehicle stopped at the intersection of North Main street waiting for a vehicle to pass when another vehicle went around the vehicle and turned in front of an oncoming vehicle. The investigation determined that Op #1 had been traveling north on North Main Street while Op #2 had been traveling south on North Main Street. A collision occurred when Op #1 had failed to yield to Veh #2 who had been traveling in the opposite direction. A witness observed Op #1 making the turn into oncoming traffic. As a result of the collision, Op #1 complained of a possible injury. Both vehicles received extensive front end damage and where towed from the scene due to disabling damages.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
5	US 5	3.54	8/24/2012	15:17	Clear	1	0	No Turns- Thru moves only- Broadside ^<	Inj 4 There was no disfigurement to the road surface that would have contributed to this crash. The weather conditions at the time of the crash were sunny and clear, the road surface was dry. It was approximately 74 degrees with good visibility. Op #1 appeared to be uninjured and was standing by his vehicle. Veh #2 appeared to have heavy damage to the front end and some minor damage to the passenger side. Op #2 was conscious and appeared alert was transported to DHMC for injuries. Both vehicles were towed due to damage. A witness stated that while he was waiting to turn right and head south on North Main Street (US#5), he saw Veh #2 approaching and was waiting for them to pass. He also saw Veh #1 stopped at the intersection. Witness stated that Veh #1 then pulled out into the intersection and was struck by Veh #2. Op #1 stated that he was traveling eastbound on Woodstock Rd (US#4) and came to a stop at the intersection. Op #1 stated that he did not see Veh #2 prior to pulling out into the intersection. Op #1 stated that by the time he noticed Veh #2, it was too late to try to avoid the collision. Op #2 stated that she was traveling southbound on North Main Street (US#5) and Veh #1 pulled into the intersection. Op #2 stated that once Veh #1 had entered the intersection there was no time to react and she struck Veh #1. Veh #2 stated that she was traveling approximately 40 MPH at the time of impact. While investigating the crash Op #1 stated that the collision was his fault, as he did not see Veh #2 prior to pulling out into the intersection. Investigation reveals that Op #1 was traveling eastbound on the Woodstock Road (US#4) and had attempted a left turn on to North Main Street (US#5) without yielding right of way.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
6	US 5	3.54	6/19/2013	15:51	Clear	2	0	Same Direction Sideswipe	Inj 3 Two vehicle crash with injuries. Officer observed heavy contact and induced damage to the driver's side door and front quarter panel of Veh #2 and heavy contact and induced damage to the front passenger side door and front quarter panel of Veh #1. Op #1 advised that she was traveling East on US#4, came to a stop at the US#5 intersection and after looking both ways and not seeing any vehicles, she advised that she pulled through the intersection and turned left onto US#5 North. Op #1 advised that she looked in her mirrors as she turned left and did not see anyone in the right most lane of US#5 and at approximately 10 miles per hour began to traverse into the right most lane of US#5 North. Vehicle #1 advised that Veh #2 must have been in her blind spot, and explained that as she traversed into the right lane of US#5 with her blinker activated she sideswiped Veh #2. All occupants (3) of Veh #1 advised that they were not injured. Op #2 advised that he was traveling in the right most lane of US#5 traveling in a northern direction at approximately 35 to 40 miles per hour. Op #2 advised that he observed Veh #1 turn left onto US Route 5 from the US Route 4 intersection. Op #2 advised that Op #1 must not have seen him and began to traverse into his lane and side swiped him, striking his driver's side door with the passenger side of her vehicle pushing him off the roadway and onto the sidewalk. Veh #1 advised that he felt pain in the back and neck area. Witness also advised that Veh #2 was driving extremely fast at approximately 60 miles per hour. Second witness advised that she was standing in the Listen Center parking lot when she observed Veh #1 turn left at the intersection of US#4 and merge North onto US#5. Second witness advised that Veh #2 was traveling at a fast rate of speed traveling in the right lane of US#5 North. Second witness advised that Veh #1 attempted to

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
									<p>merge into the right lane of US#5 and did not see Veh #2 to her right and side swiped the vehicle. Investigation, Veh #1 turned left from US#4 intersection onto the left most northern lane of US#5 traveling at approximately 10 miles per hour. Vehicle #1 than attempted to merge into the right northern lane of US#5 and did not see Veh #2 traveling in the right Northern lane of US#5. Vehicle #1 side swiped Veh #2 striking Veh #2. The impact of this sideswipe caused Veh #2 to be partially pushed off the roadway and on to the eastern shoulder/side walk where Veh #2 came to an uncontrolled rest.</p>

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
7	US 5	3.54	6/24/2013	16:08	Rain	0	0	Left Turn and Thru- Broadside v<--	Inj 5 Two vehicle crash with injuries. Officer observed heavy contact and induced damage to the driver's side door and front quarter panel of Veh #2 and heavy contact and induced damage to the front passenger side door and front quarter panel of Veh #1. O
8	US 5	3.54	10/9/2013	19:59	Clear	1	0	Rear End	Inj 3 Two vehicle crash. There was no disfigurement to the road surface that would have contributed to this crash. The weather conditions at the time of the crash were nighttime and clear, the road surface was dry. It was approximately 50 degrees with reasonable visibility. Officer observed Veh #2 facing West bound, half in the road half on the raise median. The vehicle sustained minor damage to the back bumper, right above the tow hitch. Op #2 had an injured lower back, from a previous incident, but it got aggravated during the crash. Op #2 indicated that he was traveling North on North Main Street and was about to turn left onto Woodstock Road when he observed a vehicle approaching from behind him. Op #2 informed officer that it did not appear to be slowing down and slammed into the back of Veh #2. A witness indicated that he was traveling North on North Main Street and observed Vehicle #2 in the left turn lane, attempting to turn onto Woodstock Road when Vehicle #1 smashed into the back of Veh #2. Witness informed me that Veh #1 then drove off, traveling North on North Main Street in the South bound lane. Op #1 provided a breath sample through the PBT which yielded a result of .000% BAC. Later investigation revealed that Op #1 was having a diabetic reaction. Hartford EMS evaluated Op #1 and indicated that her blood sugar was extremely low, causing her to operate the vehicle in this manner.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
9	US 5	3.54	9/17/2014	11:03	Clear	0	0	Left Turn and Thru- Angle Broadside -->v--	Inj 5 Two car motor vehicle crash. No parties involved were in need of medical attention. The visibility was good and the weather conditions were fair. Op #1 advised that she was attempting to make a left turn from Woodstock Road onto North Main Street when she did not see Veh 2 causing the crash. Vehicle 1 sustained minor damage to the front passenger side fender. Op #2 advised that Veh #1 had cut in front of her crashing into the side of her vehicle. Op #2 further indicated that she had attempted to swerve out of the way of Veh #1 in an attempt to prevent the crash, causing her to hit the curb on the far right side of the roadway, destroying her front passenger side tire. Veh #2 also sustained minor damage to the front driver side fender. Veh #1 was driven from the scene as it did not sustain debilitating damage.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
10	US 5	3.54	7/13/2015	11:22	Clear	0	0	Left Turn and Thru- Same Direction Sideswipe/Angle Crash vv--	Inj 5 Two car motor vehicle crash. Weather was sunny and dry with no wind. The temperature was approximately 84 degrees. The visibility was good. The highway comprised a blacktop layer, which was dry and in good repair. No disfigurement that would have contributed to the collision. There were no obstacles in the road. Op #1 stated that she had turned left from Woodstock Rd onto N Main St and collided with Veh #2. Op #1 stated that she thought Veh 2 had been speeding, since she looked and saw nothing, then pulled out, and collided while making her turn. Op #1 stated that she saw Veh 1 was in lane one on N Main St, headed north and swerved into lane 2. Op #2 stated that she been driving at approximately 40mph, north on N Main St and collided with Vehicle #1. She stated that Veh #1 had turned left out of Woodstock Rd and collided while making a left turn into lane 1 of N Main St. Op #2 stated that she attempted to avoid a collision with Vehicle 1 by swerving to her right, into lane 2. Op #2 was alone in Vehicle 2 and refused medical attention. The Honda had fresh minor damage to the left front and rear doors. The outer door panels exhibited intrusion and the door trim strips were scuffed. There was no intrusion into the left fender or quarter panel. The vehicle did not require towing. The investigation reveals that the vehicles had been moved from the collision scene. There were no visible marks left on the road. The damage on the vehicles is consistent with both parties' accounts. Officer concluded Op #1 is at fault for the collision, in that she failed to yield to oncoming traffic and safely turn left. Veh #2 had the right of way. There is no evidence to support the claim that Vehicle 1 was traveling at an excessive speed.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
11	US 5	3.55	2/2/2011	16:12	Snow	0	0	No Turns- Thru moves only- Broadside ^<	Inj 5 Two vehicle crash. The current weather was snowing and the roads were completely covered with snow. Ops #1 and #2 reported no injuries. Op #1 stated that he was traveling east from US#4 turning left onto North Main Street (US#5) and did not see Veh #2 before striking her with the front of his vehicle. Op #2 stated that she was traveling southbound on North Main Street at less than the posted speed limit of 40 when Veh #1 approached from the intersection of US#4 and struck the passenger side of her vehicle, forcing her car into the snow bank. Witness reported that he was traveling nb on North Main Street (US#5) when he witnessed Veh #1 drive east from the stop sign of US#4 (Woodstock Road) when his vehicle crashed into the passenger side of Veh #2 who was traveling south on North Main Street. The investigation showed that Veh #2 was traveling sb on North Main Street at a safe speed when Veh #1 failed to yield the right of way to Veh #2 as he attempted to drive across the southbound lanes and turn left North onto North Main Street. There was minimal damage to Veh #2 passenger rear door and quarter panel. There was minimal damage to Veh #1 front license plate. Visibility was poor from current snowfall, overcast skies and high snow mounds.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
12	US 5	3.58	5/3/2014	17:25	Clear	0	0	Rear End	Inj 5 Two vehicle crash. No injuries were reported. The weather condition at the time of the crash was overcast and the road surface in this area was dry. It was approximately 55 degrees and good visibility. Op #1 stated that he was traveling south on North Main St (US#5) and followed Vehicle #2 onto the Woodstock Rd on ramp. He stated that he looked to see if the other traffic was going to yield to them, but when he looked back up, he struck Vehicle #2 . Vehicle #2 stated she was traveling south on North Main St (US#5) and entered the Woodstock Rd (US#4) on ramp to head west. Stated that she slowed to a stop to allow the other vehicles in front of her when Vehicle #1 struck her in the rear.
13	US 5	3.59	2/11/2011	11:13	Clear	0	0	Same Direction Sideswipe	Inj 5 Two vehicle crash. The highway was dry and free from any obstructions. The weather was sunny and cold. Both operators were present, claiming no injury as a result of the crash. Op #1 stated that she was traveling north in the right lane. She put on her directional light to change lanes and as she did so she was struck by Veh #2. Op #1 thought that the driver may have been speeding because she did not see Veh #2. Op #2 stated that she was traveling north in the left lane when the other driver changed lanes and struck her. Investigation determined that both drivers were traveling in a northerly direction on North Main Street. As they approached the intersection of the Woodstock Road, a crash occurred between both vehicles when Op #1 attempted to change from the right lane into the left lane which was occupied by Veh #2. As a result of the crash, both vehicles received light damage. The damage to both vehicles was consistent with both operator statements. Op #1 is at fault for this crash for an unsafe lane change.

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<b>Crash Number</b>	<b>Road</b>	<b>Marker</b>	<b>Date</b>	<b>Time</b>	<b>Weather</b>	<b>Injuries</b>	<b>Fatalities</b>	<b>Type</b>	<b>Description</b>
14	US 5	3.59	12/31/2011	5:25	Sleet- Hail (Freezing Rain or Drizzle)	0	0	Single Vehicle Crash	Inj 5 Single vehicle crash. The sky was dark with a light rain. There was visible damage to the front passenger wheel, which was laying sideways on the curve. Op #1 stated that he was traveling east on Woodstock Rd (US Rt4), and stopped at the stop sign. He then turned left onto N.Main Street (US Rt5) and proceeded to travel north bound. The road was ice covered causing the vehicle to continue to slide through the intersection and collide into the east side concrete curb. The investigation showed that Op #1 was attempting to turn north bound from Woodstock Rd onto N.Main Street, when his vehicle slid on ice and collided into the east side curb. Veh #1 sustained moderate damage to the passenger front wheel. The sky was dark, with light rain, and freezing temperature. It was determined that inclement weather was the cause of the crash.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
15	US 5	3.62	11/26/2014	16:30	Snow	0	0	Rear End	<p>Inj 5 Two vehicle crash. The road was covered with approximately 2.5-3.5 inches of snow. The weather conditions at the time of the crash were snowing, with limited visibility. The road surface was slippery, with a layer of snow. It was approximately 31 degrees with limited visibility. Veh #1 (transit bus). All parties refused medical treatment and denied injury. Op #1 stated that he was traveling northbound on North Main Street (US#5) and Vehicle #2 pulled out from the Woodstock Road (US#4) intersection into his lane. Op #1 stated Vehicle #1 was in his lane of travel, and he could not slowdown in time to avoid a collision. Op #1 stated he was traveling approximately 25 mph at the time of the crash. Op #2 stated he was at the intersection of Woodstock Road (US#4) and was entering the eastbound lane on North Main Street (US#5). Op #2 stated he entered the eastbound lane, and was attempting to pull off the road into the parking area to wait for a friend. Op #2 was struck by Vehicle #1 from the rear. There were visible slide marks in the snow showing the direction of travel of Vehicle #2 after it was struck, and how it came to rest. Passenger 1 stated he observed Vehicle #2 pull onto the eastbound lane of North Main Street (US#5) and in front of Vehicle #1. Passenger 2 stated she observed Vehicle #2 turn onto N Main St (US#5) from Woodstock Road (US#4) into the left hand travel lane headed northbound. Passenger 2 stated Vehicle #2 then changed lanes, and entered the right hand travel lane in front of the bus. Investigation reveals that Op #1 was traveling eastbound on North Main Street (US#5) and could not slowdown in time to avoid a collision with Vehicle #2. Op #1 was operating a large, heavy motor vehicle, in slippery conditions with limited visibility due to the heavy snow. Op #1 was traveling northbound on N Main Street (US#5) and changed</p>

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
									<p>lanes in front of Vehicle #2. Op #2 changed lanes with limited visibility under slippery road conditions without making sure the movement could be made safely. Op #1 is at fault for the crash due to his driving of a vehicle on a highway at a speed greater than is reasonable and prudent under the conditions. Op #2 is at fault for the crash due to moving from a lane without ascertaining that the movement can be made with safety.</p>

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
16	US 4	9.29	3/28/2011	9:53	Clear	0	0	Rear End	Inj 5 Two vehicle crash. There were no reported injuries or road blockage. The weather conditions at the time of the crash were clear and sunny, cold, approximately 25 degrees, with good visibility and moderate traffic. Officer observed heavy contact and induced damage to the front driver's side bumper and fender of Veh #1 and heavy contact and induced damage to the rear passenger side bumper and fender of Veh #2. Op #1 advised that he was traveling south on North Main Street and turned onto the Woodstock Road. Op #1 advised that he was traveling at approximately 15 miles per hour as he pulled on to the Woodstock Road and the sun was in his eyes. Op 31 advised that he did not see Veh #2 come to a stop and his front bumper struck Veh #2 in the rear end. Op #2 advised that he was traveling west on the Woodstock Road and that he activated his left blinker to turn left into the Haun Welding Supply parking lot. Op #2 advised that he had to come to a complete stop and wait as there was oncoming traffic traveling east on the Woodstock Road. Op #2 advised that while he was at a complete stop with his foot on the brake he was struck from behind by Veh #1. Officer concluded Op #2 was traveling west on the Woodstock Road and came to a stop intending to make a left turn into the parking lot of Haun Welding Supply. Op #1 had just traversed from North Main Street onto the Woodstock Road at approximately 15 miles per hour. When Op #2 came to a stop to make a left turn, Op #1 struck the rear passenger side of V#2 with his front driver side bumper.

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