

US Route 7 / VT 104A Intersection and VT104A Bridge No. B1 over Arrow head Mountain Lake

In the Town of Georgia, Vermont

Prepared for:

**The Northwest Regional
Planning Commission and
The Town of Georgia**

Prepared by

 ***Vanasse Hangen Brustlin, Inc.***

Table of Contents

1.0	Introduction	1
1.1	US7 / VT104A Intersection	1-2
1.2	Bridge No. 1 over Arrowhead Mountain Lake	1-2
1.3	Local Concerns Meeting	1-3
1.4	Project Purpose and Need	1-3
2.0	Documentation of Existing Conditions	2-1
2.1	Introduction	2-1
2.2	Data Collection	2-1
2.3	US7 / VT104A Intersection	2-1
2.4	Bridge B-1	2-5
3.0	Evaluation of Solution Alternatives	3-1
3.1	Introduction	3-1
3.2	Intersection Alternatives	3-2
3.3	Bridge Alternatives	3-5
4.0	Summary and Recommendations	4-1

Appendices

A –VHB Traffic and Accident Summary Memorandum

B – VTrans Local Concerns Meeting & Public Informational Meeting

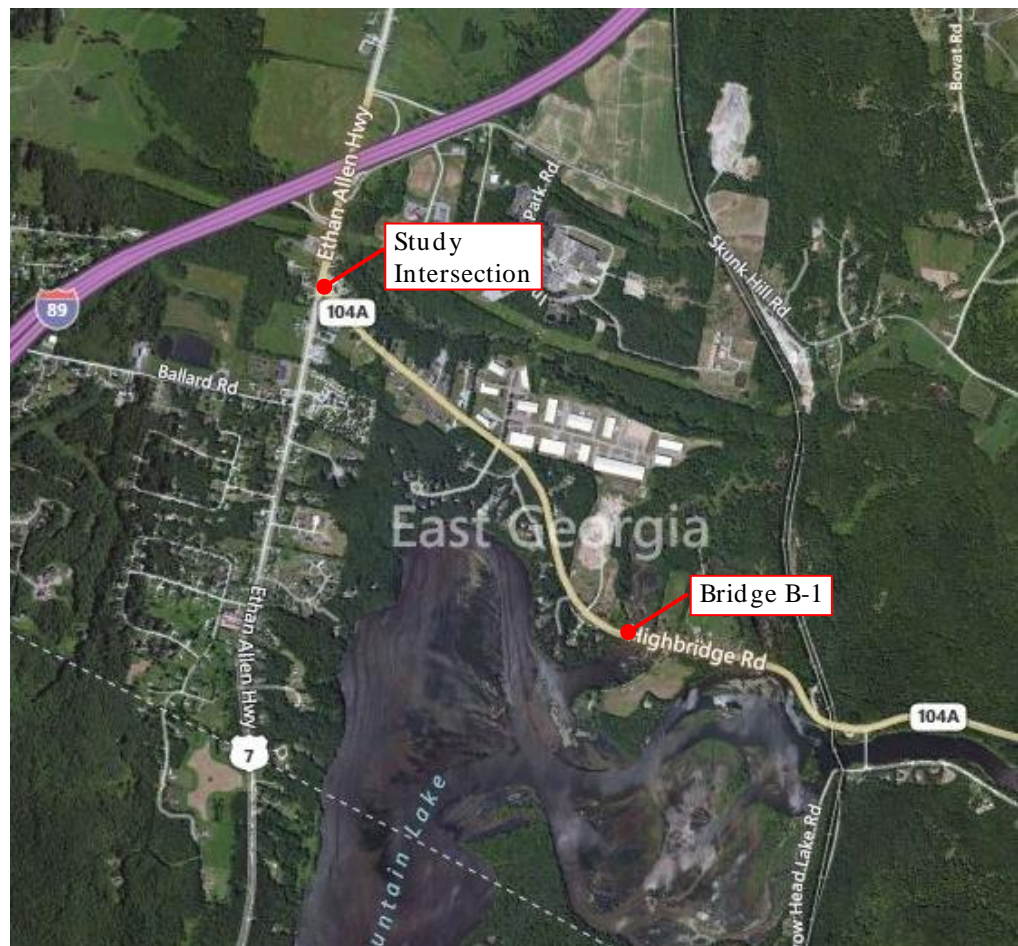
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1

Introduction

The Town of Georgia identified the need for safety and operational improvements at the intersection of US7 and VT104A. They also identified concerns at the VT104A Bridge (Bridge No. B1) over Arrowhead Mountain Lake. This report summarizes the results of a study that was conducted to address these needs with support from the Northwest Regional Planning Commission. This report identifies existing deficiencies and evaluates potential solutions that address the project Purpose and Need.

Each chapter of this report is split into two sections because there are two distinct areas of concern within the study area. The first sections are for the intersection and the second sections are for the bridge. The map below depicts both locations within the study area.



1.1 US7 / VT104A Intersection



The US7 / VT104A intersection is located due south of the Exit 18 - US7 / I-89 interchange. The existing US7 corridor is predominantly two lanes with center turn lanes at intersections and at the interstate ramps. There are currently no traffic signals within the study area and the adjacent land use is predominantly commercial in the vicinity of the subject intersection. VT104A forms a “T” intersection with US7 and is STOP controlled.

1.2 Bridge No. B1 over Arrowhead Mountain Lake



Bridge B-1 carries VT104A across a small stream fed arm of Arrowhead Mountain Lake. VT104A has become a primary commuter route since it provides access to US7 and I-89 from outlying communities. Arrowhead Mountain Lake is fed by the Lamoille River and is dam controlled in Milton.

1.3 Local Concerns Meeting

A Local Concerns Meeting was held at the Georgia Town Office on August 27, 2012 to gather input from local, regional and State officials, as well as concerned citizens. The intent of the meeting was to guide the study team in understanding the concerns and desires of the community relative to the two study locations. It was also a useful data gathering step since many of the public comments were insightful in describing the concerns from the local perspective and regional context.

1.4 Project purpose and Need

The Local Concern Meeting supplemented the study team's project understanding and therefore helped develop the following project Purpose & Need Statement.

US 7 / VT 104A Intersection:

PURPOSE:

The purpose of this project component is to improve mobility and safety for motorists, pedestrians and bicyclists through the US 7 / VT 104A intersection. These improvements should be accomplished within the context of the Community's current and long range vision for the South Village Core that includes changes in adjacent land use, traffic patterns, aesthetics and community character.

NEED:

The project need is largely defined by the following concerns and deficiencies:

Traffic Mobility and Safety:

During peak hours it is often difficult for motorists on VT 104A to find suitable gaps to safely enter US 7. VT 104A and the opposing People's Trust Company bank driveway are Stop controlled, whereas US 7 is uncontrolled through the intersection. This results in extensive peak hour delays on VT 104A, and this contributes to safety concerns when motorist frustration leads to risk taking into 40 MPH US 7 traffic.

The VT 104A approach is not striped for two lanes, however it does function that way since left and right turning vehicles tend to stack side by side at the stop line. Large trucks have difficulty making right turns without using the entire approach width, and this sometimes creates conflicts with cars.

The short cut-through that connects VT 104A to US 7 North is a minor concern because it is unclear to some motorists that it is not intended as a right turn slip ramp, but rather exists to provide access to the two businesses that abut the State right-of-way at the intersection.

Another safety related concern is the relatively high number of active business driveways within close proximity of the intersection. These drives represent potential conflict points as motorists pass through the intersection.

Pedestrian and Bike Accommodations

The only sidewalks within the project limits are on the west side of US 7 and they generally consist of short segments that do not connect. There are no pedestrian crosswalks across either roadway within the project limits. There are no special bike accommodations within the project, although the paved US 7 shoulders are wide enough for bikes.

VT 104A Bridge - B1

PURPOSE:

The purpose of this project component is to address the poor condition and substandard geometry of VT 104A bridge B1 in an environmentally responsible and cost effective manner.

NEED:

The project need is largely defined by the following concerns and deficiencies:

Bridge Condition:

The existing bridge, built in 1937, is in satisfactory condition overall, but there is ongoing deterioration of the deck and rusting of the steel beams. The existing concrete guardrail posts are severely deteriorated and the steel beam guardrail has become detached from the posts in areas and is an immediate safety concern.

Bridge and Roadway Geometry:

The existing bridge is very narrow, with only a 20'-7" curb to curb width and no shoulders or sidewalks. (The current State standard width would be in the range of 30' to 34'.) The bridge often functions as a one-lane bridge since large trucks tend to straddle the centerline, preventing oncoming vehicles from crossing at the same time. It is very intimidating for bikes and pedestrians to cross with motor vehicles due to the narrow width and lack of sidewalks and pedestrian railings.

The bridge approaches are also narrow and environmentally constrained since they are built on fill in the lake. The road width on these causeways is approximately 26'.

Bridge Clearance:

The bottom of the steel bridge beams are only 1' to 2' above the surface of Arrow Head Lake. The VTrans bridge inspections note occasional topping of the road during flood conditions, although this was not corroborated by the community. The Community has mentioned that it is difficult for kayakers to pass under the bridge. A higher bridge profile should be considered in the event the superstructure is replaced.

Documentation of Existing Conditions

2.1 Introduction

Prior to developing solution alternatives it was first necessary to document the existing conditions at the two study locations. This involved data gathering, review of relevant correspondence and previous reports, and field-based observations and measurements. The following section describes the data gathering results.

2.2 Data Collection

The study team's initial data gathering primarily consisted of Geographic Information Systems (GIS) data gathering supplemented by direct field observations and collection of relevant traffic and crash data from VTrans. Environmental fieldwork was performed at a reconnaissance level only. VHB did not delineate wetland boundaries since wetlands were either not present (at the intersection) or were obvious (along the causeway at the bridge).

Physical considerations that were observed included roadside embankments, commercial and residential properties, driveways, sidewalks, signs, drainage culverts and swales, and utility poles. In addition, motorist operations and behavior were closely observed at the intersection and the bridge.

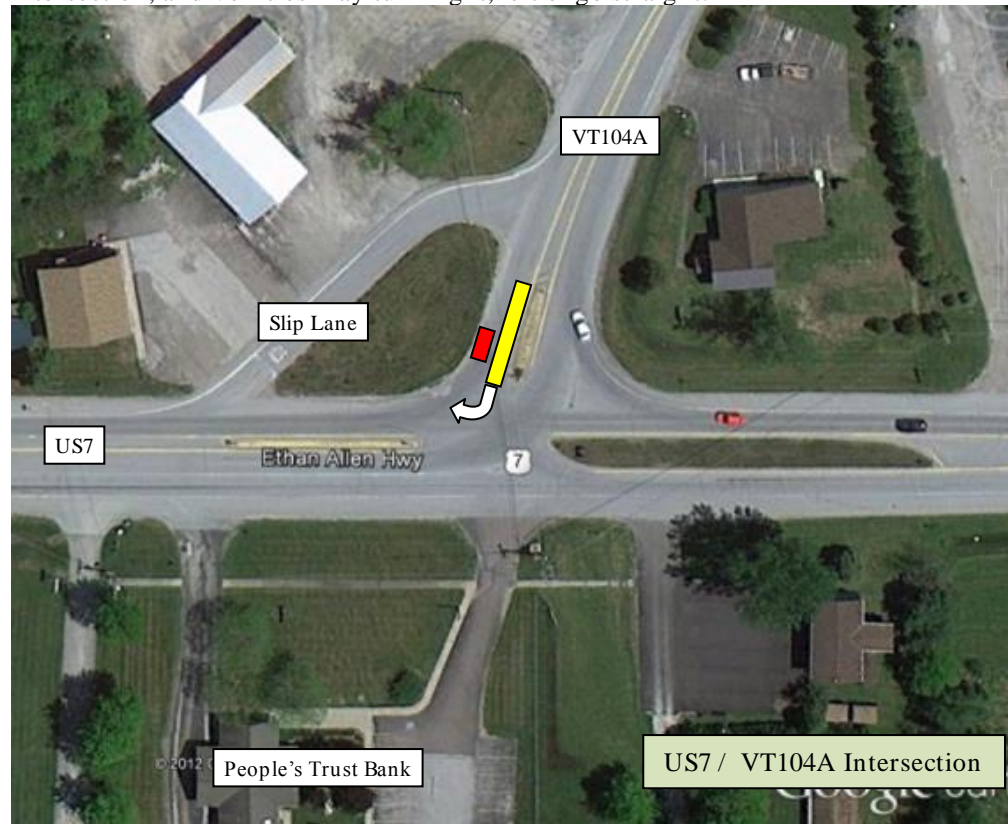
2.3 US7 / VT104A Intersection

Intersection Geometry

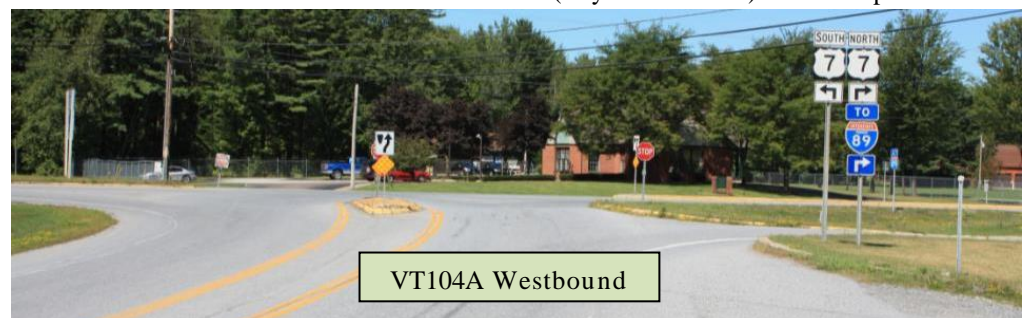
Within the study intersection US7 has 12-foot wide single northbound and southbound through lanes, and a single southbound left turn lane onto VT104A. US7 has 6 to 8-foot paved shoulders and raised center medians within the intersection limits.

VT104A has 11-foot travel lanes and narrow shoulders. The westbound approach intersects US7 at a slight skew, and there is a paved one-way slip lane that connects from VT104A westbound to US7 northbound.

The exit from the People's Trust bank forms a fourth leg of the intersection directly opposite VT104A. This stop controlled approach is one-way eastbound into the intersection, and vehicles may turn right, left or go straight.



It is important to note that the westbound VT104A approach is striped as one lane, however vehicles are frequently observed forming a left and a right (and/ or a through) lane. In addition, right turning trucks are observed starting the right turn from the left side of the approach in an effort to make the right turn without the rear wheels off-tracking into the grass. This is problematic when right turning automobiles move up beside the trucks unaware that the trucks will turn right. This has resulted in crashes since the truck drivers (in yellow above) do not expect the



The VT104A westbound to US7 northbound slip lane is a minor concern because some motorists use it to avoid delays at the stop sign at US7. This slip lane is meant to provide access to the adjacent businesses, but it also introduces some confusion for

motorists uncertain about whether they should be using it to turn right onto US7. The re-entry point at US7 is at a very skewed angle and introduces a second potential point of conflict for vehicles on US7 in less than 100 feet. The below photo also shows that the placement of the exiting guide signs might suggest that motorists should use the slip lane to access US7, which is not the intent.



Traffic Operations

A study of the existing and projected traffic shows that the VT104A and Bank driveway approaches are predicted to operate at Levels of Service (LOS) E in the assumed construction year of 2016, and LOS F in the 2036 design year if no improvements are made. This analysis is consistent with field observations of significant peak hour delays on VT104A. A traffic signal warrant analysis indicates that a traffic signal is warranted at the intersection. A memorandum that summarizes the traffic analysis and crash history in greater detail is included in the appendix.

Traffic safety

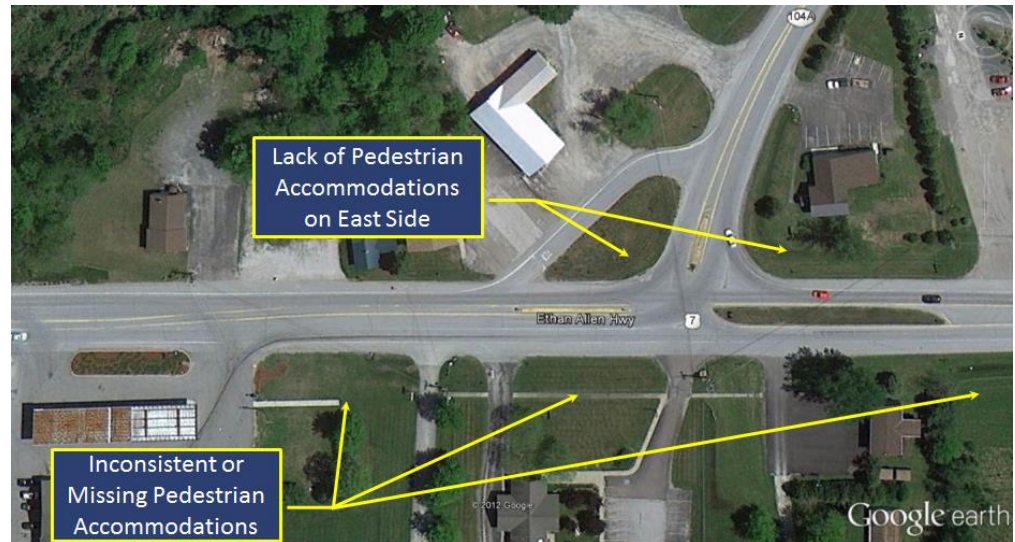
The intersection is not classified as a high crash location based on the crash data that was available from 2007 through 2011. The adjacent US7 segments were classified as high crash locations however. The multiple commercial drives along this corridor are likely contributing factors. Within the intersection congestion and delay on the VT104A approach is a safety concern since motorists are more apt to take chances and fill small gaps in the steady US7 traffic flow when they have been slowly advancing in a long queue to the 104A stop sign.

Use of the one lane westbound VT104A approach as two lanes also introduces safety concerns when right turning trucks occupy the left side of the approach, as previously described. The crash data shows that this does result in crashes, although they are very low speed. The more critical crashes are broadside crashes that result from turning vehicles crossing or entering the US7 traffic since US7 is signed for 40 MPH.

Bike and Pedestrian Accommodations

The intersection currently has minimal accommodations for pedestrians as shown in the figure below. The sidewalks that do exist are on the west side and are not continuous. There are no sidewalks on the east side and there are no crosswalks across US7 or VT104A.

There are no formal bike accommodations within the study intersection, however US7 does have paved shoulders. At the Local Concerns Meeting the public noted that VT107A is not a bike friendly route since it has minimal shoulders and 40-50 MPH speeds. US7 also has relatively high speeds but shoulders are more prevalent. Neither route is a designated bike route.



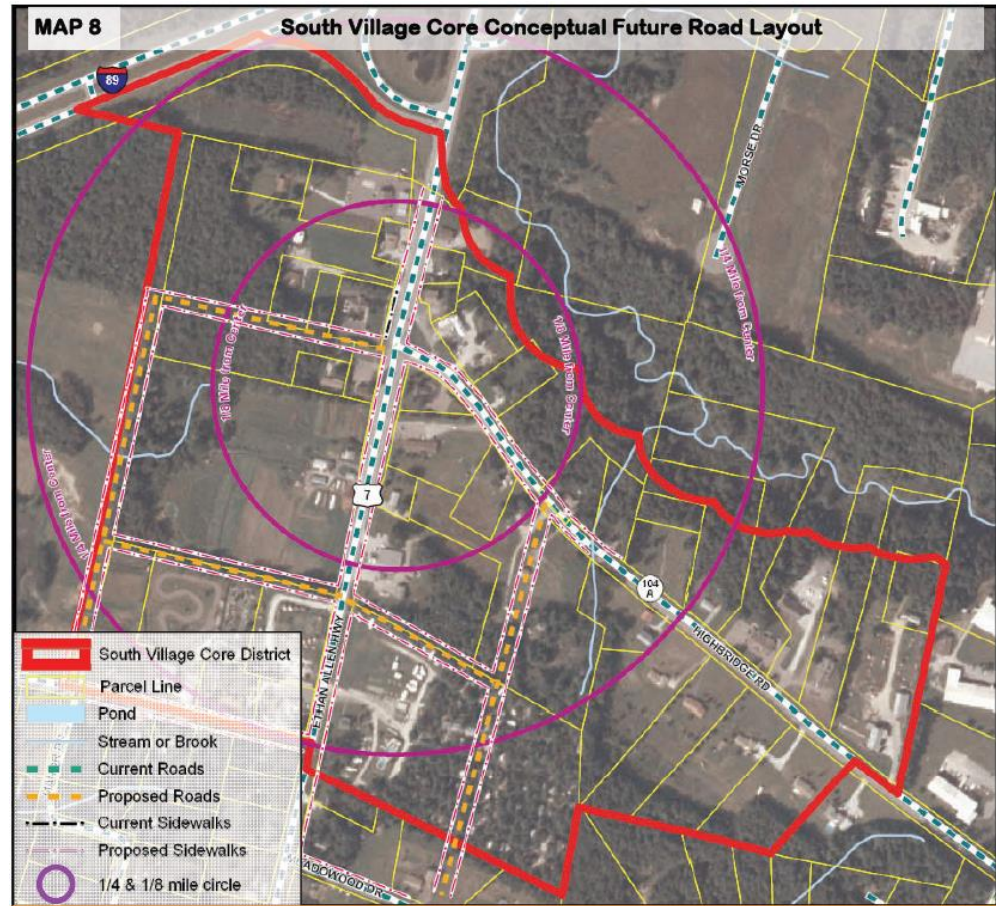
In 2012 RSG, Inc. completed a Georgia South Village Bicycle and pedestrian Feasibility Study for Town of Georgia and the Northwest Regional Planning Commission. That study included a larger study area than this intersection study. It advised that the long term intersection improvements include the following characteristics to be consistent with the overall study recommendations.

- Minimize pedestrian crossing distances,
- Use design elements to enhance motorist yielding behavior to bicyclists and pedestrians,
- Provide marked pedestrian crossings where appropriate,
- Allow for bicycle through and turning movements,
- Allow for future transit circulation,
- Allow for future expansion of an eastbound leg (currently from the bank) into the intersection, and

The final improvements of the above study should accommodate sidewalks and crossings at all four legs of the intersection.

Context

The US7 / VT104A intersection falls within the South Village Core, as discussed in the Town's 2009 *Georgia South Village Core Strategic Plan*. That plan describes a vision for concentrated mixed use development around the southern US7 corridor. It would include a network of connecting roads as shown in the below graphic from the study, and it would include pedestrian amenities and streetscape enhancements. The effect on the US7 / VT104A intersection is that it would provide a new street context that would justify reduced posted speeds and increased bike and pedestrian accommodations. The street network would ideally include a public roadway that would form a fourth leg to the US7 / VT104A intersection. As shown in the graphic, the intersection is a focal point of the South Village Core, so improvements that are proposed should consider the potential long range context as envisioned by the South Village Core Strategic Plan.



2.4 Bridge B-1

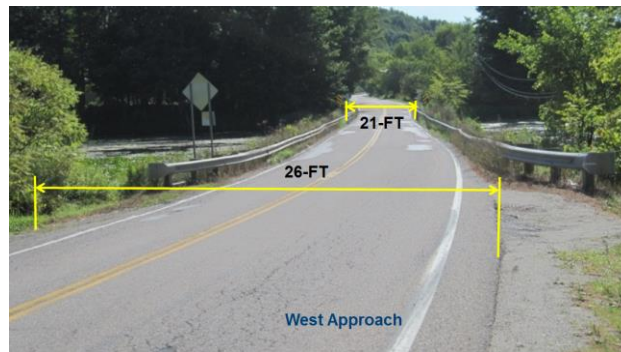
Bridge B-1 is a short and narrow bridge on VT104A that has both structural and functional concerns that warrant consideration. The concerns are documented in general terms in the Purpose and Need Statement, and this section is meant to provide additional detail on the existing conditions.

Bridge Geometry

The existing bridge span is 74 feet and the measured pavement width is approximately 20 feet and 7 inches. This is a severe constraint since the bridge has guardrail on both sides. Large vehicles tend to cross the centerline in order to avoid contact with the guardrail. The pavement widens on either side of the bridge to approximately 26 feet. The bridge approaches are on short causeways formed by filling Arrowhead Mountain Lake. The below aerial photo depicts the bridge site.



The below photos illustrate how the pavement narrows at the bridge. They also shows that both approaches are curved and the bridge is on a small crest vertical curve. Note in the left photo that vegetation is beginning to encroach on sight lines on the inside of curves.



Traffic and Safety

The posted speed through the bridge site is 50 MPH. Lower advisory speeds are posted on specific curves, but the bridge falls within an area where speeds are generally observed in the 50's.

The 2011 Average Annual Daily Traffic was 4300 vehicles per day through the bridge site. Traffic is comprised of approximately 95% passenger vehicles and 5% trucks.

Crash history on the bridge has mostly included sideswipe accidents, one including a school bus and a truck in 2013. The narrow bridge, the high speeds and the deficient guardrail heighten safety concerns above what the crash history suggests.

On June 6, 2013 VTrans organized and completed a road safety audit that included the bridge site. The detailed observations and recommendations are included in the appendix.

Structural Concerns

The latest VTrans bridge rating yielded a Sufficiency Rating of 72 (with a score of 100 being the best). This is not a poor enough rating for the bridge to be considered a priority by VTrans. The supporting steel members appear to be in fair condition; however the guardrail system is in poor condition and the deck appears to have areas of concern. The guardrail is of particular concern since it may not contain an errant vehicle on the narrow bridge. The existing concrete posts are in various stages of disrepair and in some locations the steel beam rails have become detached from the posts. The below photos illustrate some of the areas of concern.





3

Evaluation of Solution Alternatives

3.1 Introduction

The observations from the data collection phase, combined with public input, help shape the types of design solutions that will be possible or necessary to satisfy the project Purpose and Need Statement. This chapter identifies and evaluates conceptual design solutions that could be employed to address the project Purpose and Need.

This study is primarily focused on long term solutions at the intersection and the bridge. Short and mid-term solutions, as described in detail in the VTrans Road Safety Audit Review document are also possible and encouraged.

3.2 Intersection Improvement Alternatives

Alternative 1. No Build

This alternative would not involve construction activities and is included for comparison purposes only since “do nothing” is always an alternative. This alternative would only include continued maintenance.

Advantages:

- Lowest cost
- Zero Impact to resource areas and abutting properties

Disadvantages:

- No safety, operational, or bike and pedestrian benefits
- Does not support the South Village Core Master Plan

Discussion:

This alternative falls well short of satisfying the project Purpose and Need.

Alternative 2. Signalized Intersection

This build alternative would install an actuated traffic signal to control the US7, VT104A and People's Bank Drive approaches. The improvements would include geometric modifications as depicted on the below plan.



Note that this plan would close the slip lane from VT104A to US7. It would also recommend the creation of a circulating driveway at the bank so patrons would enter and exit through the signal. The traffic signal is expected to operate at Level of Service C (Good) in the design year.

Advantages:

- Provides conventional and adjustable traffic control
- Minimal impact to abutting properties and little disruption during construction
- Can accommodate the future South Village Core Master Plan improvements
- Can accommodate the addition of sidewalks and crosswalks at all four corners of the intersection (though not all are shown due to current lack of destinations and continuity)

Disadvantages:

- Does little to calm traffic
- Little opportunity to improve community character

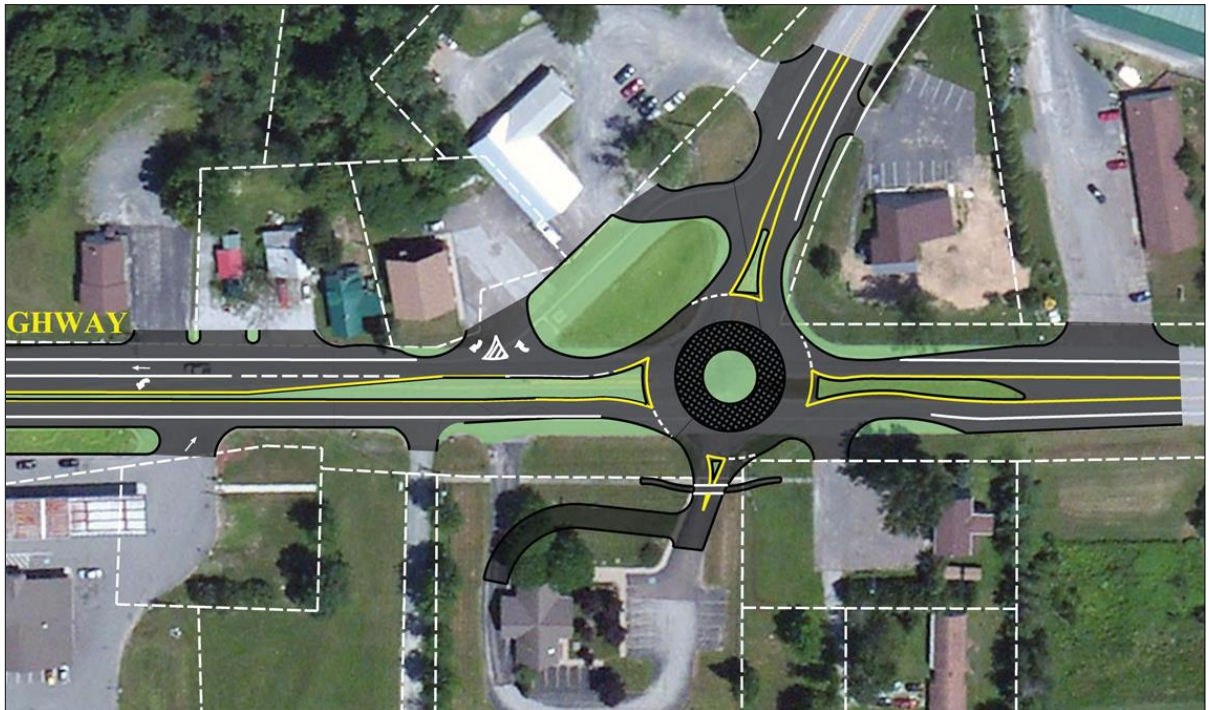
Discussion:

This alternative will satisfy the primary objectives of the project Purpose and Need, which are to improve safety, operations and bike and pedestrian accommodations. It

falls short on serving as an attractive gateway to the future South Village Core however.

Alternative 3. Construct Roundabout

This build alternative would install one-lane modern roundabout to control the US7, VT104A and People's Bank Drive approaches. The improvements would include geometric modifications as depicted on the below plan.



Note that this alternative would also close the slip lane from VT104A to US7. It would also recommend the creation of a circulating driveway at the bank so patrons would enter and exit through the 4th leg of the roundabout. The roundabout is also expected to operate at Level of Service C (Good) in the design year.

Advantages:

- Provides smooth traffic control during all hours
- Minimal impact to abutting properties
- Can accommodate the future South Village Core Master Plan improvements
- Can accommodate the addition of sidewalks and crosswalks at all four corners of the intersection (though not all are shown due to current lack of destinations and continuity)
- Highest safety improvement is expected
- Provides opportunities for aesthetic improvements and gateway/ focal point

Disadvantages:

- Highest initial cost

Discussion:

This alternative will satisfy the primary objectives of the project Purpose and Need, which are to improve safety, operations and bike and pedestrian accommodations. Roundabouts are known to greatly reduce the severity of crashes because the operating speeds are significantly lower than through signalized intersections. Roundabouts also tend to reduce the crash rate since the number of potential conflict points would be reduced. A roundabout at this location may also have a positive safety effect on the adjacent US7 roadway segments that are currently classified as high crash sections. This is due to the overall traffic calming effect compared to the existing free-flow condition as well as the Alternative 2 traffic signal.

The roundabout also provides an opportunity to create an attractive gateway or central focal point that will work well with the future South Village Core. Roundabouts are known to accommodate pedestrians very well and this is compatible with the long-term goal of making the South Village Core more pedestrian friendly.

Intersection Evaluation Matrix:

The below evaluation matrix provides an at-a-glance summary of the three alternatives that are being considered.

	Alternative 1 No Build	Alternative 2 Signalization	Alternative 3 Roundabout
2036 Level of Service	F (Side Streets)	C	C
US 7 Speed Reduction	None	Fair	Good
Expected Crash Reduction	None	Fair	Very Good
Right-of-Way Impacts	None	Minor	Minor
Construction Cost	None	\$ 450,000.	\$ 750,000.
Community Character	No Improvement	Little Improvement	Improved

3.3 Bridge Alternatives

Alternative 1. No Build

This alternative would not involve construction activities and is included for comparison purposes only since “do nothing” is always an alternative. This alternative would only include continued maintenance and perhaps the short term improvements recommended by the VTrans Roadway Safety Audit Review.

Advantages:

- Lowest initial cost
- Zero Impact to resource areas and abutting properties

Disadvantages:

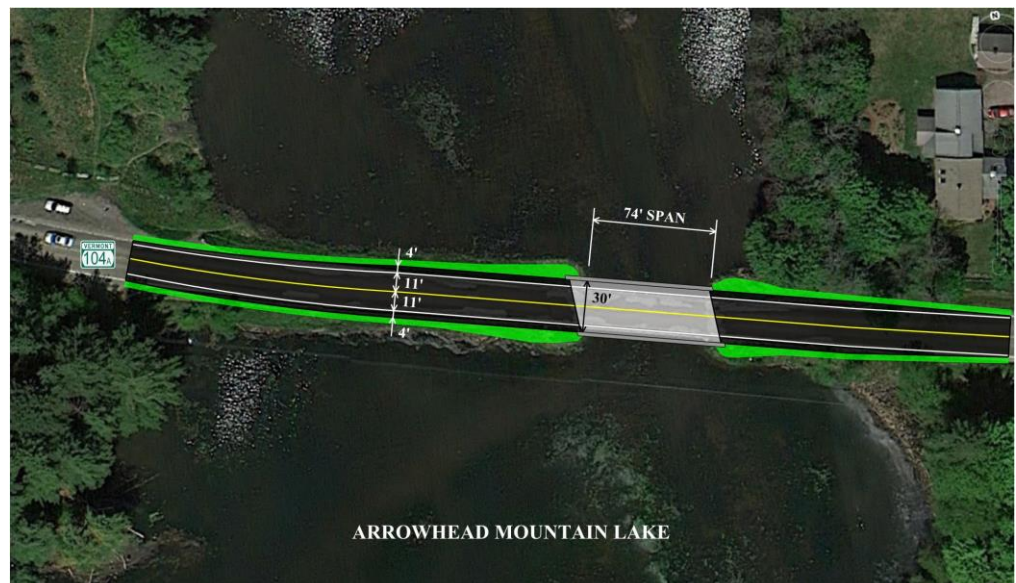
- No safety, operational, or bike and pedestrian benefits
- Continued repair costs

Discussion:

This alternative falls well short of satisfying the project Purpose and Need.

Alternative 2. Widen Bridge and Approaches

This build alternative would increase the bridge and causeway width to 11' lanes and 4' shoulders as per guidance in the Vermont State Standards. The existing bridge span length would be maintained and it is likely that the steel bridge beams would be replaced due to their age. The improvements would include geometric modifications as depicted on the below concept plan.



This alternative would result in lake impacts from the proposed roadway and bridge widening. It may be possible to increase the vertical clearance over the lake if the bridge beams are replaced, but this would generally result in more lake impacts due to the resulting wider fill slopes, and a crest curve at the bridge is not very desirable. Phasing the construction may require a temporary bridge off to one side since the existing bridge is so narrow. Alternating one-way traffic will probably be necessary during construction because of the tight environmental constraints.

Advantages:

- Greatly improved road and bridge width that will accommodate vehicles, bikes and pedestrians
- New deck and railing systems will improve safety and reduce current repair costs
- Only moderate overall costs and lake impacts

Disadvantages:

- Temporary Environmental and traffic impacts during construction

Discussion:

This alternative satisfies the project Purpose and Need. Environmental impacts could be reduced by constructing retaining walls along the causeway, but at great cost. The 4' shoulders could be expanded to 5' to better accommodate bikes and pedestrians on the bridge and causeway.

Alternative 3. Widen and lengthen Bridge

This build alternative would increase the bridge and causeway width to 30 feet as per guidance in the Vermont State Standards. The existing bridge span length would be greatly increased to approximately 350'. The improvements would include geometric modifications as depicted on the below concept plan.



This alternative would result in a reduction in permanent lake bottom impacts because the causeway would be greatly shortened. It may be possible to increase the vertical clearance over the lake under this design. Phasing the construction may require an alignment shift and/ or over widening the bridge to maintain at least one lane of traffic at all times during construction.



Advantages:

- Greatly improved road and bridge width that will accommodate vehicles, bikes and pedestrians
- New deck and railing systems will improve safety and reduce current repair costs
- Reduced permanent lake bottom impacts

Disadvantages:

- High initial cost
- Greater long term maintenance cost due to the large amount of bridge structure over water

Discussion:

This alternative satisfies the project Purpose and Need. Environmental impacts would be reduced by removing the causeway and replacing it with bridge spans, but with great initial and long term costs.

Bridge Evaluation Matrix:

The evaluation matrix on the next page provides an at-a-glance summary of the three alternatives that are being considered. It should be noted that a moderate span bridge option, one that would have a span somewhere in between the short and long spans of Alternatives 2 and 3 is another potentially viable solution. The advantage might be that the lake bottom impacts due to wider causeway fills could be compensated for by lengthening the bridge and removing an equal amount of causeway.

	Alternative 1 No Build	Alternative 2 Widen Existing Bridge	Alternative 3 Widen Bridge and Span Causeway
Bridge Width	21'	30'	30'
Bridge Length	74'	74'	350'
Improved Clearance	No	No	Possible
Lake Impacts	None	Yes	Reduced
Satisfies Purpose & Need	No	Yes	Yes
Construction Cost	None	\$1,600,000	\$ 5,000,000

Summary and Recommendations

This intersection and bridge improvement alternatives considered as part of this study were presented to the public and the overwhelming feedback was that the existing needs and deficiencies need to be addressed soon, and the solutions that are selected are almost secondary because of the pressing needs. The long term solution alternatives described in this study are not currently funded and are not on State priority lists. The Northwest Regional Planning Commission transportation advisory committee is therefore hoping to add the bridge project as a critical need, recently ranking it first in the region due to safety concerns.

In the interim, the near and mid-term recommendations from the VTrans Road Safety Audit Review should be implemented to the extent possible. Those improvements include low cost improvements such as enhanced signing and pavement markings as well as minor geometric modifications, such as rounding the northeast corner at the US7/ VT104A intersection to allow trucks to turn right easier from the right side of the westbound approach.

Intersection Recommendations

The Alternative 3 – Roundabout solution is recommended as the long term intersection improvement alternative. This is primarily because of its traffic calming attributes, its superior safety enhancements and its comparable traffic operations when compared to the Traffic Signal alternative. The roundabout also provides better streetscape and gateway opportunities, and it would be most compatible with the Georgia South Village Strategic Plan.

Bridge Recommendations

The Alternative 2 – Widen Bridge and Causeway alternative is the recommended bridge improvement alternative. This is primarily because it addresses the primary deficiency, which is the bridge and causeway width, while maintaining the existing span length and therefore controlling costs.

Both of these alternatives are influenced by their local and regional context. The intersection falls within a designated future village core, and the bridge is located on an important route that is expected to experience continued growth in traffic due to commuter patterns and development trends in outlying communities. The solutions should therefore be responsive to the changes that are forecast.

This feasibility study provides the tools for the community to take additional steps toward implementing the preferred solutions. Cost estimates, resource impacts and property needs will be identified in greater detail in subsequent project development phases. This study is intended to lay the foundation for those next steps.

Appendix

A - Traffic and Accident Summary Memorandum



Vanasse Hangen Brustlin, Inc.

Six Bedford Farms Drive, Suite 607
Bedford, New Hampshire 03110-6532
603 644-0888
FAX 603 644-2385

Memorandum

To:

Date: September 24, 2012

Project No.: 57512.00

From: Nick Sanders, P.E.
Senior Project Engineer

Re: Existing Traffic and Crash Summary
Memorandum

Vanasse Hangen Brustlin, Inc. (VHB) has completed an existing conditions evaluation for the US Route 7 / VT Route 104A intersection feasibility study in Georgia, VT. This memorandum includes the following:

- A description of the existing roadway network in the vicinity project intersection;
- A summary of the crash data at the project intersection;
- A description of the traffic volume network development; and
- An evaluation of traffic operations at the project intersection.

EXISTING CONDITIONS

US Route 7 (Ethan Allen Highway) provides north-south travel through the western portion of Vermont. Locally, US Route 7 is a residential and commercial corridor that connects the Town of Georgia with St. Albans to the north and points in Chittenden County to the south. Within the project area US Route 7 is a two lane roadway with (one travel lane in each direction) with a posted speed limit of 40 miles per hour.

VT Route 104A (Highbridge Road) provides an east-west link between I-89/ US Route 7 in Georgia with VT Route 104/ VT Route 128 in Fairfax. VT Route 104A is primarily used as a commuter route. Near the intersection of US Route 7, VT Route 104A is a two lane roadway (one travel lane in each direction) with a posted speed limit of 40 miles per hour.

VT Route 104A and the exit only driveway from the People's Trust Company (bank) intersect US Route 7 from the east and west respectively to form a four-way unsignalized intersection. Although there is no striping on the VT Route 104A approach, this westbound approach does operate as two lane approach (separate left and right turn lanes). The bank exit only driveway provides a single left/ through/ right lane. US Route 7 provides a single shared through/ right lane from the south and a left-turn lane and a through lane from the north. VT Route 104A and the bank driveway operate under stop control while US Route 7 has the right of way. A one-way access road bisects the northeastern corner of the intersection providing access and egress to two businesses (Movement Center (dance) and Interstate Auto Service.

Turning movement traffic counts conducted by VTrans on August 4 and 5, 2008 at the project intersection of US Route 7 at VT Route 104A during the weekday morning and evening peak periods were used as the basis for this evaluation. Copies of the traffic volume count data are provided in the Appendix.

CRASH SUMMARY

Crash data provided by VTrans were reviewed and evaluated for the project intersection of US Route 7 and VT Route 104A. The detailed crash data covers the period from January 1, 2007 through December 31, 2011.

The intersection of US Route 7 and VT Route 104A experienced 14 crashes over the five-year period for an average of just under 3 crashes per year. Of these 14 crashes, 7 (50 percent) were same direction sideswipe crashes, 2 (14 percent) were rear end crashes, 2 (14 percent) were left-turn broadside crashes, 1 (7 percent) was a left-turn head on crash, 1 was a through movement broadside crash, and 1 was an unidentified or unknown crash. There were 4 crashes that resulted in personal injury and no fatal crashes reported during this five-year period.

This evaluation determined that the project intersection is not a High Crash Location (HCL) intersection as the actual/ critical crash ratios for the intersection was less than 1.00. Additionally, the HCL listings on VTrans website (2006 to 2010) by intersection and section were reviewed for completeness. This data confirmed that the project intersection is not a HCL intersection, but that the section of US Route 7 adjacent to VT Route 104A (mile marker 1.046 – 1.346) is classified as a HCL section. A detailed summary table of the crash data including crash rates and determination of HCL is included in the Appendix.

TRAFFIC NETWORKS

The weekday morning and evening peak periods were selected as the critical hours for analysis purposes. The 2008 peak hour traffic volumes counts were projected to the opening year (2016) and the future design year (2036) for evaluation purposes.

Since it is impractical to design for the highest volume encountered during the year, VTrans guidelines recommend a compromise between capacity and cost. Design Hourly Volume (DHV) criteria allow roads to be designed for the 30th highest hourly volume of the year. Historical data from VTrans traffic count station on US Route 7 in Georgia (P6F029 - located 1.7 miles north of I-89) was reviewed to establish an appropriate DHV condition. The majority of the top 30 highest hours occurred during the weekday evening peak hour; indicating that a weekday evening DHV condition is appropriate. The weekday morning peak hour was adjusted to reflect a peak month condition. The following DHV and seasonal adjustments were made to the raw turning movement counts:

- A 1.07 DHV adjustment was applied to the August 2008 weekday evening data; and
- A 1.30 peak month adjustment was applied to the August 2008 weekday morning data.

Detailed calculations for the weekday evening DHV adjustment and the weekday morning peak month adjustment are provided in the Appendix.

Traffic growth is a function of expected land development in the region. To predict a rate at which traffic can be expected to grow during the forecast period, historical traffic growth and planned area developments were examined. The regression analysis for the urban highway group conducted by VTrans suggests that regional traffic growth will be flat (no growth). However a review of the closest continuous traffic count station in Georgia (P6F029) revealed that volumes will grow at about 0.4 percent per year over the next twenty years. Conversations with the Northwest Regional Planning Commission did not reveal any specific developments in the immediate vicinity of the site that would impact traffic projections. However, it the Planning Commission noted that traffic growth would likely be higher than the 0.4 percent (annually) indicated by the VTrans regression analysis because of expected continued growth in the nearby town of Fairfax and the change in zoning of the Georgia South Village District to high density. Therefore, it was concluded that an average annual growth rate of 1.0 percent would provide a conservative assessment of traffic growth in the region and account for any other nearby development projects that may occur. VTrans regression analysis is provided in the Appendix.

The 2016 and 2036 traffic volumes were developed by applying the average annual growth rate of 1.0 percent per year to the 2008 DHV/ seasonally adjusted peak hour traffic volumes. The 2016 and 2036 weekday evening DHV and weekday morning peak hour traffic volumes networks are provided in the Appendix.

TRAFFIC ANALYSES

Levels of service (LOS) were calculated based on the criteria published in the 2000 Highway Capacity Manual¹. Level of service is the term that defines the conditions that may occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing the best operating conditions and LOS F representing the worst. Copies of the level of service calculations have been provided in the Appendix.

Intersection capacity analyses were performed for the 2016 opening year, the 2036 No Build, and 2036 Build alternatives during the weekday morning peak hour condition and the weekday evening DHV condition. The results of the analysis indicate that the minor street approaches of Route 104A and the bank driveway operate at a LOS E and F respectively in the 2016 opening year No Build condition. Without any improvements these minor street approaches are expected to operate at a LOS F with long delays in the 2036 future year condition. A review peak hour warrant (Warrant 3) from the 2009 Edition of the Manual on Uniform Traffic Control Devices indicates that a signal is warranted in both the opening year and the future year conditions. With a traffic signal and additional turn lanes (northbound left-turn lane and separate westbound left and right-turn lanes) this intersection is expected to operate at a LOS C or better through the future year of 2036. Additionally, a single lane roundabout was evaluated, which is expected to operate acceptably through the future year with an overall LOS C. Unsignalized, signalized, and roundabout capacity analysis are provided in the appendix.

¹ Highway Capacity Manual, Federal Highway Administration, Transportation Research Board, 2000.



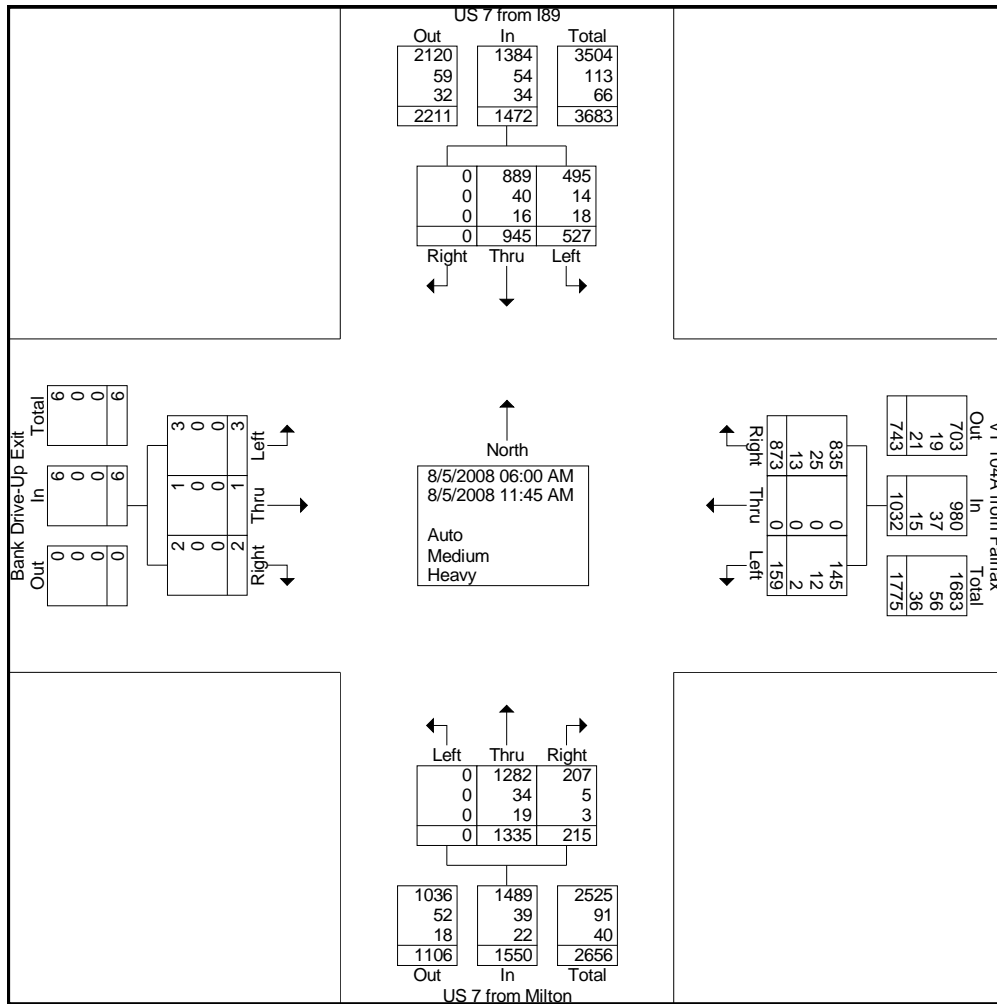
Counter: T1199
 Counted By: C Smith
 Weather: Sunny
 Town: 7-31 Georgia

File Name : 7-31am08
 Site Code : 30608705
 Start Date : 8/5/2008
 Page No : 1

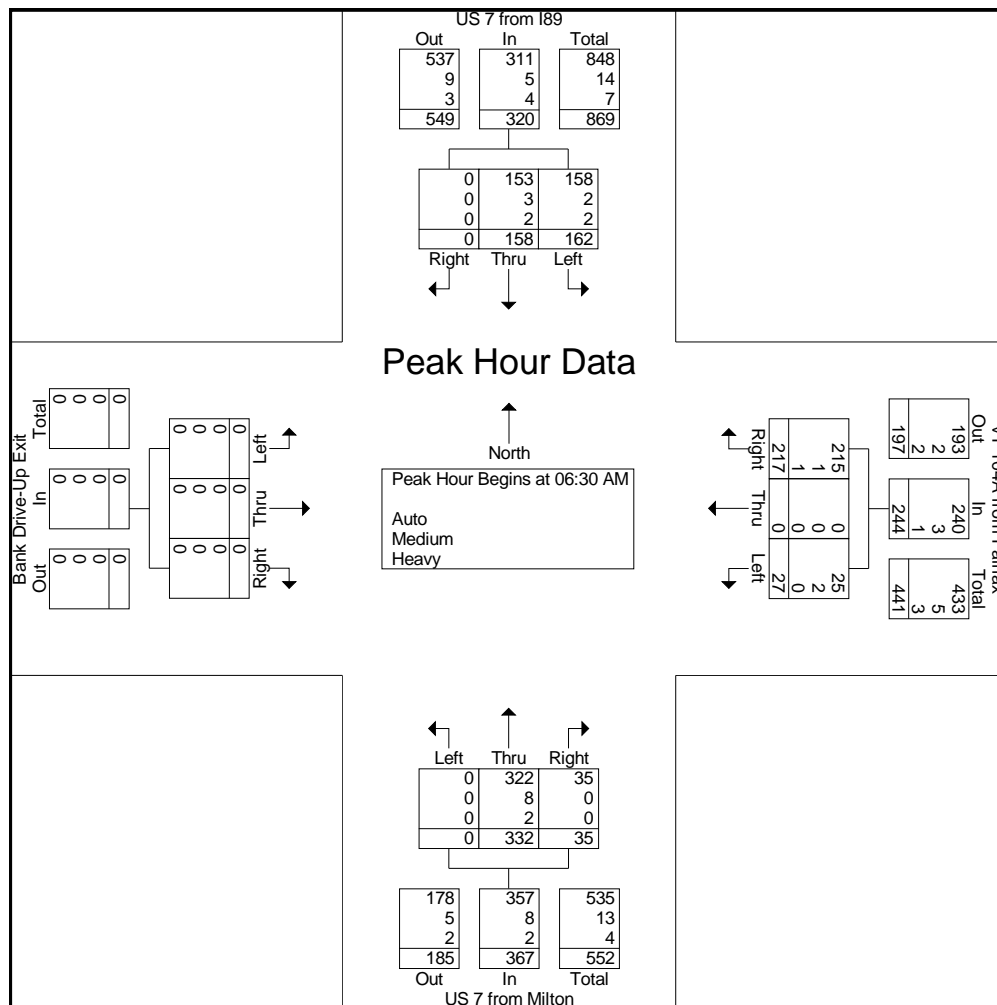
US 7 & VT 104A

Groups Printed- Auto - Medium - Heavy

	US 7 from I89 From North			VT 104A from Fairfax From East			US 7 from Milton From South			Bank Drive-Up Exit From West			Int. Total
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
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	0	36	16	30	0	2	8	50	0	0	0	0	142
06:15 AM	0	32	28	47	0	6	3	76	0	0	0	0	192
06:30 AM	0	32	62	43	0	5	9	67	0	0	0	0	218
06:45 AM	0	44	60	45	0	5	13	79	0	0	0	0	246
Total	0	144	166	165	0	18	33	272	0	0	0	0	798
07:00 AM	0	33	17	64	0	9	4	92	0	0	0	0	219
07:15 AM	0	49	23	65	0	8	9	94	0	0	0	0	248
07:30 AM	0	37	30	64	0	7	6	73	0	0	0	0	217
07:45 AM	0	26	33	62	0	5	6	53	0	0	0	0	185
Total	0	145	103	255	0	29	25	312	0	0	0	0	869
08:00 AM	0	42	16	45	0	6	11	73	0	0	0	0	193
08:15 AM	0	40	20	33	0	10	9	59	0	0	0	0	171
08:30 AM	0	45	10	48	0	2	6	55	0	0	0	0	166
08:45 AM	0	33	17	41	0	9	9	32	0	0	0	0	141
Total	0	160	63	167	0	27	35	219	0	0	0	0	671
09:00 AM	0	38	15	25	0	12	14	51	0	0	0	0	155
09:15 AM	0	33	12	29	0	3	8	41	0	0	0	0	126
09:30 AM	0	26	13	23	0	11	3	55	0	0	0	0	131
09:45 AM	0	43	12	24	0	4	10	38	0	0	0	0	131
Total	0	140	52	101	0	30	35	185	0	0	0	0	543
10:00 AM	0	35	16	26	0	4	9	47	0	0	0	0	137
10:15 AM	0	43	14	24	0	4	11	45	0	0	0	0	141
10:30 AM	0	36	18	24	0	9	6	37	0	0	0	0	130
10:45 AM	0	54	22	15	0	6	14	47	0	0	0	0	158
Total	0	168	70	89	0	23	40	176	0	0	0	0	566
11:00 AM	0	46	16	30	0	9	8	62	0	2	0	1	174
11:15 AM	0	46	22	20	0	10	8	46	0	0	0	0	152
11:30 AM	0	49	14	22	0	7	14	32	0	0	0	2	140
11:45 AM	0	47	21	24	0	6	17	31	0	0	1	0	147
Total	0	188	73	96	0	32	47	171	0	2	1	3	613
Grand Total	0	945	527	873	0	159	215	1335	0	2	1	3	4060
Apprch %	0	64.2	35.8	84.6	0	15.4	13.9	86.1	0	33.3	16.7	50	
Total %	0	23.3	13	21.5	0	3.9	5.3	32.9	0	0	0	0.1	
Auto	0	889	495	835	0	145	207	1282	0	2	1	3	3859
% Auto	0	94.1	93.9	95.6	0	91.2	96.3	96	0	100	100	100	95
Medium	0	40	14	25	0	12	5	34	0	0	0	0	130
% Medium	0	4.2	2.7	2.9	0	7.5	2.3	2.5	0	0	0	0	3.2
Heavy	0	16	18	13	0	2	3	19	0	0	0	0	71
% Heavy	0	1.7	3.4	1.5	0	1.3	1.4	1.4	0	0	0	0	1.7



	US 7 from I89 From North				VT 104A from Fairfax From East				US 7 from Milton From South				Bank Drive-Up Exit 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 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:30 AM																	
06:30 AM	0	32	62	94	43	0	5	48	9	67	0	76	0	0	0	0	218
06:45 AM	0	44	60	104	45	0	5	50	13	79	0	92	0	0	0	0	246
07:00 AM	0	33	17	50	64	0	9	73	4	92	0	96	0	0	0	0	219
07:15 AM	0	49	23	72	65	0	8	73	9	94	0	103	0	0	0	0	248
Total Volume	0	158	162	320	217	0	27	244	35	332	0	367	0	0	0	0	931
% App. Total	0	49.4	50.6		88.9	0	11.1		9.5	90.5	0		0	0	0		
PHF	.000	.806	.653	.769	.835	.000	.750	.836	.673	.883	.000	.891	.000	.000	.000	.000	.939
Auto	0	153	158	311	215	0	25	240	35	322	0	357	0	0	0	0	908
% Auto	0	96.8	97.5	97.2	99.1	0	92.6	98.4	100	97.0	0	97.3	0	0	0	0	97.5
Medium	0	3	2	5	1	0	2	3	0	8	0	8	0	0	0	0	16
% Medium	0	1.9	1.2	1.6	0.5	0	7.4	1.2	0	2.4	0	2.2	0	0	0	0	1.7
Heavy	0	2	2	4	1	0	0	1	0	2	0	2	0	0	0	0	7
% Heavy	0	1.3	1.2	1.3	0.5	0	0	0.4	0	0.6	0	0.5	0	0	0	0	0.8





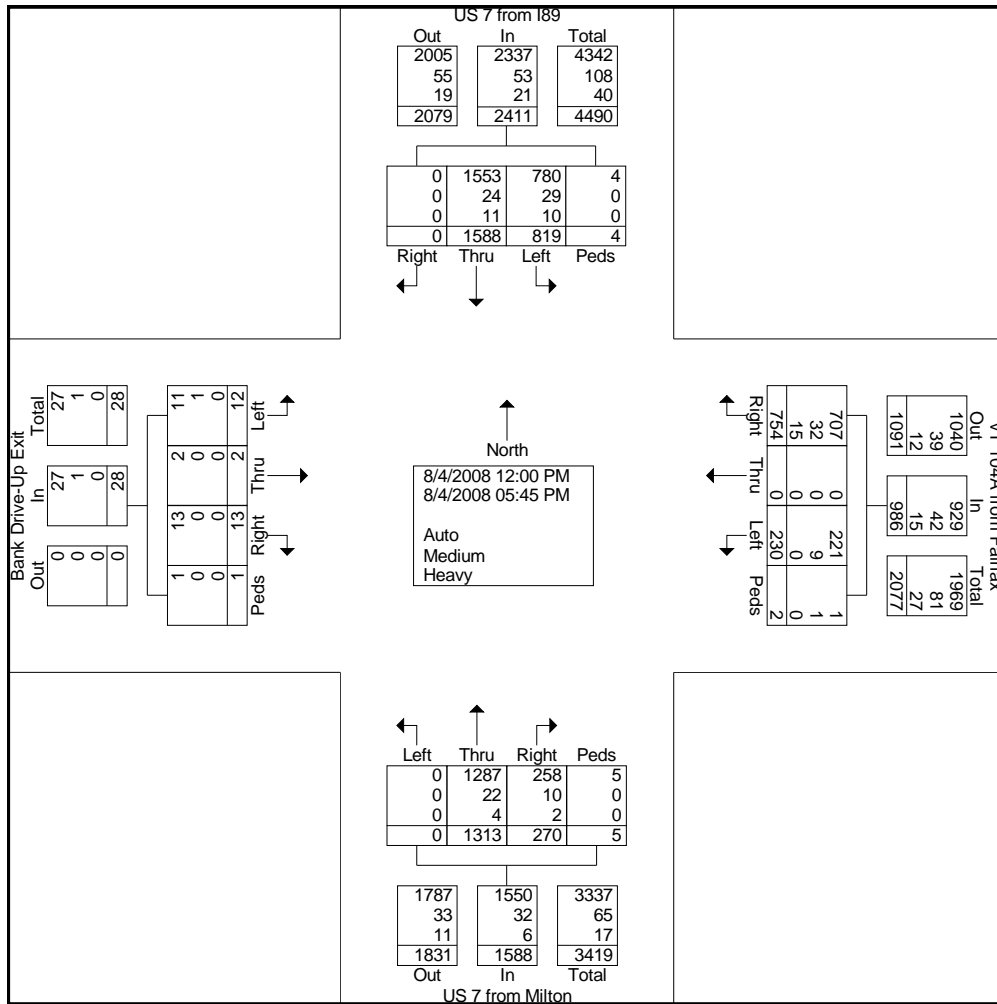
Counter: T1199
 Counted By: C Smith
 Weather: Sunny
 Town: 7-31 Georgia

File Name : 7-31pm08
 Site Code : 30608705
 Start Date : 8/4/2008
 Page No : 1

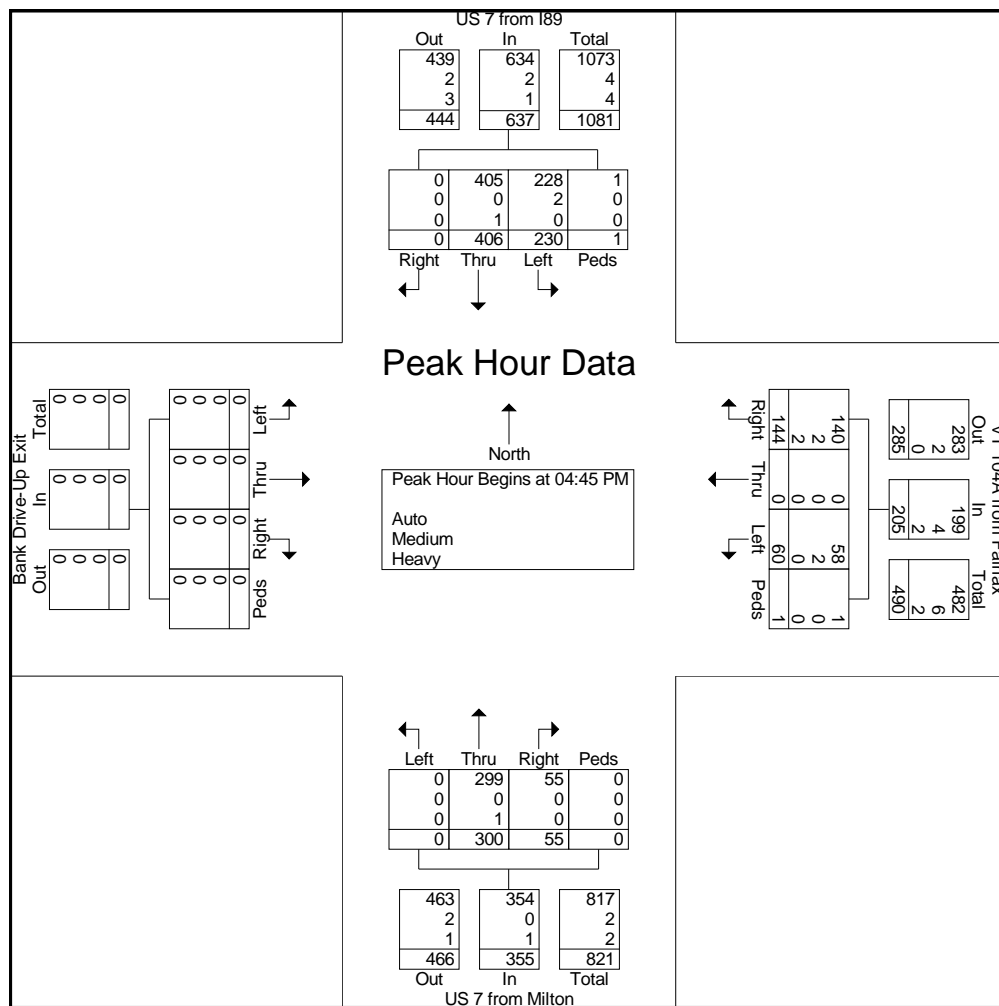
US 7 & VT 104A

Groups Printed- Auto - Medium - Heavy

	US 7 from I89 From North				VT 104A from Fairfax From East				US 7 from Milton From South				Bank Drive-Up Exit From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	1.0	1.0	1.0	1.0	
12:00 PM	0	54	16	1	24	0	10	0	27	48	0	2	0	0	0	0	182
12:15 PM	0	46	13	0	39	0	11	0	13	40	0	1	0	0	0	0	163
12:30 PM	0	44	24	0	23	0	6	0	19	52	0	1	0	0	0	0	169
12:45 PM	0	46	20	0	16	0	11	0	6	55	0	0	0	0	0	0	154
Total	0	190	73	1	102	0	38	0	65	195	0	4	0	0	0	0	668
01:00 PM	0	45	7	0	25	0	7	0	9	62	0	0	1	1	2	0	159
01:15 PM	0	36	25	0	26	0	7	1	5	38	0	0	0	0	1	0	139
01:30 PM	0	37	23	0	23	0	2	0	9	46	0	0	0	0	0	0	140
01:45 PM	0	42	24	0	32	0	6	0	10	42	0	0	0	1	0	0	157
Total	0	160	79	0	106	0	22	1	33	188	0	0	1	2	3	0	595
02:00 PM	0	44	28	1	25	0	6	0	11	44	0	0	1	0	3	0	163
02:15 PM	0	43	31	0	32	0	12	0	4	51	0	0	4	0	2	0	179
02:30 PM	0	47	28	0	23	0	6	0	7	61	0	0	4	0	3	0	179
02:45 PM	0	69	25	1	27	0	4	0	7	36	0	0	2	0	1	0	172
Total	0	203	112	2	107	0	28	0	29	192	0	0	11	0	9	0	693
03:00 PM	0	73	33	0	45	0	6	0	5	55	0	0	0	0	0	1	218
03:15 PM	0	78	26	0	55	0	15	0	10	58	0	0	1	0	0	0	243
03:30 PM	0	70	38	0	37	0	7	0	9	53	0	0	0	0	0	0	214
03:45 PM	0	63	53	0	26	0	4	0	7	51	0	0	0	0	0	0	204
Total	0	284	150	0	163	0	32	0	31	217	0	0	1	0	0	1	879
04:00 PM	0	66	28	0	30	0	11	0	5	39	0	0	0	0	0	0	179
04:15 PM	0	91	47	0	32	0	13	0	13	57	0	0	0	0	0	0	253
04:30 PM	0	105	55	0	33	0	15	0	25	63	0	0	0	0	0	0	296
04:45 PM	0	116	58	1	30	0	19	0	8	73	0	0	0	0	0	0	305
Total	0	378	188	1	125	0	58	0	51	232	0	0	0	0	0	0	1033
05:00 PM	0	89	51	0	39	0	16	0	15	77	0	0	0	0	0	0	287
05:15 PM	0	98	61	0	27	0	14	0	18	80	0	0	0	0	0	0	298
05:30 PM	0	103	60	0	48	0	11	1	14	70	0	0	0	0	0	0	307
05:45 PM	0	83	45	0	37	0	11	0	14	62	0	1	0	0	0	0	253
Total	0	373	217	0	151	0	52	1	61	289	0	1	0	0	0	0	1145
Grand Total	0	1588	819	4	754	0	230	2	270	1313	0	5	13	2	12	1	5013
Apprch %	0	65.9	34	0.2	76.5	0	23.3	0.2	17	82.7	0	0.3	46.4	7.1	42.9	3.6	
Total %	0	31.7	16.3	0.1	15	0	4.6	0	5.4	26.2	0	0.1	0.3	0	0.2	0	
Auto	0	1553	780	4	707	0	221	1	258	1287	0	5	13	2	11	1	4843
% Auto	0	97.8	95.2	100	93.8	0	96.1	50	95.6	98	0	100	100	100	91.7	100	96.6
Medium	0	24	29	0	32	0	9	1	10	22	0	0	0	0	1	0	128
% Medium	0	1.5	3.5	0	4.2	0	3.9	50	3.7	1.7	0	0	0	0	8.3	0	2.6
Heavy	0	11	10	0	15	0	0	0	2	4	0	0	0	0	0	0	42
% Heavy	0	0.7	1.2	0	2	0	0	0	0.7	0.3	0	0	0	0	0	0	0.8



	US 7 from I89 From North					VT 104A from Fairfax From East					US 7 from Milton From South					Bank Drive-Up Exit From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	116	58	1	175	30	0	19	0	49	8	73	0	0	81	0	0	0	0	0	305
05:00 PM	0	89	51	0	140	39	0	16	0	55	15	77	0	0	92	0	0	0	0	0	287
05:15 PM	0	98	61	0	159	27	0	14	0	41	18	80	0	0	98	0	0	0	0	0	298
05:30 PM	0	103	60	0	163	48	0	11	1	60	14	70	0	0	84	0	0	0	0	0	307
Total Volume	0	406	230	1	637	144	0	60	1	205	55	300	0	0	355	0	0	0	0	0	1197
% App. Total	0	63.7	36.1	0.2		70.2	0	29.3	0.5		15.5	84.5	0	0		0	0	0	0		
PHF	.000	.875	.943	.250	.910	.750	.000	.789	.250	.854	.764	.938	.000	.000	.906	.000	.000	.000	.000	.000	.975
Auto	0	405	228	1	634	140	0	58	1	199	55	299	0	0	354	0	0	0	0	0	1187
% Auto	0	99.8	99.1	100	99.5	97.2	0	96.7	100	97.1	100	99.7	0	0	99.7	0	0	0	0	0	99.2
Medium	0	0	2	0	2	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	6
% Medium																					
Heavy	0	1	0	0	1	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	4
% Heavy	0	0.2	0	0	0.2	1.4	0	0	0	1.0	0	0.3	0	0	0.3	0	0	0	0	0	0.3



Run Date: 2012/09/14

Vermont Agency of Transportation
Technical Services Division
Traffic Research Unit
Special Count - Volume
2011

Site ID: S6F105

Functional Class: RURAL:MAJOR COLLECTOR

Location: Georgia: US7 S of I89 Exit18

Town: Georgia

Count Type: VOLUME

Counter Type: Tube

Final AADT: 9100

Route No: US7

Location: Georgia: US7 S of I89 Exit18													Counter Type: Tube										Daily		Adj.				
Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total	Factor	MADTACF	Vol.	
2011/06/22 Wed	64	22	31	34	89	279	736	1050	621	525	520	537	602	582	628	928	1047	1105	687	446	345	224	173	103	11378	0.95	0.90	0.97	9485
2011/06/23 Thu	43	34	50	43	85	299	693	1017	700	524	501	557	693	571	622	892	954	968	786	476	359	254	143	93	11357	0.93	0.90	0.97	9253
2011/06/24 Fri	65	23	30	30	84	238	666	954	652	578	611	633	706	665	693	978	932	1083	734	496	393	308	241	137	11930	0.89	0.90	0.97	9263
2011/06/25 Sat	70	51	49	35	47	121	221	306	433	474	590	674	700	678	630	615	580	576	467	363	297	279	205	151	8612	1.18	0.90	0.97	8892
2011/06/26 Sun	80	45	41	34	31	90	138	222	278	384	461	496	609	535	550	508	493	447	417	373	301	224	134	66	6957	1.40	0.90	0.97	8553
2011/06/27 Mon	29	22	22	35	75	271	622	883	609	500	479	517	565	476	512	765	824	843	579	396	343	253	126	72	9818	0.97	0.90	0.97	8307
2011/06/28 Tue	57	25	31	39	79	257	644	907	582	494	476	457	539	484	488	731	833	894	607	419	331	222	130	89	9815	0.95	0.90	0.97	8141
Average:	58	32	36	36	70	222	531	763	554	497	520	553	631	570	589	774	809	845	611	424	338	252	165	102					

Sun *	Mon *	Tue *	Wed *	Thu *	Fri *	Sat *	Weekday	Weekend	All Days**	Average Peak Volume:	Preliminary AADT: 8800
Hours Averaged:	24	24	24	24	24	24	120	48	168	AM Peak***: 962	Poll Site: P6F029
Average Volume:	6957	9818	9815	11378	11357	11930	8612	10860	9981	PM Peak***: 979	Poll Group: Urban

* Averaging by hour(0-23), then by day of week (Sun-Sat)

** Adjusted Average Day equals 5/7 * Avg Weekday + 2/ 7 * Avg Weekend Day

*** AM _PM Peak Average Volumes are only from the weekday days

Run Date: 2012/09/14

Vermont Agency of Transportation
Technical Services Division
Traffic Research Unit
Special Count - Volume
2011

Site ID: S6F378

Functional Class: RURAL:MAJOR COLLECTOR

Location: Georgia: US7 betw Ballard Rd/VT104A

Town: Georgia

Count Type: CLASS

Counter Type: Tube

Final AADT: 7400

Route No: US7

Date	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total	Daily Factor	MADTACF	Adj. Vol.
2011/06/21 Tue													478	470	458	610	741	852	576	410	332	222	118	60	5327	0.94	0.90	4516
2011/06/22 Wed	42	10	19	16	48	164	402	657	457	369	386	441	524	461	487	633	767	818	559	350	292	169	118	60	8249	0.95	0.90	7071
2011/06/23 Thu	33	24	25	21	38	182	391	620	471	348	373	460	584	434	439	625	721	806	608	407	285	200	104	54	8253	0.93	0.90	6914
2011/06/24 Fri	38	20	16	22	38	130	377	599	437	384	455	503	566	510	522	663	739	835	574	408	301	235	176	109	8657	0.89	0.90	6912
2011/06/25 Sat	50	32	33	21	22	64	130	202	359	371	479	576	624	611	562	567	562	549	439	371	251	235	167	125	7402	1.18	0.90	7858
2011/06/26 Sun	56	32	28	17	20	56	94	155	226	331	433	449	555	501	549	491	463	432	445	356	303	173	99	54	6318	1.40	0.90	7987
2011/06/27 Mon	23	14	10	16	33	159	411	614	436	395	413	481	509	434	433	661	793	824	595	404	326	224	101	62	8371	0.97	0.90	7283
2011/06/28 Tue	42	14	14	17	40	172	413	627	439	382	380	412	492	427	408	612	788	874	614	397	280	186	103	65	8198	0.95	0.90	6992
2011/06/29 Wed	27	12	20	17	49	174	406	596	478	369	417	472													3037	0.94	0.90	2563
Average:	39	20	21	18	36	138	328	509	413	369	417	474	542	481	482	608	697	749	551	388	296	206	123	74				

	Sun *	Mon *	Tue *	Wed *	Thu *	Fri *	Sat *	Weekday	Weekend	All Days**	Average Peak Volume:	Preliminary AADT: 7300
Hours Averaged:	24	24	36	36	24	24	24	144	48	192	AM Peak***: 623	Poll Site: P6F029
Average Volume:	6318	8371	8236	8258	8253	8657	7402	8349	6860	7923	PM Peak***: 831	Poll Group: Urban

* Averaging by hour(0-23), then by day of week (Sun-Sat)

** Adjusted Average Day equals 5/7 * Avg Weekday + 2/ 7 * Avg Weekend Day

*** AM _PM Peak Average Volumes are only from the weekday days

General Yearly Summaries - Crash Listing: State Highways and All Federal Aid Highway Systems
 From 01/01/07 To 12/31/11 General Yearly Summaries Information

* Reporting Agency/ Number	Town	Mile Marker	Date MM/DD/YY	Time	Weather	Contributing Circumstances	Direction Of Collision	Number Of Injuries	Number Of Fatalities	Number Of Untimely Deaths	Direction	Road Group
Route: US-7												
0613/5133-07	Georgia	1.01	03/31/2007	16:40	Clear	No improper driving, Failed to yield right of way	Head On	0	0	0	N	SH
VTVSP0700/10A20 5080	Georgia	1.05	11/13/2010	17:36	Clear	No improper driving		0	0	0	S	SH
0613/2208-07	Georgia	1.1	02/10/2007	13:23	Clear	No improper driving, Unknown	Same Direction Sideswipe	0	0	0		SH
VTVSP0700/09A20 4923	Georgia	1.1	10/23/2009	16:55	Cloudy	Failed to yield right of way, No improper driving	No Turns, Thru moves only, Broadside ^<	2	0	0		SH
VTVSP0700/10A20 3634	Georgia	1.1	08/20/2010	16:43	Other - Explain in Narrative	Failed to yield right of way, Unknown	Left Turn and Thru, Angle Broadside -->v--	0	0	0	E	SH
VT0060000/11FRC 0479	Georgia	1.1	02/10/2011	10:01	Clear	Failed to yield right of way, Inattention, No improper driving	Left Turn and Thru, Angle Broadside -->v--	1	0	0	E	SH
VTVSP0700/11A20 2211	Georgia	1.1	05/23/2011	15:25	Clear	No improper driving, Inattention	Left Turn and Thru, Head On ^v--	0	0	0		SH
0613/4408-07	Georgia	1.12	03/23/2007	14:38	Clear	Followed too closely, No improper driving	Same Direction Sideswipe	0	0	0	S	SH
0613/3463-07	Georgia	1.17	02/17/2007	16:06	Clear	Failed to yield right of way, No improper driving	Left Turn and Thru, Angle Broadside -->v--	2	0	0	N	SH
0613/16507-07	Georgia	1.2	12/13/2007	07:31	Cloudy	No improper driving, Failed to yield right of way	Left Turn and Thru, Angle Broadside -->v--	0	0	0		SH
VTVSP0700/08A20 5584	Georgia	1.2	10/19/2008	08:36	Cloudy	Failed to yield right of way, No improper driving	No Turns, Thru moves only, Broadside ^<	0	0	0	E	SH
VTVSP0700/11A20 2723	Georgia	1.2	06/20/2011	18:13	Clear	Failed to yield right of way, Inattention, No improper driving	Same Direction Sideswipe	0	0	0	N	SH
Totals:								5	0	0		

Total Crash Count = 12 Fatal Crash Count = 0 Injury Crash Count = 3 PDO Crash Count = 9

Note: US-7 Georgia MM 0.98-1.22 only.

VT-104A intersects US-7 at mile point 1.10.

Untimely Deaths are the result of death prior to a crash event. These deaths are not counted in the Fatal/Fatality type counts. They are considered an Incapacitating Injury and are counted in Injury Type crashes.

L. Roberts - Vtrans

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General Yearly Summaries - Crash Listing: State Highways and All Federal Aid Highway Systems
 From 01/01/07 To 12/31/11 General Yearly Summaries Information

* Reporting Agency/Number	Town	Mile Marker	Date MM/DD/YY	Time	Weather	Contributing Circumstances	Direction Of Collision	Number Of Injuries	Number Of Fatalities	Number Of Untimely Deaths	Direction	Road Group
Route: VT-104A												
0613/12674-07	Georgia	0	09/27/2007	10:41	Cloudy	Failed to yield right of way, No improper driving	Same Direction Sideswipe	0	0	0		SH
VTVSP0700/08A20 6282	Georgia	0	12/03/2008	06:40	Clear	Made an improper turn, Unknown	Same Direction Sideswipe	0	0	0	N	SH
VTVSP0700/09A20 0654	Georgia	0	02/13/2009	15:58	Clear	Other improper action	Same Direction Sideswipe	0	0	0	W	SH
VTVSP0700/09A20 5532	Georgia	0	12/04/2009	07:36	Clear		Same Direction Sideswipe	0	0	0		SH
VT0060000/10FRC 3413	Georgia	0	08/27/2010	13:31	Cloudy	Inattention, No improper driving	Rear End	0	0	0	W	SH
VTVSP0700/10A20 5572	Georgia	0	12/13/2010	07:38	Rain	Followed too closely, No improper driving	Rear End	1	0	0	E	SH
VT0060000/11FRC 0997	Georgia	0	03/25/2011	09:15	Cloudy	Other improper action, No improper driving	Same Direction Sideswipe	1	0	0	W	SH
Totals:								<u>2</u>	<u>0</u>	<u>0</u>		

Total Crash Count = 7 Fatal Crash Count = 0 Injury Crash Count = 2 PDO Crash Count = 5

Note: VT-104A Georgia MM 0.00-0.12 only.

US-7 intersects VT-104A at mile point 0.00.

Untimely Deaths are the result of death prior to a crash event. These deaths are not counted in the Fatal/Fatality type counts.

They are considered an Incapacitating Injury and are counted in Injury Type crashes.

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Appendix

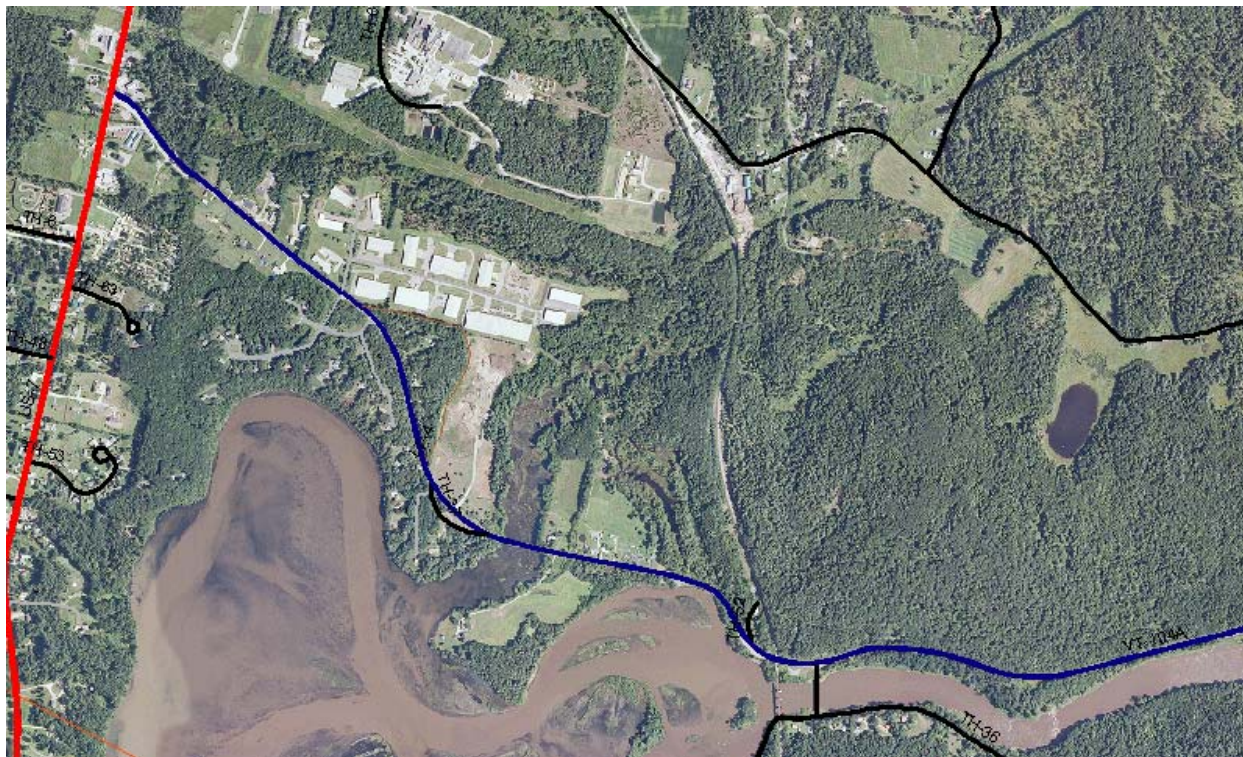
B - VTrans Road Safety Audit Review

Traffic Safety Section

Road Safety Audit Review

Town:	Georgia	Date Reviewed:	June 6 2013
Route:	VT 104a	Mile points:	0.00 to 2.00

Location Map:



Definitions

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. "Independent" means that the members of the team will not be directly involved with the location being audited.

In addition to the Audit Team, a RSAR involves the following key players: Local Coordinator, Local Input Team and Responsible Entities.

The **Local Coordinator** is either a representative of the Town/City or the local regional planning commission. His/her role is to put a Local Input Team together, aggregate traffic and safety information, lead the commencement meeting and follow-up with local responsible entities. The role of the **Local Input Team** is to provide a local perspective at the commencement meeting. It

Traffic Safety Section

Road Safety Audit Review

is composed of representatives from the community such as Selectboard Members, Police, EMT, VAOT District, and Other Local People. The **Audit Team** is responsible for performing a site visit, identifying safety issues and coming to a consensus with respect to possible guidance. **Responsible Entities** are any groups who own a roadway feature or who are responsible for making an improvement or initiating further studies. These could include for example, the VTRANS Design Section, the Local Town, the Police or the Local RPC/MPO. The role of the Responsible Entities is to assess the viability of the suggestions provided by the Audit Team and provide a written response to the Audit Coordinator, to schedule and/or perform the improvements if deemed necessary and to follow-up with the audit or local coordinator when the project is completed. Finally, the **Audit Coordinator** is the person responsible for setting up the audit and other meeting dates, to put the audit team together, to facilitate the post inspection meeting and the completion meeting, and to prepare the audit report.

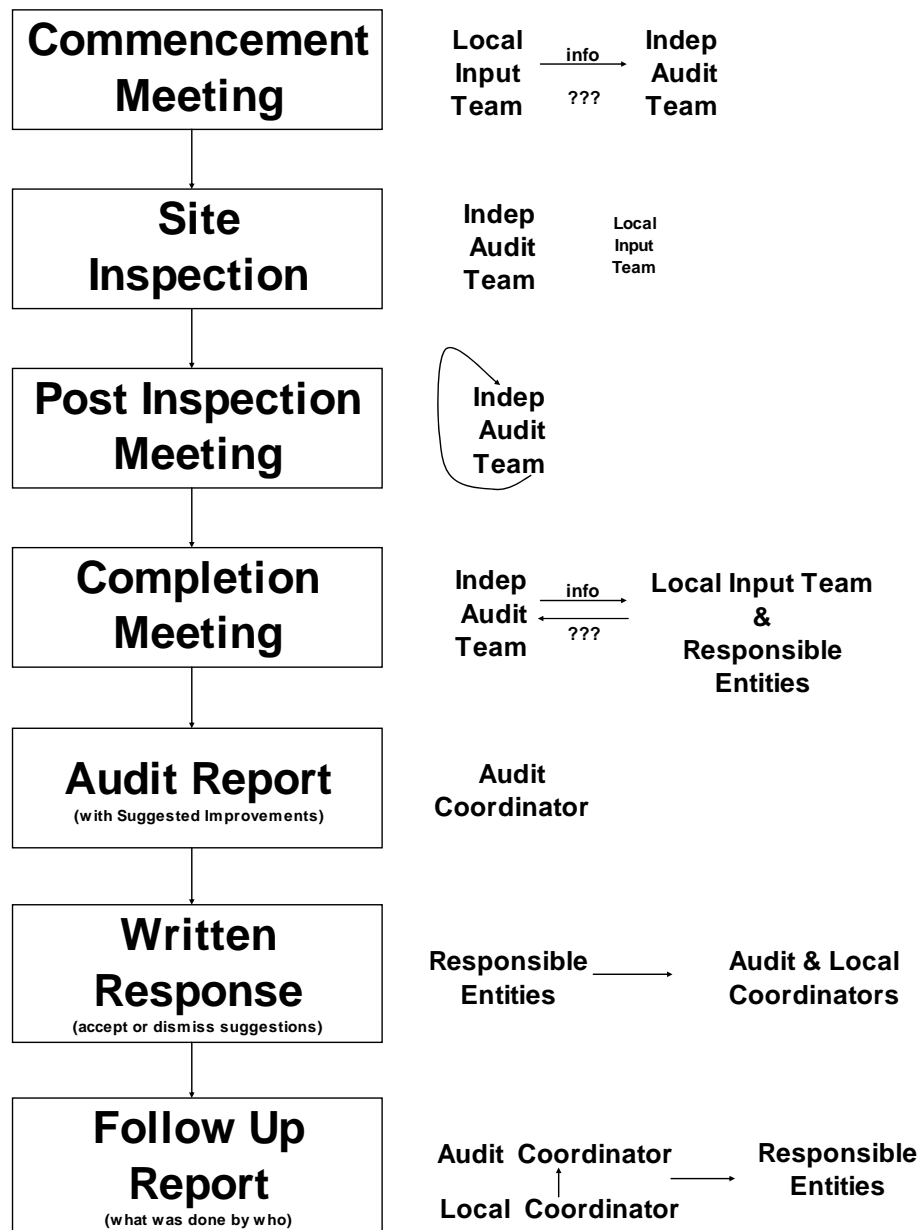
RSAR Process

The RSAR process is composed of several steps as shown in the diagram below. The process starts with a **Commencement Meeting** between the Local Input Team and the Audit Team. The purpose of the meeting is for the Local Input Team to present community concerns to the Audit Team. A **Site Inspection** is then performed by the Audit Team. Members from the Local Input Team can accompany the Audit Team to further explain concerns. 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

Traffic Safety Section

Road Safety Audit Review

Figure 1. ROAD SAFETY AUDIT PROCESS



“get a feel” for the area, traveling through each approach in the case of intersections. The team is to then drive at a slower posted speed to make observations. If needed, the team will also walk the location. Following the site inspection, the Audit Team holds a **Post Inspection**

Traffic Safety Section

Road Safety Audit Review

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. The final RSAR report (Written Report) is finalized following the Completion Meeting during which the issues identified by the audit team are discussed with the Local Input Team and Responsible Entities. The meeting is to be constructive and foster dialogue between the parties involved. 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 to provide a Written Response on every finding of the Written Report as to its implementation. The Responsible Entity is not obliged to implement the findings in the Written Report. However, the reasons for not implementing a finding should be documented (e.g. physical constraints, excessive cost, environmental constraints, etc.).

The RSAR herein covers physical features which may affect road user safety and it has sought to identify potential safety hazards. However, the audit team points out that no guarantee is made that every deficiency has been identified. Further, it should also be understood that the adoption of the guidance in this report should improve the level of safety of the facility but not necessarily remove all the risks.

Location

The location of this RSAR is the section of VT 104a between US 7 and a point 1000 feet east of the Arrow Head Lake Rd intersection. Specifically, the areas of concern are the intersection with US 7, Bridge 1 and the series of curves east of Bridge 1. The mile markers mentioned in this report start from the US 7 intersection at 0.0 and increase eastward.

Purpose of the RSAR

This RSAR was conducted at the request of the Northwest Regional Planning Commission and the Town of Georgia. This request came out of a recent public meeting for the VT 104A/US 7 Intersection and Bridge 1 feasibility study. While the permanent solution at Bridge 1 is to replace the narrow bridge, the community recognizes that this is many years away and that in the meantime, a RSAR could identify some short-term improvements.

RSAR Team

The independent, multi-disciplined Road Safety Audit Review Team included the following individuals:

Greg Bakos,	VHB
Aaron Guyette,	VHB
Marcos Miller,	Traffic Ops, VAOT

Traffic Safety Section

Road Safety Audit Review

Randy Snelling,

District 5, VAOT

RSAR Team Coordinator

The road safety audit review coordinator was:

Mario Dupigny-Giroux,

Traffic Ops, VAOT

Local Coordinator

The local coordinator was:

Bethany Remmers,

Northwest Regional Planning Commission (NRPC)

Local Input Team

The following individuals from the local community were present at the Commencement Meeting:

Wesley Combs,

Road Foreman, Georgia

Ric Nye,

Highway Road Com, Georgia

Diane Perley,

District 8, VAOT

Jay Sweeny,

Franklin County Sheriffs

Deb Woodward,

Town Administrator, Georgia

Information Reviewed

Horizontal and Vertical Curves

There are several horizontal curves along the segment under study. Table 1 below summarizes the locations of these curves along with the current warning signs that are associated with these curves.

In addition to the horizontal curves listed in Table 1, there are two vertical curves along this section of road. One is a negative three percent grade that goes from mile point 0.70 to 0.90 while the other one is a seven percent grade vertical curve between mile points 1.55 and 1.60 that is further combined with an horizontal curve.

Traffic Safety Section

Road Safety Audit Review

Table 1, Horizontal Curve Locations

Curve Location	Mile Point	Degree	Radius ft	Existing Signage	Crashes 5 years
Start Curve Right	0.590	4.91	725		0
End Curve Right	0.734				
Start Curve Left	0.884	4.87	732	EB Curve Left W1-2L @ 0.784 missing?	0
End Curve Left	1.118				
Start Curve Right	1.458	9.27	384	EB Mod Right Reverse W1-4MR + W13-1 40 mph @ 1.42 A	3
End Curve Right	1.540			W1-6 Large Arrow @ 1.507, 1.501 WB E/F	
Start Curve Left	1.570	6.82	587	W1-6 Large Arrow EB @ 1.6 A, 1.64 B, 1.67 B	6
End Curve Left	1.798			Right Reverse Curve W1-4R + W13-1 40 mph @ 1.725 WB F	
Start Curve Right	1.816	5.71	623	Left Reverse Curve W1-4L + W13-1 40 mph @ 1.94 WB F	1
End Curve Right	1.890				
Start Curve Right	1.946	3.1	1148		2
End Curve Right	2.010				

Traffic Safety Section

Road Safety Audit Review

Bridge Information

Bridge 1 is located approximately 1.1 miles east of US 7. It was built in 1937. Its roadway width curb-to-curb is 20.9 feet while its length is 74 feet.

Speed and Traffic Volume

The posted speed limit is 40 mph from US 7 to just east of Yankee Park Rd and it is 50 mph from that point eastward.

Advisory speeds that suggest the preferred speed to travel at along certain curves are posted at mile point 1.42 for eastbound traffic, at mile point 1.72 for westbound traffic and at mile point 1.94 also for westbound traffic.

The 2011 Average Annual Daily Traffic was 4300 vehicles per day between US 7 and Arrow Head Lake Rd and it was 3700 vehicles per day east of Arrow Head Lake Rd up to the Fairfax townline.

A 2010 automatic vehicle classification count on VT 104a at mile point 3.15 revealed that traffic on VT 104a is composed of approximately 95% passenger vehicles, 4% single vehicle trucks and 2% tractor trailer trucks.

Based on a 2012 turning movement count, the percentage of trucks approaching the US 7 intersection from VT 104a is 7.6%. Of the trucks approaching the intersection from the east, 1.9% are tractor trailer trucks and 5.65% are single unit trucks (approximately 43 and 128 vehicles of each type respectively over the 12-hour period of 6:00 am to 6:00 pm). Of these trucks, 77.3% are turning right and 22.7% are making a left turn. This distribution is very similar to the one of passenger vehicles. Overall on the VT 104a approach, the raw 2012 count indicated that 1804 vehicles were turning right compared to 387 vehicles that were turning left and 71 that were continuing across US 7 to the bank entrance.

Pavement Condition

The 2012 pavement condition rating for this portion of VT 104a was qualified as "very poor". Between US 7 and mile marker 1.0, the average rut depth of both wheel paths was 0.268 inch and the composite index was 18.87, while for the section between mile markers 1.0 and 2.0, the composite index was 28.79 and the average rut depth was 0.25 inch.

The very poor determination of the overall condition of the road surface was determined from the composite index (in our case, 28.79 and 18.87) using the following scale with 0 being the worst possible condition and 100 being the best. Specifically, this scale is: 0-40 Very Poor, 40-65 Poor, 65-80 Fair, 80-100 Good.

Traffic Safety Section

Road Safety Audit Review

Traffic Committee Action

The Town of Georgia requested in March 2009 that the Traffic Committee evaluate and reduce the posted speed limit to 40 mph from the Arrowhead Industrial Park driveway to a point easterly on Highbridge Rd. The Traffic Committee considered this request at its September 2009 meeting and elected to retain the existing speed limit.

The decision of the Traffic Committee was based on the findings of a July 2009 engineering study that determined that the 85th percentile speed at three locations ranged between 50 and 52 mph, which indicated at the time, based on guidance from the Manual on Uniform Traffic Control Devices, that the existing speed limit was adequate for this section of road.

Specifically, the study determined that at around mm 0.88, the 85th percentile speed was 52 mph and the 10-mile pace (the 10-mile range of speeds within which most vehicles travel) was 44 to 53 mph. Near mile marker 1.45, the 85th percentile speed was 50 mph and the 10-mile pace was 42 to 51 mph while at the third location near mile point 1.73, the percentile speed was 51 mph and the 10-mile pace was also 42 to 51 mph.

USLimits, an expert system software available from FHWA's website, was used to further assess the speed limit in this area. The software considers traffic, but not specifically truck traffic. Input to the analysis included, the 2009 speed study, the 2008-2012 crash data, the area type and the number of driveways. Based on this, USLimits suggests that the appropriate speed limit be 50 mph and that areas with adverse alignments may require lower advisory speeds.

Past Projects

This section of VT 104a was last paved in the late 90's. According to VTrans Pavement Management, it will be at least five more years before this road is paved again (discussion with Mike Fowler on May 29, 2013).

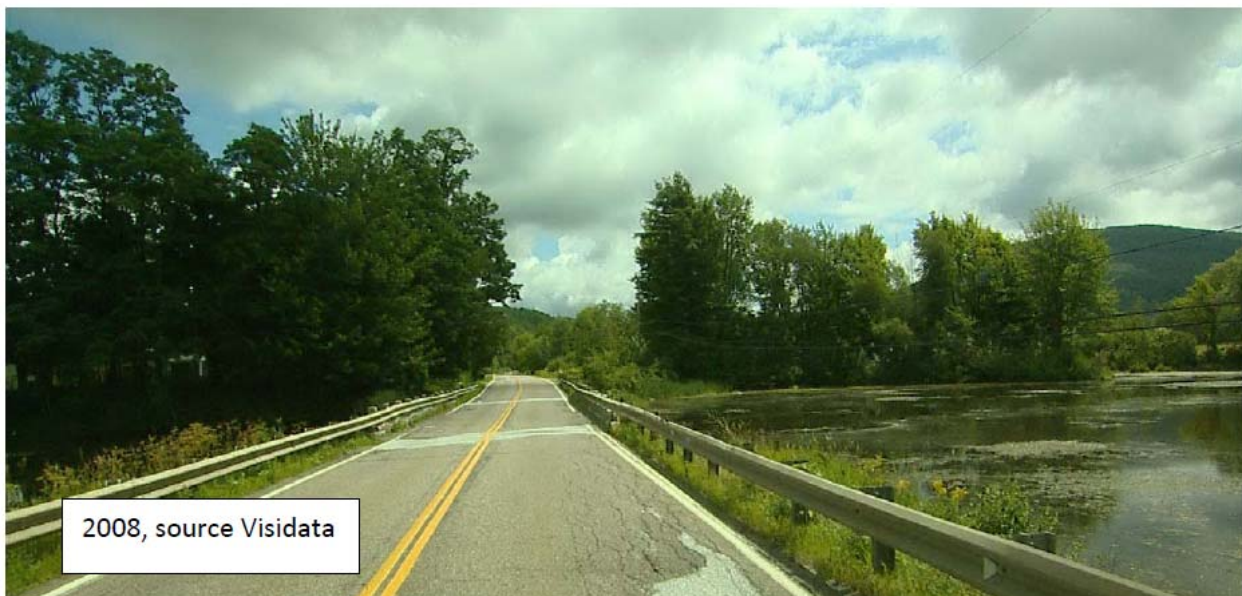
A work order (01-081) was completed on April 18, 2001. This work order included VT 104a from US 7 to about mile marker 2.0 (just east of 2664 Highbridge Rd) and was mostly for the replacement of signs. The work order adjusted the placement of the large arrows between mile markers 1.5 and 1.7. The work order retained the two modified turn signs and their associated 40 mph advisory plaques near mile points 1.4 and 1.7, replaced the reverse curve sign near mile point 2.0 and installed a new curve sign for eastbound traffic near mile point 0.784 for the curve near Harrison Sand Inc.

A second work order (09-494) was completed on January 28, 2010. This work order was for new sign applications. The work order installed object markers near the abutment of Bridge 1 on all four corners. It also installed narrow bridge warning signs in advanced of the bridge. Figure 2 shows the bridge in 2008 without the object markers and the bridge in 2012 with the object markers. This work order also installed Watch For Turning Vehicles warning signs with a Next ½ Mile plaque at mile points 0.878 and 1.538 in the vicinity of the fishing access.

Traffic Safety Section

Road Safety Audit Review

Figure 2, Before and After Pictures of Bridge 1 without and with Object Markers



Traffic Safety Section

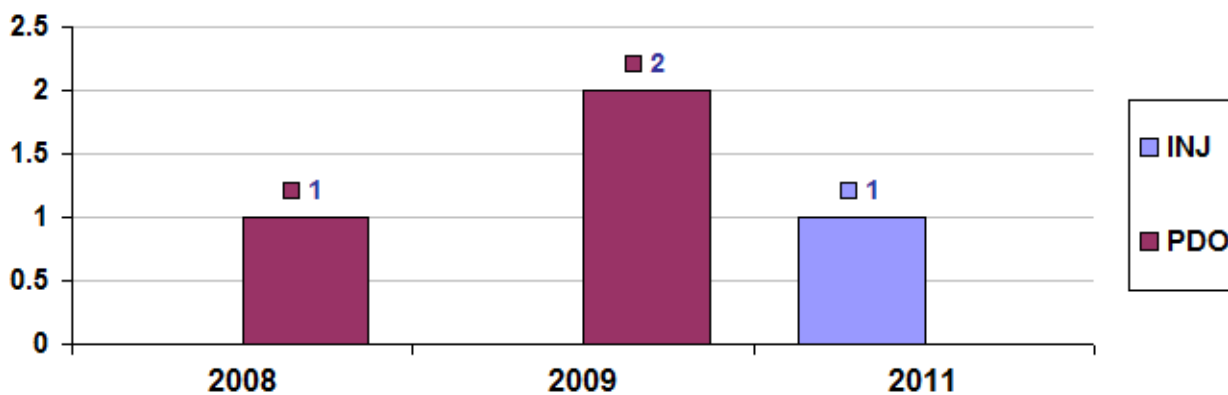
Road Safety Audit Review

Crash History

Crash history was reviewed for the area between US 7 and Bridge 1 and for the area around the Arrow Head Lake Rd intersection.

There were ten crashes on VT 104a between US 7 and Bridge 1 from 2008 to May 2013. Of these ten crashes, five took place on the VT 104a approach of the US 7 intersection. Specifically, four of the five crashes displayed a similar pattern: Same direction sideswipe involving a tractor trailer that had to swing wide to make the right turn while a vehicle was passing on the right (There is only one lane on the approach, but it is wide enough for two vehicles to stand side-by-side). The distribution of these same direction sideswipe crashes is shown in Figure 3. The other crash at the US 7 intersection was a rear-end crash.

Figure 3, Severity Distribution of Same Direction Sideswipe Crashes at the US 7 intersection



During the same period, there was one crash that took place on the bridge, a recent occurrence that happened earlier in 2013 between a school bus and a truck. There were no injuries in the crash as the two vehicles brushed off each other which resulted in one of the mirrors of the bus to shatter.

The other three crashes within this section took place at various points and did not show any specific patterns.

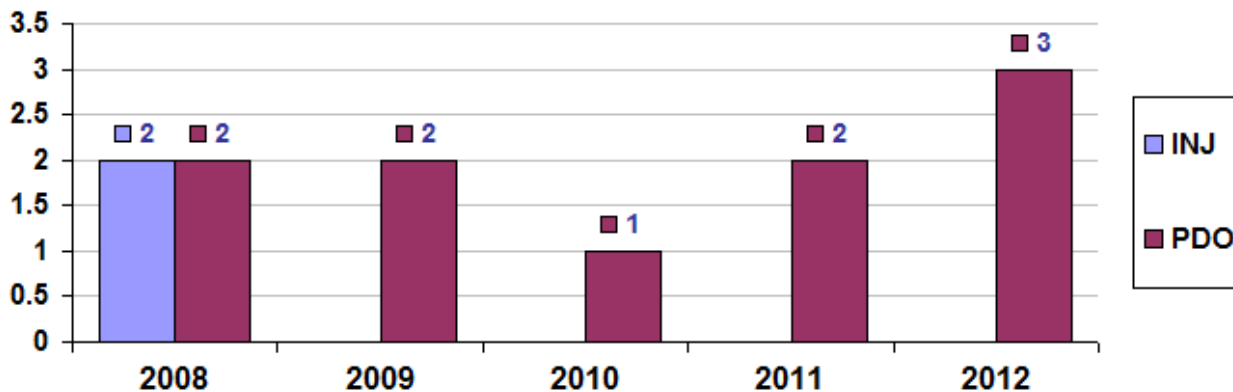
There were twelve crashes between 2008 and May 2013 on VT 104a in the area extending half a mile on each side of the Arrow Head Lake Rd intersection. The graph in Figure 4 below shows the distribution of these crashes over the period. It is to be noted that the three crashes in 2012 took place on the same day within a short period of time.

Of the twelve crashes, nine involved a vehicle that ran-off-the-road or hit a fixed object (75%). For 55% of these nine crashes, the road surface was either snow covered or icy (but the weather was either sunny or cloudy). Seventy percent of these vehicles were also traveling westbound.

Traffic Safety Section

Road Safety Audit Review

Figure 4, Severity Distribution of Crashes ½ mile each side of Arrow Lake Rd



There are two sub-areas where crashes are happening within the area of the Arrow Head Lake Rd intersection. The first is between the fishing access and Jed Shepard Rd. The common crash type in this area is a vehicle that lost control.

The other hot spot location is between Arrow Head Lake Road and a point about 0.25 miles east of the Arrow Head Lake intersection. There was only one specific intersection type crash at the intersection of Arrow Head Lake Rd (a vehicle that was waiting to make a left turn and that got rear-ended). Loss of control crashes were determined to be happening east of the intersection within the first 100 feet and also somewhere 0.2 to 0.25 miles east of the intersection.

Traffic Studies

The Northwest Regional Planning Commission initiated a feasibility study for long term improvements at the US Route 7 and VT 104A Intersection as well as for Bridge 1. Major geometric improvements at the intersection include a traffic signal or a roundabout. For the bridge, it is being proposed to widen it to 30 feet.

There are a number of studies that are being done as part of Act 250. These include new developments on US 7 in the area of the VT 104a intersection (Dollar General near Georgia Market) and a proposed query between Skunk Hollow Road and VT 104a.

Local Concerns

The following issues were brought forward by the local team during the commencement meeting.

Traffic Safety Section

Road Safety Audit Review

- Two years ago, the RPC initiated a feasibility study for the US 7/VT 104a intersection. Bridge 1 was added to the study since it had been a concern for the Town.
- Bridge 1 is narrow and for the traffic condition, it should be 30 ft wide.
- The guardrail system is failing on the bridge.
- The centerline marking is currently not visible.
- As a result of the recent bus incident on the bridge, the school suggested to bus drivers that they stop before entering the bridge when there is opposing traffic.
- There has been an increase in truck traffic on VT 104a due principally to Husky.
- There is increasing development in Fairfax and thus an increase in commuter traffic.

Potential Safety Concerns

This section lists the areas of safety concern identified by the audit team during the field visit and from their analysis of available data along with potential remedial actions. The concerns are not listed in order of importance. These safety concerns are also summarized on the observations table presented at the end of this section. The observations table lists the group most likely to be responsible for making the improvements.

Problem #1

Narrow bridge and lack of visual clues (especially when the centerline is completely faded)

Immediate to Short Term Actions (within 6 months)

Install recessed yellow centerline markings on the bridge and its approaches

Install additional object 3 markers on the back of the existing object markers

Install a vertical retroreflective strip on the post of each object 3 marker

Relocate the Narrow Bridge signs

Replace all reflectors inside the guardrail on the bridge and its approaches

Mid Term Actions (within 12 months)

Prioritize a project for a wider bridge

Traffic Safety Section

Road Safety Audit Review

Problem #2

Travel speeds perceived too high for traffic, land use and geometric conditions

Immediate to Short Term Actions (within 6 months)

Install a 40 mph advisory speed plaque beneath each Narrow Bridge Sign (upsized warning signs to 36")

Evaluate the need for updated signage (including ball banking) for the curves listed in Table 1

Measure the corner sight distance at the Arrow Head Lake Rd intersection and assess the situation

Request from VTrans a reevaluation of the posted speed limit given new traffic generators and increased truck and commuter traffic

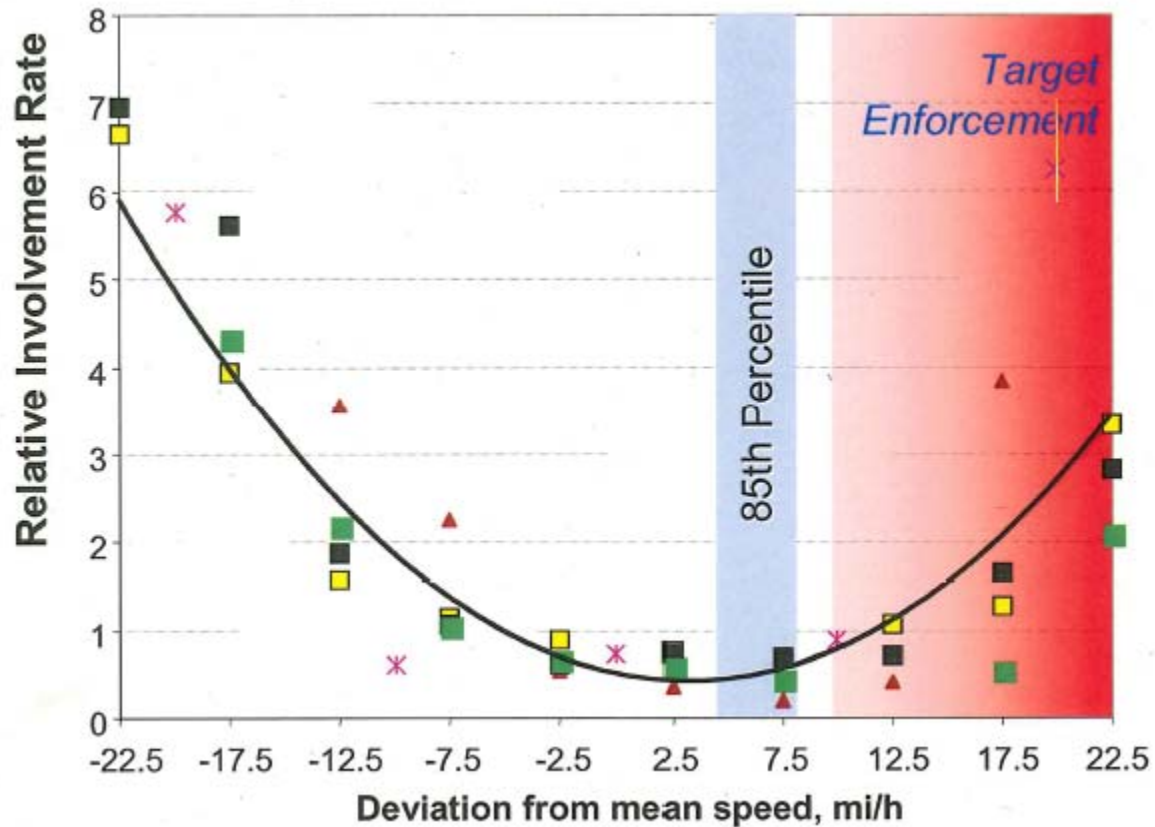
Increase enforcement and target drivers traveling above 56 mph

Concept: From the enforcement side, if enforcement is to contribute to the safety of this road, it should be done according to the following concept suggested by FHWA. As depicted in Figure 4, Research has shown that 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. Applying this concept to this section of VT 104a means that the focus should be put on vehicles that are traveling at or above 56 mph.

Traffic Safety Section

Road Safety Audit Review

Figure 4, Targeted Enforcement Concept



Problem #3

High proportion of single vehicle crashes on an icy/snowy road surface

Immediate to Short Term Actions (within 6 months)

Evaluate past practices and develop a policy to improve, as needed, winter maintenance on VT 104a

Mid Term Actions (within 12 months)

Prioritized the programming of a resurfacing project

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Road Safety Audit Review

Mid Term to Long Term Actions (12 months to five years)

Resurface VT 104a

Install a high friction surface treatment with calcined bauxite aggregates in the section between mile points 1.45 and 1.75.

Problem #4

Conflicting movements between a right turning truck and a second right turning vehicle caused by the de facto right turning lane on the VT 104a approach of the US 7 intersection. Conflicting movements between right turning vehicles on the VT 104a approach and right turning motorists that use the road that acts as some kind of a slip lane. See Figures 5a & 5b.

Immediate to Mid Term Actions (within 24 months)

Develop (and construct) a low cost project to strip and signs the approach as one left turn lane and one right turn lane (This will require modifying the island on the northeast corner of the intersection to accommodate trucks with a wider radius and possibly a truck apron as to not make the approach too wide. It will also be highly desirable to close off the access to what acts as a "slip lane").

Problem #5

Potential for motorists that leave Interstate Auto Service & Movement Center to go the wrong way on the "slip lane" towards VT 104a

Immediate Actions

Install Do Not Enter signs at the end of the "slip lane" where it meets VT 104a

Traffic Safety Section

Road Safety Audit Review

Figure 5a, VT 104a Approach to the US 7 Intersection (Visidata 2012)



Traffic Safety Section

Road Safety Audit Review

Figure 5b, VT 104a Intersection Leg at US 7 (Visidata 2012)



Traffic Safety Section

Road Safety Audit Review

Action Plans

The safety concerns and potential actions that were just described in the previous section are further summarized in the next table. In this table, the safety issues of concern are listed in the first column. The second set of columns identifies the groups that are most likely capable of implementing a solution. For each safety issue, the audit team suggested the actions that are listed in the column titled “strategy” as possible remedial solutions. For each safety issue, the groups identified by an X are asked to review the proposed strategies and evaluate their ability to implement these strategies by indicating in the appropriate column if they agree to implement these measures and if not, by supporting their decision by writing a reason in the last column. The groups identified are not obliged to follow the findings of the RSAR report. However, the reasons for not implementing a finding should be documented (e.g. physical constraints, excessive cost, environmental constraints, etc.). Each group should return their completed table to the audit coordinator as soon as possible.

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
<u>Problem #1</u> Narrow bridge and lack of visual clues (especially when the centerline is completely faded)				X				Immediate to Short Term Actions (within 6 months) Install recessed yellow centerline markings on the bridge and its approaches			
				X				Install additional object 3 markers on the back of the existing object markers			
				X				Install a vertical retroreflective strip on the post of each object 3 marker			
				X				Relocate the Narrow Bridge Sign			

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
					X			Replace all reflectors inside the guardrail on the bridge and its approaches			
	X							Mid Term Actions (within 12 months) Prioritize a project for a wider bridge			
<u>Problem #2</u> Travel speeds perceived too high for traffic, land use and geometric conditions				X				Immediate to Short Term Actions (within 6 months) Install a 40 mph advisory speed plaque beneath each Narrow Bridge Sign (upsized warning signs to 36")			
				X				Evaluate the need for updated signage (including ball banking) for the curves listed in Table 1			

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
				X				Measure the corner sight distance at the Arrow Head Lake Rd Intersection and assess the situation			
		X						Request from VTrans a reevaluation of the posted speed limit given new traffic generators and increased truck and commuter traffic			
			X					Increase enforcement and target drivers traveling above 56 mph			
<u>Problem #3</u> High proportion of single vehicle crashes on an icy/snowy road surface					X			Immediate to Short Term Actions (within 6 months) Evaluate past practices and develop a policy to improve, as needed, winter maintenance on VT 104a			

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Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
							X	Mid Term Actions (within 12 months) Prioritized the programming of a resurfacing project			
							X	Mid Term to Long Term Actions (12 months to five years) Resurface VT 104a			
							X	Install a high friction surface treatment with calcined bauxite aggregates in the section between mile points 1.45 and 1.75.			

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Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
<u>Problem #4</u> Conflicting movements between a right turning truck and a second right turning vehicle caused by the de facto right turning lane on the VT 104a approach of the US 7 intersection. Conflicting movements between right turning vehicles on the VT 104a approach and right turning motorists that use the road that acts as some kind of a slip lane.				X	X	X		Immediate to Mid Term Actions (within 24 months) Develop (and construct) a low cost project to strip and signs the approach as one left turn lane and one right turn lane (This will require modifying the island on the northeast corner of the intersection to accommodate trucks with a wider radius and possibly a truck apron as to not make the approach too wide. It will also be highly desirable to close off the access to what acts as a "slip lane")			
<u>Problem #5</u> Potential for motorists that leave Interstate Service & Movement Center to go the wrong way on the "slip lane" towards VT 104a				X				Immediate Actions Install Do Not Enter signs at the end of the "slip lane" where it meets VT 104a			

Collision Diagrams

COLLISION DIAGRAM

Key Number = 0

MUNICIPALITY: Georgia COUNTY: _____
 INTERSECTION: VT-104A
 PERIOD: 5 YEARS 5 MONTHS FROM 1/1/2008 TO 5/27/2013

FILE: RSARVT104aG
 CASE #: _____
 BY: _____ DATE: 5/29/2013



SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		RIGHT TURN
	PARKED VEHICLE		LEFT TURN
	RECORD NUMBER		OVERTAKE
	PEDESTRIAN		OUT OF CONTROL
	BICYCLIST		HEAD ON
	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT TURN
	Fatal		RIGHT ANGLE
			SIDE SWIPE

COLLISION DIAGRAM

Key Number =

MUNICIPALITY: <u>Georgia</u>	COUNTY: _____	FILE: <u>RSARVT104aG</u>
INTERSECTION: <u>VT-104A</u>		CASE #: _____
PERIOD: <u>5</u> YEARS <u>5</u> MONTHS	FROM <u>1/1/2008</u> TO <u>5/27/2013</u>	BY: _____ DATE: <u>5/29/2013</u>



SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		LEFT TURN
	PARKED VEHICLE		OVERTAKE
	RECORD NUMBER		OUT OF CONTROL
	PEDESTRIAN		HEAD ON
	BICYCLIST		RIGHT TURN
	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT ANGLE
	Fatal		SIDE SWIPE

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COLLISION DIAGRAM

Key Number = 3

MUNICIPALITY: Georgia COUNTY: _____
 INTERSECTION: VT-104A
 PERIOD: 5 YEARS 5 MONTHS FROM 1/1/2008 TO 5/27/2013

FILE: RSARVT104aG
 CASE #: _____
 BY: _____ DATE: 5/29/2013



SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		LEFT TURN
	PARKED VEHICLE		OVERTAKE
	RECORD NUMBER		OUT OF CONTROL
	PEDESTRIAN		HEAD ON
	BICYCLIST		RIGHT TURN
	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT ANGLE
	Fatal		SIDE SWIPE

COLLISION DIAGRAM

Key Number = 4

MUNICIPALITY: <u>Georgia</u>	COUNTY: _____	FILE: <u>RSARVT104aG</u>
INTERSECTION: <u>VT-104A</u>		CASE #: _____
PERIOD: <u>5</u> YEARS <u>5</u> MONTHS	FROM <u>1/1/2008</u> TO <u>5/27/2013</u>	BY: _____ DATE: <u>5/29/2013</u>



SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		LEFT TURN
	PARKED VEHICLE		OVERTAKE
	RECORD NUMBER		OUT OF CONTROL
	PEDESTRIAN		HEAD ON
	BICYCLIST		RIGHT TURN
	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT TURN
	Fatal		RIGHT ANGLE
			SIDE SWIPE

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COLLISION DIAGRAM

Key Number = 1

MUNICIPALITY: Georgia COUNTY: _____
 INTERSECTION: VT-104A
 PERIOD: 5 YEARS 0 MONTHS FROM 1/1/2008 TO 12/31/2012

FILE: GeorgiaArrowH
 CASE # : _____
 BY: _____ DATE: 4/30/2013



SYMBOLS		MANNER OF COLLISION	
	MOVING VEHICLE		REAR END
	TURNING VEHICLE		LEFT TURN
	BACKING VEHICLE		LEFT TURN
	PARKED VEHICLE		OVERTAKE
	RECORD NUMBER		OUT OF CONTROL
	PEDESTRIAN		HEAD ON
	BICYCLIST		RIGHT TURN
	ANIMAL		RIGHT TURN
	FIXED OBJECT		RIGHT ANGLE
	Fatal		SIDE SWIPE

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





















COLLISION DIAGRAM

Key Number = 2

MUNICIPALITY: Georgia COUNTY: _____
 INTERSECTION: VT-104A
 PERIOD: 5 YEARS 0 MONTHS FROM 1/1/2008 TO 12/31/2012

FILE: GeorgiaArrowH
 CASE #: _____
 BY: _____ DATE: 4/30/2013



SYMBOLS		MANNER OF COLLISION	
 MOVING VEHICLE	 PEDESTRIAN	 REAR END	 HEAD ON
 TURNING VEHICLE	 BICYCLIST	 LEFT TURN	 RIGHT TURN
 BACKING VEHICLE	 ANIMAL	 LEFT TURN	 RIGHT TURN
 PARKED VEHICLE	 FIXED OBJECT	 OVERTAKE	 RIGHT ANGLE
 RECORD NUMBER	 Fatal	 OUT OF CONTROL	 SIDE SWIPE

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
1	VT-104A	1.45	1/8/2012	11:20	Cloudy	0	0	Single Vehicle Crash	Single vehicle crash on VT Rt. 104A near the fishing access. The roads were icy and the weather was partly cloudy without any precipitation. The visibility was clear. Operator #1 advised me that she was travelling west at approximately 40mph in a posted 50 mph zone due to the icy road conditions. Said that she came around the curve and started to lose control as her vehicle proceeded downhill. Then advised that she started to spin around, hit the guardrail, and then overturned the vehicle. It should be noted that there were three other crashes in the same area that occurred within a 20-minute period. Veh 1 F 19 Inj 5
2	VT-104A	1.45	1/8/2012	11:25	Cloudy	0	0	Single Vehicle Crash	Single vehicle crash near the fishing access. The roads were icy and the weather was partly cloudy without any precipitation. Operator #1 advised that she was travelling west at approximately 50mph in a posted 50 mph zone. Operator #1. Said that she had come around the curve and as she started to travel downhill she noticed the current single vehicle crash and Georgia fire trucks stopping traffic. Operator #1 slammed on the brakes, but hit the patch of ice and started to lose control as her vehicle proceeded downhill. Operator #1 said that she started to slide, hit the guardrail, and slowed to a stop just missing the other vehicles. Operator #1 came to a position of controlled rest in the fishing access pull off. Operator #1 hit the same patch of ice that a previous crash hit about 5 minutes sooner. Veh 1 F 19 Inj 5

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
3	VT-104A	1.50	4/17/2008	13:23	Clear	1	0	Single Vehicle Crash	Motorcycle crash with extensive injuries. 528 ft west of Jed Shepard RD. The road at the time of the accident was dry, and the weather was clear. From looking at the scene with multiple Troopers, it was determined that Operator #1 was traveling westbound on Route 104A when he came into a moderate curve. His motorcycle drove off the westbound side of the road and into the dirt before striking the guardrails. He left the roadway approximately 141feet prior to his position of uncontrolled rest landing in the westbound lane near the end of the guardrails. Operator #1 advised that he was traveling approximately 40 mph when the incident occurred, and went into the curve too high. He stated that this caused him to go into the dirt. He also advised that he had his helmet on, yet the strap was not tight. Veh 1 M 56
4	VT-104A	1.60	4/1/2008	4:13	Clear	1	0	Single Vehicle Crash	Tractor trailer crash on Route 104A (grain truck that rolled over). 100 ft west of Jed Shepard RD. Operator # 1 advised that he was traveling eastbound on Route 104A when he felt the vehicle shift abruptly. He advised that it then shifted again and he ended up rolling over. Advised that he had been traveling approximately 35-40 mph. It was apparent that the vehicle had been traveling eastbound on Route 104A before coming to the up-hill curve prior to Jed Shepard Rd. Upon exiting the curve on the up-hill slope, the vehicle crossed the center line, and then rolled over. From the green marks along the guard rails, it was determined that the "boom" for the grain truck had scraped across it for approximately 30 feet while the trailer was on its side headed east. Officer said that the road at the time of the accident was partially wet, yet that there were no weather issues that should have been a factor. It was dark out during the crash, and the road was not lighted. The cause of the accident was determined to be failing to keep the vehicle on the roadway and this could possibly have been a factor of too much speed, or because of a heavy load issue. Veh 1 M 44 Inj 3

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
5	VT-104A	1.60	1/16/2009	21:41	Cloudy	0	0	Single Vehicle Crash	Single vehicle crash in the area of Jed Shepard RD (100 ft west of). The area where the crash occurred is at the crest of a hill and a curve. The road conditions were icy. Operator # 1 was traveling west at approximately 55 MPH. Explained that as he crested the hill, he lost control of his vehicle. Upon doing so, he went off the side of the road causing the vehicle to roll. Veh 1 M 16 Inj 5
6	VT-104A	1.72	5/27/2010	7:51	Clear	0	0	Rear End	Three vehicle crash at the intersection with Arrowhead Lake Road. The road was dry and the weather was clear and sunny. Operator # 1 said she had rear-ended Vehicle 2, which subsequently travelled into the rear of Vehicle 3. Said she had been traveling west at approximately 50 mph when she rear-ended Vehicle 2, which had been stopped waiting for Vehicle 3 to turn onto Arrowhead Lake Rd. Operator # 2, confirmed that he had been stopped in the westbound travel lane as Vehicle 3 was stopped in front of him, waiting to turn onto Arrowhead Lake Road. This area of roadway is a straight, downward slope that provides several hundred feet of unobstructed visibility. The point of possible perception for Operator #1 to have seen the stopped traffic was several hundred feet east of this stopped traffic. Veh 1 F 40 Inj 5, Veh 2 M 37 Inj 5, Veh 3 F 33 Inj 5
7	VT-104A	1.73	11/1/2011	22:22	Clear	0	0	Single Vehicle Crash	40 Ft east of the intersection of Arrow Head Lake Rd. The weather was clear and the roadway was dry at the time of the crash. Op 1 advised he had consumed 3 or 4 alcoholic drinks that night. There were scuff marks in the westbound lane traveling into the opposite lane. There were scuff marks on the guardrail along the south side of the road and another scuff mark leading away from the guardrail and traveling back into the westbound lane. The vehicle traveled off of the roadway on the north side of the road and overturned, coming to a position of uncontrolled rest on the drive side of the vehicle. The reading indicated a BAC of 0.141% at 23:01 hours. Veh 1 M 23 Inj 5

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
8	VT-104A	1.73	12/10/2011	9:13	Clear	0	0	Single Vehicle Crash	Single vehicle crash 15 feet east of Arrowhead Lake Road intersection. The conditions the day of the crash were clear, however there was snow and ice on the road. Witness advised that he was traveling west when he was passed by Operator #1. Said that he was traveling at approximately 55 MPH in a marked 50 zone, and that shortly after he was passed he came upon the vehicle in the middle of the roadway at a stop. Advised that after speaking with Operator #1, she advised that she spun out on the roadway and struck a guardrail before coming to rest. Operator # 1 said that she was traveling west at approximately 55 MPH. Advised that while driving, her front right tire crossed the white line and hit a patch of ice. The operator advised that the vehicle spun and crossed the centerline striking the guardrail. The operator advised that she came to rest after colliding with the guardrail. Veh 1 F 20 Inj 5
9	VT-104A	1.75	1/26/2009	8:24	Clear	0	0	Single Vehicle Crash	Single Vehicle rollover. Vehicle had gone off the westbound side of VT 104A just 100 ft east of Arrowhead Lake Rd. Operator #1 advised that she was traveling westbound when she started sliding. She advised that she attempted to correct herself, but ended up leaving the roadway and rolling over. Advised that she was traveling approximately 45-50 mph at the time. The weather at the time was clear, yet the road was still icy in spot due to the recent weather. The road was headed downhill and on a moderate to sharp curve. Veh 1 F 31 Inj 5

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
10	VT-104A	1.85	12/20/2008	18:35	Cloudy	0	0	Opp Direction Sideswipe	Two-vehicle collision between Jed Shepard Rd and the 104a state fishing access. At the time of the collision, it was nighttime and extremely cold. The roadway was snow covered and extremely icy. The officer was able to see an icy gloss of the roadway when illuminated by headlights. Upon the arrival of the officer, he noticed a brown colored SUV, facing in a North/North West direction (towards Rt 7) directly adjacent to the state fishing access. Operator #2 advised that he was traveling towards Fairfax when he was struck by the other vehicle. Operator #1 advised that he was traveling Rt 104a towards Rt 7 when the collision occurred. Passenger in vehicle 1 said that the vehicle became sideways just before the collision occurred. Veh 1 M 32 Inj 5, Veh 2 M 19 Inj 5
11	VT-104A	1.93	4/29/2008	20:50	Clear	0	0	Single Vehicle Crash	Single vehicle crash approximately 0.2 miles east of Arrow Head Lake Rd. The weather at the time of the crash was clear and dry. Operator #1 said he was traveling east at approximately 50 MPH when a car came around the corner. Operator #1 said the car traveling in the other direction traveled into his lane forcing him to hit the guard rail. Vehicle #2 did not stop. If Operator #2 is located s/he will be cited for Leaving the Scene of an Accident. Veh 1 M 29 Inj 5

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
12	VT-104A	1.97	1/8/2012	12:30	Cloudy	0	0	Opp Direction Sideswipe	Two-vehicle crash on VT Rt. 104A 0.25 miles east of the intersection with Arrow Head Lake Rd. Officer was currently in response to 2 separate crashes that had occurred on VT Rt. 104A while this call came in. Officer observed that the roads were icy and the weather was partly cloudy without any precipitation. The visibility was clear. Vehicle#1 hit a section of ice on the roadway, which resulted in a loss of traction on a downhill curve that ultimately led to the crash. This was the third crash within approximately 20 minutes in this 3 mile stretch of the roadway. Operator #1 advised me that she was travelling west at approximately 45 mph in a posted 50 mph zone. Operator #1 said that she came around the curve and as she started to travel downhill her vehicle started to fishtail. Operator#1 then slammed on the emergency brake because she felt herself losing control of the vehicle. However, this action created more of a hazard as vehicle #1 then started to spin 1-2 full rotations as she continued west. Operator #1 then noticed vehicle #2 approaching her, but she could not react as she was not in control of her vehicle and was sliding down the middle of the roadway. Operator #1 stated that she struck the guardrail and then collided into the side of vehicle #2. Operator #2 stated that she was travelling east at approximately 35 mph due to the icy roads. Said that she saw vehicle #1 approaching her and observed that she was out of control as the vehicle was spinning down the roadway. Veh 1 F 17 Inj 5, Veh 2 F 51 Inj 5

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
13	VT-104A	0.00	12/3/2008	6:40	Clear	0	0	Same Direction Sideswipe	Two-vehicle collision involving a Tractor Trail at the intersection of Route 104a and Route 7 in the Town of Georgia. Route 104a consists of only one lane at his intersection. OP#1 advised that she was traveling west on Route 104A approaching the intersection of Route 104A and Route 7. OP#1 observed a pickup truck in front of her with a left hand signal and a TT unit in front of the pick-up. OP#1 advised that the TT unit appeared to be turning left onto Route 7. OP#1 then passed the pick-up truck and TT unit on the right hand side to make a right hand turn onto Route 7 off from Route 104A. OP#1 advised that the TT unit began making a left hand turn onto Route 7 and clipped the front drives side of her vehicle. OP#2 he advised that he was making left hand turn onto Route 7 from Route 104a when he was flagged down by a motorist who advised him he had just clipped a car. OP#2 advised he had to swing to the right in order to make the left hand turn. OP#2 advised he did not realize he had hit the vehicle he thought he had just driven over the curb.

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
14	VT-104A	0.00	2/13/2009	15:58	Clear	0	0	Same Direction Sideswipe	Involving a TT Unit at the intersection of Route 104A and Route 7 in Georgia. The weather was clear at the time and the sun was out. There were no road conditions that would have affected this. Op 1 advised that he was driving on Route 104A when he approached the intersection of Route 7. He advised that the TT Unit pulled up to left side of the road and activated his left directional signal. He advised that because of this, he pulled to the right of the truck in order to get up to that same intersection. He advised that the TT Unit then started to turn right and struck the side of his vehicle. Op 1 was adamant about stating that the TT Unit had its left blinker on, yet then turned on his right blinker at a later time. Operator of the TT Unit advised that he pulled up to the intersection and had his right directional on. He stated that he needs to go to the left in order to make the right turn, yet still had his right blinker on. He advised that when he went to turn right, he did not see the vehicle next to him and struck the side of it. He advised that the vehicle was not at the intersection when he pulled up to it. Officer wrote: There are no separate lines that differentiate between a right and left turn lane, and as stated above, there is a whole separate lane for bearing right. Regardless of the right directional signal being used or not, when the Cobalt pulled up to the intersection, it made its own lane next to the TT Unit. It is recommended that the Highway Department access this location and determine whether a "One Lane" sign needs to be placed in the area. Vehicles routinely pull up at this intersection together, yet there are no clearly marked separate lanes.

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
15	VT-104A	0.00	12/4/2009	7:36	Clear	0	0	Same Direction Sideswipe	A minivan and tractor trailer unit were involved. At the time of the crash it was sunny and the roadway was dry. Operator #1 advised that he was on the left portion of the roadway attempting to turn right. Operator #1 advised that he had his right directional on. Operator #1 advised that a vehicle pulled up on his right and he had to wait for that vehicle to pass. Operator #1 advised after the vehicle passed he turned right. Operator #1 advised that he did not see Vehicle #2. Operator #2 advised that she was behind Vehicle #1 approaching the intersection. Operator #2 advised that she observed Vehicle #1 to be on the left edge of the roadway indicating a left turn. Operator #2 advised she drove to the right of Vehicle #1 and stopped at the stop sign. Operator #2 advised that Vehicle #1 then pulled out. Operator #2 advised that the trailer crashed into her car. Witness was behind Operator #2 in traffic. Advised that he observed Vehicle #1 to be indicating a left hand turn. Advised that he observed Vehicle #2 pulled alongside Vehicle #1. Advised that Vehicle #1 changed its directional and pulled out.
16	VT-104A	0.00	8/27/2010	13:31	Cloudy	0	0	Rear End	Vehicle #2 stopped at stop sign, vehicle #1 failed to stop behind #2 and struck it in the rear. Both vehicles west bond on 104a, upon reaching intersection of 7 and 104a vehicle #2 stopped at the stop sign with vehicle #1 stopping behind him. Operator #1 stated that her foot slipped on the clutch and she lurched ahead striking #2 in the rear.
17	VT-104A	0.00	12/13/2010	7:38	Rain	1	0	Rear End	Two-vehicle crash on route 104a in Georgia. The weather was clear and dry. Operator #2 advised she was traveling east on route 104a. Operator #2 advised she was attempting to turn into her work parking area when vehicle #1 struck her from behind. Operator #1 advised she was traveling west on 104a. Operator #1 advised she dropped her coffee and picked it up. Operator #1 advised when she looked up she saw the vehicle in front of her but it was too late to avoid crashing into Vehicle #2.

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Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
18	VT-104A	0.00	3/25/2011	9:15	Cloudy	1	0	Same Direction Sideswipe	Both operators W bound on 140a with op #2 in front of op #1. Operator #2 stopped for stop sign at jct of 104a and Route 7, he had direction lights on to turn right. Operator #1 advised she saw no directional lights. Operator #2 started a right turn to head north on rt 7. Veh #1 thought veh #2 was turning left to head south on Rt 7 and started passing veh #2 on the right. As veh #2 turned right the right rear of his trailer struck the left front of veh #1 as she attempted to pass on the right and turn right.
19	VT-104A	0.54	11/16/2012	12:39	Clear	1	0	No Turns, Thru moves only, Broadside ^<	Two-car crash at the intersection of route 104A and Industrial park road in Georgia, VT. At the time of the accident, the weather was clear and the roadway was dry. It appeared that V1 was turning out of the industrial park and V2 was heading west on route 104A at the time of the crash. Operator 1 stated that day was her first day at work and upon leaving, she never stopped at the stop sign. Op 2 was traveling west towards Georgia at approx. 30 mph when V1 entered route 104A without stopping.
20	VT-104A	0.75	10/22/2012	18:23	Clear	0	0	Other - Explain in Narrative	Property damage accident that occurred on Rte 104A in Georgia. A 2 x 4 had fallen off a truck and struck another vehicle. Operator 2 stated that he was traveling east on Rte 104 A when he saw an approaching truck with a 2 x 4 sticking out of the back of the bed into the east lane. The 2 x 4 struck the front of his vehicle and possibly the roof when the impact dislodged it. Operator 1 was operating a Harrison Concrete vehicle carrying a load of 2 x 4's used from a job. He was unaware that on had struck another vehicle. Vehicle 1 was carrying a load of 2 x 4's that were unsecure and not strapped in. As the two vehicles passed in traffic a 2 x 4 struck vehicle 2 causing minor damage to the front bumper and possibly the roof.

Crash Number	Road	Marker	Date	Time	Weather	Injuries	Fatalities	Type	Description
21	VT-104A	0.90	9/20/2008	10:52	Clear	1	0	Single Vehicle Crash	Single vehicle motor vehicle. Op1 stated she was traveling south on route 104A, towards Fairfax, when she drifted off the travel portion of the roadway. Stated when she steered back onto the travel portion, she overcorrected and lost control of the vehicle. Stated she then struck the guardrail. The minor damage caused to the vehicle supported Op 1's claim to be traveling below the post 50 mile an hour speed limit. Near 3617 Highbridge
22	VT-104A	1.16	3/13/2013	15:21	Cloudy	1	0	Opp Direction Sideswipe	Two-vehicle crash on Route 104A. The point of impact is on a narrow bridge. The weather at the time of the accident was cold and cloudy. The roadway was dry. Operator #1 advised that she was operating a Georgia Elementary School bus (north on VT 104a). She had her window open. She was traveling across the Arrowhead Lake Bridge. She advised a truck was crossing at the same time. She advised that the truck impacted her mirror. The mirror shattered sending pieces into the passenger area of the bus. She then stopped the bus after traveling off the bridge. This was a scheduled stop to drop off a student. Witness #1 advised that they were traveling from Georgia to Fairfax VT on 104A. She noticed an 18-wheeler approaching them. The vehicle was across the center line. The vehicle appeared to be going too fast because it looked like it was out of control. The vehicle traveled back into its lane before it passed them. Witness #2 advised she was traveling to Fairfax on RTE 104A. She advised that an 18 wheeler almost collided with her on the Arrowhead Lake Bridge. She had to swerve to avoid a crash. Upon investigation the tractor trailer continued on. The vehicle was not located.

Traffic Safety Section

Road Safety Audit Review

Action Plans

The safety concerns and potential actions that were just described in the previous section are further summarized in the next table. In this table, the safety issues of concern are listed in the first column. The second set of columns identifies the groups that are most likely capable of implementing a solution. For each safety issue, the audit team suggested the actions that are listed in the column titled “strategy” as possible remedial solutions. For each safety issue, the groups identified by an X are asked to review the proposed strategies and evaluate their ability to implement these strategies by indicating in the appropriate column if they agree to implement these measures and if not, by supporting their decision by writing a reason in the last column. The groups identified are not obliged to follow the findings of the RSAR report. However, the reasons for not implementing a finding should be documented (e.g. physical constraints, excessive cost, environmental constraints, etc.). Each group should return their completed table to the audit coordinator as soon as possible.

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
<u>Problem #1</u> Narrow bridge and lack of visual clues (especially when the centerline is completely faded)				X				Immediate to Short Term Actions (within 6 months) Install recessed yellow centerline markings on the bridge and its approaches			
				X				Install additional object 3 markers on the back of the existing object markers			
				X				Install a vertical retroreflective strip on the post of each object 3 marker			
				X				Relocate the Narrow Bridge Sign			

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
					X			Replace all reflectors inside the guardrail on the bridge and its approaches			
	X							Mid Term Actions (within 12 months) Prioritize a project for a wider bridge			
<u>Problem #2</u> Travel speeds perceived too high for traffic, land use and geometric conditions				X				Immediate to Short Term Actions (within 6 months) Install a 40 mph advisory speed plaque beneath each Narrow Bridge Sign (upsized warning signs to 36")			
				X				Evaluate the need for updated signage (including ball banking) for the curves listed in Table 1			

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Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
				X				Measure the corner sight distance at the Arrow Head Lake Rd Intersection and assess the situation			
		X						Request from VTrans a reevaluation of the posted speed limit given new traffic generators and increased truck and commuter traffic			
			X					Increase enforcement and target drivers traveling above 56 mph			
<u>Problem #3</u> High proportion of single vehicle crashes on an icy/snowy road surface					X			Immediate to Short Term Actions (within 6 months) Evaluate past practices and develop a policy to improve, as needed, winter maintenance on VT 104a			

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Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
							X	Mid Term Actions (within 12 months) Prioritized the programming of a resurfacing project			
							X	Mid Term to Long Term Actions (12 months to five years) Resurface VT 104a			
							X	Install a high friction surface treatment with calcined bauxite aggregates in the section between mile points 1.45 and 1.75.			

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

Observation	NWRPC	Town of Georgia	Sheriff	AOT Traf Ops	AOT District	AOT Traffic Design	AOT Traffic Pavement	Strategy	Decision Agree Reject	Planned Completion Date	Comments
<u>Problem #4</u> Conflicting movements between a right turning truck and a second right turning vehicle caused by the de facto right turning lane on the VT 104a approach of the US 7 intersection. Conflicting movements between right turning vehicles on the VT 104a approach and right turning motorists that use the road that acts as some kind of a slip lane.				X	X	X		Immediate to Mid Term Actions (within 24 months) Develop (and construct) a low cost project to strip and signs the approach as one left turn lane and one right turn lane (This will require modifying the island on the northeast corner of the intersection to accommodate trucks with a wider radius and possibly a truck apron as to not make the approach too wide. It will also be highly desirable to close off the access to what acts as a "slip lane")			
<u>Problem #5</u> Potential for motorists that leave Interstate Service & Movement Center to go the wrong way on the "slip lane" towards VT 104a				X				Immediate Actions Install Do Not Enter signs at the end of the "slip lane" where it meets VT 104a			