SAFETY REPORT

December 2013

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EB I-70 Peak Period Shoulder Lane

CATEGORICAL EXCLUSION

I-70 EASTBOUND PEAK PERIOD SHOULDER LANE (PPSL)

SAFETY REPORT

Prepared for:

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EXECUTIVE SUMMARY

The I-70 Mountain Corridor experiences high levels of weekend traffic congestion. The highest volumes are recorded eastbound on Sunday afternoons as recreational travelers make their way back from the mountains to the Denver metro area. The worst and most consistent delays along the I-70 Mountain Corridor occur from Georgetown to the Twin Tunnels just east of Idaho Springs.

In order to provide more eastbound capacity for peak conditions, the Colorado Department of Transportation (CDOT) is investigating ways to improve operations on an interim basis without a significant construction project. The I-70 Eastbound Peak Period Shoulder Lane (PPSL) project would utilize the shoulder to provide a third eastbound travel lane during peak periods from US 40 at Empire Junction to east Idaho Springs. During peak periods when the shoulder lane is being utilized, it would operate as a tolled express lane (Managed Lane). The PPSL would serve as an extension of the third eastbound lane that was recently opened to traffic. This construction project widened I-70 eastbound only and extended from the East Idaho Springs interchange (Exit 241) to the US 6 interchange (Exit 244) at the base of Floyd Hill. Initiating the PPSL at Empire Junction recognizes the fact that US 40 adds a significant amount of traffic to I-70 during peak eastbound periods.

A thorough analysis of safety in the PPSL corridor was completed for this project. The most predominant crash types were found to be fixed object type crashes (concrete barrier, guard rail, embankment and walls), rear end type crashes, and sideswipe same direction type crashes. These crash types comprise approximately 82 percent of the crashes along the corridor. In general, there are several factors that contribute to the cause of crashes along the study corridor. Some of the primary factors include; the horizontal curvature of I-70, travel speed, traffic congestion due to weekend traffic, direction of travel and inclement weather / road conditions. Rear end type and sideswipe same direction type crashes typically occurred on winter weekends when traffic congestion is more likely. These rear end and sideswipe type crashes occurred more frequently in the eastbound direction because this direction experiences higher traffic congestion. In fact, almost 50 percent of the eastbound rear end crashes occur on Sundays. In addition, there were several locations that the horizontal curvature of the roadway made rear end accidents more frequent due to the inability for vehicles to see stopped traffic ahead.

There are a number of implementations where safety shoulders are used as travel lanes to increase the efficient utilization of highway capacity. In the United States, the primary use of shoulders has been as a safety refuge area. Several states have deployed temporary shoulder use for all vehicles on congested corridors with success. While the number of deployments is limited, overall experience utilizing shoulders for interim use (known as dynamic shoulder use or DSU) has been positive in the United States. In Europe, part-time shoulder use is a congestion management strategy typically deployed in conjunction with complementary traffic management strategies – such as variable speed limits (speed harmonization) and/or ramp metering. European agencies have realized both safety and mobility benefits as a result of these projects.

The Concept of Operations report for this study provides a comprehensive overview of the most significant construction and elements of the planned project. To the greatest extent possible, the existing roadway cross section will be utilized without widening. The minimum typical

cross-section recommended by the project team is 39 feet. From left to right, this will allow a 12-foot inside shoulder during off-peak periods (1-foot shoulder and 11-foot managed lane during peak periods), 11 and 12-foot general purpose lanes, and a 4-foot outside shoulder. Through the evaluation of operational concerns (such as driver expectancy and the higher anticipated speeds during PPSL operations), lessons learned from other states, meetings with the emergency responders within the project limits, and the commercial vehicle operations representatives, it was determined that the left-side PPSL was the preferred alternative.

Safety was analyzed in a quantitative manner based on the geometric features and changes in the level of congestion that are inherent to the PPSL concept. The safety analysis of geometric elements determined that changes to the number of lanes, their widths, and the shoulders (while utilizing the existing pavement section, for the most part) may result in a decrease in safety (increased crashes). However, reduced congestion (due to the additional travel lane available when the Managed Lane is operating) may improve safety through a decrease in rear-end crashes resulting from less stop-and-go traffic. Overall, the calculations result in a small forecasted improvement in safety.

There are a number of decisions about how the various elements of the PPSL will be configured. A qualitative assessment was made of their potential impacts to safety and how measures will be included in the design for the PPSL that minimize potential adverse impacts to safety. These design elements include merge and diverge areas, access and egress points, variable speed limit signs, emergency pull-outs, monitoring of operations by CDOT staff, signing, opening and closing procedures, and emergency response.

1.0 INTRODUCTION

The I-70 Mountain Corridor experiences high levels of weekend traffic congestion, with the highest volumes recorded eastbound on Sunday afternoons as recreational travelers make their way back from the mountains to the Denver metro area. The worst and most consistent delays along the I-70 Mountain Corridor occur from Georgetown to the Twin Tunnels just east of Idaho Springs.

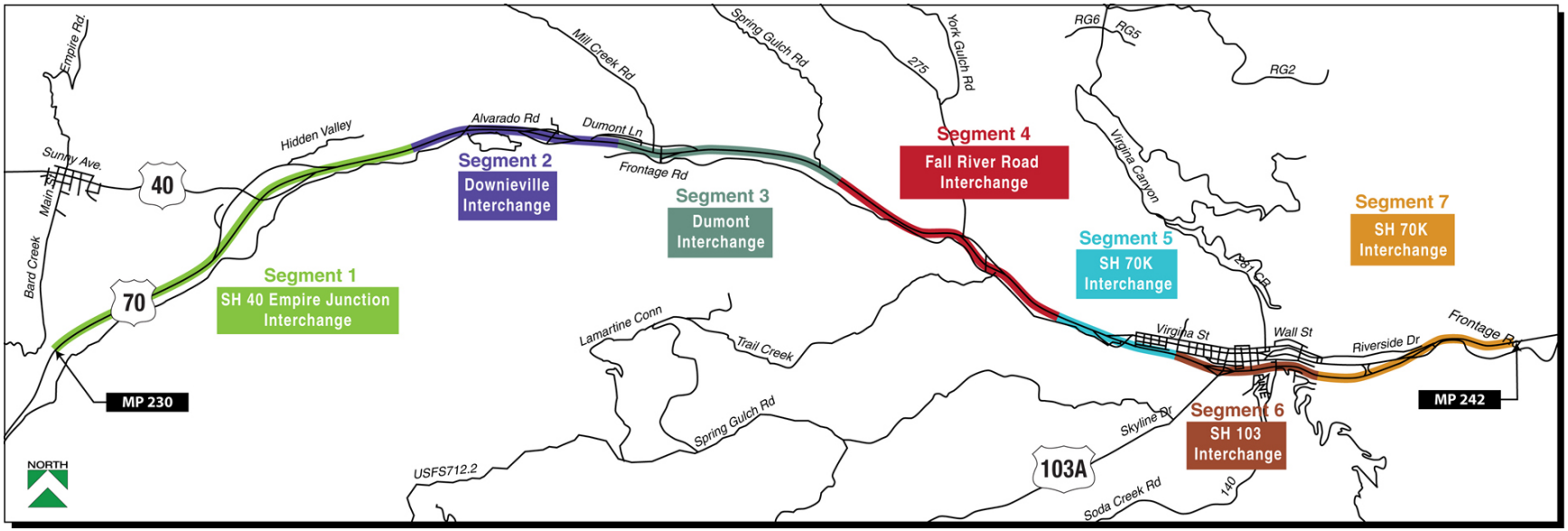
During both the summer and winter peak season, traffic volumes throughout the I-70 Mountain Corridor are highest on weekends when recreational travelers comprise the vast majority (more than 90 percent) of trips through the Twin Tunnels area. The summer season (June through September) generates the highest average daily volumes due to the dispersed recreational opportunities that the mountains of western Colorado provide. The second highest season (December through March) results from the winter recreation activities (primarily skiing) centered on mountain resorts. Many visitors drive to the mountains on Friday or Saturday for recreational activities and return to the Denver metropolitan area on Sundays in order to be at work on Monday morning. Thus, Sundays have the highest volumes of the week, contributing significantly to eastbound congestion on most Sundays during these two peak seasons. Holidays can also result in high eastbound volumes. The majority of this congestion happens in the segment between Georgetown and the Floyd Hill area (see **Figure 1)** for the following reasons:

- Heavy traffic volumes enter and exit I-70 at U.S. Highway 40 (US 40)/Empire Junction just to the east of Georgetown; the interchange serves numerous recreational opportunities in Grand County that use Berthoud Pass.
- The Twin Tunnels segment (located between Idaho Springs and Floyd Hill) were operationally constrained because of the narrow shoulder widths, but again this has been addressed in the eastbound direction with the current Twin Tunnels Widening project.

I-70 currently carries two travel lanes in each direction within the Project corridor, while construction was recently completed on the Twin Tunnels segment to the east of the project to add a third eastbound lane. At least one, two-lane local road is also present through the entire corridor, running approximately parallel to I-70. The eastbound and westbound lanes of I-70 are separated by a narrow median with guardrail or concrete barrier. The speed limit is posted at 65 miles per hour (mph) entering the west end of project corridor, but is reduced to 60 mph at MP 238, and further reduced to 55 mph at MP 242. The corridor's Annual Average Daily Traffic (AADT) ranges from 39,000 to 45,000 vehicles per day.

Commercial vehicles account for approximately 10.5% of the AADT (CDOT 2011) through this segment of the corridor. During the peak period of travel the percentage is lower, but the commercial vehicles on this corridor have few other east-west options and can still have a significant effect on traffic operations due to the roadway geometry.

Figure 1. Project Area/Vicinity Map



In order to provide more eastbound capacity for peak conditions, the Colorado Department of Transportation (CDOT) is investigating ways to improve operations on an interim basis without a significant construction project. The I-70 Eastbound Peak Period Shoulder Lane (PPSL) project would utilize the shoulder to provide a third eastbound travel lane during peak periods from US 40 at Empire Junction to east Idaho Springs. During peak periods when the shoulder lane is being utilized, it would operate as a tolled express lane (Managed Lane or ML). The PPSL would serve as an extension of the third eastbound lane that was recently opened to traffic. This construction project widened I-70 eastbound only and extended from the East Idaho Springs interchange (Exit 241) to the US 6 interchange (Exit 244) at the base of Floyd Hill. Initiating the PPSL at Empire Junction recognizes the fact that US 40 adds a significant amount of traffic to I-70 during peak eastbound periods.

The PPSL project is being developed according to the guidelines of the I-70 Mountain Corridor Context Sensitive Solutions (CSS) process. A Technical Team was formed that consists of representative from CDOT, other state and federal agencies, local governments, specific interest groups, and other stakeholders. A series of Technical Team meetings have been conducted on a monthly (or more frequent) basis to collaboratively develop the PPSL design concept with input from all stakeholders.

2.0 CURRENT SAFETY CONDITIONS

A thorough analysis of safety in the PPSL corridor was completed for this project (*Safety Assessment Report – State Highway 70A – MP 230.00 to MP 242.00 – Region 1*, October 25, 2013) and is included in this report as **Appendix A**. This report found that there were 780 crashes reported within the study segment between January 1, 2008 and December 31, 2012. The most predominant crash types were fixed object type crashes (concrete barrier, guard rail, embankment and walls), rear end type crashes, and sideswipe same direction type crashes. These crash types comprise approximately 82 percent of the crashes along the corridor. In general, there are several factors that contribute to the cause of crashes along the study corridor. Some of the primary factors include; the horizontal curvature of I-70, travel speed, traffic congestion due to weekend traffic, direction of travel and inclement weather / road conditions. For many of the crashes, there was more than one of these factors that contributed.

In general, the *Safety Assessment Report* (Reference 1) found that the fixed object crashes typically occurred on a winter weekday when higher travel speeds and / or poor road conditions were common factors. These barrier type crashes occurred more frequently in the westbound direction.

Rear end type and sideswipe same direction type crashes typically occurred on winter weekends when traffic congestion is more likely. These rear end and sideswipe type crashes occurred more frequently in the eastbound direction because this direction experiences higher traffic congestion. In fact, almost 50 percent of the eastbound rear end crashes occur on Sundays. In addition, there were several locations that the horizontal curvature of the roadway made rear end accidents more frequent due to the inability for vehicles to see stopped traffic ahead.

There were four specific curves in the eastbound direction where specific patterns of crashes were identified, involving both rear end and fixed object crashes: included:

- **Curve 1 (at Empire Junction - MP 231.70 to MP 232.20)** – During the study period, there were a total of 56 crashes on this curve, 37 eastbound and 19 westbound. The predominant crash type on this curve was rear end type crashes (30 of 56) which comprised 54 percent of the total. Of the rear end crashes 28 were eastbound and 2 were westbound. As was the trend for the entire segment, most of these rear end type crashes occurred in dry/daylight conditions during the afternoon peak hours when there was significant congestion.
- **Curve 5 (just west of Fall River interchange - MP 237.25 to MP 237.55)** – During the study period, there were a total of 27 crashes on this curve, 19 eastbound and 8 westbound. The predominant crash type on this curve was fixed object (guard rail, embankment) type crashes (13 of 27) which comprised 48 percent of the total. Of the fixed object crashes 9 were eastbound and 4 were westbound. These crashes generally occurred during the winter in inclement road conditions.

- **Curve 6 (east of SH 103 interchange near Soda Creek Road overpass - MP 239.90 to MP 240.25)** – During the study period, there were a total of 44 crashes on this curve, 26 eastbound and 18 westbound. The predominant crash type on this curve was fixed object (guard rail, barrier, embankment, etc.) type crashes (25 of 44) which comprised 57 percent of the total. Of the fixed object crashes, 14 were eastbound and 11 were westbound. These crashes generally occurred during the winter in inclement road conditions.
- **Curve 7 (long curve and grade west of East Idaho Springs interchange - MP 240.43 to MP 241.15)** – During the study period, there were a total of 46 crashes on this curve, 35 eastbound and 11 westbound. The predominant crash type on this curve was rear end type crashes (24 of 46) which comprised 53 percent of the total. Of the rear end crashes 18 were eastbound and 6 were westbound. As was the trend for the entire segment, most of these rear end type crashes occurred in dry/daylight conditions. The eastbound crashes primarily occurred during the eastbound peak hours of travel around 3:00 in the afternoon, while most of the westbound crashes occurred in the morning during the westbound peak hour of travel. It should be noted that Curve 7 has a large downhill grade in the eastbound direction.

3.0 OVERVIEW OF PPSL CONCEPT

The I-70 Eastbound Peak Period Shoulder Lane project ("Project") will utilize the shoulder to provide a third eastbound travel lane during peak periods along the I-70 Mountain Corridor from US 40 at Empire Junction to east Idaho Springs. The PPSL will serve as an extension to the third eastbound lane that has been constructed through the Twin Tunnels. It will operate as a tolled express lane (Managed Lane) during peak Sundays (and holidays) and will function as a safety shoulder for emergency stopping during off-peak periods. Several combinations of unmanaged lanes (also known as General Purpose (GP) lanes) and Managed Lane (ML) were considered. Intelligent Transportation System (ITS) devices will be installed or upgraded to support the operation of the PPSL. Long range improvements along the entire corridor are not yet funded, so the intent of this project is to provide an interim operational improvement to help ease traffic congestion along the I-70 Mountain Corridor. This chapter provides a summary of the information contained in the Concept of Operations report for this study (Reference 2).

The proposed PPSL along I-70 will provide reliable travel times during peak travel periods (generally 11:00 am to 8:00 pm) for motorists returning to the Denver Metro Area from recreational activities in the mountains of Central Colorado. The PPSL toll rate structure will be designed to carry traffic all the way to US 6, east of the Twin Tunnels.

CDOT will be responsible for the design and construction of the Project as well as maintenance and operation of the facility. The High Performance Transportation Enterprise (HPTE) will oversee the management and operation of the Managed Lane's tolling system. It is presumed that the E-470 Public Highway Authority (E-470) will serve as the Tolling System Integrator and will provide the back office system and customer service center to process and issue tolls, as well as collect payment.

3.1 Typical Section

A series of meetings were held with the project technical team to develop the requirements for the typical roadway cross-section, which will be used to ensure safe operations and a context sensitive solution that minimizes the amount of additional pavement required for widening. The existing I-70 roadway section through the project limits varies from approximately 37 feet to 40 feet. The proximity of Clear Creek to I-70 within the project limits suggests that a narrow typical cross-section will have the least environmental impacts. This approach also follows the interim nature of the project. In order to minimize negative impacts to safety along the corridor due to a narrow cross-section, the project technical team established the minimum lane and shoulder width requirements shown in **Table 1**.

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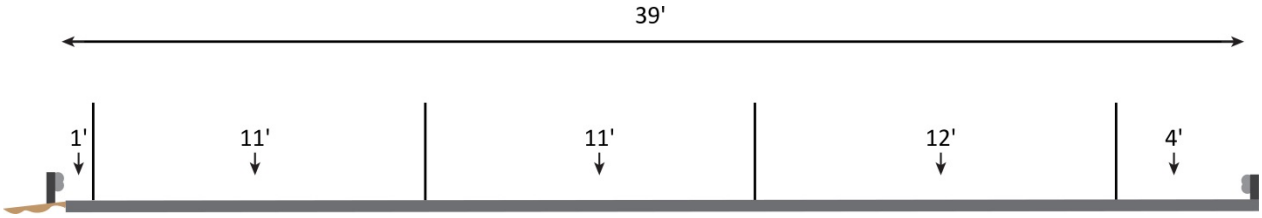
Table 1. Minimum Lane and Shoulder Widths

Element	Minimum Width	Source
Left Shoulder (inside)	1 ft	Safety Analysis
All Travel Lanes	11 ft	FHWA Requirement, Safety Analysis
Primary Commercial Vehicle Lane	12 ft	CMCA, Safety Analysis
Right Shoulder (outside	4 ft	FHWA Requirement

The most common type of separation treatment for managed lanes in Colorado is to create a buffer area with pavement markings, as opposed to a physical barrier. The width of the buffer area can vary depending on the available pavement and ROW. In keeping with the goals of an interim solution and due to the geometric constraints within the project limits, the recommended separation treatment between the PPSL and the GP lanes is only the width of the pavement markings.

Based on these requirements, the minimum typical cross-section recommended by the project team is depicted in **Figure 2**. This 39-foot cross-section will be applied as a general template for the project corridor. However, a wider cross-section may be used as right-of-way and existing pavement allow, and exceptions may need to be evaluated for short stretches with tighter geometry.

Figure 2. Minimum Recommended Typical Cross-Section



With the typical cross-section established, a determination was made as to which lane would be managed (tolled) during peak periods and which lane would serve as the full shoulder (breakdown area) during the off-peak periods.

The project technical team evaluated the operation of a left-side versus right-side PPSL, and developed **Table** 2 to show the pros and cons of each alternative. General driver expectancy would suggest that the right-side PPSL would provide a more standard break-down area during the off-peak conditions, but this option would create several operational concerns that the project team had to consider. With a right-side PPSL, the traffic in the GP lanes would have to shift one lane to the right during peak periods in order to operate the left-side toll lane, requiring extra signing and additional merging conflict points. The freeway ramps would also tie into the travel lanes at a different point during the peak and off-peak periods, creating potentially unsafe conditions. In order to allow slower moving commercial vehicles to operate in a full 12-foot lane

and to stay to the right during both peak and off-peak periods with a right-side PPSL, the minimum cross-section (**Figure 2**) would have to be widened by one foot (to 40 feet) to accommodate the second 12-foot lane.

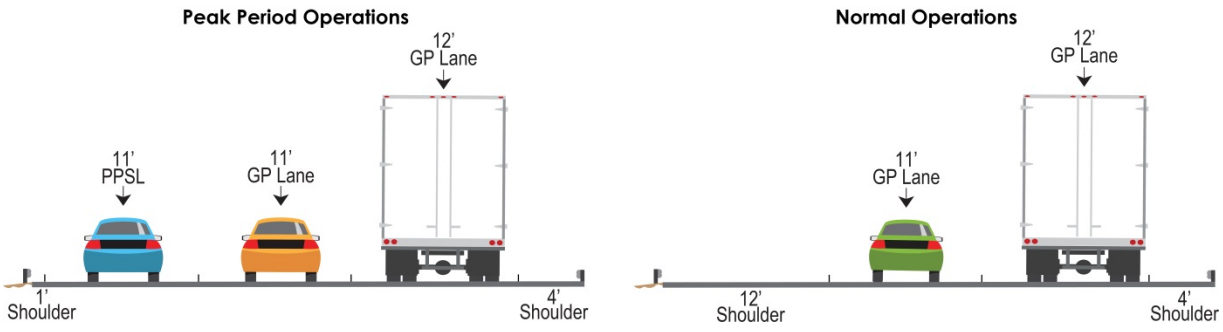
Through the evaluation of these operational concerns (such as driver expectancy and the higher anticipated speeds during PPSL operations), lessons learned from other states, meetings with the emergency responders within the project limits, and the commercial vehicle operations representatives, it was determined that the left-side PPSL was the preferred alternative. **Figure** 3 depicts the typical cross-section and lane assignments for the preferred alternative during peak and off-peak conditions.

Table 2 Left-Side vs. Right-Side PPSL

	Pros	Cons
Left	▪ Managed lane clearly defined ▪ Consistent operations peak and off peak ▪ Reduces signing by 50% ▪ Ability to add rumble strip between GP and ML ▪ 12' lane is on the far right used by trucks	▪ Shoulder is wider on the left during off peak periods (unconventional) ▪ Deceleration lanes will be reduced ▪ Ice and snow removal issues (100% of the time) ▪ Striping at the Twin Tunnels will not match PPSL project for express lane
Right	▪ Breakdown lane is on the right side of the roadway ▪ PPSL lane would be a continuous add lane at US 40 interchange	▪ Increases signing by up to 50% ▪ Managed lane is not clearly defined ▪ Peak and off peak operations differ ▪ 12' lane is in the middle, meaning you will need to pass trucks on the right ▪ Trucks have to weave right to reach port of entry ▪ No opportunity for rumble strip ▪ Inattentive drivers may end up in ML

Source: I-70 Eastbound Peak Period Shoulder Lane Left vs. Right Side Operations, HDR White Paper

Figure 3. Typical Cross-Section with Lane Assignments



3.2 Access and Egress Provisions

Motorists will be able to operate in the PPSL continuously from beginning to end; however, potential intermediate access zones to accommodate ingress and/or egress movements were also considered. Access is a key design component of any type of managed lane, helping to safely and efficiently guide users in and out of the facility at desired locations. Access zones are designed at logical points based upon trip origins and destinations, and the primary purpose of the lane. The frequency of access zones takes into account the travel demands of the area, pricing strategy for tolled lanes, length of tolling area, safety, and other factors.

In order to maintain free flow operations and minimize weaving/merging movements with the anticipated speed differential (see Section 5.3), no intermediate ingress-only access zone are recommended between US 40 and the east side of Idaho Springs. However, an ingress-only access zone will be required between the east Idaho Springs interchange (Exit 241) and the Twin Tunnels, allowing entrance into the full-time managed lane that will continue to operate from the Twin Tunnels to US 6 when the PPSL is not in operation.

3.3 Emergency Pull-outs

Emergency pull-outs are essential to the reliable operation of any roadway segment that has been converted to dynamic shoulder use (DSU), particularly in rural areas with a lower density of interchanges. Based on European experience, the recommended spacing for emergency pull-outs (or interchanges) in this segment of I-70 is every ½ to ¾ mile. **Table 3** shows the locations of proposed emergency pullouts specifically built for the PPSL project and off-ramps that also serve to move disabled vehicles out of the stream of traffic. There are 9 locations through the approximately nine miles where PPSL operations will limit shoulder use for emergencies. This is an average of 1.0 mile between pull-out with a minimum separation of 0.7 miles and a maximum of 1.8 miles.

Table 3. Proposed Emergency Pull-out Summary with Ramp Locations

No	MP	Location	Length	Width	Miles Between
Ramp	231.9	Empire Ramp (E-14-S)	380	12	-
Ramp	233.0	Lawson Ramp (E-14-AM)	980	12	1.1
Ramp	234.2	Downieville Ramp (E-14-AK)	1650	12	1.2
3	235.0	Dumont	510	16	0.8
5	236.8	West of Fall River Rd	510	16	1.8
Ramp	237.7	Fall River Ramp (E-14-AZ)	600	12	0.9
Ramp	238.9	West Idaho Springs Ramp (F-14-H)	670	12	1.2
Ramp	239.6	SH 103 Ramp (F-14-E/F-14-AA)	800	12	0.7
Ramp	241.1	East Idaho Springs Ramp (F-14-Y)	310	12	1.5

3.4 Speed Limits

During peak period operations, the target speed for the PPSL will be at least 45 mph to optimize traffic flow and provide a reliable travel option through pricing. The GP lanes will likely be operating at a lower speed due to traffic congestion. Reducing the speed differential between the fastest moving traffic and the slowest moving traffic is generally found to increase safety by reducing the number of lane changes and the average crash severity. There are two main methods CDOT can actively employ to manage the speed differential between the two lane groups: toll rates and variable speed limits.

- Toll rates can be set to achieve desired volumes in managed lanes, which in turn affects the speeds in that lane since speeds are related to the volume of traffic.
- Variable speed limits could also be used to change the posted regulatory speed limit along the corridor. Through a separate study (Reference 3), CDOT has previously investigated the potential benefits of dynamically controlling speed limits along this segment of the I-70 corridor based on traffic conditions. It is assumed that the same speed limit will be posted for all lanes and will be varied manually (not automatically).

Beyond these active methods for controlling speeds, the fact that the adjacent GP lanes will be congested and moving slowly may naturally lower the speeds in the toll lane due to driver discomfort.

3.5 Roadway Striping

The PPSL will need to be separated from the general purpose lanes, which will be accomplished using pavement markings. The roadway striping will identify the appropriate locations where drivers can enter or exit the PPSL and should convey that the PPSL is a shoulder during non-peak periods. An 8-inch solid white line will be used to delineate the PPSL from the GP lanes. It is recommended that a rumble strip will be placed along this separator line.

3.6 Roadway Signing

The signing associated with the PPSL will be a critical component of the traffic control and operations of the lane. Signing will need to clearly convey that the shoulder is only open to traffic during limited time periods, but is available for breakdowns or emergencies during the off-peak periods. Since this is an interim operational improvement, the focus of the signing will be to provide clear and concise messaging with a minimal number of signs. The following section provides an overview of the information that should be conveyed to drivers during both peak and off-peak periods, and conceptual signing layouts.

Since the PPSL will be tolled, signage will be necessary to provide toll rate information and the location of the access zones with enough advance warning to allow drivers to easily enter and exit the PPSL. Clear and consistent signing and striping will reduce confusion for drivers and minimize lane separation violations in which drivers enter or exit the PPSL at locations outside of the designated access zones.

4.0 SAFETY FINDINGS FOR SIMILAR INSTALLATIONS

There are a number of implementations where safety shoulders are used as travel lanes to increase the efficient utilization of highway capacity (see Reference 4). In the United States, the primary use of shoulders has been as a safety refuge area. The limited shoulder use as a travel lane has been primarily reserved for special users of the roadway system, most often transit vehicles. Agencies have seen bus use of shoulders as a low-cost and quick strategy to improve bus operations and reliability without having to acquire additional right-of-way and invest additional large sums of money into the infrastructure. Several states have deployed temporary shoulder use for all vehicles on congested corridors with success. While the number of deployments is limited, overall experience utilizing shoulders for interim use (known as dynamic shoulder use or DSU) has been positive in the United States.

However, research regarding documented safety benefits has been inconclusive (see Reference 5). Factors that make it difficult to identify DSU safety impacts include (see Reference 6):

- The small number of available sites with the treatment, along with potential complexities added due to unique geometric designs present or unique operational protocols used at each site.
- The limited number of years the treatment has typically been in use.
- The expected magnitude of the safety effects, which may be small. Smaller safety effects require a larger sample size to determine significance.
- The limited number of crashes, especially crashes that are associated with the specific treatment.

In Europe, part-time shoulder use is a congestion management strategy typically deployed in conjunction with complementary traffic management strategies – such as variable speed limits (speed harmonization) and/or ramp metering. European implementers include The Netherlands, Germany, and Great Britain. The use of exterior shoulder lanes during peak travel periods has been utilized extensive in Germany and England since the 1990s. Part-time shoulder use is only utilized during congested periods when queues begin to build at bottlenecks in the system. Moreover, this treatment is almost always deployed in conjunction with speed harmonization. The intent is to reduce the speeds along the corridor and smooth out driver performance and reduce the likelihood of collisions. European agencies have realized both safety and mobility benefits as a result of these projects. When travel speeds decline due to congestion, dynamic signs over or next to the shoulder indicate that travel on the shoulder is permitted. These signs and the overhead lane messages are blank when travel on the shoulder is not permitted.

In both England and the Netherlands, it was noted that the need for the outside shoulder to serve as a disabled vehicle area has diminished because of improvements in vehicle mechanical reliability. Therefore, the risk level for not providing full shoulder widths have diminished since fundamental freeway design criteria were first established (Reference 5). Research by Highways Agency in England indicated that the risk of eliminating shoulders (at least for part-time use) is minimal.

4.1 Deployments in the United States

I-35W - Minneapolis, Minnesota – A segment of the left shoulder on I-35W has been converted from bus only to a priced dynamic shoulder lane open to all vehicles (Reference 4). Opened in 2009, the objective of the project is to improve traffic flow using transit and tolling. The shoulder treatment was also deployed with variable speed limits on the general purpose lanes. All lanes are 12 feet wide with three-foot shoulders. Overhead gantries are spaced every 1.2 mile and include static signs and dynamic message sign inserts indicating price and lane use. The Minnesota State Patrol enforces the facility through visual inspection. Emergency refuges were installed along the right shoulder to facilitate emergency use.

Although safety statistics are not available, Mn/DOT personnel believe the facility is operating safely and as planned. Early results from variable speed limits in Minnesota shows increased mobility, throughput, and safety resulting from improvement in the speed differentials approaching congestion and reduced shockwaves.

I-66 – Northern Virginia – The segment of I-66 between US 50 and I-495 has been converted to include separate HOV lane and shoulder lane (Reference 4). The right shoulder is open to peak-period, peak-direction general purpose traffic which allows the leftmost lane to operate as an HOV lane. The general purpose lanes are 12 feet wide, the inside shoulder is 8 to 12 feet wide, and the outside shoulder (peak lane) is 11 feet wide. Signs over the outside shoulder enable a downward pointing green arrow when the shoulder lane is active, and a red X appears when the shoulder reverts to its normal use.

With regard to safety, researchers made the following observations (see Reference 6):

- **All lanes together** – models found no evidence that the following factors affect crash frequency when aggregated across all lanes: managed-lane strategy during peak hours, AADT volumes, merging and diverging influence areas, weather, light conditions, and existence of pull-off areas.
- **General purpose lanes only** – the variable AADT volumes appear to be significant and show about a two percent increase in weekday crashes for each increase of 1,000 vehicles per day in the AADT range of 50,000 to 83,000 vpd.
- **Right shoulder specific** – motorist behaviors at the merge and diverge areas during adverse sunlight conditions are significant and show an increase of about 38 percent in crashes.

California – The safety effects of narrow lanes and shoulder use lanes was investigated using 490 sites in California where the freeway was converted from four to five lanes or five to six lanes (see Reference 6). The evaluation found that projects converting four lanes to five lanes resulted in increases of 10 to 11 percent in crash frequency, which was found to be statistically significant. The observed increases in crash frequency could not necessarily be attributed to the use of a narrower lane or the conversion of a shoulder to a travel lane. The use of the added lanes as HOV lanes, which may have introduced a difference in speed between adjacent lanes, may be another explanation for the increase in crashes. The analysis results also suggest that the conversion projects may decrease crash frequencies upstream of the project an increase crash frequencies within and downstream of the project because the project may result in the relocation of a traffic operational bottleneck.

4.2 Deployments in Europe

The Netherlands – Temporary Shoulder Use and Speed Harmonization – As implemented in The Netherlands, temporary right shoulder use (also known as hard shoulder running) involves a gantry with lane control signals indicating when the shoulder is available for use (Reference 4). Hard shoulder running is only deployed in conjunction with speed harmonization. This strategy works to reduce speeds in congested conditions, thereby improving traffic flows and reducing the likelihood of traffic incidents. With hard shoulder running used on six freeways, the Dutch have seen reductions in incidents between 10 percent and 48 percent.

Germany – Temporary Shoulder Use and Speed Harmonization – Temporary shoulder use in Germany, also known as hard shoulder use, is only deployed in conjunction with speed harmonization to address capacity bottlenecks on the freeway network (Reference 4). The use of the right shoulder during peak travel periods has been utilized since the 1990s with nearly 125 miles currently in operation. Digital signs over each lane indicate lane use and reduced speed limits. The safety benefits realized through temporary shoulder use and speed harmonization are significant. Facilities with temporary shoulder use have seen a reduction of up to 29 percent in crashes with injuries, a reduction of up to 27 percent in crashes with heavy material damage, and a reduction of up to 3 percent in crashes with light material damage.

Great Britain – Managed Motorways – Introduced in 2001 by the UK's Highways Agency, its experience with deployment of over 30 miles of managed motorways has been very positive – improved flow, reduced accidents, fewer emissions – all at a fraction of the cost and environmental impact of traditional widening. In fact, the performance of managed motorways has exceeded expectations, notably in terms of safety (Reference 7). The project combines the strategies of speed harmonization (variable speed limits) and temporary shoulder use (Reference 4).

As an example, the M42 managed motorway has numerous technological components that ensure its successful operation (Reference 8). These include:

- **Lightweight Gantries** – hold lane control signals and dynamic message signs that indicate reduced speed limits and the availability of the hard shoulder for travel use rather than for emergency refuge only.
- **Highways Agency Digital Enforcement Camera System (HADECS)** – are purpose built enforcement cameras that enforce the mandatory speed limits.
- **Emergency Refuge Areas (ERAs)** – Safe areas away from the traffic for use in the event of a breakdown or emergency are spaced three-tenths of a mile apart. They are wider than the hard shoulder to provide additional safety and are connected to the Highways Agency (HA) regional control center by both CCTV cameras and emergency roadside telephones so that vehicles can be detected when they enter the ERA.
- **Emergency Call Boxes** – are situated in every emergency refuge area and offering a direct link to the HA regional control center.
- **Sensors** – are buried in the road surface to measure the general speed and flow of traffic. The sensors are used, via a computer system called MIDAS (Motorway Incident Detection and Automatic Signaling), to automatically set the most appropriate speed limit for current traffic conditions.

The primary goal for improving transportation across the UK is related to safety – which is an acknowledge contributor to roadway congestion. During the first 36 months of operations (Reference 9), MM 42 experienced a reduction in personal injury accidents (PIA) from 5.08 to 2.25 per month (a 55 percent reduction), and a notable reduction in the "accident severity index" (ratio of fatal and serious accidents to all accidents) from 0.16 to 0.07 (54 percent reduction). Furthermore, there has been a notable reduction in the number of people being fatally or seriously injured suggesting that when accidents do happen, vehicle occupants are more likely to be slightly injured than fatally or seriously injured.

5.0 SAFETY CONCERNS WITH PPSL

When comparing the proposed I-70 PPSL project with others in the United States and Europe, the following difference should be kept in mind:

- The I-70 PPSL will only be deployed on weekends (primarily Sundays) and holiday peak periods (generally 11:00 am to 8:00 pm) when there is congestion (primarily summer and winter). The PPSL will revert to its normal purpose as a safety shoulder at all other times. Other DSU implementations generally address weekday peak period (morning and evening) congestion concerns. Thus, they can be implemented 10 times a week, and everyday commuters become very familiar with their operation and requirements.
- When the shoulder is used as a travel lane, it will be tolled (Managed Lane). An installation on I-35W in Minneapolis, Minnesota is also tolled (Priced Dynamic Shoulder Lane – PDSL). However, other lanes in the United States and Europe are free and open to all vehicles or certain classes of vehicles (such has high occupancy vehicles – HOV). When the hard shoulder is free and open to all vehicles, there is more potential for vehicles to weave in and out of the shoulder lane which helps to reduce speed differentials between lanes, but increases the likelihood of crashes due to these maneuvers.
- The safety shoulder (during off-peak periods) for the PPSL project will be on the left side of the freeway. The normal location for the safety shoulder is on the outside/right (left for England).
- The PPSL will transition to the permanent third lane that has been constructed beginning at the East Idaho Springs interchange (Exit 241). This means that there will be no downstream bottleneck that might lead to crashes migrating from one section of the corridor to another.

When comparing the I-70 PPSL project to the physical and operational characteristics of European implementations, several differences that could affect safety are apparent:

- Due to the high volumes and limited space for enforcement activities, the I-70 PPSL will only have limited speed limit enforcement activities. This is similar to I-35W in Minneapolis where variable speed limits are considered advisory only. In the UK, the Highways Agency Digital Enforcement Camera System (HADECS) is utilized on Managed Motorways. This automated system uses purpose-built enforcement cameras to enforce mandatory speed limits.
- The PPSL corridor will have complete coverage by closed circuit television cameras (CCTV). This will allow personnel at the designated control center to monitor traffic flow when the managed lane is operational. In the future, CDOT may be implementing a system of traffic sensors that provide real-time data to control personnel. Managed Motorways in Great Britain utilized a computer system called MIDAS (Motorway Incident Detection and Automatic Signaling) to automatically set the most appropriate speed limit for current traffic conditions. This system relies on sensors buried in the road surface that measure the general speed and flow of traffic (Reference 8).

- The I-70 PPSL will rely on signs along the edge of the roadway and dynamic signs on the left side of the Managed Lane or shoulder at other times. It will not utilize gantries that span all lanes and have specific dynamic message signs over each lane to inform motorists of the speed limits and whether the lane is open to traffic, i.e., the lane may be closed ahead due to an incident.

Safety was analyzed based on the geometric features and changes in the level of congestion that are inherent to the PPSL concept. The following two section show how calculations of the safety improvement due to reduced congestion could more than offset the safety implications resulting from changes to the number of lanes, their widths, and the shoulders (while utilizing the existing pavement section, for the most part). Overall, the calculations result in a small forecasted improvement in safety.

5.1 Safety Analysis of Geometric Changes

As shown in **Figure 3**, the 39 feet of available pavement will be utilized differently on Sundays than the rest of the week. The *Highway Safety Manual* (HSM - Reference 10) includes Chapter 13 that is devoted to Crash Modification Factors (CMF). CMFs quantify the change in expected average crash frequency (crash effect) at a site caused by implementing a particular treatment, design modification, or change in operations. CMFs are used to estimate the potential changes in expected crash frequency or crash severity plus or minus a standard error due to implementing a particular action. The resulting CMFs are often specific to the type of facility involved. Although not every type of change on every type of facility is covered, there is a broad range of statistics that were found to be suitable for analyzing the PPSL project.

Table 4 provides a summary of the CMFs that were utilized for the PPSL analysis. It should be pointed out that a CMF of 1.0 means that there is likely to be no change in the crash experience due to a change. A CMF greater than 1.0 indicates that more crash may be expected. Conversely, a CMF less than 1.0 means that that an improvement in safety might be realized. For example, decreasing the width of a travel lane from 12 feet to 11 feet could likely result in a decrease in safety. For example, Table 13-4 of the HSM shows that narrowing a travel lane from 12 feet to 11 feet results in a CMF of 1.03 – approximately 3 percent more total crashes may result from this change.

Table 4. Crash Modification Factors (CMF)

Geometric Change	HSM Table	CMF
Decreasing lane width from 12’ to 11’	13-4	1.03
Increasing shoulder width from 4’ to 8’ (no further improvement is noted when the shoulder is widened to 12’)	13-8	0.92
Decreasing the shoulder width from 8’ to 4’ (no decrease is experience between 10’ and 8’)	13-8	1.09
Decreasing the shoulder width from 4’ to 1’	13-8	1.06
Removing an edge of lane rumble strip	13-45	1.10

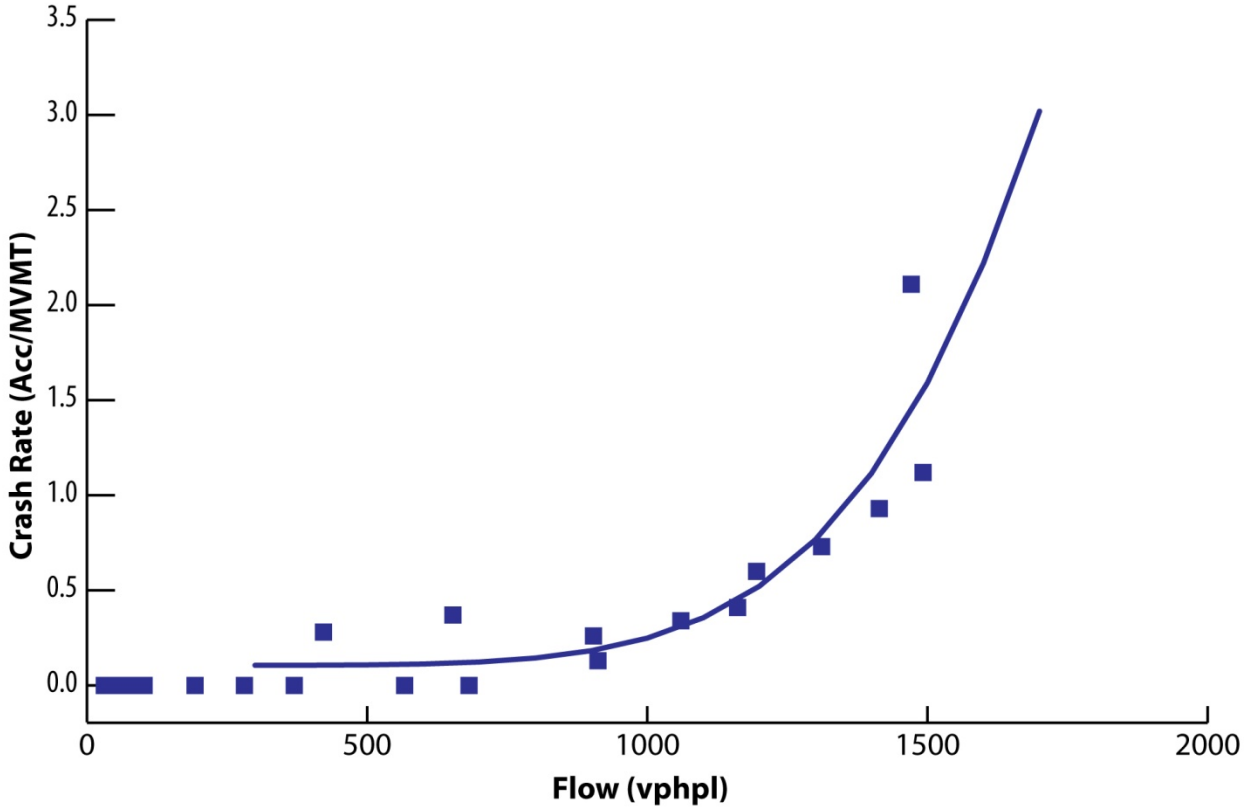
Four separate calculations were made using individual crash modification factors (see **Appendix B** to review the detailed calculations):

- **Off-Peak (Monday through Saturday) Total Crash calculations based on changes to lane and shoulder width** – The increase in the width of the left shoulder offsets the decrease in the width of the right shoulder. The narrowing of the left through lane means that the overall CMF is 1.03 for this element of the analysis. Over the 5-year crash analysis period, there was an average of 54 crashes each year in the eastbound direction (272 crashes in 5 years). The average annual increase would be 1.6 eastbound crashes.
- **Peak (Sunday) Total Crash calculations based on changes to lane and shoulder width** – On Sundays, there will be two 11-foot lanes and the shoulders on each side will be substandard. These narrow geometric elements result in an overall CMF of 1.23 for Sundays. Over the 5-year crash analysis period there was an average of 26 crashes each year in the eastbound direction (128 crashes in 5 years). The average annual increase would be 5.8 eastbound crashes.
- **Off-Peak (Monday through Saturday) Single Vehicle Run of the Road (SVROR) calculations based on changes to rumble strips** – During off-peak periods (Monday through Saturday), there would be rumble strips on the left side of the inside lane and on the right side of the outside. Thus, there would be no change expected to the experience for SVROR crashes during off-peak periods.
- **Peak (Sunday) Single Vehicle Run of the Road (SVROR) calculations based on changes to rumble strips** – During peak periods on Sunday, there would be rumble strips on each side of the general purpose lanes (the same as during off-peak periods). However, there would not be a rumble strip on the left side of the Managed Lane. See **Appendix B** for the detailed calculation of increased crash potential, but the result is an increase of 0.2 crashes per year.
- **Total Crashes related to geometric changes** – The total result of the CMF analyses is an expected increase of 7.6 crashes per year (37 crashes in 5 years).

5.2 Safety Analysis due to Congestion Reduction

A recent research paper prepared by CDOT staff members examined the relationship of traffic flow parameters (such as volume, density, and speed) to safety (Reference 11). This research found that as flow increases, the crash rate initially remains constant until a certain critical threshold combination of speed and density is reached. Once this threshold is exceeded, the crash rate rises rapidly (see **Figure 4**). This rapid rise in crash rate is likely caused by an increase in density without a notable reduction in speed and the resultant smaller headways that make it difficult or impossible for drivers to compensate for error. When one considers that perception-reaction time and vehicle characteristics remain unchanged (even though considerably more vehicles are in the same space traveling at substantially the same speed as before), an increased probability of crash occurrence is highly plausible. The analysis suggests that during hard shoulder running, crash rates decline because of the lower traffic volume or density per lane and that the safety benefits of a reduced volume or density per lane outweigh the adverse effects resulting from the lack of provision of a full shoulder.

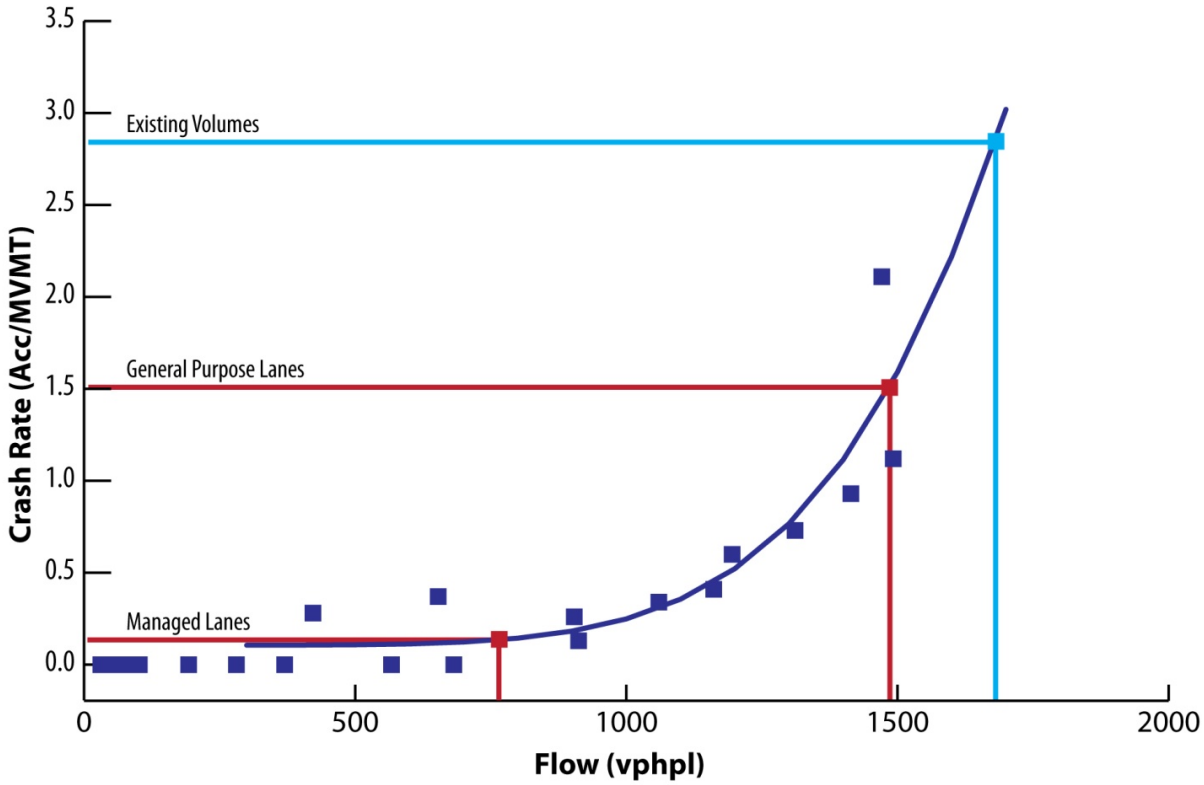
Figure 4. Corridor Specific SPF for I-70, Weekend in Winter (Eastbound Flow)



One of the roadway segments that were analyzed for Reference 11 was the I-70 Mountain Corridor in the eastbound direction on a Sunday in winter (see **Figure 4**). This figure shows the relationship between hourly volumes and the resulting crash rate. An analysis was conducted based on a comparison of existing hourly traffic volumes and of the hourly volumes that would use either the two general purpose lanes or the Managed Lane on Sunday afternoons (see **Appendix C**). The PPSL project hourly volume forecasts were obtained from the DynusT model that was developed during the PPSL Feasibility Study (Reference 12). **Figure 5** illustrates the difference in volumes per lane that would occur during the 3:00 pm hour on Sunday afternoon and the resulting differences in the crash rate. **Appendix C** provides the hourly comparison of crash rates for the existing and PPSL scenarios.

The result is a forecasted decrease of approximately 53 percent in the eastbound total crashes on Sundays from implementation of the PPSL project. According to the Safety Assessment (see Reference 1), the total annual crashes on Sundays in the eastbound direction is approximately 26 (128 over five years) and the annual number of rear-end crashes is approximately 19 (94 over five years). The calculation reveals that annual decrease in crashes due to congestion reduction would be between 9.4 (47 over 5 years) and approximately 12.8 (64 over 5 years).

Figure 5. PPSL Corridor Volumes Superimposed on I-70 SPF



Thus, when the forecasted decrease in crashes due to congestion relief is compared to the increase related to geometric changes, the analysis show an annual decrease of between 1.8 (9 over 5 years) and 5.2 crashes (26 over 5 years).

Safety was analyzed based on the geometric features and changes in the level of congestion that are inherent to the PPSL concept. The calculations show that the safety improvement due to reduced congestion could more than offset the safety implications resulting from changes to the number of lanes, their widths, and the shoulders (while utilizing the existing pavement section, for the most part). Overall, the calculations result in a small forecasted improvement in safety.

5.3 General Observations concerning PPSL Elements

As covered in the previous sections, there are a number of decisions about how the various elements of the PPSL will be configured. Each one has the potential to impact safety positively or negatively. The following discussion provides a qualitative assessment concerning these potential impacts to safety and how measures will be included in the design for the PPSL that minimize potential adverse impacts to safety.

- **Merge and Diverge Areas** – To the greatest extent possible, the geometry of on-ramps and off-ramps is being preserved. No deceleration or acceleration lengths are being decreased and will be lengthened where possible to meet current design standards. Since the PPSL is on the left side, there will be no changes to how these ramps operate between

peak and off-peak conditions. Thus, the safety characteristics of these should remain the same as currently, with some possibility for minor improvement.

- **Intermediate Access and Egress Points** – Based on project team discussions about the safety implications of the speed differential that will be created during peak periods on eastbound I-70 between the Managed Lane and the adjacent general purpose lane, published research on this topic were reviewed and a summary memorandum prepared (see **Appendix D**). Based on this research, recommendations regarding access and egress points along the PPSL are as follows:
  - The number of access points should be limited, and only an entrance downstream of the US 40 on-ramp (Exit 231 – Empire Junction) provided. A secondary access to the Managed Lane will be located east of the East Idaho Springs interchange (Exit 241), allowing entrance into the full-time Managed Lane that will continue to operate form the Twin Tunnels to US 6 when the PPSL is not in operation.
  - The number of exit points should likewise be limited, and only the exit (closure point) before the US 6 interchange (Exit 244 – Kermitt's) provided.
- **Variable Speed Limit (VSL) Signs** – Because enforcement of the variable speed limits will be limited (no camera detection systems such as those used in the United Kingdom), VSL signs are an important safety consideration and should be utilized through the PPSL/ML corridor (see **Appendix D**). They will serve to moderate speed differentials and harmonize traffic between the managed lane and general purpose lanes. Toll rates can be changed as traffic demand warrants so that the volume in the ML is less than the adjacent GP lane and thus the speed will be higher. A volume in the ML that is higher than normally encountered with HOV lanes will minimize the number of large gaps in the traffic stream and thus reduce the temptation to switch lanes at intermediate points. Based on on-going experience once the PPSL is operational, a differential of 15 to 20 mph should not present undue safety concerns, especially with minimal lane changing.
- **Emergency Pull-outs and Interchanges** – The number of emergency pull-outs and off-ramp locations should minimize disturbances to peak traffic operations due to breakdowns. The average spacing is 1.0 miles. The maximum separation (1.8 miles) will be encountered east of the Dumont interchange (Exit 235) where I-70 has long tangent sections and relatively gentle curves, allowing good sight-distance of the traffic stream ahead. Both England and the Netherlands have noted that the need for refuges (either the outside shoulders or pull-outs) to serve as disabled vehicle areas has diminished because of improvements in vehicle mechanical reliability. Research by Highways Agency in England indicated that the risk of eliminating shoulders (at least for part-time use) is minimal. In fact, new standards for full-time shoulder use in the United Kingdom recognize that original guidance may have been too conservative and allow up to 1.5 miles between emergency pull-outs (see Reference 13). Therefore, the risk level for not providing full shoulder widths have diminished since fundamental freeway design criteria were first established (Reference 5)
- **Monitoring of Operations by CDOT Staff** – The PPSL corridor will have complete coverage by closed circuit television cameras (CCTV). This will allow personnel at the designated control center to monitor traffic flow when the managed lane is operational. If there are incidents in the PPSL area, operators will be able to see and determine the nature of the problems and coordinate the appropriate emergency response. In addition,

Courtesy Patrol equipment should be prepositioned in the corridor during PPSL operations to respond to minor emergencies and tow disabled vehicles out to the traffic stream as quickly as possible. In the future, CDOT may be implementing a system of traffic sensors that provide real-time data to control personnel.

- **Signs** – The signing associated with the PPSL will be a critical component of the traffic control and operations of the lane. Signing will need to clearly convey that the shoulder is only open to traffic during limited time periods, but is available for breakdowns or emergencies during the off-peak periods. The electronic, variable elements of the signs (partial or whole) can be used to provide specific messages tailored to specific and/or unusual situations.
- **Opening and Closing Procedures** – The ML should only be opened after it has been determined that the shoulder lane is clear of stationary vehicle, debris, standing water, and or snow. Normally, DSIs are opened in reverse section order to reduce the risk of a vehicle stopping in the shoulder lane in the time between the shoulder lane check being completed and the section being opened. The proposed operation of the PPSL with only one entrance location will mean that operators will need to closely monitor the CCTVs throughout this critical transition period. Closure of the ML at the end of the peak period should be straightforward and proceed from the west end to the east. If the lane must be closed during the peak period for an emergency situation, VMS signs along the corridor can be changed simultaneously to information motorists of the new status of operations.
- **Emergency Response** – The project team has closely coordinated with emergency service providers in Clear Creek County, and a summary of emergency response procedures has been prepared.

Overall, the conclusion is that the proposed PPSL project will not result in a decrease in safety. However, there should be comprehensive monitoring of both peak and off-peak operations after the PPSL is implemented. Traffic operations and safety should be reviewed frequently, not just in the PPSL corridor but from the Eisenhower Johnson Memorial Tunnel (EJMT) to the Clear Creek County / Jefferson County boundary.

The following data is normally collected by CDOT in the normal course of operations and should be very valuable:

- **Crash records** – should be reviewed by day of the week, season, lane, etc.
- **Automatic Traffic Recorders (ATR)** – are maintained by CDOT at the Twin Tunnels and EJMT, and they record volumes by vehicle classification for each lane.
- **Speed and Travel Time Indicators** – are placed throughout the I-70 Mountain Corridor.
- **VISSIM and DynusT Computer Models** – have been calibrated for the I-70 Mountain Corridor and can be used to analyze the impacts of changes that could potentially improve operations further.

6.0 SUMMARY AND RECOMMENDATIONS

The I-70 Eastbound Peak Period Shoulder Lane (PPSL) project would utilize the shoulder to provide a third eastbound travel lane during peak periods from US 40 at Empire Junction to east Idaho Springs. During peak periods when the shoulder lane is being utilized, it would operate as a tolled express lane (Managed Lane). The PPSL would serve as an extension of the third eastbound lane that was recently opened to traffic. This construction project widened I-70 eastbound only and extended from the East Idaho Springs interchange (Exit 241) to the US 6 interchange (Exit 244) at the base of Floyd Hill. Initiating the PPSL at Empire Junction recognizes the fact that US 40 adds a significant amount of traffic to I-70 during peak eastbound periods.

A thorough analysis of safety in the PPSL corridor was completed for this project. The most predominant crash types were found to be fixed object type crashes (concrete barrier, guard rail, embankment and walls), rear end type crashes, and sideswipe same direction type crashes. These crash types comprise approximately 82 percent of the crashes along the corridor. These rear end and sideswipe type crashes occurred more frequently in the eastbound direction because this direction experiences higher traffic congestion. In fact, almost 50 percent of the eastbound rear end crashes occur on Sundays.

To the greatest extent possible, the existing roadway cross section will be utilized without widening. The minimum typical cross-section recommended by the project team is 39 feet. From left to right, this will allow a 12-foot inside shoulder during off-peak periods (1-foot shoulder and 11-foot ML during peak periods), 11 and 12-foot general purpose lanes, and a 4-foot outside shoulder. Based on a thorough and encompassing evaluation process, it was determined that the left-side PPSL was the preferred alternative.

6.1 Safety Findings for Similar Installations

While overall experience utilizing shoulders as additional travel lanes in the United States has been positive, research regarding documented safety benefits has been inconclusive. Factors that make it difficult to identify safety impacts include the small number of available sites with the treatment, the complexities due to unique geometries of each implementation, the limited number of years each treatment has been in use, the anticipated small magnitude of the safety effects, and the limited number of crashes associated with each specific treatment.

In Europe, part-time shoulder use is a congestion management strategy typically deployed in conjunction with complementary traffic management strategies such as speed harmonization and/or ramp metering. The intent is to reduce the speeds differentials along a corridor and reduce the likelihood of collisions. European agencies have realized both safety and mobility benefits as a result of these projects.

The following describes specific elements of implementations in both the United States and Europe.

I-35W (Minneapolis, Minnesota) – A segment of the left shoulder on I-35W has been converted to a priced dynamic shoulder lane open to all vehicles. Although safety statistics are not available, Mn/DOT personnel believe the facility is operating safely and as planned. Early results from variable speed limits in Minnesota show increased mobility, throughput, and safety

resulting from improvement in the speed differentials approaching congestion and reduced shockwaves.

I-66 (Northern Virginia) – The segment of I-66 between US 50 and I-495 has been converted to include an HOV lane and a shoulder lane. Models associated with the project found no evidence that the following factors affect crash frequency when aggregated across all lanes: managed-lane strategy during peak hours, AADT volumes, merging and diverging influence areas, weather, light conditions, and existence of pull-off areas.

California – The safety effects of narrow lanes and shoulder use lanes were investigated using 490 sites in California where the freeway was converted from four to five lanes or five to six lanes. The evaluation found that projects converting four lanes to five lanes resulted in crash frequency increases of 10 to 11 percent. However, the observed increase could also be a result of the speed differential introduced by added HOV lanes. Also, the analysis results suggest that despite increasing crash frequencies within the project limits, crash frequencies upstream of the project may be reduced.

The Netherlands – Hard shoulder running is only deployed in conjunction with speed harmonization in the Netherlands. With implementations on six freeways, the Dutch have seen a reduction in incidents between 10 and 48 percent.

Germany – Hard shoulder running is also only deployed in conjunction with speed harmonization in Germany. Facilities with hard shoulder running and speed harmonization have seen a reduction of up to 29 percent in crashes with injuries, a reduction of up to 27 percent in crashes with heavy material damage, and a reduction of up to 3 percent in crashes with light material damage.

MM 42 (Great Britain) – In Great Britain, MM 42 combines speed harmonization with hard shoulder running. During the first 36 months of operations there was a reduction in personal injury accidents from 5.08 to 2.25 per month (55 percent) and a reduction in the "accident severity index" (ratio of fatal and serious accidents to all accidents) from 0.16 to 0.07 (54 percent).

6.2 Safety Concerns with PPSL

When comparing the proposed I-70 PPSL with other projects in the United States and Europe, significant differences should be kept in mind. These include:

- Other implementations generally address weekday peak period congestion concerns and therefore have everyday commuters that become very familiar with their operation and requirements.
- When the shoulder is used as a travel lane, it will be tolled. When the hard shoulder is free and open to all vehicles, there is more potential for vehicles to weave in and out of the shoulder lane which helps to reduce speed differentials between lanes, but increases the likelihood of crashes due to these maneuvers.
- The safety shoulder (during off-peak periods) will be on the left side of the freeway, whereas the normal location in the United States is on the right side.

- The PPSL will transition to the permanent third lane that has been constructed beginning at the East Idaho Springs Interchange, which means there will be no downstream bottleneck that might lead to crashes migrating from one section of the corridor to another.
- Only limited speed limit enforcement will be possible due to the high volumes and limited space for enforcement activities.
- The project will not utilize gantries that span all lanes and have specific dynamic message signs over each lane to inform motorists of speed limits and whether the lane is open to traffic.

Safety Analysis of Geometric Changes – The Highway Safety Manual (HSM) discusses crash modification factors which quantify the change in expected average crash frequency at a site caused by implementing a particular treatment, design modification, or change in operations. Four separate calculations were made using individual crash modification factors to analyze the total number of crashes during both off-peak and peak periods, and the number of single vehicle run off the road crashes during both off-peak and peak periods. As a result of these calculations, it was found that there is the potential for an additional 7.6 crashes per year related to geometric changes associated with the project.

Safety Analysis due to Congestion Reduction – A recent research paper prepared by CDOT staff members suggests that during hard shoulder running crash rates decline because of the lower traffic volume or density per lane. The I-70 Mountain Corridor was analyzed in this paper and it was forecasted that a decrease in total crashes of approximately 53 percent on Sundays would be seen as a result of PPSL implementation; an annual decrease in crashes due to congestion reduction would be between 9.4 and approximately 12.8.

When the forecasted crash reductions due to congestion relief are combined with the previously discussed increase related to geometric changes, the analysis shows an annual decrease of between 1.8 and 5.2 crashes. Therefore, the PPSL project should not result in a net increase in crashes, and, furthermore, it is likely that there could be a moderate decrease in crashes for eastbound I-70 traffic.

6.3 General Safety Observations Concerning PPSL Elements

While overall the conclusion is that the proposed PPSL project will not result in a decrease in safety, there should still be comprehensive monitoring of both peak and off-peak operations after implementation. The following discussion provides a qualitative assessment concerning the potential impacts to safety of various design elements and measures that should be included in the design of the PPSL that minimize potential adverse safety impacts.

Merge and Diverge Areas – Since the PPSL is on the left side, there will be no changes to how on-ramps and off-ramps operate between peak and off-peak conditions. Thus, the safety characteristics of these should remain the same as currently, with some possibility for minor improvement.

Intermediate Access and Egress Points – The number of access points should be limited in order to reduce the chance for the conditions that have been found to cause crashes at access points on buffer separated HOV lanes in Texas and California.

Variable Speed Limit (VSL) Signs – VSL signs are an important safety consideration and should be utilized through the PPSL corridor. They will serve to moderate speed differentials and harmonize traffic between the managed lane and general purpose lanes. Based on on-going experience once the PPSL is operational, a differential of up to 15-20 MPH should not present undue safety concerns, especially with minimal lane changing.

Emergency Pull-outs – The number of emergency pull-outs and off-ramp locations should minimize disturbances to peak traffic operations due to breakdowns. The average spacing for emergency pull outs or interchanges is approximately 1.0 miles.

Monitoring of Operations by CDOT Staff – The PPSL corridor will have complete video coverage by closed circuit television cameras (CCTV). This will allow personnel at the CTMC to monitor traffic flow when the managed lane is operational.

Signs – The signing associated with the PPSL will be a critical component of the traffic control and operations of the lane.

Opening Procedures – The PPSL should only be opened after it has been determined that the shoulder lane is clear of stationary vehicles, debris, standing water, and/or snow.

Emergency Response – The project team has closely coordinated with emergency service providers in Clear Creek County, and a summary of emergency response procedures has been prepared.

6.4 General Safety Conclusions

Safety was analyzed based on the geometric features and changes in the level of congestion that are inherent to the PPSL concept. The calculations show that the safety improvement due to reduced congestion could more than offset the safety implications resulting from changes to the number of lanes, their widths, and the shoulders (while utilizing the existing pavement section, for the most part). Overall, the calculations result in a small forecasted improvement in safety.

However, there should be comprehensive monitoring of both peak and off-peak operations after the PPSL is implemented. Traffic operations and safety should be reviewed frequently, not just in the PPSL corridor but from the Eisenhower Johnson Memorial Tunnel (EJMT) to the Clear Creek County / Jefferson County boundary. There should be significant reductions in congestion throughout Clear Creek County.

The following data is normally collected by CDOT in the normal course of operations and should be very valuable:

- **Crash records** – should be reviewed by day of the week, season, lane, etc.
- **Automatic Traffic Recorders (ATR)** – are maintained by CDOT at the Twin Tunnels and EJMT, and they record volumes by vehicle classification for each lane.
- **Speed and Travel Time Indicators** – are placed throughout the I-70 Mountain Corridor.
- **VISSIM and DynusT Computer Models** – have been calibrated for the I-70 Mountain Corridor and can be used to analyze the impacts of changes that could potentially improve operations further.

7.0 REFERENCES

1 *Safety Assessment Report – State Highway 70A – MP 230.00 to MP 242.00 – Region 1*, CDOT, October 25, 2013
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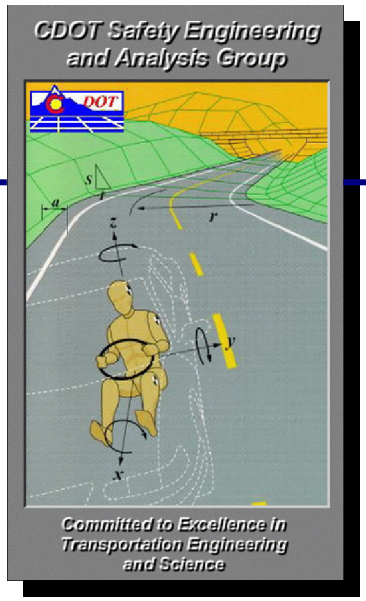
APPENDIX A SAFETY ASSESSMENT REPORT – STATE HIGHWAY 70A – MP 230.00 TO MP 242.00 – REGION 1, OCTOBER 25, 2013



SAFETY ASSESSMENT REPORT

State Highway 70A
MP 230.00 to MP 242.00
Region 1

January 29, 2014

Prepared for: **Colorado Department of Transportation**
Safety and Traffic Engineering Branch
Safety Engineering and Analysis Group
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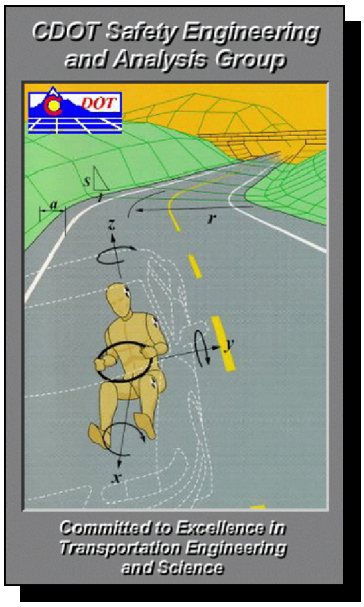


A Statement of Philosophy

The efficient and responsible investment of resources in addressing safety problems is a difficult task. Since crashes occur on all highways in use, it is inappropriate to say of any highway that it is safe. However, it is correct to say that highways can be built to be safer or less safe. Road safety is a matter of degree. When making decisions affecting road safety, it is critical to understand that expenditure of limited available funds on improvements in places where it prevents few injuries and saves few lives can mean that injuries will occur and lives will be lost by not spending them in places where more crashes could have been prevented[1]. It is CDOT's objective to maximize crash reduction within the limitations of available budgets by making road safety improvements at locations where it does the most good or prevents the most crashes.

INTRODUCTION

The Transportation Equity Act for the 21st Century (TEA-21) of 1998 requires explicit consideration of safety in the transportation planning process. While this government mandate is well intentioned, little is known about how to accomplish it. In order to meet this requirement, CDOT has employed a recently developed concept of the Level of Service of Safety[2] (LOSS). The LOSS concept makes it possible to accomplish the following:

- Qualitatively describe the degree of safety or un-safety of a roadway segment.
- Effectively communicate the magnitude of the safety problem to other professionals or elected officials.
- Bring perception of roadway safety in line with reality of safety performance reflecting a specific facility.
- Provide a frame of reference from a safety perspective for planning major corridor improvements.

The safety analysis provided in this technical report supports an environment study for a portion of Interstate 70 (I-70) between MP 230.00 and MP 242.00. The scope of the safety assessment is as follows:

- Assess the magnitude and nature of the safety problem within the project limits.
- Relate crash causality to roadway geometrics, roadside features, traffic control devices, traffic operations, driver behavior and vehicle type.
- Suggest counter measures to address identified problems within context of the proposed action.

This report is based on the analysis of five years of crash history and a field visit by Felsburg Holt & Ullevig staff. The Region is advised to verify, through field survey, the information included in this report regarding physical features and roadside characteristics in the study area.

[1] Hauer, E., (1999) Safety Review of Highway 407: Confronting Two Myths. TRB
[2] Kononov, J. & Allery, B. (2003) Level of Service of Safety-Conceptual Blueprint and Analytical Framework. Presented at the TRB Annual Meeting, Washington D.C. (January 2003)

PROJECT DESCRIPTION

The purpose of the I-70 Peak Period Shoulder Lane (PPSL) project is to relieve peak period congestion on eastbound Interstate 70 through the construction of a peak period shoulder lane. The concept of the PPSL would allow vehicles to travel in two eastbound travel lanes and use a shoulder as an additional travel lane during peak periods. The goal is to implement an operational improvement, which would produce three lanes of traffic in the peak travel periods, in order to help alleviate congestion. The shoulder lane would be managed (tolled) to insure that it remains uncongested and relatively free flowing during the peak periods. The PPSL concept would use the existing roadway template (approximately 38 feet) to the maximum extent possible and would only add minimal new pavement as appropriate. The PPSL would extend from Empire Junction (MP 232) to east Idaho Springs (MP 241).

The purpose of this safety assessment is to identify safety issues along this segment of highway and potential improvements to improve safety. This study identifies crash patterns for both the eastbound and westbound directions of travel. This study also provides general safety improvements to be considered. These suggested improvements are limited to the eastbound direction of travel since the PPSL project would only involve the eastbound travel. A separate safety analysis of the PPSL is being conducted to analyze the safety implications of implementation.

SITE LOCATION

This study addresses a section of Interstate 70 beginning at MP 230.00, just west of the interchange with the US 40 (Empire Junction) and extending to MP 242.00 which is just east of Idaho Springs. The direction of increasing milepost (primary direction) for this section of I-70 is eastbound. This section of I-70 is classified as a Federal-Aid Interstate (FAI) state highway.

SITE CONDITIONS

According to CDOT records, the 2012 average annual daily traffic (AADT) varied between approximately 37,000 vehicles per day (vpd) and 47,000 vpd. As a percentage of the total vehicular traffic volume, the average truck volume across the section is 7.5 percent.

The following observations related to the study corridor were made from the current CORIS file and the CDOT video log:

- A typical cross section includes 10-foot outside shoulders (although they vary throughout the corridor and are as narrow as 2-feet), two 12-foot travel lanes and 4-foot inside shoulders in each direction.
- The median type varies throughout the corridor from either a depressed median of approximately 4 to 30 feet in width to a concrete barrier median.
- Guard rail and concrete barriers are located on both the inside and outside shoulders throughout the corridor in the vicinity of interchanges, over and underpasses and through curves.
- There are rumble strips throughout portions of the study corridor.
- There are luminaires located in the vicinity of the interchanges along the study corridor.
- There are seven interchanges within the study corridor: US 40 (Empire Junction) (MP 231.89), Downieville (MP 234.21), Dumont (MP 235.01), Fall River Road (MP 237.66), I-70

Business Route (MP 238.89), SH 103 (MP 239.65), and I-70 Business Route (MP 241.13). There is also an eastbound off ramp at Lawson (MP 232.89). In addition, the Twin Tunnels are located at MP 242.29 just to the east of the study segment.

- The posted speed limit on I-70 is currently 65 miles per hour (mph) in both direction from the start of the study corridor to MP 238.00 and 60 mph from MP 238.00 to MP 241.90. From MP 241.90 to the end of the corridor the speed limit is 55 mph.

CRASH HISTORY AND PROBLEM ANALYSIS

Crash history for the five-year period, January 1, 2008 through December 31, 2012, was examined between MP 230.00 and MP 242.00 to locate crash clusters and identify crash causes.

Table 1 summarizes the number of crashes for I-70 over the five-year study period. Of note, these totals include both mainline and ramp crashes along this section. As can be seen in this table, the total number of crashes has fluctuated from year to year over the five-year study period with a slight majority of the crashes (approximately 55 percent) occurring in the eastbound direction.

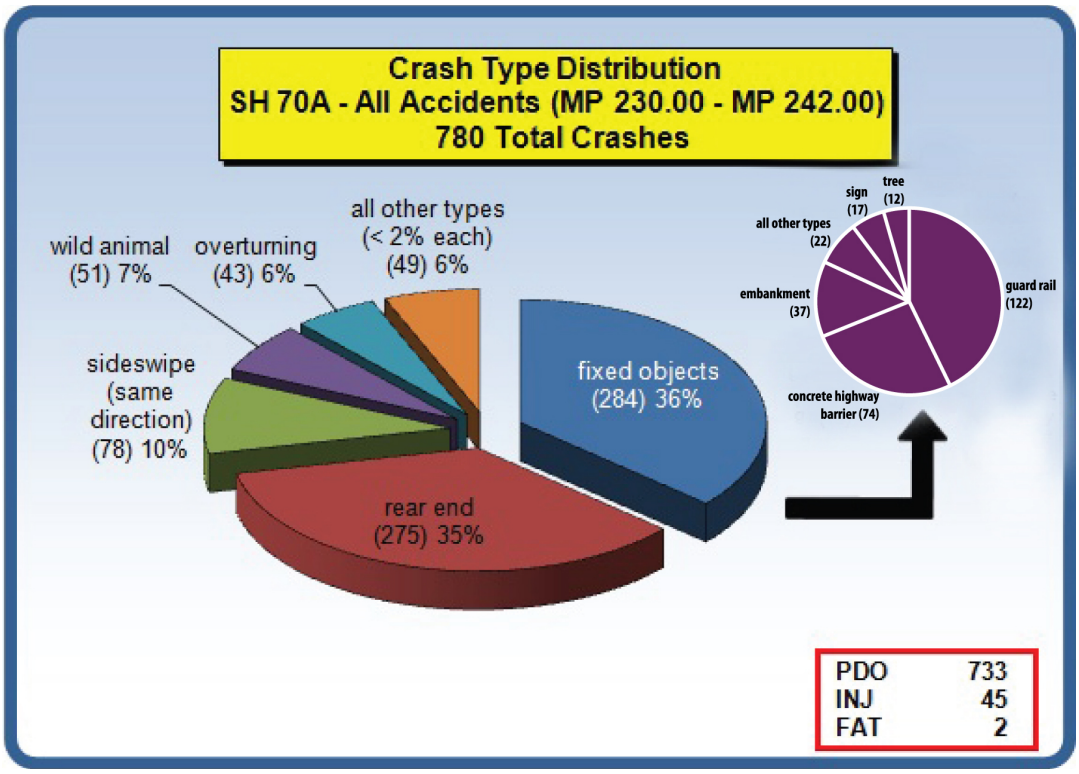
Table 1
SH 70A: MP 230.00 – MP 242.00

Period	Number of Crashes							
	Prop. Damage Only		Injury		Fatality		Total	
	EB	WB	EB	WB	EB	WB	EB	WB
01/01/2008 – 12/31/2008	91	82	6	3	0	1	97	86
01/01/2009 – 12/31/2009	85	59	9	2	0	0	94	61
01/01/20010 – 12/31/20010	78	73	4	4	0	1	82	78
01/01/20011 – 12/31/2011	70	73	3	7	0	0	73	80
01/01/20012 – 12/31/2012	75	47	3	4	0	0	78	51
Total (01/01/2008 – 12/31/2012)	**399**	**334**	**25**	**20**	**0**	**2**	**424**	**356**
Overall 5-Year Average per Year	**79.8**	**66.8**	**5**	**4**	**0**	**0.4**	**84.8**	**71.2**

Crash History

During the five-year study period there were 780 reported crashes within the study limits including mainline I-70 crashes, ramp crashes and ramp terminal intersection crashes. There were 733 PDO crashes, 45 injury crashes with 61 injuries, and 2 fatal crashes. **Figure 1** presents a graphical representation of crash types for this area. Fixed object type crashes (37%) were the predominant crash type followed by rear end type crashes (35%). The general crash summary sheet is presented in the **Appendix**.

Figure 1



Corridor Wide Crash Patterns

There are several factors that contribute to the cause of crashes along the study corridor. Some of the primary factors include; the horizontal curvature of I-70, travel speed, traffic congestion due to weekend traffic, and inclement weather / road conditions. For many of the crashes, more than one of these factors contributed. In order to better understand these factors and how they influenced crashes, the circumstances surrounding the most predominant crash types along the corridor were reviewed. The crash types reviewed include the most predominant fixed object type crashes (concrete barrier, guard rail, and embankments), rear end type crashes, and sideswipe (same direction) type crashes. These crash types comprise 82 percent of the crashes along the corridor. The direction of each of these crash types as well as the time of year and day of the week were reviewed.

The corridor was split into seven analysis segments, based on each of the seven interchanges. Each of these seven segments was then subdivided into smaller segments typically based on the curves along I-70. In all, there are a total of nine curves analyzed along the entire study

segment. Figures showing the locations of these segments and curves are included in the following segment discussions. The complete tables showing the segmentation and the breakdown of the crashes can be found in the appendix. However, **Table 2** and **Table 3** show a summary of the tables provided in the appendix. **Table 2** shows a summary of the directionality of the most predominant crash types occurring along I-70.

Table 2
Directionality of Predominant Crash Types

Guardrail / Concrete Barrier / Embankment / Cable Rail			**Rear End**			**Sideswipe same direction**		
EB	WB	Total	EB	WB	Total	EB	WB	Total
101 (42%)	138 (58%)	239	191 (69%)	84 (31%)	275	55 (71%)	23 (29%)	78

As **Table 2** shows, the majority of crashes on I-70 occurred in the eastbound direction. However, the disparity in the distribution between eastbound and westbound is most significant for the rear end and sideswipe type crashes. This is not entirely unexpected as these accident types are related to congestion, and this segment of I-70 experiences high levels of congestion in the eastbound direction. The fixed object crashes occur at slightly higher rates in the westbound direction. This is likely because the westbound direction does not experience as much congestion making it easier to travel at a higher rate of speed, which can lead to run-off-the-road type crashes. These vehicles are more likely to lose control traveling through the curves along I-70, leave their lane and strike a fixed object.

Given the higher rates of congestion on weekends and holidays in the corridor, an analysis was completed to determine the season and day of week most common to each of the predominant crash types. The patterns identified by this analysis will help to determine what factors are contributing to the most predominant crash types on I-70. **Table 3** shows the time of year (winter or summer) and day of the week (weekday or weekend / holiday) that each of the predominant crash types occurred along I-70. **Tables 4** and **5** separate the crashes by direction showing eastbound and westbound, respectively.

Table 3
Seasonality and Day of Week of Predominant Crash Types – Both Directions

Season	Guardrail / Concrete Barrier / Embankment / Cable Rail				Rear End				Sideswipe same direction			
	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total
Winter (Nov. – Apr.)	120	18	19	157	86	48	61	195	27	12	7	46
Summer (May - Oct.)	56	12	14	82	26	6	48	80	19	5	8	32

Table 4
Seasonality and Day of Week of Predominant Crash Types – Eastbound

Season	Guardrail / Concrete Barrier / Embankment / Cable Rail				Rear End				Sideswipe same direction			
	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total
Winter (Nov. – Apr.)	54	8	10	72	53	26	51	130	17	11	3	31
Summer (May - Oct.)	19	4	6	29	14	4	43	61	13	4	7	24

Table 5
Seasonality and Day of Week of Predominant Crash Types – Westbound

Season	Guardrail / Concrete Barrier / Embankment / Cable Rail				Rear End				Sideswipe same direction			
	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total
Winter (Nov. – Apr.)	66	10	9	85	33	22	10	65	10	1	4	15
Summer (May - Oct.)	37	8	8	53	12	2	5	19	6	1	1	8

As can be seen in these tables, the majority of the predominant crash types on the study segment are occurring during the winter season. However, the fixed object type crashes are more common on weekdays while the rear end and sideswipe crashes are more common on weekends when traffic congestion is more widespread. In fact, almost 50 percent of the eastbound rear end crashes occur on Sundays.

Tables 6 and **7** provide the average speeds at which the predominant crash types occurred in the eastbound and westbound directions, respectively. As shown, the run-off-the-road fixed object type crashes occurred at a higher rate of speed than other accident types. The rear end type crashes occurred at the lowest average rate of speed, indicating they usually occurred in congestion.

Table 6
Average Speed of Predominant Crash Types – Eastbound

	Guardrail / Concrete Barrier / Embankment / Cable Rail			Rear End			Sideswipe same direction		
Time of Day	Weekday (M-F)	Weekend (Sat - Sun)	All	Weekday (M-F)	Weekend (Sat - Sun)	All	Weekday (M-F)	Weekend (Sat - Sun)	All
Daytime	59.1	57.9	58.8	35.8	36.5	36.3	50.5	48.2	49.5
Nighttime	61.5	65.8	62.9	36.0	39.4	38.6	53.0	46.9	49.2

Table 7
Average Speed of Predominant Crash Types – Westbound

	Guardrail / Concrete Barrier / Embankment / Cable Rail			Rear End			Sideswipe same direction		
Time of Day	Weekday (M-F)	Weekend (Sat - Sun)	All	Weekday (M-F)	Weekend (Sat - Sun)	All	Weekday (M-F)	Weekend (Sat - Sun)	All
Daytime	57.3	56.9	57.3	45.9	37.5	41.7	47.5	45.0	46.8
Nighttime	56.0	57.0	56.3	36.0	51.3	40.4	57.5	-	57.5

General Observations

As discussed, concrete highway barrier, guard rail and embankment crashes were the most common of the fixed object type crashes along the study corridor. In general, the guardrail and barrier involved in the crashes usually prevented a more serious crash. The occurrence of these crashes was typically related to road conditions, the curvature in mainline I-70 throughout the corridor, vehicle speeds in the given road conditions or on the given curve, and / or the lighting conditions at night along I-70. Due to these patterns, there are several mitigation measures that should be considered during the design of the proposed action. First, due to the high occurrence of crashes at night (See **Table 8**), consideration should be given to reviewing the existing lighting along the corridor to ensure that it is sufficient. Currently, there is lighting at all the interchanges within the study area. Consideration should also be given to using highly reflective pavement markings, installing linear barrier delineation and replacing all delineator post reflector buttons and rail reflector tabs to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

Along with the reconstruction in association with the improvement alternative, “Safety Edge” methods should be utilized when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

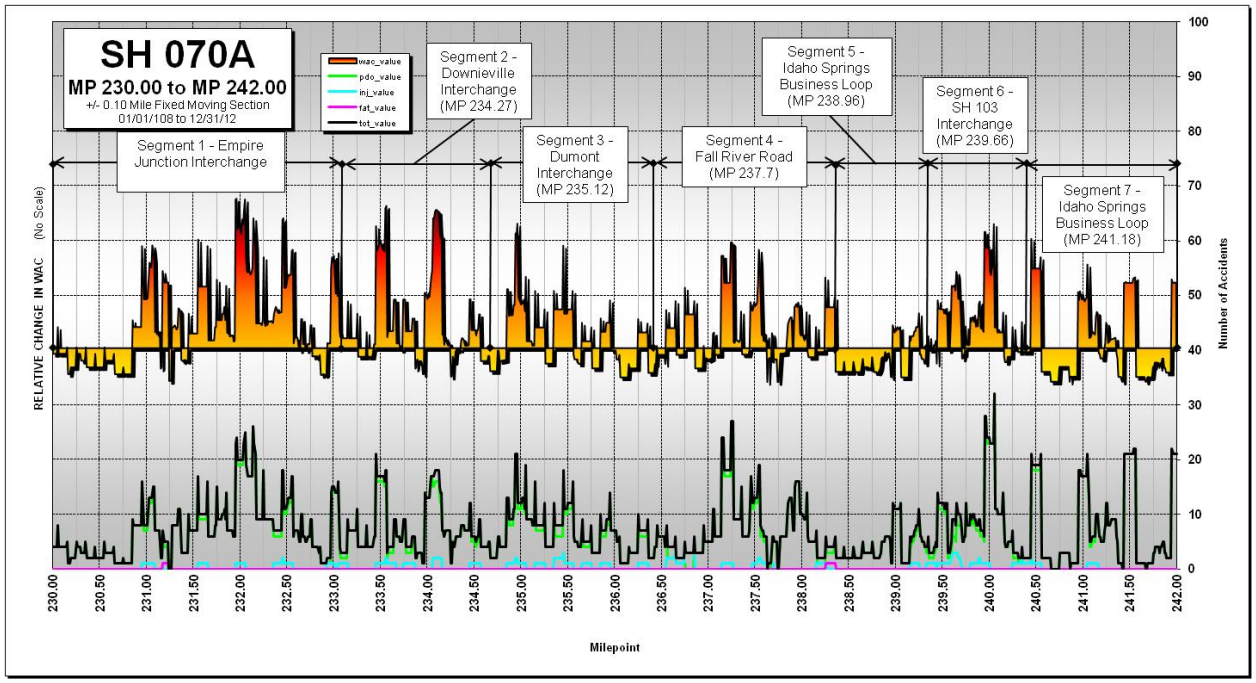
Table 8
Time of Day of Predominant Crash Types

Time of Day	Guardrail / Concrete Barrier / Embankment / Cable Rail	Rear End	Sideswipe same direction
Daytime	132	231	57
Nighttime	107	44	21
Total	239	275	78

Weighted Accident Concentration

A graphical rendering of the change in weighted accident concentration (WAC) through the study limits shown on **Figure 2** reveals the locations of crash concentration and severity along the corridor. The complete crash listing and detailed crash summary sheets for this section of I-70 are provided in the **Appendix**.

Figure 2



As shown, there are several locations of crash concentrations throughout the study corridor. In general, the largest concentrations of crashes are in the vicinity of some of the sharper horizontal curves along I-70. The largest peak on the graph coincides with the curves at the Empire Junction interchange.

A review of the crash history at these locations indicated that the peaks shown on **Figure 2** are locations with the potential for corrective measures that can be associated with the highway improvement project. The following sections separate mainline crashes and analyze them using Safety Performance Function methodology, with the crashes that occurred on the I-70 ramps reviewed separately.

Safety Performance Function Analysis

In addition to the examination and comparison of crash rates for the entire study area as well as the WAC analysis, the assessment of the magnitude of safety problems on selected highway sections has been refined through the use of Safety Performance Functions (SPF). The SPF reflects the complex relationship between traffic exposure measured in ADT and the crash count for a unit of road section measured in crashes per mile per year. The SPF models provide an estimate for the expected crash frequency for each interchange influence area, for a range of ADT, among similar facilities. SPF functions are limited to mainline crashes only and as such do not include crashes that occur on ramps.

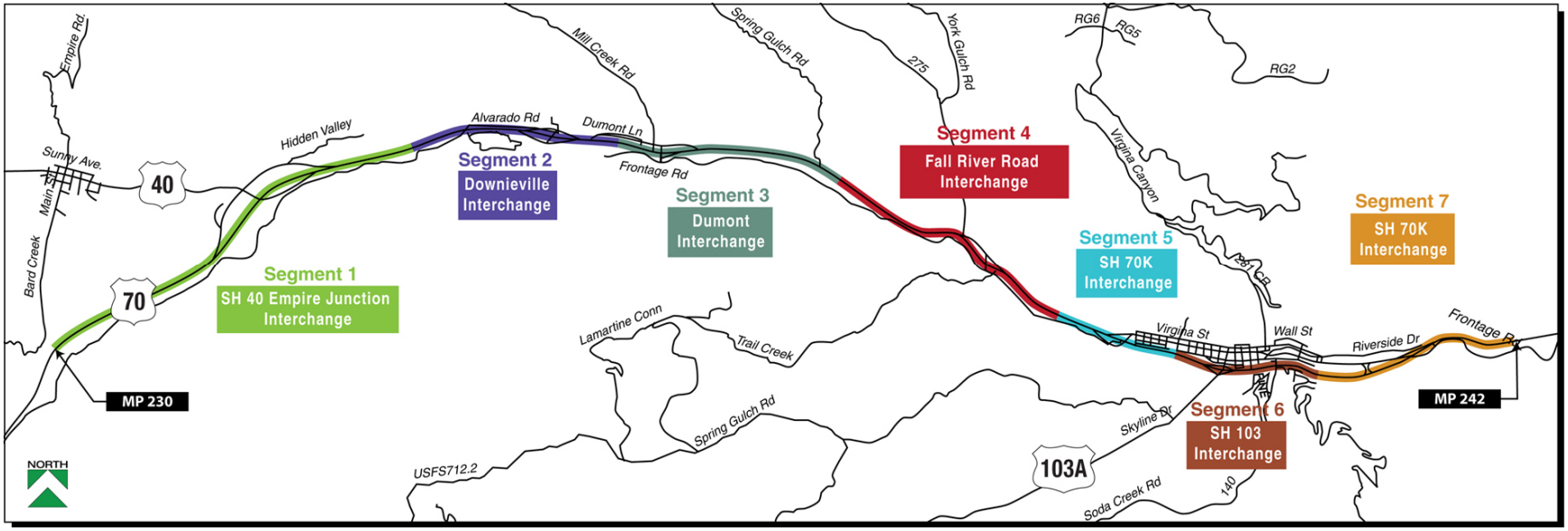
Development of the SPF lends itself well to the conceptual formulation of the Levels of Service of Safety (LOSS). The concept of level of service uses qualitative measures that characterize safety of an intersection in reference to its expected performance. If the level of safety predicted by the SPF will represent a normal or expected number of crashes at a specific level of ADT, then the degree of deviation from the norm can be stratified to represent specific levels of safety.

LOSS-I – Indicates low potential for crash reduction
LOSS-II – Indicates better than expected safety performance
LOSS-III – Indicates less than expected safety performance
LOSS-IV – Indicates high potential for crash reduction

Gradual change in the degree of deviation of the LOSS boundary line from the fitted model mean reflects the observed increase of variability in crashes as ADT increases. LOSS reflects how the intersection is performing in regard to its expected crash frequency at a specific level of ADT (major street and minor street). It only provides a crash frequency comparison with the expected norm. It does not, however, provide any information related to the nature of the safety problem itself. If a safety problem is present, LOSS will only describe its magnitude from a frequency standpoint. The nature of the problem is determined through diagnostic analysis using direct diagnostics and pattern recognition techniques and is discussed later in this report.

The study section of I-70 is classified as a Rural Mountainous 4-Lane Interstate. The corridor has been broken down into seven analysis segments, each segment associated with one of the seven interchanges. The segmentation for the corridor is presented graphically on **Figure 3**.

Figure 3


Empire Rd.
Mill Creek Rd
Spring Gulch Rd
York Gulch Rd
275
RG6
RG5
RG2
Hidden Valley
Alvarado Rd
Dumont Ln
Sunny Ave.
Main St
40
Frontage Rd
Segment 2
Downieville Interchange
Segment 3
Dumont Interchange
Segment 4
Fall River Road Interchange
Virginia Canyon
Segment 7
SH 70K Interchange
Segment 5
SH 70K Interchange
Bard Creek
70
Segment 1
SH 40 Empire Junction Interchange
Lamartine Conn
Trail Creek
Virginia St
Wall St
Riverside Dr
Frontage Rd
MP 230
MP 242
Segment 6
SH 103 Interchange
Spring Gulch Rd
Skyline Dr
USFS712.2
103A
Soda Creek Rd
140
NORTH

Data for five-years of crash history on I-70 has been plotted for evaluation on the SPF figure shown on **Figure 4**.

Figure 4

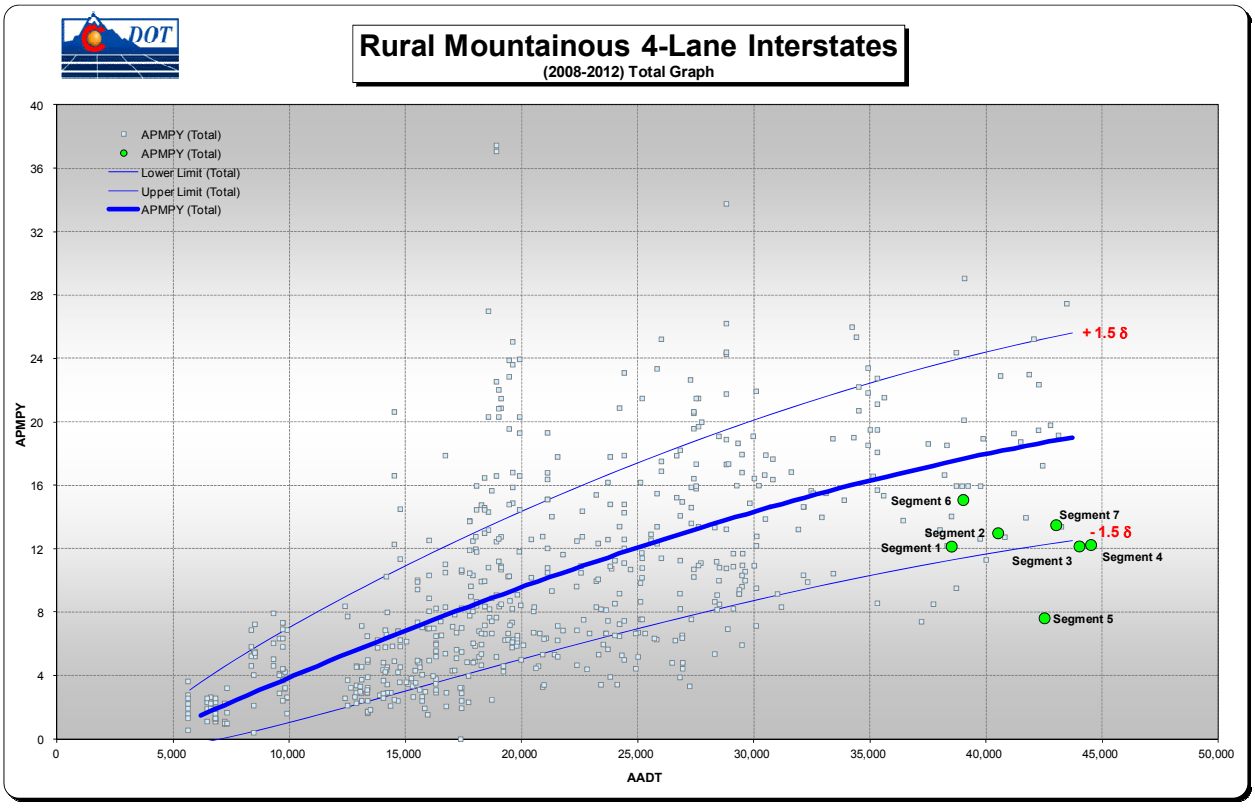


Figure 4 depicts the total crash SPF of I-70 based on the given crash data. As can be seen, the majority of the SPF points for the I-70 segments are near or below the expected value for the given AADTs. Segments 3, 4, and 5 are LOSS I which indicates a much better than expected safety performance and a low potential for improvements. The remaining segments all are LOSS II, which indicates a slightly better than expected safety performance.

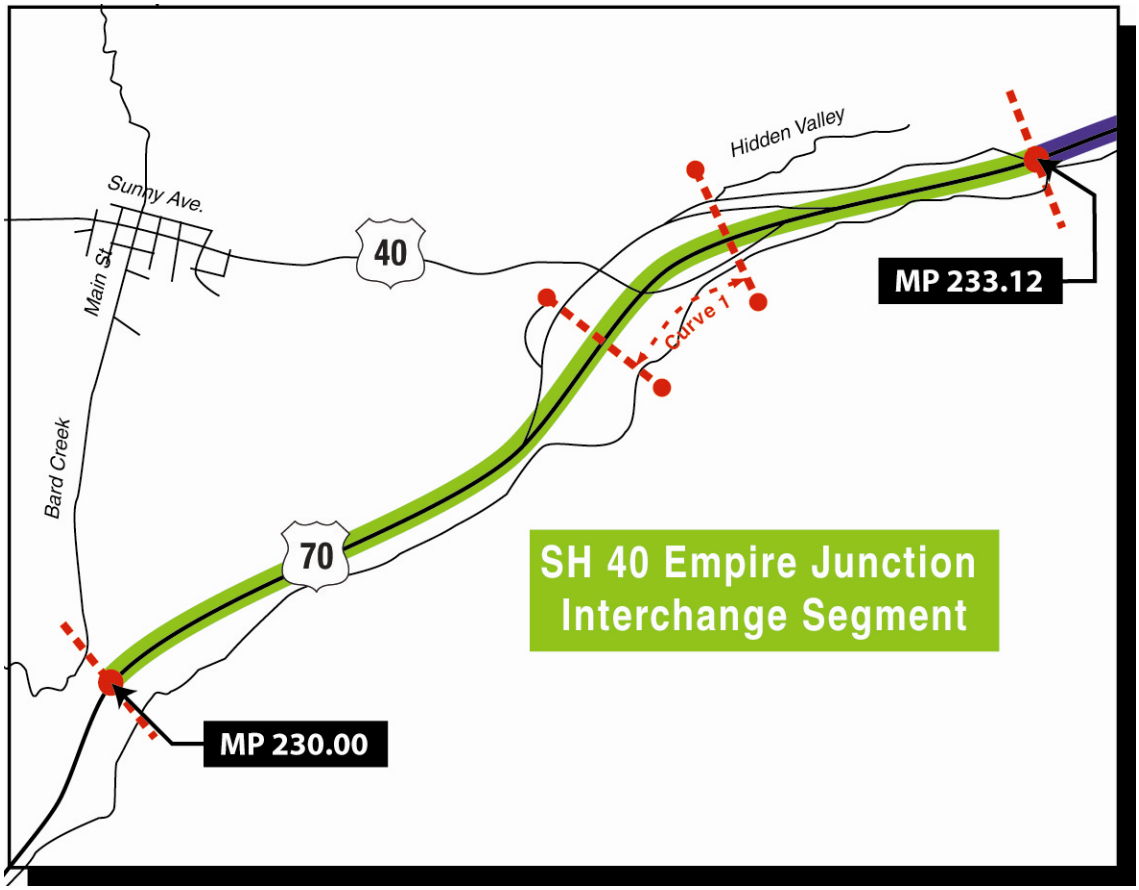
The details of the crash occurrence on each of the SPF segments are discussed in more detail in the following sections. The mainline crashes, which correlate to the SPF analyses, are reviewed independently from the ramp crashes and the ramp terminal intersection crashes (if any) in the following sections.

Segment 1 – US 40, Empire Junction Interchange (MP 230.00 – MP 233.11)

Mainline Crashes

During the five-year study period there were 189 reported mainline crashes between MP 230.00 and MP 233.11 on I-70. There were 181 property damage only (PDO) crashes, 7 injury crashes and 1 fatal crash. **Figure 5** shows Segment 1 in relation to the other roadways in the vicinity. This figure also shows the curve (Curve 1) located on this segment.

Figure 5



The fatal crash on this segment occurred when a westbound vehicle spun out of control on ice and ran off the right side of the road around MP 231.20, overturning and striking a tree. This crash occurred on an unlit section of road around 2 AM in May 2008 on an icy road surface. The vehicle was traveling at approximately 55 mph at the time of the accident and the driver was not wearing a seat belt.

Figure 6 shows the change in weighted accident concentration throughout this segment of I-70. As shown, the largest concentration of crashes occurred on Curve 1 in the segment. Most of the other locations of large spikes in the graph are within the limits of the interchange.

Figure 6

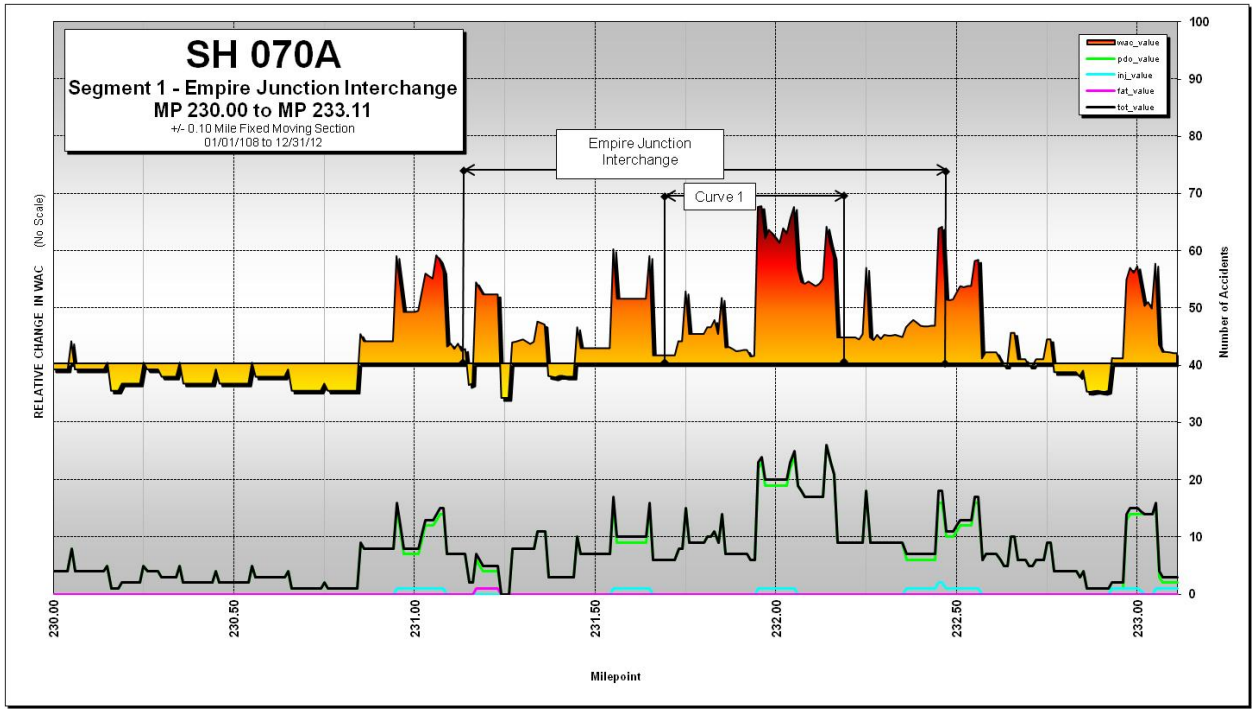


Figure 7 provides a graphical representation of crash types for this segment. Rear end crashes were predominant (43%) followed by fixed object type crashes (26%).

Figure 7

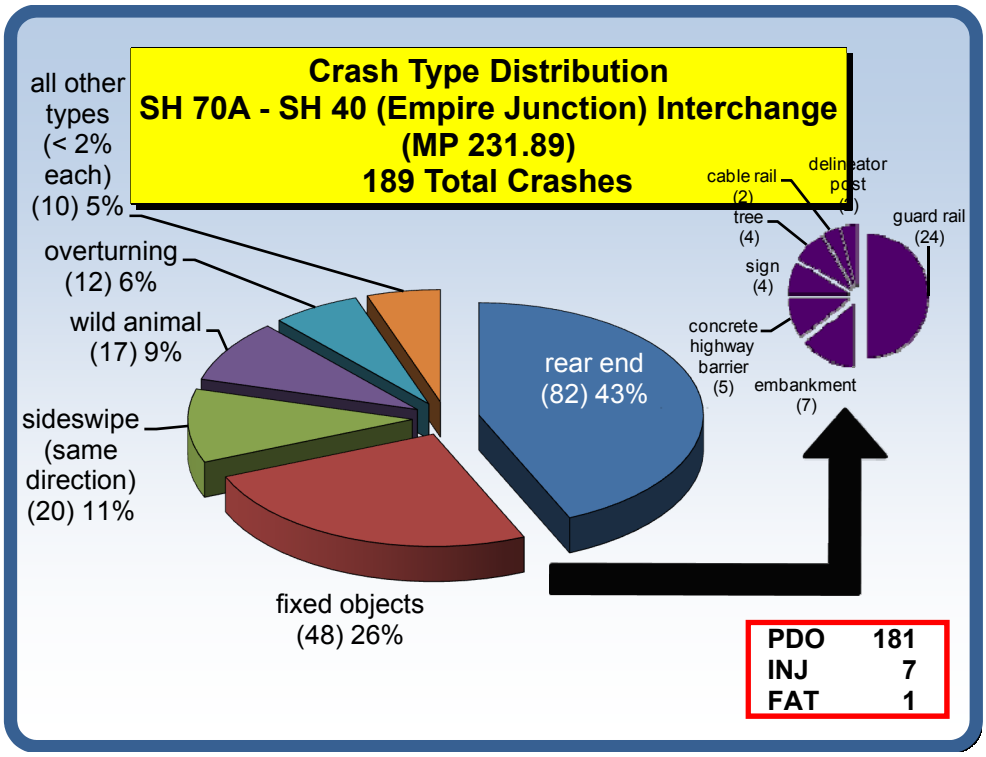


Table 9 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 9
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	10 (21%)	4 (8%)	14 (29%)	6 (13%)	8 (17%)	14 (30%)
Night	0	3 (6%)	3 (6%)	5 (10%)	12 (25%)	17 (35%)
Total	10 (21%)	7 (14%)	17 (35%)	11 (23%)	20 (42%)	31 (65%)

As can be seen in this table, the majority of the eastbound fixed object crashes occurred during the day in dry road conditions, while the highest proportion of the westbound crashes occurred during the night in inclement weather. There was a large concentration of these crash types within Mile 232 which is located in the vicinity of the US 40 Interchange along Curve 1 (see **Figure 5**). Most of the crashes at this location occurred in the westbound direction in inclement weather. Based on a review of the crash reports, many of these crashes occurred when a driver lost control due to the road conditions. The driver was generally driving too fast for the given conditions.

The proportion of guard rail type crashes were higher than expected for this portion of the study corridor. Of the 24 crashes in this category, 17 of 24 occurred in the westbound direction and 7 of 24 occurred in the eastbound direction.

The proportion of crashes involving wild animals was higher than expected. Of the 17 crashes, 4 occurred in the eastbound direction and 13 occurred in the westbound direction. Fourteen of the wildlife accidents occurred in the summer months (May-October). Nearly all of these crashes were in dry conditions and occurred around dawn or just after dark. There was no location with a large concentration of wild animal crashes as they are distributed fairly evenly across the segment. Consideration should be given to installing wildlife warning signs with flashing beacons along this segment in the westbound direction.

The proportion of rear end type crashes was higher than expected. Unlike the barrier type crashes, the majority of rear end type crashes occurred in the eastbound direction (77 of 82) and most occurred in dry / daylight conditions (59 of 82). Of the eastbound crashes, most occurred on a weekend (48 of 77) and/or in the winter months (64 of 77). **Table 10** provides details of the road conditions, season, and day of the week. **Figure 8** shows the numbers of crashes by time of day. As shown, the majority of crashes took place around 3 PM, which coincides with the eastbound peak hour of traffic during both the summer and winter months. It should be noted that the roadway congestion is worst during the weekends, which coincides with when most of the eastbound accidents occurred. Based on a review of the crash reports, the majority of the rear end type crashes were related to congestion on I-70. It is worth noting that many of the rear end crashes in the eastbound direction occurred around MP 232.0 which is located within Curve 1, so the lack of visibility of the stopped traffic ahead due to the curve may play a role in the crashes along Curve 1. Consideration should be given to adding signing warning of congestion ahead before MP 232.0 in the eastbound direction.

Figure 8
Rear End Crashes by Time of Day

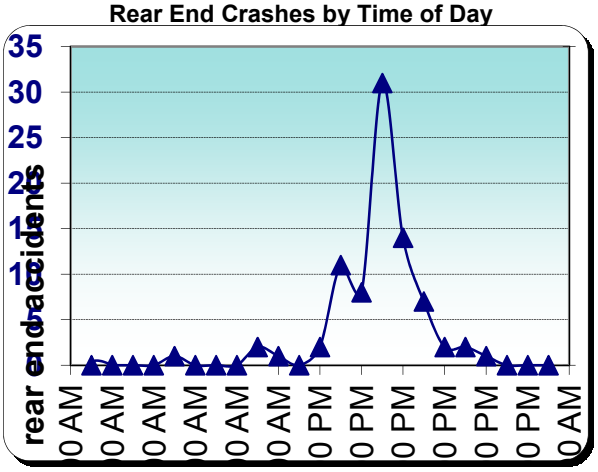


Table 10
Segment 1 Rear End Crashes

Season	Road Conditions	Eastbound				Westbound				Total
		Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	
Winter (Nov. – Apr.)	Dry	24	13	16	53	1	1	-	2	55
	Inclement	4	2	5	11	2	-	-	2	13
	Total	28	15	21	64	3	1	-	4	68
Summer (May – Oct.)	Dry	1	-	12	13	-	-	1	1	14
	Inclement	-	-	-	-	-	-	-	-	-
	Total	1	-	12	13	-	-	1	1	14
Total		29	15	33	77	3	1	1	5	82
Crashes/Mile		9.3	4.8	10.6	24.8	1.0	0.3	0.3	1.6	26.4

The proportion of sideswipe (same direction) type crashes was also higher than expected for a mountain freeway segment. Of these 20 crashes, 14 occurred in the eastbound direction. The largest number of crashes in the eastbound direction was in the afternoon. The concentration in the westbound direction was around 9 AM. This coincides with the westbound peak hour of traffic. Over half of the eastbound crashes occurred between MP 232.5 and 233.0, many of which occurred at lower speeds in congestion. Consider using highly reflective pavement markings to potentially reduce the number of sideswipe (same direction) crashes on this segment.

Crash Pattern Summary for the Curve on Segment 1

As mentioned, Curve 1 is within Segment 1 (see **Figure 5**). The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 1 (MP 231.70 – MP 232.20) – During the study period, there were a total of 56 crashes on this curve, 37 eastbound and 19 westbound. The predominant crash type on this curve was rear end type crashes (30 of 56) which comprised 54 percent of the total. Of the rear end crashes 28 were eastbound and 2 were westbound. As was the trend for the entire segment, most of these rear end type crashes occurred in dry/daylight conditions during the afternoon peak hours when there was significant congestion.

Due to the frequency of fixed object type accidents, consideration should also be given to installing dynamic speed monitoring displays (DSMD) to inform drivers of excessive speeds and encourage them to slow down. In addition, consider installing variable speed limit (VSL) signs add adjusting the speed limit based on road and weather conditions.

Segment 1 Mainline Recommendations

Consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged. Due to the frequency of wild animal type crashes, consideration should be given to installing wildlife warning signs with flashing beacons along this segment in the westbound direction.

In addition, the new pavement with the reconstruction of I-70 should help to improve skid resistance along the corridor and could help to reduce the number of run-off-road crashes. Along with the reconstruction, "Safety Edge" methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. "Safety Edge" can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the "Safety Edge" pamphlet is provided in the **Appendix**. Finally, consideration should be given to installing rumble strips along the westbound shoulder which could help to reduce the number of run-off-the-road crashes along the corridor.

I-70 / US 40 (Empire Junction) Interchange Ramp Crashes

During the five-year study period there were 19 reported crashes on the ramps of the Empire Junction interchange. The highest crash type during the study period were fixed object type crashes with 10 crashes, eight of which occurred on the eastbound to northbound loop ramp. Most crashes on the loop ramp occurred in dry road conditions during daylight hours and were the result of excessive speed. Currently there is a ramp advisory 15 mph speed sign (W13-7) approximately 300 feet prior to the exit and three chevron alignment signs (W1-8) on the ramp curve. Consideration should be given to additional signing to warn of the curve or consider installing dynamic speed monitoring displays (DSMD) to inform drivers of excessive speeds and encourage them to slow down. In addition, consider clearing some of the trees off the right side of the ramp. These bushes block visibility of the curve and clearing some may help to make drivers aware of the sharp curve ahead.

Segment 2 – Downieville Interchange (MP 233.12 – MP 234.69)

Mainline Crashes

During the five-year study period there were 102 reported mainline crashes between MP 233.11 and MP 234.69 on I-70. There were 96 property damage only (PDO) crashes and 6 injury crashes. **Figure 9** shows Segment 2 in relation to the other roadways in the vicinity. This figure also shows the curve (Curve 2) located on this segment.

Figure 9

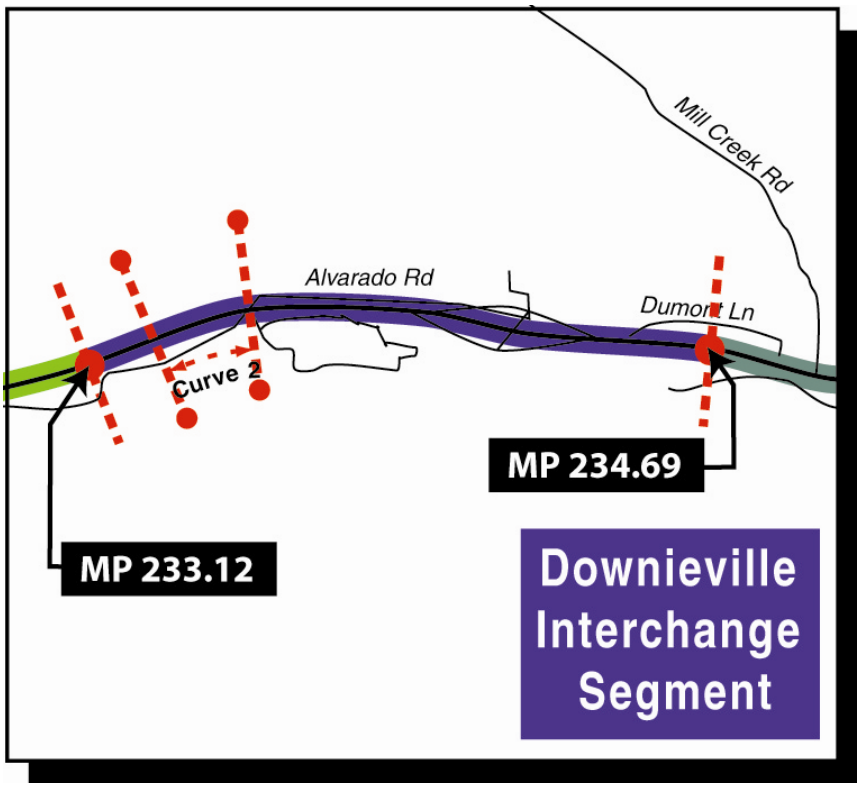


Figure 10 shows the change in weighted accident concentration throughout this segment of I-70. As shown, the largest concentration of crashes occurred on Curve 2 in the segment and within the limits of the interchange.

Figure 10

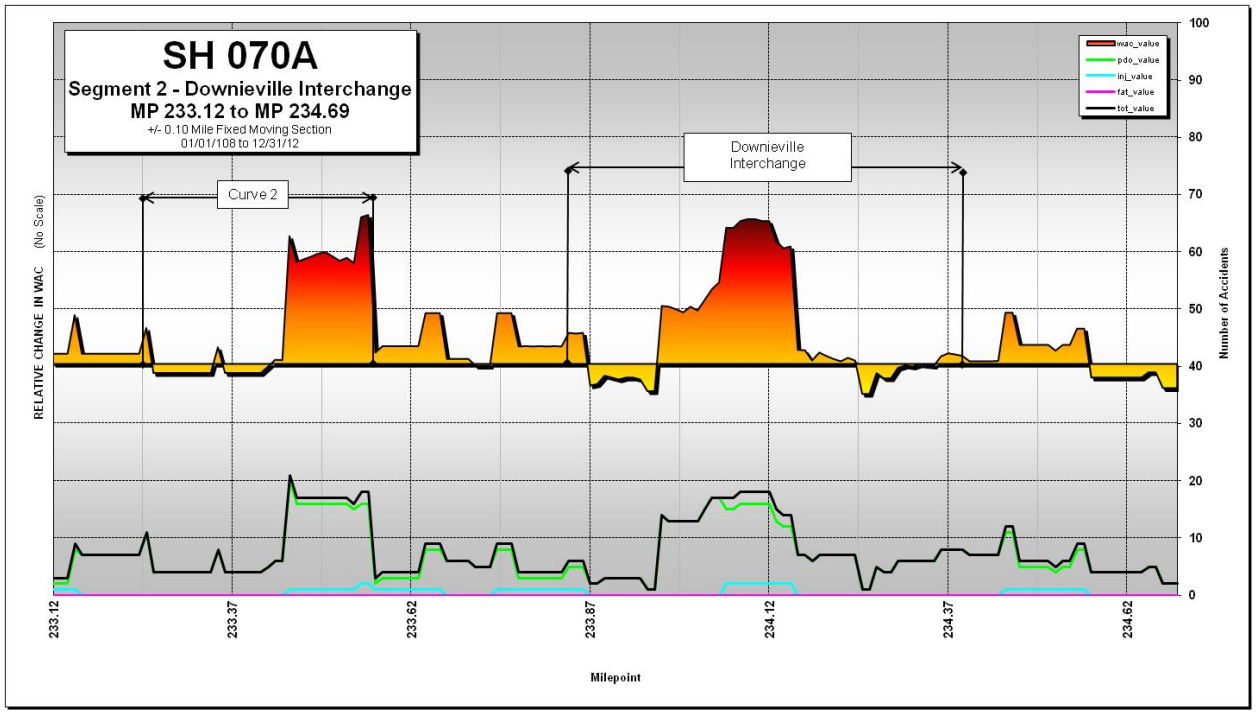


Figure 11 provides a graphical representation of crash types for this segment. Rear end and fixed object crashes were predominant (36% each).

Figure 11

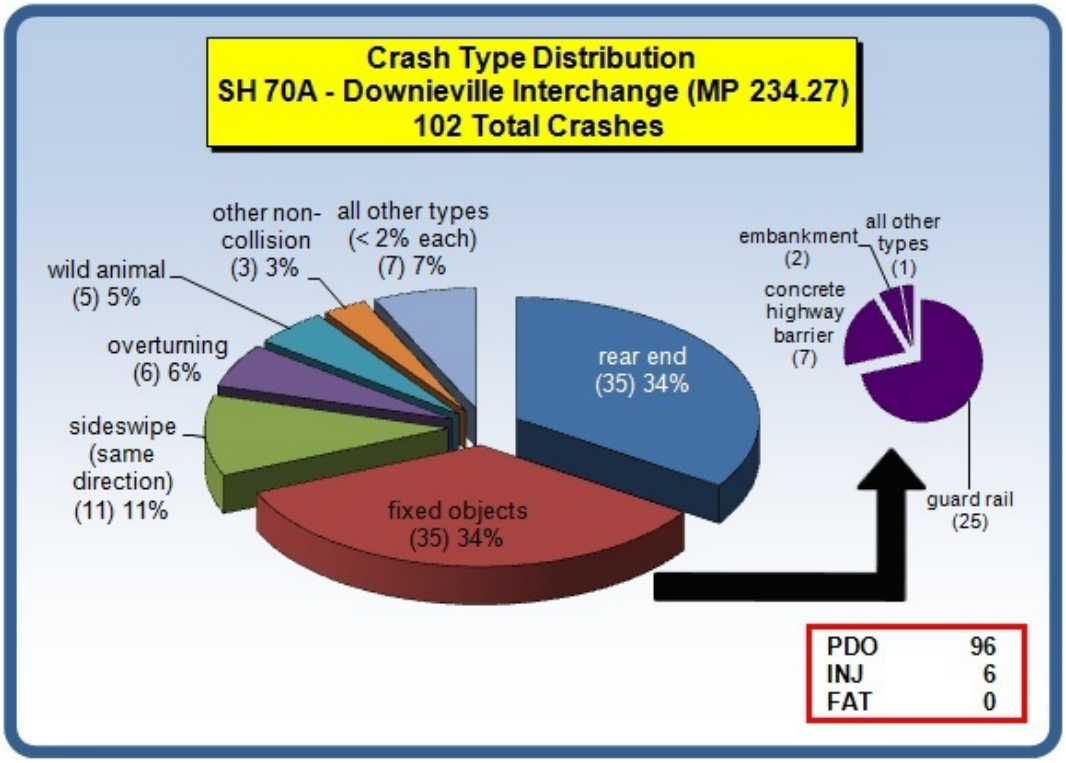


Table 11 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 11
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	4 (11%)	7 (20%)	11 (31%)	10 (29%)	5 (14%)	15 (43%)
Night	0	2 (6%)	2 (6%)	4 (11%)	3 (9%)	7 (20%)
Total	4 (11%)	9 (26%)	13 (37%)	14 (40%)	8 (23%)	22 (63%)

As can be seen in this table, the distribution of fixed object crashes among the various road condition categories was fairly equal, while most of the crashes occurred during the day. There was a large concentration of these crash types around MP 233.5, at the eastern edge of Curve 2, and 234.1, in the vicinity of the interchange. Both locations which show large spikes in the weighted accident concentration graph. Based on a review of the crash reports, most of these crashes around MP 233.5 occurred in poor road conditions when a westbound driver lost control due to the road conditions and/or excessive speed and hit the barrier or rail. The driver was generally driving too fast for the given conditions. However, the rail and barrier involved in the crashes generally prevented a more serious crash from occurring. While the crashes in the vicinity of 234.1 occurred fairly equally in both directions with almost all resulting in a guard rail

type crash, these too were primarily due to drivers driving too fast for road conditions and losing control.

Of the fixed object crashes, the proportion of guard rail and concrete barrier type crashes also were higher than expected for this portion of the study corridor. Of the 32 crashes in these two categories, 20 of 32 occurred in the westbound direction and 12 of 32 occurred in the eastbound direction.

The proportion of rear end type crashes was higher than expected. Unlike the barrier type crashes, the majority of rear end type crashes occurred in the eastbound direction (26 of 35) and most occurred in dry / daylight conditions (28 of 35). Of the eastbound crashes, most occurred on a weekend (21 of 26) and/or in the winter months (18 of 26). **Table 12** provides details of the road conditions, season, and day of the week. **Figure 12** shows the numbers of crashes by time of day. As shown, the majority of crashes took place around 3 PM, which coincides with the eastbound peak hour of traffic during both the summer and winter months. It should be noted that the roadway congestion is worst during the weekends, which coincides with when most of the eastbound accidents occurred. Based on a review of the crash reports, the majority of the rear end type crashes were related to congestion on I-70.

Figure 12
Rear End Crashes by Time of Day

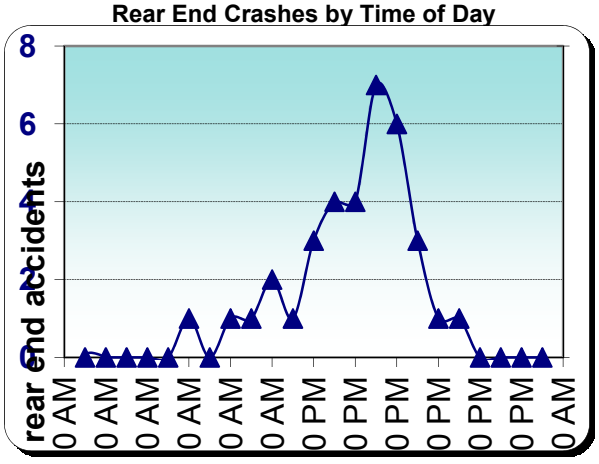


Table 12
Segment 2 Rear End Crashes

Season	Road Conditions	Eastbound				Westbound				Total
		Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	
Winter (Nov. – Apr.)	Dry	7	2	4	13	3	1	1	5	18
	Inclement	-	1	4	5	-	1	-	1	6
	Total	7	3	8	18	3	2	1	6	24
Summer (May – Oct.)	Dry	-	-	8	8	1	-	2	3	11
	Inclement	-	-	-	-	-	-	-	-	-
	Total	-	-	8	8	1	-	2	3	11
Total		7	3	16	26	4	2	3	9	35
Crashes/Mile		4.5	1.9	10.2	16.6	2.5	1.3	1.9	5.7	22.3

The proportion of sideswipe (same direction) type crashes was also higher than expected for Segment 2. Of these 11 crashes, there was a fairly even split between crashes that occurred in the eastbound direction and those that occurred in the westbound direction. The largest number of crashes in the eastbound direction was at 4 PM in the afternoon, while the concentration in the westbound direction was between 6 AM and 8 AM. These timeframes coincide with the peak hours of traffic for each direction. There is a concentration in crashes at MP 234.0, which is at the interchange. Consider using highly reflective pavement markings.

The proportion of large rock type crashes is higher than expected for this segment with 4 crashes. All the crashes occurred in the westbound direction between MP 233.4 and 233.5. There is a large, rocky hill adjacent to this segment of the freeway, however all the crashes were run-off-the-road crashes that occurred when the vehicles left the roadway due to inclement conditions and/or excessive speeds. There was no incidents of rocks causing crashes in the lane of travel.

Crash Pattern Summary for the Curve on Segment 2

As mentioned, Curve 2 is within Segment 2 (see **Figure 9**). The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 2 (MP 233.25 – MP 233.55) – During the study period, there were a total of 25 crashes on this curve, 8 eastbound and 17 westbound. The predominant crash type on this curve was

fixed object (guard rail, barrier, embankment) type crashes (10 of 25) which comprised 40 percent of the total. Of the fixed object crashes 3 were eastbound and 7 were westbound. These crashes generally occurred during the winter in inclement road condition.

Segment 2 Mainline Recommendations

Consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

Finally, the new pavement with this project should help to improve skid resistance along the corridor. This should help to reduce the number of crashes along this segment. Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

I-70 / Downieville Interchange Ramp Crashes

During the five-year study period there were 6 reported crashes on the ramps of the I-70 Business Route interchange. Four of these crashes occurred at the westbound weigh station, 3 of which involved other fixed objects. Based on a review of the crash reports, there does not appear to be a correctable pattern for these crashes.

Segment 3 – Dumont Interchange (MP 234.70 – MP 236.41)

Mainline Crashes

During the five-year study period there were 104 reported mainline crashes between MP 234.70 and MP 236.41 on I-70. There were 95 property damage only (PDO) crashes and 9 injury crashes. **Figure 13** shows Segment 3 in relation to the other roadways in the vicinity. This figure also shows the curve (Curve 3) located on this segment.

Figure 13

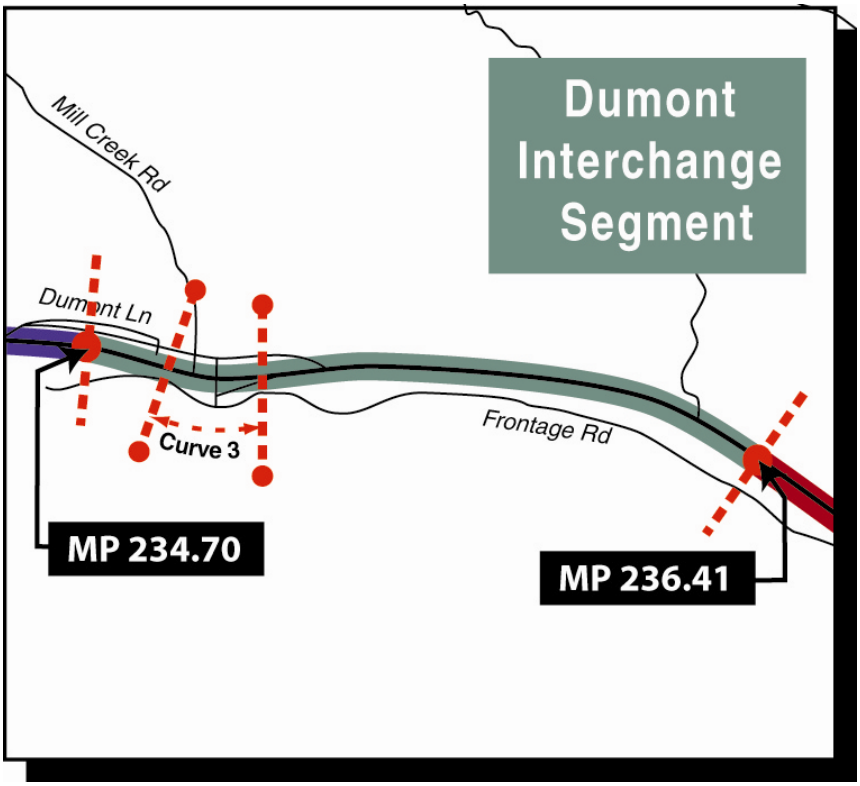


Figure 14 shows the change in weighted accident concentration throughout this segment of I-70. As shown, the largest concentration of crashes occurred on Curve 3 in the segment.

Figure 14

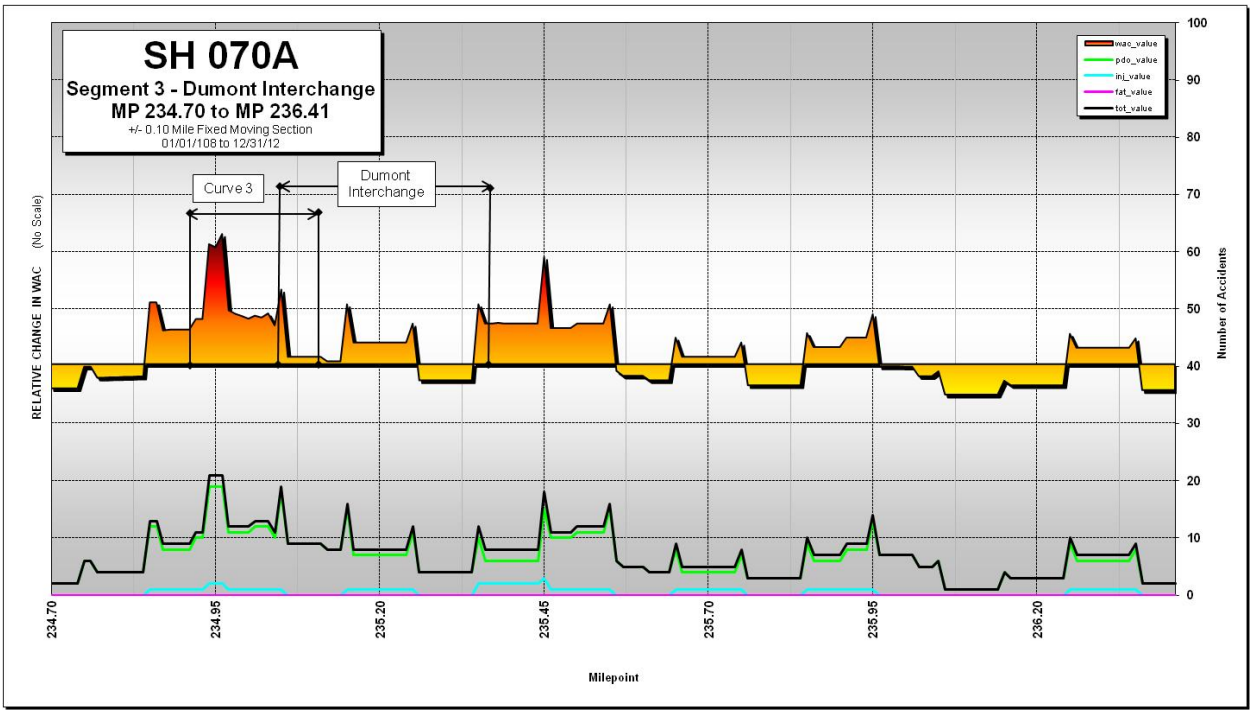
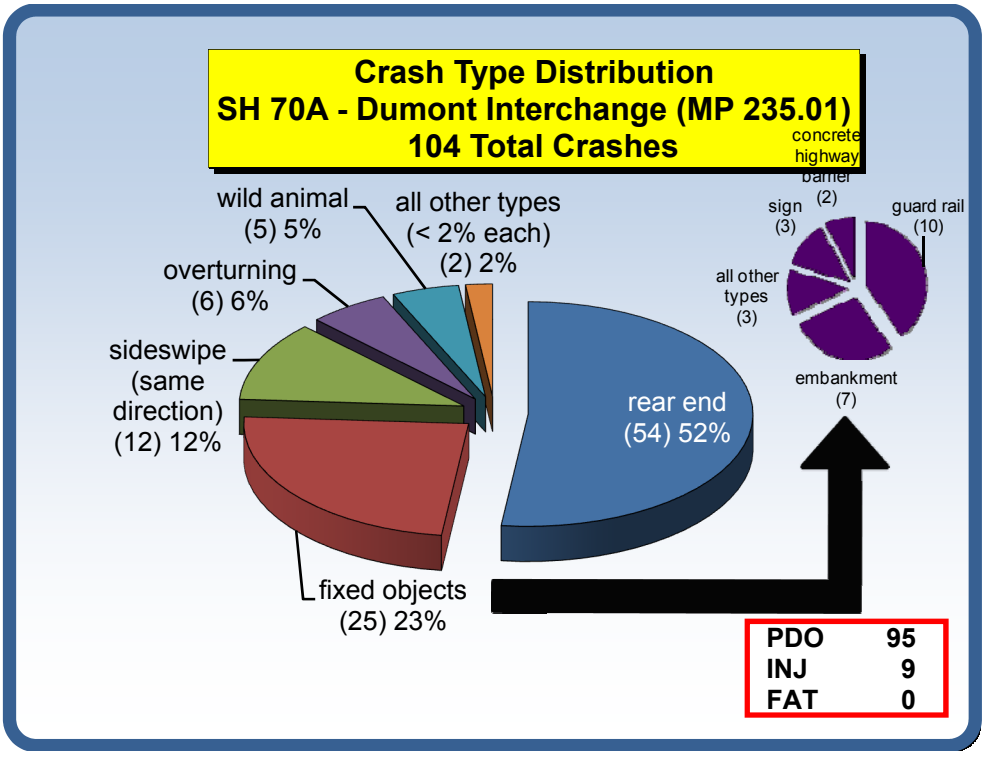


Figure 15 provides a graphical representation of crash types for this segment. Rear end crashes were predominant (52%) followed by fixed object type crashes (23%).

Figure 15



The proportion of rear end type crashes was higher than expected along Segment 3. Unlike previous segments, the rear end crashes were fairly evenly distributed by direction with 28 of 54 occurring in the eastbound direction and 26 of 54 occurring in the westbound direction. Most of these crashes occurred in dry / daylight conditions (47 of 54). Of the rear crashes, most occurred on a weekend (45 of 54) and/or in the winter months (38 of 54). **Table 13** provides details of the road conditions, season, and day of the week. **Figure 16** shows the numbers of crashes by time of day. As shown, the majority of crashes took place around 8 AM with another smaller peak around 3 PM. All of the crashes that took place around the morning peak occurred in the westbound direction and this coincides with the westbound peak hour of traffic. Most of the afternoon accidents occurred in the eastbound direction and the eastbound peak hour occurs around 3 PM. It should also be noted that the roadway congestion is worst during the weekends, which coincides with when most of the accidents occurred. Based on a review of the crash reports, the majority of the rear end type crashes were related to congestion on I-70.

Figure 16
Rear End Crashes by Time of Day

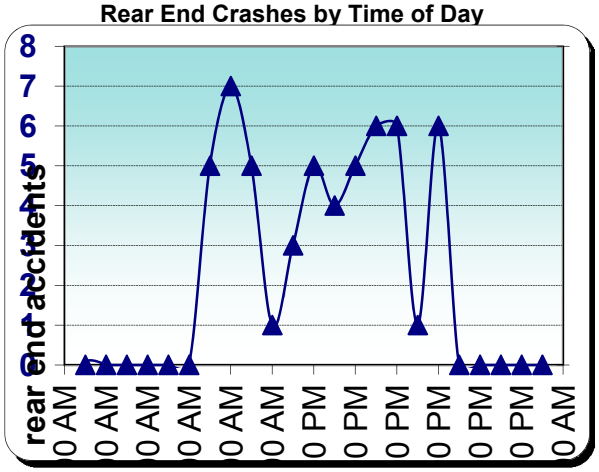


Table 13
Segment 3 Rear End Crashes

Season	Road Conditions	Eastbound				Westbound				Total
		Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	
Winter (Nov. – Apr.)	Dry	7	-	8	15	10	2	5	17	32
	Inclement	1	1	-	2	1	3	-	4	6
	Total	8	1	8	17	11	5	5	21	38
Summer (May – Oct.)	Dry	3	1	7	11	3	1	1	5	16
	Inclement	-	-	-	-	-	-	-	-	-
	Total	3	1	7	11	3	1	1	5	16
Total		11	2	15	28	14	6	6	26	54
Crashes/Mile		6.4	1.2	8.8	16.4	8.2	3.5	3.5	15.2	31.6

The proportion of sideswipe (same direction) type crashes was also higher than expected for a mountain freeway segment. Of these 12 crashes, 9 occurred in the eastbound direction. The largest number of crashes in the eastbound direction was in the afternoon. The crashes were typically spread throughout the segment so no correctable pattern has been identified. However, using highly reflective pavement markings could help to reduce the number of sideswipe (same direction) crashes on this segment.

Crash Pattern Summary for the Curve on Segment 3

As mentioned, Curve 3 is within Segment 3 (see **Figure 13**). The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 3 (MP 234.9 – MP 235.1) – During the study period, there were a total of 29 crashes on this curve, 14 eastbound and 15 westbound. The predominant crash type on this curve was rear end type crashes (14 of 29) which comprised 48 percent of the total. Of the rear end crashes 6 were eastbound and 8 were westbound. As was the trend for the entire segment, all of these rear end type crashes occurred in dry/daylight conditions. The eastbound crashes primarily occurred during the eastbound peak hour of travel, while most of the westbound crashes occurred in the morning.

Segment 3 Mainline Recommendations

Based on a review of the rear end crash reports, consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

In addition, the new pavement with the reconstruction of I-70 should help to improve skid resistance along the corridor and could help to reduce the number of run-off-road crashes. Along with the reconstruction, "Safety Edge" methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. "Safety Edge" can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the "Safety Edge" pamphlet is provided in the **Appendix**.

I-70 / Dumont Interchange Ramp Crashes

During the study period, there were only a total of 3 crashes on the ramps or at the ramp terminals at this interchange. There was one accident of each of the following crash types: broadside, sideswipe, and wild animal.

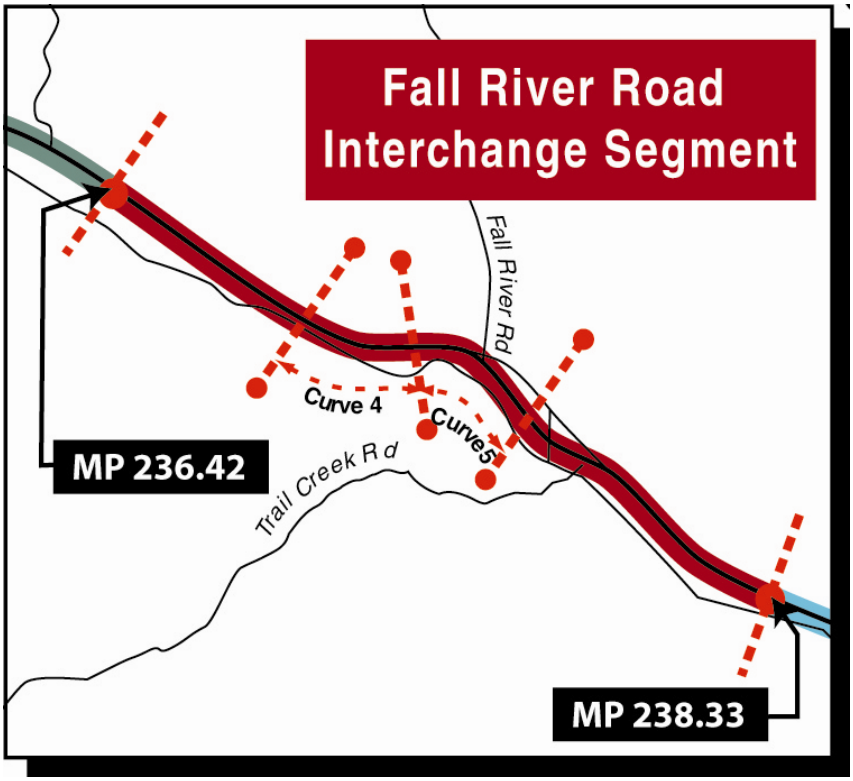
Due to the low number of crashes, no recommendations have been made for the ramps at this interchange.

Segment 4 – Fall River Road Interchange (MP 236.42 – MP 238.33)

Mainline Crashes

During the five-year study period there were 117 reported mainline crashes between MP 236.42 and MP 238.33 on I-70. There were 106 property damage only (PDO) crashes, 10 injury crashes, and one fatality crash. **Figure 17** shows Segment 4 in relation to the other roadways in the vicinity. This figure also shows the curves (Curves 4 and 5) located on this segment.

Figure 17



The fatal crash on this segment occurred when a westbound vehicle spun out of control sideswiping another car, hitting a guardrail, and overturning around MP 238.30. This crash occurred during the day in March 2010 on a dry road surface with no inclement weather. The driver of the vehicle was driving under the influence of alcohol at the time of the accident and was not wearing a seat belt.

Figure 18 shows the change in weighted accident concentration throughout this segment of I-70. As shown, the largest concentration of crashes occurred on Curves 4 and 5 in the segment.

Figure 18

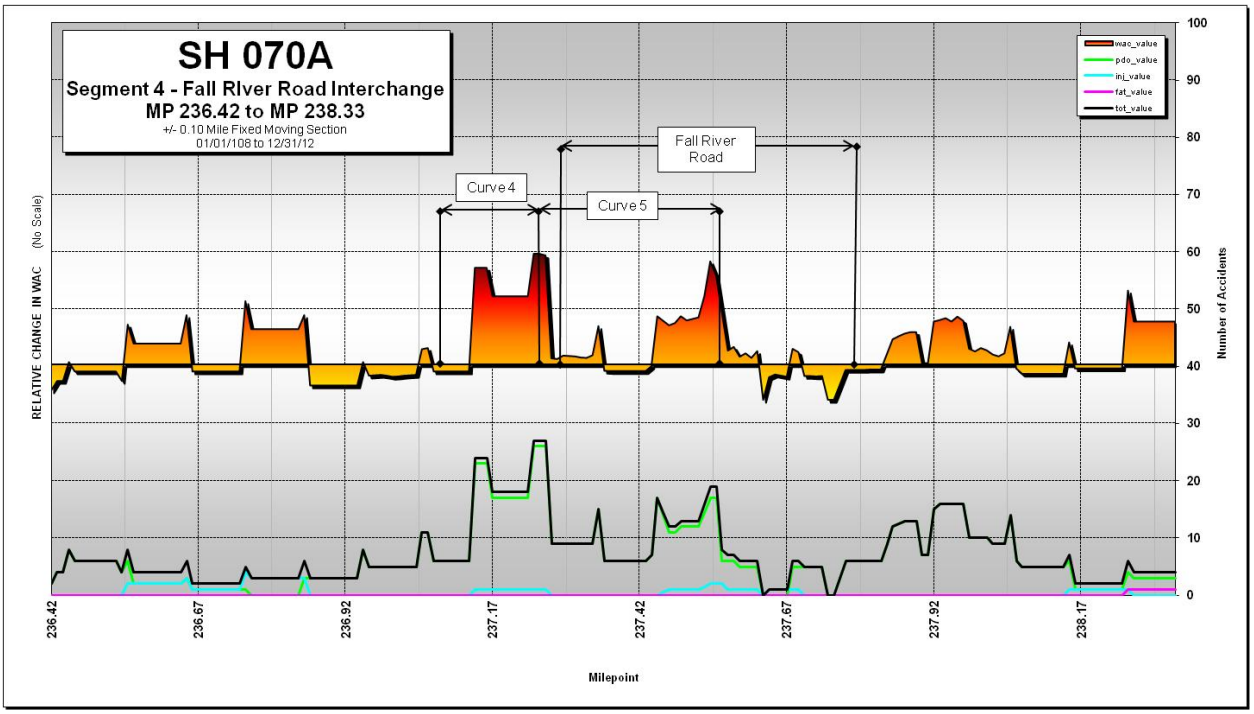


Figure 19 provides a graphical representation of crash types for this segment. Fixed object crashes were predominant (37%) followed by rear end type crashes (32%).

Figure 19

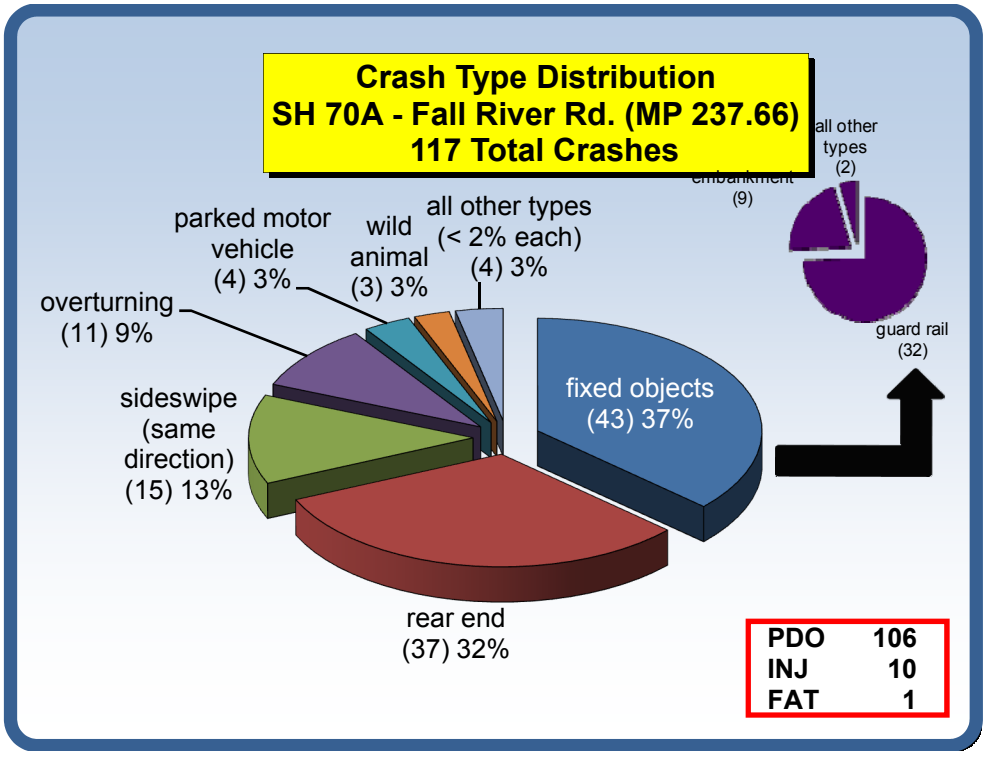


Table 14 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 14
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	3 (7%)	1 (2%)	4 (9%)	8 (18%)	5 (12%)	12 (30%)
Night	10 (23%)	5 (12%)	15 (35%)	9 (21%)	2 (5%)	11 (26%)
Total	13 (30%)	6 (14%)	19 (44%)	17 (39%)	7 (17%)	24 (56%)

As can be seen in this table, the majority of the eastbound fixed object crashes occurred at night in dry road conditions, while the westbound crashes were split between day and night during dry road conditions. There was a large concentration of these crash types along Curve 5 (see **Figure 18**). Most of the crashes at this location occurred in the eastbound direction. Based on a review of the crash reports, many of these crashes occurred when a driver lost control due to the road conditions or excessive speed. The driver was generally driving too fast for the given conditions and hit the guard rail. However, it is worth noting that the rail involved in the crashes generally prevented a more serious crash from occurring.

The proportion of guard rail and embankment type crashes were higher than expected for this portion of the study corridor. Of the 41 crashes in these two categories, 22 of 41 occurred in the westbound direction and 19 of 41 occurred in the eastbound direction.

The proportion of rear end type crashes was higher than expected. Similar to the barrier type crashes, the majority of rear end type crashes occurred in the westbound direction (22 of 37) in Segment 4. Approximately half of these crashes occurred in dry / daylight conditions (19 of 37). Of the rear end crashes, most occurred on a weekday (19 of 37) and/or in the winter months (22 of 37). **Table 15** provides details of the road conditions, season, and day of the week. **Figure 20** shows the numbers of crashes by time of day. As shown, the majority of crashes took place around 8 AM and 5 PM. All of the crashes that took place around the morning peak occurred in the westbound direction and this coincides with the westbound peak hour of traffic. Most of the afternoon accidents occurred in the eastbound direction. The eastbound peak hour occurs around 3 PM, so these accidents occurred slightly later than the peak hour of traffic in this direction. It should also be noted that the roadway congestion is worst during the weekends, which coincides with when many of the accidents occurred. Based on a review of the crash reports, the majority of the rear end type crashes were related to congestion on I-70. Many of the westbound rear end crashes occurred within Curve 4. The lack of visibility of the stopped traffic ahead due to the curve may play a role in the crashes along Curve 4.

Figure 20
Rear End Crashes by Time of Day

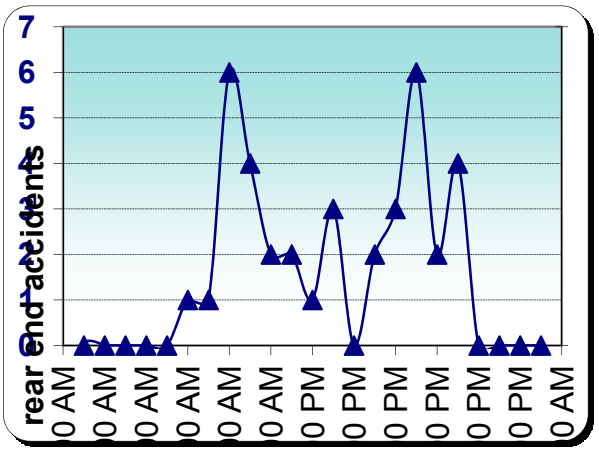


Table 15
Segment 4 Rear End Crashes

Season	Road Conditions	Eastbound				Westbound				Total
		Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	
Winter (Nov. – Apr.)	Dry	-	4	1	5	6	2	1	9	14
	Inclement	3	-	-	3	3	-	2	5	8
	Total	3	4	1	8	9	2	3	14	22
Summer (May – Oct.)	Dry	-	-	5	5	5	1	-	6	11
	Inclement	-	1	1	2	2	-	-	2	4
	Total	-	1	6	7	7	1	-	8	15
Total		3	5	7	15	16	3	3	22	37
Crashes/Mile		1.6	2.6	3.7	7.9	8.4	1.6	1.6	11.5	19.4

The proportion of sideswipe (same direction) type crashes was also higher than expected for this segment. Of these 15 crashes, 10 occurred in the eastbound direction. The largest number of crashes in the eastbound direction was around 4 PM in the afternoon, which is about the time of the peak hour of traffic in that direction. The crashes were typically spread throughout the segment so no correctable pattern has been identified. However, using highly reflective pavement markings could help to reduce the number of sideswipe (same direction) crashes on this segment.

Crash Pattern Summary for Curves on Segment 4

As mentioned, Curves 4 and 5 are within Segment 4 (see **Figure 17**). The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 4 (MP 237.05 – MP 237.25) – During the study period, there were a total of 24 crashes on this curve, 10 eastbound and 14 westbound. The predominant crash type on this curve was rear end type crashes (10 of 24) which comprised 42 percent of the total. Of the rear end crashes 2 were eastbound and 8 were westbound. As was the trend for the entire segment, approximately half these rear end type crashes occurred in dry/daylight conditions.

Curve 5 (MP 237.25 – MP 237.55) – During the study period, there were a total of 27 crashes on this curve, 19 eastbound and 8 westbound. The predominant crash type on this curve was fixed object (guard rail, embankment) type crashes (13 of 27) which comprised 48 percent of the

total. Of the fixed object crashes 9 were eastbound and 4 were westbound. These crashes generally occurred during the winter in inclement road conditions.

Segment 4 Mainline Recommendations

Consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

In addition, the new pavement with this project should help to improve skid resistance along the corridor. Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

I-70 / Fall River Road Interchange Ramp Crashes

During the study period, there were only a total of 3 crashes on the ramps or at the ramp terminals at the Fall River Road interchange. There were 2 broadside type crashes and 1 rear end type crash.

Due to the low number of crashes, no recommendations have been made for the ramps at this interchange.

Segment 5 – SH 70K Interchange (MP 238.34 – MP 239.31)

Mainline Crashes

During the five-year study period there were 37 reported mainline crashes between MP 238.34 and MP 239.31 on I-70. There were 36 property damage only (PDO) crashes and one injury crash. **Figure 21** shows Segment 5 in relation to the other roadways in the vicinity.

Figure 21

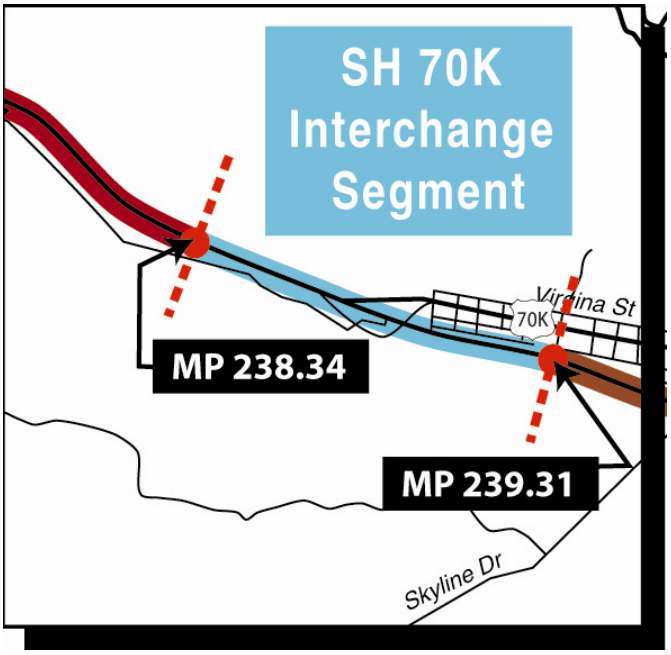


Figure 22 shows the change in weighted accident concentration throughout this segment of I-70. As shown, there are no significant spikes in this segment.

Figure 22

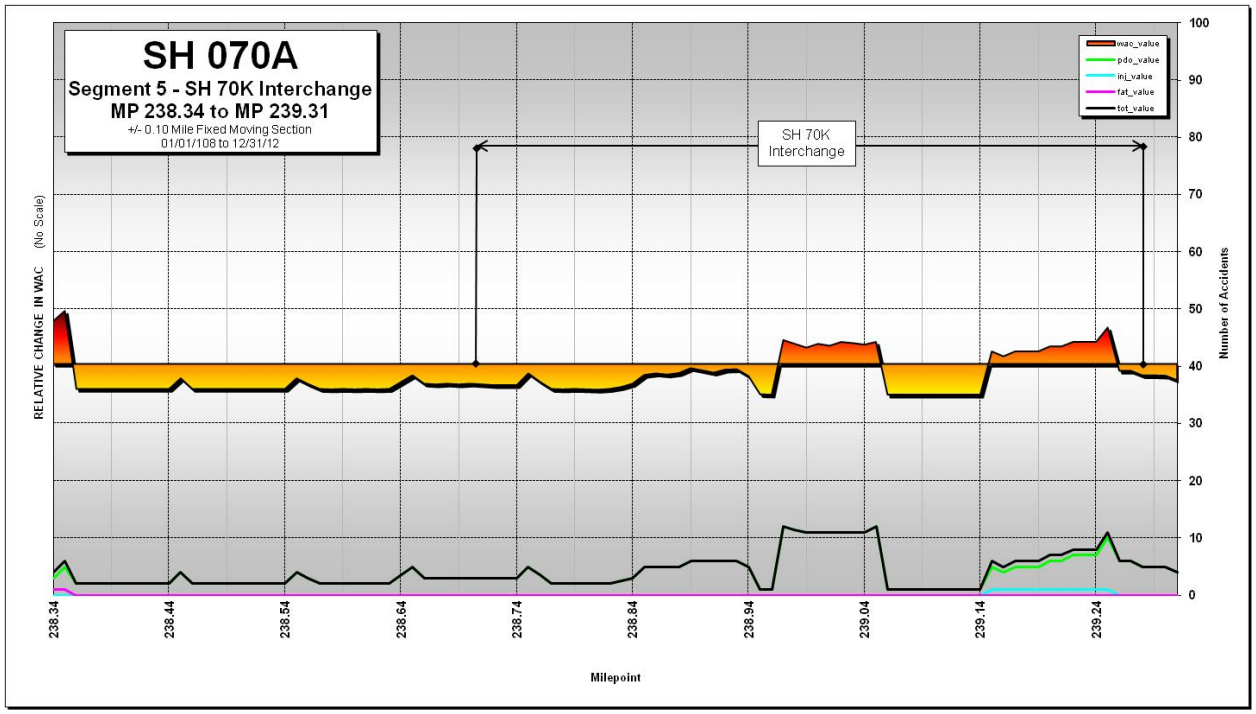


Figure 23 provides a graphical representation of crash types for this segment. Fixed object crashes were predominant (70%) followed by rear end type crashes (19%).

Figure 23

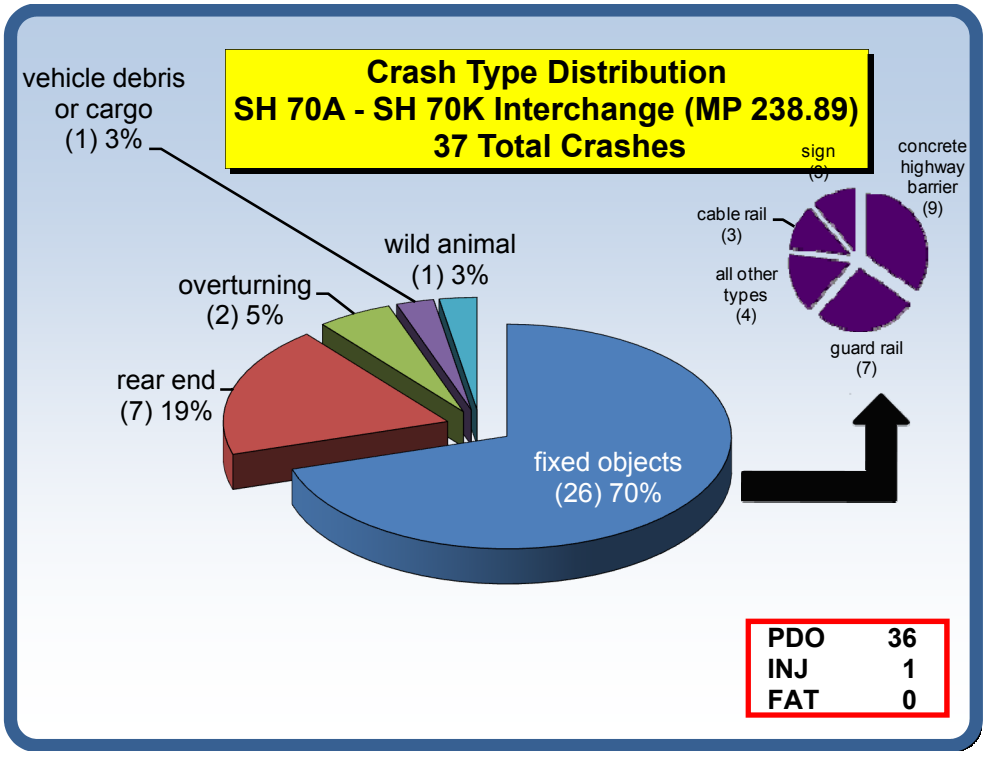


Table 16 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 16
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	3 (12%)	1 (3%)	4 (15%)	3 (12%)	8 (31%)	11 (43%)
Night	3 (12%)	1 (3%)	4 (15%)	5 (19%)	2 (8%)	7 (27%)
Total	6 (24%)	2 (6%)	8 (30%)	8 (31%)	10 (39%)	18 (70%)

As can be seen in this table, the majority of the fixed object crashes occurred in the westbound direction with a fairly even distribution between various lighting and road conditions. The largest concentration of crashes occurred around MP 239. Most of the fixed object accidents at this location occurred in the westbound direction during inclement road conditions. Based on a review of the crash reports, many of these crashes occurred when a driver lost control due to the road conditions and hit the barrier or rail. The driver was generally driving too fast for the given conditions. However, the rail and barrier involved in the crashes generally prevented a more serious crash from occurring.

Of the fixed object, the proportion of guard rail, cable rail, and concrete barrier type crashes were all higher than expected for this portion of the study corridor. Of the 19 crashes in these three categories, 14 of 19 occurred in the westbound direction and 5 of 19 occurred in the eastbound direction.

Segment 5 Mainline Recommendations

Consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

In addition, the new pavement with this project should help to improve skid resistance along the corridor. Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

I-70 / SH 70K Interchange Ramp Crashes

During the study period, there were only a total of 3 crashes on the ramps or at the ramp terminals at this interchange. There were 2 fixed object type crashes and 1 rear end type crash. One of the fixed object type crashes occurred at the eastbound ramp gore point.

Due to the low number of crashes, no recommendations have been made for the ramps at this interchange.

Segment 6 – SH 103 Interchange (MP 239.32 – MP 240.42)

Mainline Crashes

During the five-year study period there were 83 reported mainline crashes between MP 239.32 and MP 240.42 on I-70. There were 75 property damage only (PDO) crashes and 8 injury crashes. **Figure 24** shows Segment 6 in relation to the other roadways in the vicinity. This figure also shows the curve (Curves 6) located on this segment.

Figure 24

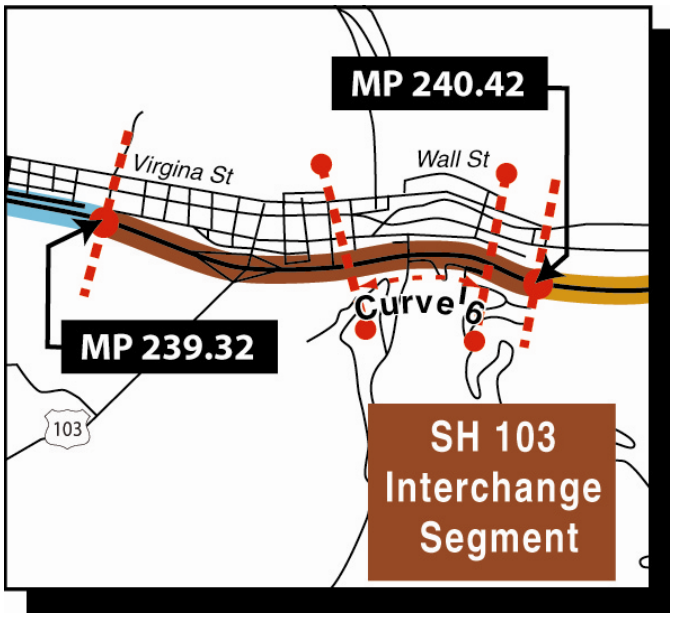


Figure 25 shows the change in weighted accident concentration throughout this segment of I-70. As shown, the largest concentration of crashes occurred on Curve 6 in the segment. It should be noted that there is an uphill grade in the eastbound direction along Curve 6. Most of the other locations of large spikes in the graph are within the limits of the interchange.

Figure 25

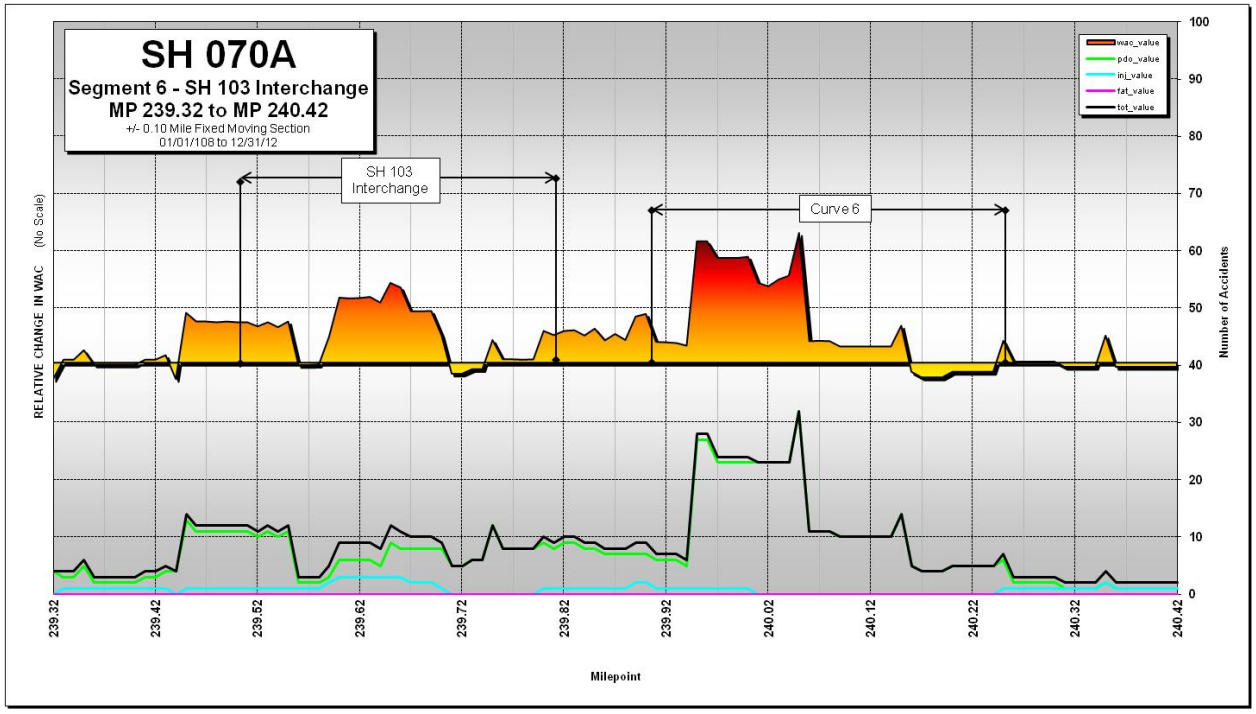


Figure 26 provides a graphical representation of crash types for this segment. Fixed object crashes were predominant (61%) followed by rear end type crashes (18%).

Figure 26

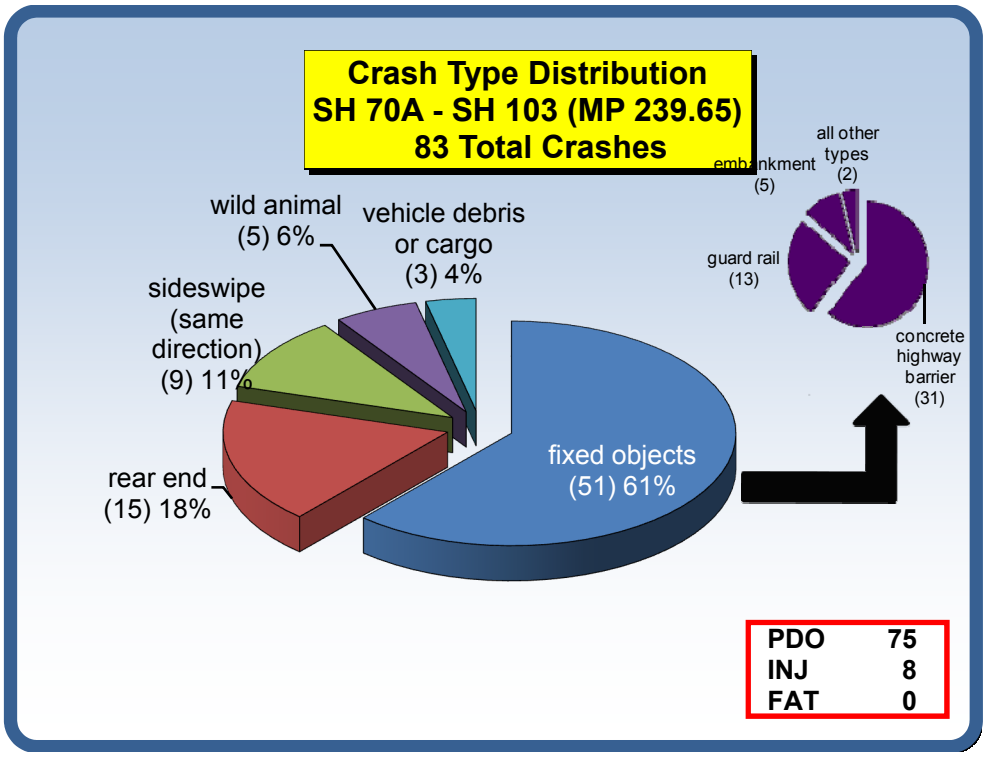


Table 17 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 17
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	12 (24%)	3 (6%)	15 (30%)	8 (16%)	5 (10%)	13 (26%)
Night	6 (11%)	7 (14%)	13 (25%)	4 (7%)	6 (12%)	10 (19%)
Total	18 (35%)	9 (20%)	27 (55%)	12 (23%)	11 (22%)	23 (45%)

As can be seen in this table, the highest proportion of the eastbound fixed object crashes occurred during the day in dry road conditions, while the westbound crashes had a fairly even distribution between various lighting and road conditions. There are concentrations of fixed object crashes at MP 239.5, at the western portion of the interchange, and MP 240.0 in Curve 6 (see **Figure 25**). At both these locations most of the crashes occurred in inclement road conditions with a fairly even split between the eastbound and westbound directions. Based on a review of the crash reports, many of these crashes occurred when a driver lost control due to the road conditions and/or excessive speed. The driver was generally driving too fast for the

given conditions and lost control hitting a barrier or rail. It should be noted that barrier and rail crashes typically prevent more serious crashes from occurring.

Of the fixed object, the proportion of guard rail and concrete barrier crashes were higher than expected for this portion of the study corridor. Of the 44 crashes in these categories, 22 of 44 occurred in the westbound direction and 22 of 44 occurred in the eastbound direction.

The proportion of sideswipe (same direction) type crashes was also higher than expected for a mountain freeway segment. Of these 9 crashes, 7 occurred in the eastbound direction. The largest number of crashes in the eastbound direction was in the afternoon at 2 PM, which is around the time of the peak hour of traffic in the eastbound direction. The crashes were typically spread throughout the segment so no correctable pattern has been identified. However, using highly reflective pavement markings could help to reduce the number of sideswipe (same direction) crashes on this segment.

Crash Pattern Summary for the Curve on Segment 6

As mentioned, Curve 6 is within Segment 6 (see **Figure 24**) and has a grade. The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 6 (MP 239.90 – MP 240.25) – During the study period, there were a total of 44 crashes on this curve, 26 eastbound and 18 westbound. The predominant crash type on this curve was fixed object (guard rail, barrier, embankment) type crashes (25 of 44) which comprised 57 percent of the total. Of the fixed object crashes, 14 were eastbound and 11 were westbound. These crashes generally occurred during the winter in inclement road conditions.

Segment 6 Mainline Recommendations

Consideration should given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. In addition, consideration should be given to reviewing the existing lighting along the corridor to ensure that it is sufficient. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged.

Finally, the new pavement with this project should help to improve skid resistance along the corridor. This should help to reduce the number of crashes along this segment. Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

I-70 / SH 103 Interchange Ramp Crashes

During the study period, there were only a total of 4 crashes on the ramps or at the ramp terminals at the SH 103 interchange. The number of broadside type crashes was the most frequent at 3 occurrences. All three of the broadsides occurred at the eastbound ramp terminal involving an eastbound vehicle getting struck by a southbound vehicle. There is a visibility problem at this terminal and any future bridge replacement should take this into consideration.

Segment 7 – SH 70K Interchange (MP 240.43 – MP 242.00)

Mainline Crashes

During the five-year study period there were 106 reported mainline crashes between MP 240.43 and MP 242.00 on I-70. There were 104 property damage only (PDO) crashes and 2 injury crashes. **Figure 27** shows Segment 7 in relation to the other roadways in the vicinity. This figure also shows the curves (Curves 7, 8, and 9) located on this segment.

Figure 27

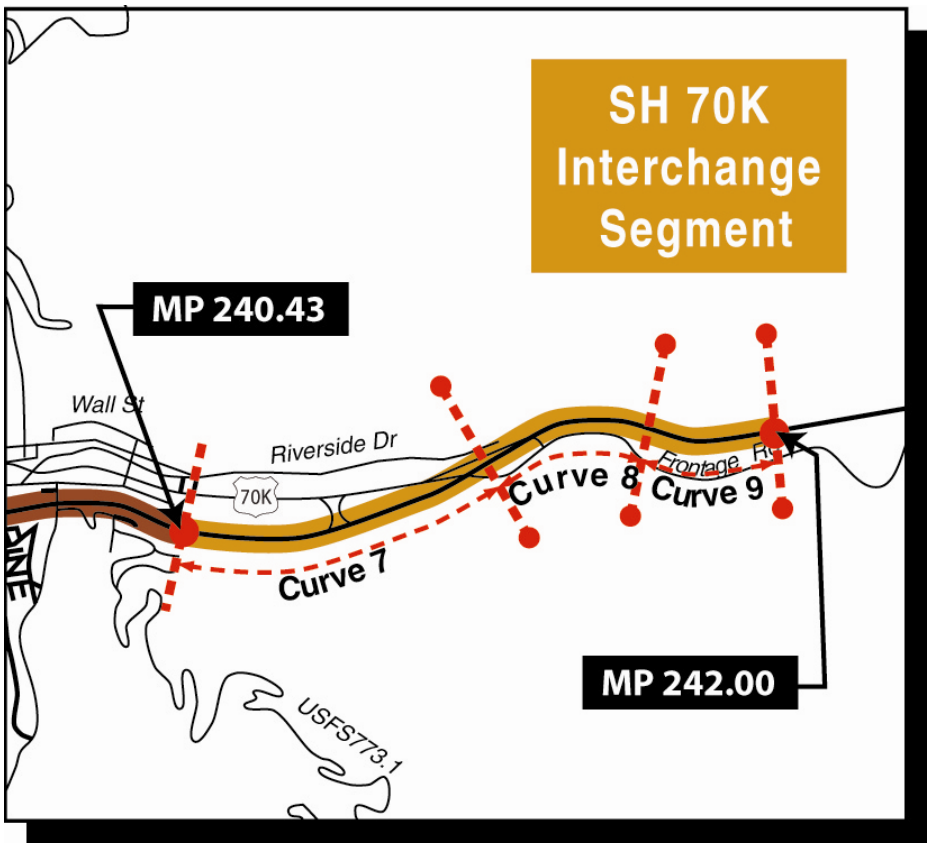


Figure 28 shows the change in weighted accident concentration throughout this segment of I-70. As shown, there is a large concentration of crashes on each curve in the segment.

Figure 28

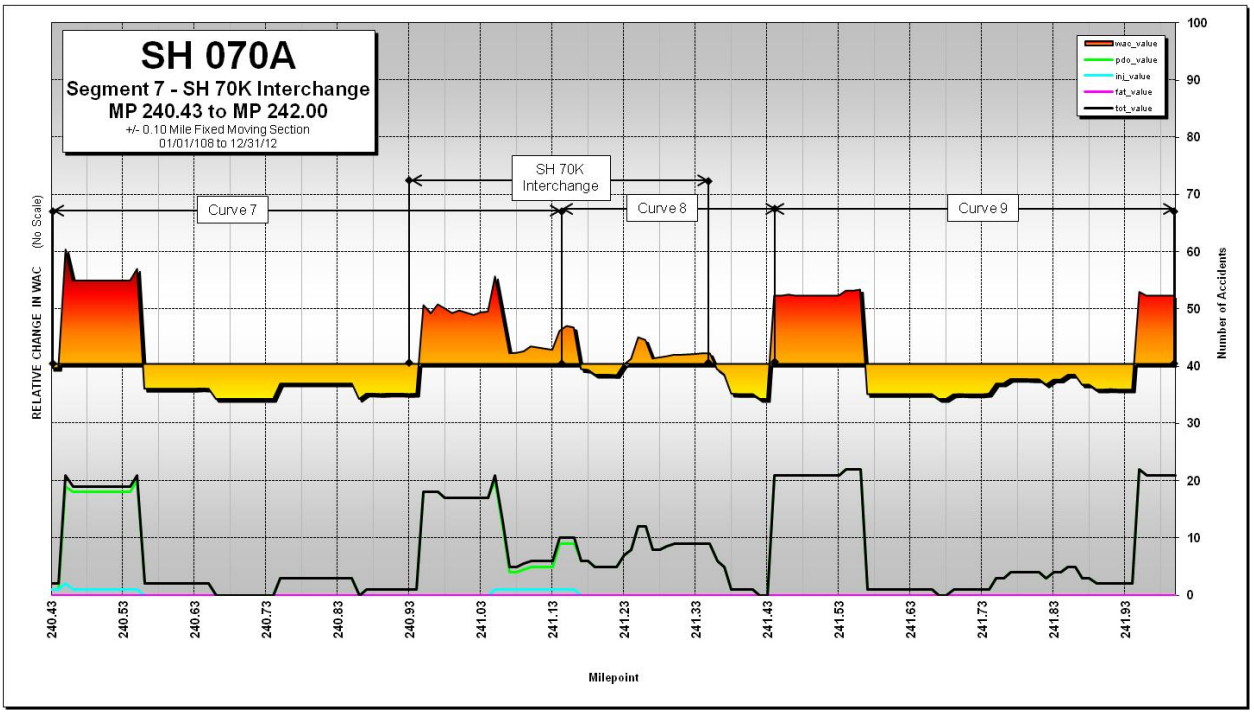


Figure 29 provides a graphical representation of crash types for this segment. Rear end crashes were predominant (40%) followed by fixed object type crashes (34%).

Figure 29

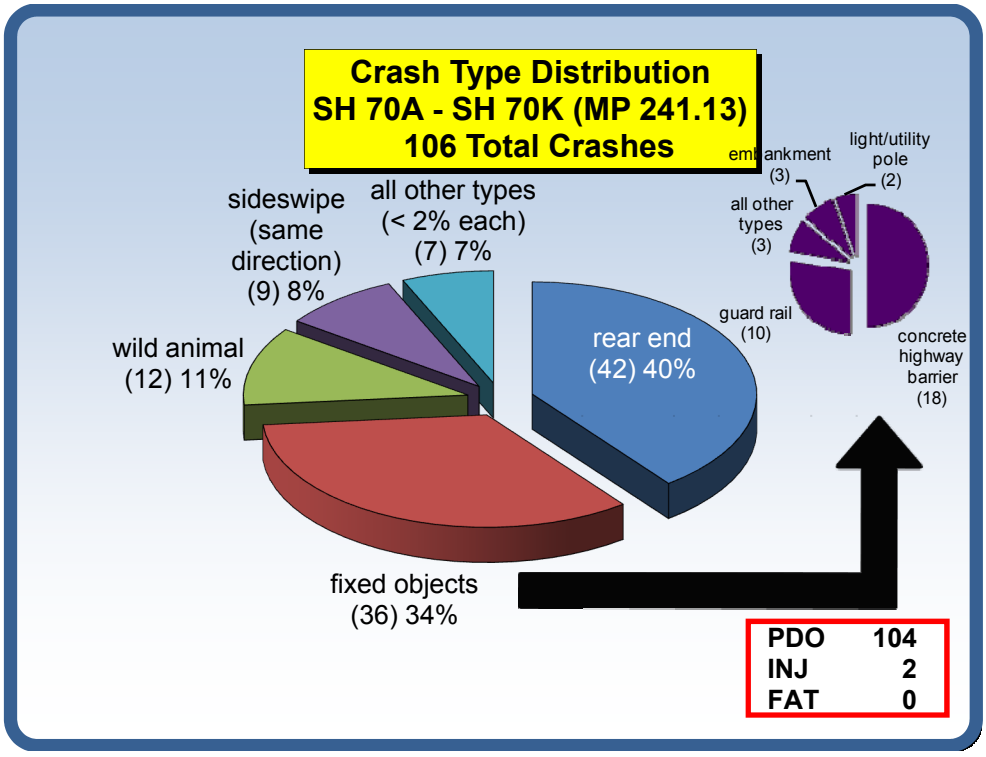


Table 18 shows the lighting and roadway conditions present for the fixed object crashes that occurred in this segment by direction.

Table 18
Lighting and Road Conditions for Fixed Object Crash Types

Lighting Condition	Eastbound			Westbound		
	Dry	Inclement Road Conditions	Total	Dry	Inclement Road Conditions	Total
Daylight	6 (17%)	6 (17%)	12 (34%)	5 (14%)	2 (6%)	7 (20%)
Night	5 (14%)	1 (2%)	6 (16%)	7 (19%)	4 (11%)	11 (30%)
Total	11 (31%)	7 (19%)	18 (50%)	12 (33%)	6 (17%)	18 (50%)

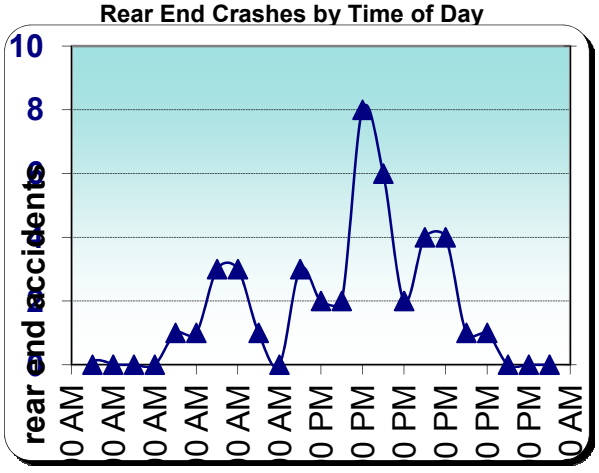
As can be seen in this table, the distribution of fixed object crashes between the eastbound and westbound directions is fairly equal. In the eastbound direction more crashes occurred during the day in dry road conditions, while in the westbound direction more crashes occurred at night also in dry road conditions.

Of the fixed object, the proportion of concrete barrier crashes was higher than expected for this portion of the study corridor. Of the 18 crashes in these categories, 10 of 18 occurred in the westbound direction and 8 of 18 occurred in the eastbound direction.

There was a large concentration of these crash types around MP 241.5, at the western edge of Curve 9, which coincides with a spike in the weighted accident concentration graph (See **Figure 28**). Based on a review of the crash reports, all the crashes at this location occurred on inclement road conditions with more occurring in the westbound direction. In most cases the driver lost control due to the road conditions and/or excessive speed and hit the barrier. The driver was generally driving too fast for the given conditions. However, the rail and barrier involved in the crashes generally prevented a more serious crash from occurring.

The proportion of crashes involving wild animals was higher than expected along this segment. Of the 12 crashes, 4 occurred in the eastbound direction and 8 occurred in the westbound direction. Nearly all of these crashes were in dry conditions and occurred around dawn or dusk. There was a large concentration at MP 242.0 with 5 of the westbound crashes occurring at that location. There is a large meadow to the south of I-70 in the vicinity of these mile posts. Consider installing wildlife warning signs with flashing beacons for the westbound direction immediately west of the tunnel. Also, consideration should be given to installing a wild life fence along I-70 in this location. A beacon and wildlife fence could help to reduce the number of wild animal crashes on at this location.

Figure 30
Rear End Crashes by Time of Day



The proportion of rear end type crashes was also higher than expected. The majority of rear end type crashes occurred in the eastbound direction (32 of 42) and most occurred in dry / daylight conditions (28 of 42). Of the eastbound crashes, most occurred on a weekend (23 of 32) and/or in the winter months (20 of 32). **Table 19** provides details of the road conditions, season, and day of the week. **Figure 30** shows the numbers of crashes by time of day. As shown, the majority of crashes took place around 3 PM, which coincides with the eastbound peak hour of traffic during both the summer and winter months. It should be noted that the roadway congestion is worst during the weekends, which coincides with when most of the eastbound accidents occurred. Based on a review of the crash reports, the majority of the rear end type crashes were related to congestion on I-70. It is worth noting that 14 of rear end crashes occurred around MP 241.0, which is Curve 7 near the interchange, and eight occurred around MP 242.0, in Curve 9.

Table 19
Segment 7 Rear End Crashes

Season	Road Conditions	Eastbound				Westbound				Total
		Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	
Winter (Nov. – Apr.)	Dry	3	2	11	16	2	3	-	5	21
	Inclement	3	-	1	4	1	3	-	4	8
	Total	6	2	12	20	3	6	-	9	29
Summer (May – Oct.)	Dry	4	1	5	10	1	-	-	1	11
	Inclement	1	-	1	2	-	-	-	-	2
	Total	5	1	6	12	1	-	-	1	13
Total		11	3	18	32	4	6	-	10	42
Crashes/Mile		7.0	1.9	11.5	20.4	2.5	3.8	-	6.4	26.8

Crash Pattern Summary for Curves on Segment 7

As mentioned, Curves 7, 8, and 9 are within Segment 7 (see **Figure 27**). The tables in the appendix show the directionality of the predominant crash types (barrier, rear end and sideswipe crashes) on these curves. The seasonality and day of the week trends of the crashes on these curves are also shown in these tables. The following provides a summary of the trends shown in the tables in the appendix.

Curve 7 (MP 240.43 – MP 241.15) – During the study period, there were a total of 46 crashes on this curve, 35 eastbound and 11 westbound. The predominant crash type on this curve was rear end type crashes (24 of 46) which comprised 53 percent of the total. Of the rear end crashes 18 were eastbound and 6 were westbound. As was the trend for the entire segment, most of these rear end type crashes occurred in dry/daylight conditions. The eastbound crashes primarily occurred during the eastbound peak hour of travel around 3 PM in the afternoon, while most of the westbound crashes occurred in the morning during the westbound peak hour of travel. It should be noted that Curve 7 has a large downhill grade in the eastbound direction.

Curve 8 (MP 241.16 – MP 241.45) – During the study period, there were a total of 11 crashes on this curve, 6 eastbound and 5 westbound. The predominant crash types on this curve were rear end type crashes and fixed object type crashes with 4 of each crash type.

Curve 9 (MP 241.46 – MP 242.00) – During the study period, there were a total of 49 crashes on this curve, 27 eastbound and 22 westbound. The predominant crash type on this curve was fixed object (guard rail, barrier, embankment) type crashes (22 of 49) which comprised 46

percent of the total. Of the fixed object crashes 10 were eastbound and 12 were westbound. These crashes generally occurred during the winter in inclement road conditions.

Segment 7 Mainline Recommendations

Consideration should be given to using highly reflective pavement markings and replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor. In addition, consideration should be given to reviewing the existing lighting along the corridor to ensure that it is sufficient. Replacing damaged median barrier and guard rail should also be considered as the barrier and rails may not perform as designed when damaged. Due to the frequency of wild animal type crashes, consideration should be given to installing wildlife warning signs with flashing beacons along this segment in the westbound direction.

Lastly, the new pavement with this project should help to improve skid resistance along the corridor. Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide. In addition, a copy of the “Safety Edge” pamphlet is provided in the **Appendix**.

I-70 / SH 70K Interchange Ramp Crashes

During the study period, there were only a total of 4 crashes on the ramps or at the ramp terminals at this interchange. There was no predominant accident type at this location. A fixed object type crash occurred at the eastbound ramp gore point.

Due to the low number of crashes, no recommendations have been made for the ramps at this interchange.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are based on the analysis of five years of crash history and a review of video data by Felsburg Holt & Ullevig staff. The Region is advised to verify through field survey, the information included in this report regarding physical features, roadside characteristics and traffic control devices within the study area.

Based on the Weighted Accident Concentration (WAC) analysis, there are several locations along the study segment with higher than expected crash concentration and severity that are primarily related to barrier type crashes (concrete barrier, guard rail, and embankment) and rear end type crashes. The worst location (see **Figure 2**) is in the vicinity of the Empire Junction interchange in Curve 1.

There were 780 crashes reported within the study segment between January 1, 2008 and December 31, 2012. The most predominant crash types were fixed object type crashes (concrete barrier, guard rail, embankment and walls), rear end type crashes, and sideswipe same direction type crashes. These crash types comprise approximately 82 percent of the crashes along the corridor. In general, there are several factors that contribute to the cause of crashes along the study corridor. Some of the primary factors include; the horizontal curvature of I-70, travel speed, traffic congestion due to weekend traffic, direction of travel and inclement weather / road conditions. For many of the crashes, more than one of these factors contributed.

The study corridor was divided into seven analysis segments, one for each of the interchanges along the study segment. These seven segments were then divided into sub segments that generally correspond to each of the curves along the study corridor. In all, there are a total of nine curves along the study corridor; one in Segment 1, one in Segment 2, one in Segment 3, two in Segment 4, one in Segment 6, and three in Segment 7.

Based on the analyses of these segments and sub segments, it was found that the fixed object crashes typically occurred on a winter weekday when higher travel speeds and / or poor road conditions were common factors. The curves with the highest fixed object crash totals were Curves 2, 5, 6, and 9. These barrier type crashes occurred more frequently in the westbound direction.

Rear end type and sideswipe same direction type crashes typically occurred on winter weekends when traffic congestion is more likely. At some locations, the horizontal curvature of the roadway made rear end accidents more frequent due to the inability for vehicles to see stopped traffic ahead. This could be seen in Curves 1, 3, 4, and 7. These rear end and sideswipe type crashes occurred more frequently in the eastbound direction because this direction experiences higher traffic congestion.

The following list of recommendations was developed based on a review of the crash reports and the prevalent crash patterns along I-70.

In addition to the reconstruction and restriping of the pavement with highly reflective materials in conjunction with the peak period shoulder lane, the following recommendations are made to help reduce the number of mainline crashes along I-70.

- Consideration should also be given replacing all delineator post reflector buttons, rail reflector tabs and installing linear barrier delineation to provide better and consistent nighttime delineation throughout the corridor

- Consider replacing damaged median barrier and guard rail as the barrier and rails may not perform as designed when damaged.
- Along with the reconstruction, “Safety Edge” methods should be used when paving the shoulders where the guardrail is not against the paved shoulder to help make it easier for vehicles to reenter the roadway in a controlled manner. “Safety Edge” can be found in Chapter 4 of the CDOT Roadway Design Guide.
- Consider installing rumble strips along the westbound shoulder which could help to reduce the number of run-off-the-road crashes along the corridor.
- Finally, the construction of an eastbound peak period shoulder lane should help to reduce congestion and will likely help to reduce the number of rear end type crashes occurring in the eastbound direction.

In addition to corridor wide mainline crashes, there are several other locations of higher than expected crash concentration and severity throughout the study corridor. The following recommendations are made with respect to these locations:

Segment 1 – US 40, Empire Junction Interchange (MP 230.00 – MP 233.11)

- Due to the frequency of wildlife type crashes, consideration should be given to installing wildlife warning signs with flashing beacons in the westbound direction.

- Consideration should be given to adding additional signing to the eastbound to northbound loop ramp to warn drivers of the sharp curve. Or consider installing dynamic speed monitoring displays (DSMD) to inform drivers of excessive speeds and encourage them to slow down.

- Consider clearing some of the bushes off the right side of the eastbound I-70 to northbound US 40 ramp to make the sharp curve ahead more visible to drivers.

- Consider adding signing warning of congestion ahead before MP 232.0 in the eastbound direction.

- On Curve 1, consideration should be given to installing dynamic speed monitoring displays (DSMD) to inform drivers of excessive speeds and encourage them to slow down.
- On Curve 1, consideration should be given to installing variable speed limit signs (VSL) and adjusting the speed limits based on road and weather conditions.

Segment 7 – SH 70K Interchange (MP 240.43 – MP 242.00)

- Due to the frequency of wildlife type crashes, consideration should be given to installing wildlife warning signs with flashing beacons in the westbound direction.

APPENDIX

CRASH PATTERN TABLES

FIVE-YEAR DETAILED SUMMARY OF TRAFFIC CRASHES

FIVE-YEAR GENERAL SUMMARY OF TRAFFIC CRASHES

- Segment 1 – US 40, Empire Junction Interchange (MP 230.00 – MP 233.11)
- Segment 2 – Downieville Interchange (MP 233.12 – MP 234.69)
- Segment 3 – Dumont Interchange (MP 234.70 – MP 236.41)
- Segment 4 – Fall River Road Interchange (MP 236.42 – MP 238.33)
- Segment 5 – SH 70K Interchange (MP 238.34 – MP 239.31)
- Segment 6 – SH 103 Interchange (MP 239.32 – MP 240.42)
- Segment 7 – SH 70K Interchange (MP 240.43 – MP 242.00)

GENERAL SUMMARY OF TRAFFIC CRASHES BY YEAR

- 1/1/2008 – 12/31/2008
- 1/1/2009 – 12/31/2009
- 1/1/2010 – 12/31/2010
- 1/1/2011 – 12/31/2011
- 1/1/2012 – 12/31/2012

COMMON CRASH TYPES AND DIAGRAMS

SAFETY EDGE BROCHURE

STRAIGHT-LINE-DIAGRAM

FIVE-YEAR CRASH LISTING

Seasonality and Day of the Week of Predominant Crash Types (EB I-70)

Segment	Location	Season	Guardrail / Concrete Barrier /				Rear End				Sideswipe same direction			
			Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total	Weekday (M-F)	Saturday	Sunday	Total
Segment 1	Curve 1	Winter (Nov. - Apr.)	-	-	1	1	13	5	8	26	-	1	-	1
	(MP 231.70 - MP 232.20)	Summer (May - Oct.)	-	-	-	0	-	-	2	2	1	1	-	2
Segment 2	Curve 2	Winter (Nov. - Apr.)	1	-	2	3	2	-	1	3	-	-	-	0
	(MP 233.25 - MP 233.55)	Summer (May - Oct.)	-	-	-	0	-	-	1	1	1	-	-	1
Segment 3	Curve 3	Winter (Nov. - Apr.)	-	-	-	0	1	-	1	2	2	2	-	4
	(MP 234.90 - MP 235.10)	Summer (May - Oct.)	1	1	-	2	1	1	2	4	-	-	1	1
Segment 4	Curve 4	Winter (Nov. - Apr.)	1	-	-	1	-	1	-	1	1	-	-	1
	(MP 237.05 - MP 237.25)	Summer (May - Oct.)	-	-	-	0	-	-	1	1	-	-	1	1
	Curve 5	Winter (Nov. - Apr.)	6	3	-	9	1	-	-	1	2	1	-	3
	(MP 237.25 - MP 237.55)	Summer (May - Oct.)	-	-	-	0	-	1	1	2	-	-	-	0
Segment 6	Curve 6	Winter (Nov. - Apr.)	9	1	-	10	-	1	1	2	1	-	-	1
	(MP 239.90 - MP 240.25)	Summer (May - Oct.)	3	1	-	4	3	1	1	5	2	-	-	2
Segment 7	Curve 7	Winter (Nov. - Apr.)	2	1	-	3	3	-	9	12	1	2	-	3
	(MP 240.43 - MP 241.15)	Summer (May - Oct.)	-	-	2	2	1	1	4	6	1	-	-	1
	Curve 8	Winter (Nov. - Apr.)	1	-	-	1	-	-	-	0	2	-	-	2
	(MP 241.16 - MP 241.45)	Summer (May - Oct.)	-	-	-	0	1	-	1	2	-	-	-	0
	Curve 9	Winter (Nov. - Apr.)	5	2	2	9	3	2	3	8	-	1	-	1
	(MP 241.46 - MP 242.00)	Summer (May - Oct.)	-	-	-	0	3	-	1	4	2	-	-	2
Total		**Winter (Nov. - Apr.)**	**25**	**7**	**5**	**37**	**23**	**9**	**23**	**55**	**9**	**7**	**0**	**16**
		Summer (May - Oct.)	**4**	**2**	**2**	**8**	**9**	**4**	**14**	**27**	**7**	**1**	**2**	**10**

Directionality of Predominant Crash Types

Segment	Location	Guardrail / Concrete Barrier / Embankment / Cable Rail			Rear End			Sideswipe same direction		
		EB	WB	Total	EB	WB	Total	EB	WB	Total
Segment 1	Curve 1 (MP 231.70 - MP 232.20)	1	7	8	28	2	30	3	1	4
Segment 2	Curve 2 (MP 233.25 - MP 233.55)	3	7	10	4	2	6	1	1	2
Segment 3	Curve 3 (MP 234.90 - MP 235.10)	2	3	5	6	8	14	5	-	5
Segment 4	Curve 4 (MP 237.05 - MP 237.25)	1	3	4	2	8	10	2	1	3
	Curve 5 (MP 237.25 - MP 237.55)	9	3	12	3	1	4	3	-	3
Segment 6	Curve 6 (MP 239.90 - MP 240.25)	14	10	24	7	4	11	3	1	4
Segment 7	Curve 7 (MP 240.43 - MP 241.15)	5	2	7	18	6	24	4	-	4
	Curve 8 (MP 241.16 - MP 241.45)	1	2	3	2	2	4	2	-	2
	Curve 9 (MP 241.46 - MP 242.00)	9	12	21	12	2	14	3	-	3
Total		**45**	**49**	**94**	**82**	**35**	**117**	**26**	**4**	**30**

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
Detailed Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509120706

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	733	
INJ:	45	61 :Injured
FAT:	2	2 :Killed
Total:	**780**	

Multi-Vehicle

One Vehicle:	378
Two Vehicles:	313
Three or More:	89
Unknown:	0
Total:	**780**

Location

On Road:	441	Off in Median:	0
Off Road Left:	167	Private Property:	0
Off Road Right:	172	Unknown:	0
Off Road at Tee:	0		
		Total:	**780**

Accident Type

Overturning:	43	Road Maintenance Equipment:	2	Fence:	0
Other Non Collision:	7	Domestic Animal:	0	Tree:	12
School Age Peds:	0	Wild Animal:	51	Large Rocks or Boulder:	9
Ped on Toy Motorized Vehicle:	0	Light/Utility Pole:	6	Railroad Crossing Equipment:	0
Other Pedestrians:	0	Traffic Signal Pole:	0	Barricade:	0
Head On:	0	Sign:	17	Wall/Building:	0
Rear End:	275	Guard Rail:	122	Crash Cushion/Traffic Barrel:	1
Broadside:	7	Cable Rail:	6	Mailbox:	0
Approach Turn:	0	Concrete Highway Barrier:	74	Other Fixed Object:	6
Overtaking Turn:	0	Bridge Structure:	0	Involving Other Object:	7
Sideswipe (Same):	78	Vehicle Debris/Cargo:	10	Unknown:	0
Sideswipe (Opposite):	0	Culvert/Headwall:	0	**Total:**	**780**
Parked Motor Vehicle:	7	Embankment:	37		
Railway Vehicle:	0	Curb:	0	Total Fixed Objects:	284
Bicycle:	0	Delineator Post:	3	Total Other Objects:	26

Lighting Conditions

Daylight:	525
Dawn or Dusk:	67
Dark - Lighted:	47
Dark - Unlighted:	141
Unknown:	0
Total:	**780**

Weather Conditions

None:	563	Dust:	0
Rain:	57	Wind:	27
Snow/Sleet/Hail:	133	Unknown:	0
Fog:	0		
		Total:	**780**

Road Description

At Intersection:	6
At Driveway Access:	0
Intersection Related:	3
Non Intersection:	739
Alley Related:	0
Roundabout:	0
Ramp:	31
Parking Lot:	1
Unknown:	0
Total:	**780**

Road Conditions

Dry:	447
Wet:	89
Muddy:	0
Snowy:	43
Icy:	156
Slushy:	12
Foreign Material:	0
Dry w/Icy Road Treatment:	18
Wet w/Icy Road Treatment:	6
Snowy w/Icy Road Treatment:	6
Icy w/Icy Road Treatment:	3
Slushy w/Icy Road Treatment:	0
Unknown:	0
Total:	**780**

Mainline/Ramps/Frontage Rds

Mainline:	738
Crossroad (Ramp A):	1
Frontage Rd:	2

Ramps

B:	4	H:	9
C:	1	I:	0
D:	8	J:	1
E:	3	K:	0
F:	0	T:	4
G:	0		

Intsx Frontage/Ramps

M:	0	N:	4
O:	5	P:	0

HOV Lanes:	0
Uknwn:	0
Total:	**780**

Accident Rates

PDO:	0.89 MVMT	Total:	0.95 MVMT
Injury:	0.05 MVMT		
Fatal:	0.24 100 MVMT		

ADT: 37,994 **Length:** 11.81 **Coris File:** tcoris2010.dbf

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2008 **To:** 12/31/2012

Vehicle Types	Veh 1	Veh 2	Veh 3
Vehicle/Vehicle Combo (> 10k Lbs):	22	18	3
School Bus (All School Busses):	1	0	0
Non-School Bus (> 8) in Commerce:	1	1	0
Transit Bus:	0	0	0
Passenger Car/Van:	309	145	29
Passenger Car/Van w/Trailer:	1	0	0
Pickup Truck/Utility Van:	151	69	16
Pickup Truck/Utility Van w/Trailer:	11	5	0
SUV:	268	153	38
SUV w/Trailer:	2	4	0
Motor Home:	2	1	0
Motorcycle:	5	1	0
Bicycle:	0	0	0
Motorized Bicycle:	0	1	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	6	3	1
Light Rail:	0	0	0
Other:	1	1	1
Unknown:	0	0	1
Commercial Vehicle **Total:**	**780**	**402**	**89**

Direction	Veh 1	Veh 2	Veh 3
North:	2	0	0
Northeast:	0	0	0
East:	421	264	66
Southeast:	0	0	0
South:	3	5	0
Southwest:	0	0	0
West:	354	133	22
Northwest:	0	0	0
Unknown:	0	0	1
Total:	**780**	**402**	**89**

Contributing Factor	Veh 1	Veh 2	Veh 3
No Apparent Contributing Factor:	476	392	85
Asleep at the Wheel:	19	0	0
Driver Fatigue:	10	0	0
Illness/Medical:	9	0	0
Driver Inexperience:	62	0	0
Agressive Driving:	39	6	2
Driver Unfamilar with Area:	75	3	1
Driver Emotionally Upset:	1	0	0
Evading Law Enforcement Officier:	3	0	0
Physical Disability:	0	0	0
DUI, DWAI, DUID:	27	0	0
Distracted/Passenger:	3	0	0
Distracted/Cell Phone:	3	0	0
Distracted/Radio:	1	0	0
Distracted/Other:	22	0	0
Other Factor:	30	1	1
Unknown:	0	0	0
Total:	**780**	**402**	**89**

Vehicle Movement	Veh 1	Veh 2	Veh 3
Going Straight:	416	119	8
Slowing:	59	156	31
Stopped in Traffic:	5	91	46
Making Right Turn:	7	1	0
Making Left Turn:	7	0	0
Making U-Turn:	0	0	0
Passing:	16	2	0
Backing:	4	0	0
Enter/Leave Parked Pos:	3	0	1
Parked:	0	8	1
Changing Lanes:	44	7	0
Avoiding Object in Road:	12	12	1
Weaving:	13	0	0
Spun Out of Control:	187	3	0
Drove Wrong Way:	2	0	0
Other:	5	3	0
Unknown:	0	0	1
Total:	**780**	**402**	**89**

Driver Condition (Alcohol)	Veh 1	Veh 2	Veh 3
No Alcohol Suspected:	728	395	84
Alcohol Suspected:	28	0	0
Unknown Alcohol:	24	7	5
Alcohol Sub-Total:	**780**	**402**	**89**

Driver Condition (Drugs)	Veh 1	Veh 2	Veh 3
No Drugs Suspected:	741	395	49
Drugs Suspected:	11	0	0
Unknown Drugs:	28	7	40
Drugs Sub-Total:	**780**	**402**	**89**

ADT: 37,994 **Length:** 11.81 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121237

Highway: 70A **Begin:** 230.00 **End:** 233.11 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	200	
INJ:	7	8 :Injured
FAT:	1	1 :Killed
Total:	**208**	

Number of Vehicles

One Vehicle:	96
Two Vehicles:	78
Three or More:	34
Unknown:	0
Total:	**208**

Location

On Road:	131
Off Road:	77
Unknown:	0
Total:	**208**

Accident Type

Overturning:	17	Sideswipe (Same):	20	Bicycles:	0
Other Non Collision:	2	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	19
Broadside:	1	Overtaking Turn:	0	Fixed Objects:	58
Head On:	0	Parked Motor Vehicle:	1	Other Objects:	6
Rear End:	82	Railway Vehicle:	0	Unknown:	0
				Total:	**208**

Lighting Conditions

Daylight:	147
Dawn or Dusk:	11
Dark - Lighted:	3
Dark - Unlighted:	47
Unknown:	0
Total:	**208**

Mainline/Ramps/Frontage Rds

Mainline:	189
Ramps:	19
Frontage Roads:	2
Intsx Frontage/Ramps:	1
HOV Lanes:	0
Unknown:	0
Total:	**208**

Weather Conditions

None:	158
Rain:	4
Snow/Sleet/Hail:	36
Fog:	0
Dust:	0
Wind:	10
Unknown:	0
Total:	**208**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	5	0	1
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	1	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	84	41	12
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	43	15	3
Pickup Truck/Utility Van w/Trailer:	2	2	0
SUV:	68	51	17
SUV w/Trailer:	0	2	0
Motor Home:	1	0	0
Motorcycle:	3	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	0	0
Light Rail:	0	0	0
Other:	0	1	1
Unknown:	0	0	0
Total:	**208**	**112**	**34**

Commercial Vehicle

Road Conditions

Dry:	127
Wet:	18
Muddy:	0
Snowy:	12
Icy:	36
Slushy:	3
Foreign Material:	0
With Road Treatment:	12
Unknown:	0
Total:	**208**

Accident Rates

PDO:	1.17 *	* MVMT
INJ:	0.04 *	** 100 MVMT
FAT:	0.58 **	**Total:** **1.21** *

ADT: 30,395 **Length:** 3.08 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121337

Highway: 70A **Begin:** 233.12 **End:** 234.69 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	102	
INJ:	6	11 :Injured
FAT:	0	0 :Killed
Total:	**108**	

Number of Vehicles

One Vehicle:	52
Two Vehicles:	49
Three or More:	7
Unknown:	0
Total:	**108**

Location

On Road:	61
Off Road:	47
Unknown:	0
Total:	**108**

Accident Type

Overturning:	6	Sideswipe (Same):	11	Bicycles:	0
Other Non Collision:	3	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	5
Broadside:	0	Overtaking Turn:	0	Fixed Objects:	40
Head On:	0	Parked Motor Vehicle:	1	Other Objects:	7
Rear End:	35	Railway Vehicle:	0	Unknown:	0
				Total:	**108**

Lighting Conditions

Daylight:	84
Dawn or Dusk:	7
Dark - Lighted:	8
Dark - Unlighted:	9
Unknown:	0
Total:	**108**

Mainline/Ramps/Frontage Rds

Mainline:	102
Ramps:	6
Frontage Roads:	0
Intsx Frontage/Ramps:	1
HOV Lanes:	0
Unknown:	0
Total:	**108**

Weather Conditions

None:	68
Rain:	9
Snow/Sleet/Hail:	23
Fog:	0
Dust:	0
Wind:	8
Unknown:	0
Total:	**108**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	6	4	0
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	1	0
Transit Bus:	0	0	0
Passenger Car/Van:	35	20	1
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	18	11	2
Pickup Truck/Utility Van w/Trailer:	0	0	0
SUV:	47	20	4
SUV w/Trailer:	0	0	0
Motor Home:	1	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Commercial Vehicle **Total:**	**108**	**56**	**7**

Road Conditions

Dry:	53
Wet:	14
Muddy:	0
Snowy:	6
Icy:	30
Slushy:	2
Foreign Material:	0
With Road Treatment:	3
Unknown:	0
Total:	**108**

Accident Rates

PDO:	1.04 *	* MVMT
INJ:	0.06 *	** 100 MVMT
FAT:	0.00 **	**Total:** **1.10** *

ADT: 33,216 **Length:** 1.61 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121427

Highway: 70A **Begin:** 234.70 **End:** 236.41 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	98	
INJ:	9	11 :Injured
FAT:	0	0 :Killed
Total:	**107**	

Number of Vehicles

One Vehicle:	37
Two Vehicles:	59
Three or More:	11
Unknown:	0
Total:	**107**

Location

On Road:	76
Off Road:	31
Unknown:	0
Total:	**107**

Accident Type

Overturning:	6	Sideswipe (Same):	13	Bicycles:	0
Other Non Collision:	0	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	6
Broadside:	1	Overtaking Turn:	0	Fixed Objects:	25
Head On:	0	Parked Motor Vehicle:	0	Other Objects:	2
Rear End:	54	Railway Vehicle:	0	Unknown:	0
				Total:	**107**

Lighting Conditions

Daylight:	84
Dawn or Dusk:	6
Dark - Lighted:	2
Dark - Unlighted:	15
Unknown:	0
Total:	**107**

Mainline/Ramps/Frontage Rds

Mainline:	104
Ramps:	3
Frontage Roads:	0
Intsx Frontage/Ramps:	1
HOV Lanes:	0
Unknown:	0
Total:	**107**

Weather Conditions

None:	74
Rain:	10
Snow/Sleet/Hail:	21
Fog:	0
Dust:	0
Wind:	2
Unknown:	0
Total:	**107**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	0	4	0
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	46	24	2
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	17	9	4
Pickup Truck/Utility Van w/Trailer:	3	0	0
SUV:	39	30	4
SUV w/Trailer:	0	1	0
Motor Home:	0	1	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	1	1
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	**107**	**70**	**11**

Commercial Vehicle

Road Conditions

Dry:	70
Wet:	12
Muddy:	0
Snowy:	7
Icy:	14
Slushy:	2
Foreign Material:	0
With Road Treatment:	2
Unknown:	0
Total:	**107**

Accident Rates

PDO:	0.75 *	* MVMT
INJ:	0.07 *	** 100 MVMT
FAT:	0.00 **	**Total:** **0.82** *

ADT: 43,032 **Length:** 1.66 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121555

Highway: 70A **Begin:** 236.42 **End:** 238.33 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	108	
INJ:	11	11 :Injured
FAT:	1	1 :Killed
Total:	**120**	

Number of Vehicles

One Vehicle:	56
Two Vehicles:	50
Three or More:	14
Unknown:	0
Total:	**120**

Location

On Road:	59
Off Road:	61
Unknown:	0
Total:	**120**

Accident Type

Overturning:	11	Sideswipe (Same):	15	Bicycles:	0
Other Non Collision:	1	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	3
Broadside:	2	Overtaking Turn:	0	Fixed Objects:	43
Head On:	0	Parked Motor Vehicle:	4	Other Objects:	3
Rear End:	38	Railway Vehicle:	0	Unknown:	0
				Total:	**120**

Lighting Conditions

Daylight:	70
Dawn or Dusk:	11
Dark - Lighted:	2
Dark - Unlighted:	37
Unknown:	0
Total:	**120**

Mainline/Ramps/Frontage Rds

Mainline:	117
Ramps:	3
Frontage Roads:	0
Intsx Frontage/Ramps:	2
HOV Lanes:	0
Unknown:	0
Total:	**120**

Weather Conditions

None:	91
Rain:	8
Snow/Sleet/Hail:	19
Fog:	0
Dust:	0
Wind:	2
Unknown:	0
Total:	**120**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	2	3	2
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	49	25	6
Passenger Car/Van w/Trailer:	1	0	0
Pickup Truck/Utility Van:	25	13	2
Pickup Truck/Utility Van w/Trailer:	1	1	0
SUV:	40	20	3
SUV w/Trailer:	0	0	0
Motor Home:	0	0	0
Motorcycle:	0	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	2	2	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	1
Commercial Vehicle **Total:**	**120**	**64**	**14**

Road Conditions

Dry:	69
Wet:	13
Muddy:	0
Snowy:	2
Icy:	30
Slushy:	1
Foreign Material:	0
With Road Treatment:	5
Unknown:	0
Total:	**120**

Accident Rates

PDO:	0.72 *	* MVMT
INJ:	0.07 *	** 100 MVMT
FAT:	0.67 **	**Total:** **0.80** *

ADT: 43,317 **Length:** 1.89 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121648

Highway: 70A **Begin:** 238.34 **End:** 239.31 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	39	
INJ:	1	1:Injured
FAT:	0	0:Killed
Total:	**40**	

Number of Vehicles

One Vehicle:	29
Two Vehicles:	10
Three or More:	1
Unknown:	0
Total:	**40**

Location

On Road:	10
Off Road:	30
Unknown:	0
Total:	**40**

Accident Type

Overturning:	2	Sideswipe (Same):	0	Bicycles:	0
Other Non Collision:	0	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	1
Broadside:	0	Overtaking Turn:	0	Fixed Objects:	28
Head On:	0	Parked Motor Vehicle:	0	Other Objects:	1
Rear End:	8	Railway Vehicle:	0	Unknown:	0
				Total:	**40**

Lighting Conditions

Daylight:	23
Dawn or Dusk:	5
Dark - Lighted:	3
Dark - Unlighted:	9
Unknown:	0
Total:	**40**

Mainline/Ramps/Frontage Rds

Mainline:	37
Ramps:	3
Frontage Roads:	0
Intsx Frontage/Ramps:	1
HOV Lanes:	0
Unknown:	0
Total:	**40**

Weather Conditions

None:	26
Rain:	7
Snow/Sleet/Hail:	3
Fog:	0
Dust:	0
Wind:	4
Unknown:	0
Total:	**40**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	1	0	0
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	19	4	0
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	10	4	0
Pickup Truck/Utility Van w/Trailer:	1	0	0
SUV:	8	3	1
SUV w/Trailer:	1	0	0
Motor Home:	0	0	0
Motorcycle:	0	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Commercial Vehicle	**Total:** 40	11	1

Road Conditions

Dry:	16
Wet:	9
Muddy:	0
Snowy:	0
Icy:	12
Slushy:	1
Foreign Material:	0
With Road Treatment:	2
Unknown:	0
Total:	**40**

Accident Rates

PDO:	0.51 *	* MVMT
INJ:	0.01 *	** 100 MVMT
FAT:	0.00 **	**Total:** 0.52 *

ADT: 42,000 **Length:** 1.00 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121721

Highway: 70A **Begin:** 239.32 **End:** 240.42 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	78	
INJ:	9	17 :Injured
FAT:	0	0 :Killed
Total:	**87**	

Number of Vehicles

One Vehicle:	56
Two Vehicles:	24
Three or More:	7
Unknown:	0
Total:	**87**

Location

On Road:	35
Off Road:	52
Unknown:	0
Total:	**87**

Accident Type

Overturning:	0	Sideswipe (Same):	9	Bicycles:	0
Other Non Collision:	0	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	5
Broadside:	3	Overtaking Turn:	0	Fixed Objects:	52
Head On:	0	Parked Motor Vehicle:	0	Other Objects:	3
Rear End:	15	Railway Vehicle:	0	Unknown:	0
				Total:	**87**

Lighting Conditions

Daylight:	52
Dawn or Dusk:	9
Dark - Lighted:	15
Dark - Unlighted:	11
Unknown:	0
Total:	**87**

Mainline/Ramps/Frontage Rds

Mainline:	83
Ramps:	4
Frontage Roads:	0
Intsx Frontage/Ramps:	3
HOV Lanes:	0
Unknown:	0
Total:	**87**

Weather Conditions

None:	60
Rain:	14
Snow/Sleet/Hail:	13
Fog:	0
Dust:	0
Wind:	0
Unknown:	0
Total:	**87**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	4	3	0
School Bus (All School Busses):	1	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	28	17	2
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	14	3	3
Pickup Truck/Utility Van w/Trailer:	2	1	0
SUV:	35	4	2
SUV w/Trailer:	1	1	0
Motor Home:	0	0	0
Motorcycle:	0	1	0
Bicycle:	0	0	0
Motorized Bicycle:	0	1	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	0	0
Light Rail:	0	0	0
Other:	1	0	0
Unknown:	0	0	0
Commercial Vehicle **Total:**	**87**	**31**	**7**

Road Conditions

Dry:	45
Wet:	16
Muddy:	0
Snowy:	7
Icy:	16
Slushy:	1
Foreign Material:	0
With Road Treatment:	2
Unknown:	0
Total:	**87**

Accident Rates

PDO:	0.94 *	* MVMT
INJ:	0.11 *	** 100 MVMT
FAT:	0.00 **	**Total:** **1.05** *

ADT: 41,313 **Length:** 1.09 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121804

Highway: 70A **Begin:** 240.43 **End:** 242.00 **From:** 01/01/2008 **To:** 12/31/2012

Severity

PDO:	108	
INJ:	2	2:Injured
FAT:	0	0:Killed
Total:	**110**	

Number of Vehicles

One Vehicle:	52
Two Vehicles:	43
Three or More:	15
Unknown:	0
Total:	**110**

Location

On Road:	69
Off Road:	41
Unknown:	0
Total:	**110**

Accident Type

Overturning:	1	Sideswipe (Same):	10	Bicycles:	0
Other Non Collision:	1	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	12
Broadside:	0	Overtaking Turn:	0	Fixed Objects:	38
Head On:	0	Parked Motor Vehicle:	1	Other Objects:	4
Rear End:	43	Railway Vehicle:	0	Unknown:	0
				Total:	**110**

Lighting Conditions

Daylight:	65
Dawn or Dusk:	18
Dark - Lighted:	14
Dark - Unlighted:	13
Unknown:	0
Total:	**110**

Mainline/Ramps/Frontage Rds

Mainline:	106
Ramps:	4
Frontage Roads:	0
Intsx Frontage/Ramps:	0
HOV Lanes:	0
Unknown:	0
Total:	**110**

Weather Conditions

None:	86
Rain:	5
Snow/Sleet/Hail:	18
Fog:	0
Dust:	0
Wind:	1
Unknown:	0
Total:	**110**

Vehicle Types

Vehicle Types	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	4	4	0
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	48	14	6
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	24	14	2
Pickup Truck/Utility Van w/Trailer:	2	1	0
SUV:	31	25	7
SUV w/Trailer:	0	0	0
Motor Home:	0	0	0
Motorcycle:	0	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	0	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Commercial Vehicle	**Total:** 110	58	15

Road Conditions

Dry:	67
Wet:	7
Muddy:	0
Snowy:	9
Icy:	18
Slushy:	2
Foreign Material:	0
With Road Treatment:	7
Unknown:	0
Total:	**110**

Accident Rates

PDO:	1.00 *	* MVMT
INJ:	0.02 *	** 100 MVMT
FAT:	0.00 **	**Total:** 1.02 *

ADT: 41,526 **Length:** 1.42 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509120819

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2008 **To:** 12/31/2008

Severity

PDO:	173	
INJ:	9	12 :Injured
FAT:	1	1 :Killed
Total:	**183**	

Number of Vehicles

One Vehicle:	85
Two Vehicles:	74
Three or More:	24
Unknown:	0
Total:	**183**

Location

On Road:	103
Off Road:	80
Unknown:	0
Total:	**183**

Accident Type

Overturning:	17	Sideswipe (Same):	11	Bicycles:	0
Other Non Collision:	1	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	6
Broadside:	1	Overtaking Turn:	0	Fixed Objects:	65
Head On:	0	Parked Motor Vehicle:	0	Other Objects:	5
Rear End:	75	Railway Vehicle:	0	Unknown:	0
				Total:	**183**

Lighting Conditions

Daylight:	122
Dawn or Dusk:	17
Dark - Lighted:	12
Dark - Unlighted:	32
Unknown:	0
Total:	**183**

Mainline/Ramps/Frontage Rds

Mainline:	174
Ramps:	9
Frontage Roads:	0
Intsx Frontage/Ramps:	3
HOV Lanes:	0
Unknown:	0
Total:	**183**

Weather Conditions

None:	126
Rain:	4
Snow/Sleet/Hail:	43
Fog:	0
Dust:	0
Wind:	10
Unknown:	0
Total:	**183**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	6	3	1
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	72	39	7
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	38	14	3
Pickup Truck/Utility Van w/Trailer:	2	0	0
SUV:	62	38	13
SUV w/Trailer:	0	1	0
Motor Home:	0	0	0
Motorcycle:	2	1	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	1	0
Light Rail:	0	0	0
Other:	0	1	0
Unknown:	0	0	0
Total:	**183**	**98**	**24**

Commercial Vehicle

Road Conditions

Dry:	97
Wet:	17
Muddy:	0
Snowy:	11
Icy:	50
Slushy:	2
Foreign Material:	0
With Road Treatment:	6
Unknown:	0
Total:	**183**

Accident Rates

PDO:	1.05 *	* MVMT
INJ:	0.05 *	** 100 MVMT
FAT:	0.61 **	**Total:** **1.11** *

ADT: 37,958 **Length:** 11.81 **Coris File:** tcoris2008.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509120924

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2009 **To:** 12/31/2009

Severity

PDO:	144	
INJ:	11	16 :Injured
FAT:	0	0 :Killed
Total:	**155**	

Number of Vehicles

One Vehicle:	78
Two Vehicles:	60
Three or More:	17
Unknown:	0
Total:	**155**

Location

On Road:	91
Off Road:	64
Unknown:	0
Total:	**155**

Accident Type

Overturning:	8	Sideswipe (Same):	18	Bicycles:	0
Other Non Collision:	2	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	16
Broadside:	2	Overtaking Turn:	0	Fixed Objects:	56
Head On:	0	Parked Motor Vehicle:	2	Other Objects:	3
Rear End:	48	Railway Vehicle:	0	Unknown:	0
				Total:	**155**

Lighting Conditions

Daylight:	103
Dawn or Dusk:	11
Dark - Lighted:	13
Dark - Unlighted:	28
Unknown:	0
Total:	**155**

Mainline/Ramps/Frontage Rds

Mainline:	145
Ramps:	10
Frontage Roads:	0
Intsx Frontage/Ramps:	2
HOV Lanes:	0
Unknown:	0
Total:	**155**

Weather Conditions

None:	108
Rain:	12
Snow/Sleet/Hail:	30
Fog:	0
Dust:	0
Wind:	5
Unknown:	0
Total:	**155**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	3	6	1
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	1	0
Transit Bus:	0	0	0
Passenger Car/Van:	65	30	3
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	33	11	5
Pickup Truck/Utility Van w/Trailer:	4	1	0
SUV:	48	28	8
SUV w/Trailer:	0	0	0
Motor Home:	0	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	1	0	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Commercial Vehicle **Total:**	**155**	**77**	**17**

Road Conditions

Dry:	98
Wet:	19
Muddy:	0
Snowy:	11
Icy:	19
Slushy:	3
Foreign Material:	0
With Road Treatment:	5
Unknown:	0
Total:	**155**

Accident Rates

PDO:	0.86 *	* MVMT
INJ:	0.07 *	** 100 MVMT
FAT:	0.00 **	**Total:** **0.92** *

ADT: 38,881 **Length:** 11.81 **Coris File:** tcoris2009.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509120957

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2010 **To:** 12/31/2010

Severity

PDO:	151	
INJ:	8	9 :Injured
FAT:	1	1 :Killed
Total:	**160**	

Number of Vehicles

One Vehicle:	73
Two Vehicles:	69
Three or More:	18
Unknown:	0
Total:	**160**

Location

On Road:	83
Off Road:	77
Unknown:	0
Total:	**160**

Accident Type

Overturning:	7	Sideswipe (Same):	21	Bicycles:	0
Other Non Collision:	2	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	2
Broadside:	4	Overtaking Turn:	0	Fixed Objects:	63
Head On:	0	Parked Motor Vehicle:	4	Other Objects:	7
Rear End:	50	Railway Vehicle:	0	Unknown:	0
				Total:	**160**

Lighting Conditions

Daylight:	115
Dawn or Dusk:	15
Dark - Lighted:	11
Dark - Unlighted:	19
Unknown:	0
Total:	**160**

Mainline/Ramps/Frontage Rds

Mainline:	148
Ramps:	12
Frontage Roads:	0
Intsx Frontage/Ramps:	4
HOV Lanes:	0
Unknown:	0
Total:	**160**

Weather Conditions

None:	114
Rain:	13
Snow/Sleet/Hail:	27
Fog:	0
Dust:	0
Wind:	6
Unknown:	0
Total:	**160**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	6	4	0
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	1	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	64	31	8
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	25	18	3
Pickup Truck/Utility Van w/Trailer:	4	2	0
SUV:	58	32	5
SUV w/Trailer:	0	0	0
Motor Home:	1	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	1
Light Rail:	0	0	0
Other:	0	0	1
Unknown:	0	0	0
Commercial Vehicle **Total:**	**160**	**87**	**18**

Road Conditions

Dry:	80
Wet:	17
Muddy:	0
Snowy:	13
Icy:	41
Slushy:	4
Foreign Material:	0
With Road Treatment:	5
Unknown:	0
Total:	**160**

Accident Rates

PDO:	0.92 *	* MVMT
INJ:	0.05 *	** 100 MVMT
FAT:	0.61 **	**Total:** **0.98** *

ADT: 37,994 **Length:** 11.81 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121046

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2011 **To:** 12/31/2011

Severity

PDO:	143	
INJ:	10	11 :Injured
FAT:	0	0 :Killed
Total:	**153**	

Number of Vehicles

One Vehicle:	77
Two Vehicles:	58
Three or More:	18
Unknown:	0
Total:	**153**

Location

On Road:	83
Off Road:	70
Unknown:	0
Total:	**153**

Accident Type

Overturning:	5	Sideswipe (Same):	13	Bicycles:	0
Other Non Collision:	2	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	6
Broadside:	0	Overtaking Turn:	0	Fixed Objects:	60
Head On:	0	Parked Motor Vehicle:	0	Other Objects:	8
Rear End:	59	Railway Vehicle:	0	Unknown:	0
				Total:	**153**

Lighting Conditions

Daylight:	97
Dawn or Dusk:	11
Dark - Lighted:	6
Dark - Unlighted:	39
Unknown:	0
Total:	**153**

Mainline/Ramps/Frontage Rds

Mainline:	147
Ramps:	6
Frontage Roads:	2
Intsx Frontage/Ramps:	0
HOV Lanes:	0
Unknown:	0
Total:	**153**

Weather Conditions

None:	118
Rain:	8
Snow/Sleet/Hail:	22
Fog:	0
Dust:	0
Wind:	5
Unknown:	0
Total:	**153**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	5	2	1
School Bus (All School Busses):	0	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	60	27	6
Passenger Car/Van w/Trailer:	1	0	0
Pickup Truck/Utility Van:	33	15	3
Pickup Truck/Utility Van w/Trailer:	1	0	0
SUV:	47	28	7
SUV w/Trailer:	2	2	0
Motor Home:	0	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	1	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	2	1	0
Light Rail:	0	0	0
Other:	1	0	0
Unknown:	0	0	1
Commercial Vehicle **Total:**	**153**	**76**	**18**

Road Conditions

Dry:	86
Wet:	14
Muddy:	0
Snowy:	4
Icy:	38
Slushy:	3
Foreign Material:	0
With Road Treatment:	8
Unknown:	0
Total:	**153**

Accident Rates

PDO:	0.87 *	* MVMT
INJ:	0.06 *	** 100 MVMT
FAT:	0.00 **	**Total:** **0.93** *

ADT: 37,994 **Length:** 11.81 **Coris File:** tcoris2010.dbf

DR2447 Format

Colorado Department of Transportation
Safety and Traffic Engineering
General Accident Summary Report

Microsoft Visual FoxPro 9 SP2
05/09/2013

Job #: 20130509121139

Highway: 70A **Begin:** 230.00 **End:** 242.00 **From:** 01/01/2012 **To:** 12/31/2012

Severity

PDO:	122	
INJ:	7	13 :Injured
FAT:	0	0 :Killed
Total:	**129**	

Number of Vehicles

One Vehicle:	65
Two Vehicles:	52
Three or More:	12
Unknown:	0
Total:	**129**

Location

On Road:	81
Off Road:	48
Unknown:	0
Total:	**129**

Accident Type

Overturning:	6	Sideswipe (Same):	15	Bicycles:	0
Other Non Collision:	0	Sideswipe (Opposite):	0	Domestic Animal:	0
Pedestrians:	0	Approach Turn:	0	Wild Animal:	21
Broadside:	0	Overtaking Turn:	0	Fixed Objects:	40
Head On:	0	Parked Motor Vehicle:	1	Other Objects:	3
Rear End:	43	Railway Vehicle:	0	Unknown:	0
				Total:	**129**

Lighting Conditions

Daylight:	88
Dawn or Dusk:	13
Dark - Lighted:	5
Dark - Unlighted:	23
Unknown:	0
Total:	**129**

Mainline/Ramps/Frontage Rds

Mainline:	124
Ramps:	5
Frontage Roads:	0
Intsx Frontage/Ramps:	0
HOV Lanes:	0
Unknown:	0
Total:	**129**

Weather Conditions

None:	97
Rain:	20
Snow/Sleet/Hail:	11
Fog:	0
Dust:	0
Wind:	1
Unknown:	0
Total:	**129**

Vehicle Types

	Vehicle 1	Vehicle 2	Vehicle 3
Vehicle/Vehicle Combo (> 10k Lbs):	2	3	0
School Bus (All School Busses):	1	0	0
Non-School Bus (> 8) in Commerce:	0	0	0
Transit Bus:	0	0	0
Passenger Car/Van:	48	18	5
Passenger Car/Van w/Trailer:	0	0	0
Pickup Truck/Utility Van:	22	11	2
Pickup Truck/Utility Van w/Trailer:	0	2	0
SUV:	53	27	5
SUV w/Trailer:	0	1	0
Motor Home:	1	1	0
Motorcycle:	0	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	2	1	0
Light Rail:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	**129**	**64**	**12**

Commercial Vehicle

Road Conditions

Dry:	86
Wet:	22
Muddy:	0
Snowy:	4
Icy:	8
Slushy:	0
Foreign Material:	0
With Road Treatment:	9
Unknown:	0
Total:	**129**

Accident Rates

PDO:	0.74 *	* MVMT
INJ:	0.04 *	** 100 MVMT
FAT:	0.00 **	**Total:** **0.78** *

ADT: 37,994 **Length:** 11.81 **Coris File:** tcoris2010.dbf

APPROACH TURN ACCIDENTS

Definition:

Two vehicles traveling opposite direction are approaching each other and one vehicle unsafely turns in front of the oncoming vehicle resulting in a front to side collision.

Event Sequence Diagrams [2]:

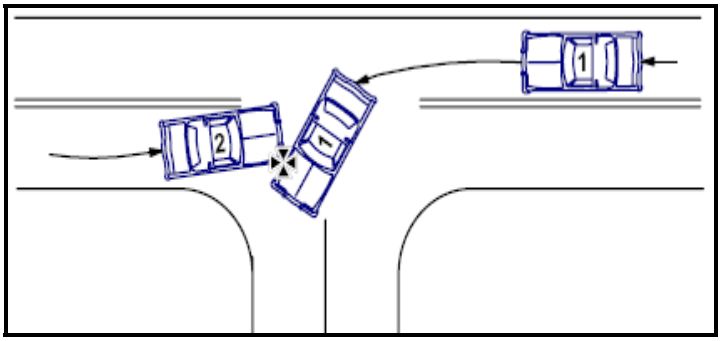


Figure FR-5: Front to Side

Probable Causes:

Approach turn accidents at signalized intersections are typically attributable to:

1) Restricted Sight Distance
2) Excessive speed
3) Poor traffic control visibility
4) Inadequate advance intersection warning signs
5) Inadequate traffic signal cycles
6) Inadequate road design and/or maintenance

BROADSIDE ACCIDENTS

Definition [1]:

Two vehicles approaching from non-opposing angular directions collide, typically resulting as one vehicle failed to either stop or yield right of way from a Stop or Yield sign, ran a red light, or was not cleared from the intersection upon the onset of the conflicting movement's green signal.

Event Sequence Diagrams [2]:

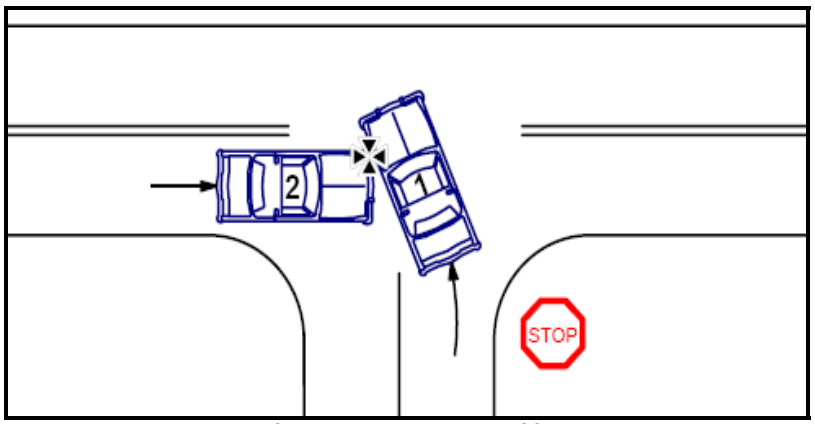


Figure FR-12A: Front to Side

Probable Causes:

Broadside accidents at signalized intersections are typically attributable to:

1) Restricted sight distance
2) Excessive Speed on approaches
3) Poor visibility of signals
4) Inadequate signal timing
5) Inadequate roadway lighting
6) Inadequate advance intersection warning signs
7) Large total intersection volume

HEAD-ON COLLISION ACCIDENTS

Definition [1]:

Two vehicles approaching opposite directions and intending to continue in opposite directions collide in a frontal or angular manner as a result of one or both vehicles crossing the painted or unpainted centerline or divided median of the roadway. This includes a collision resulting from one vehicle traveling the wrong way down a divided highway.

Event Sequence Diagrams [2]:

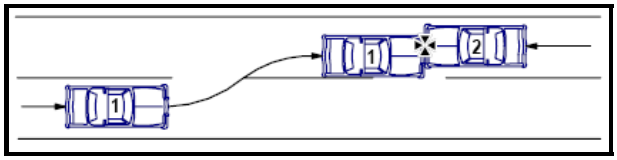


Figure FR-6A: Front to Front

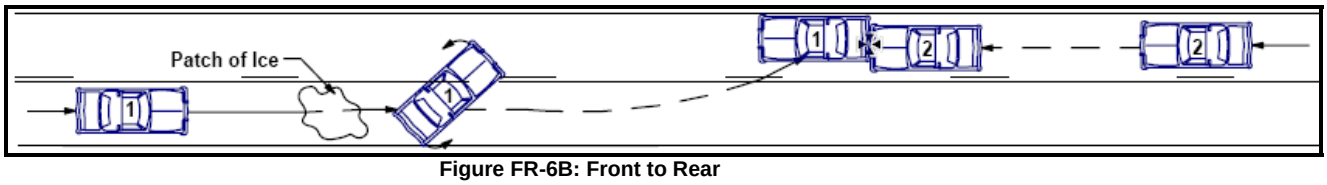


Figure FR-6B: Front to Rear

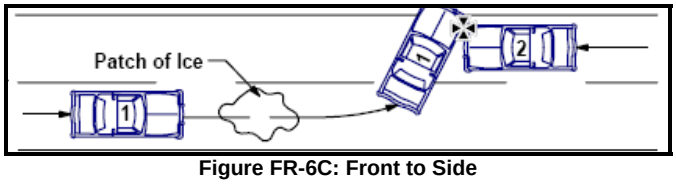


Figure FR-6C: Front to Side

Probable Causes:

Head-on collision accidents are typically attributable to:

1) Inadequate road design and/or maintenance
2) Inadequate shoulders
3) Excessive vehicle speed
4) Inadequate pavement markings
5) Inadequate channelization
6) Inadequate signing
7) Aggressive driving behaviors

OVERTAKING ACCIDENTS

Definition [3]:

Collisions occur when a vehicle tries to overtake another vehicle traveling in the same direction by overtaking when approaching or at a road junction on either side of the road, where the road narrows, when approaching a school crossing patrol, where traffic is queuing at junctions or in construction work zones. This forces another road user to swerve or slow down, at a level crossing, when a road user is indicating right.

Event Sequence Diagrams [2]:

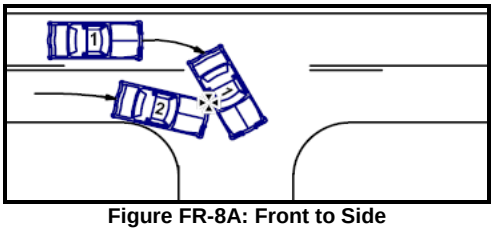


Figure FR-8A: Front to Side

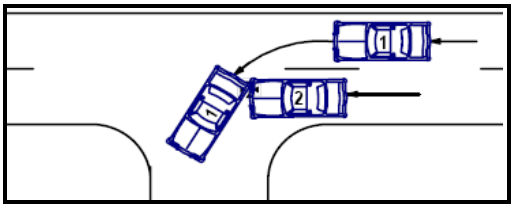


Figure FR-8B: Front to Side

Probable Causes:

Overtaking accidents at signalized intersections are typically attributable to:

1) Inadequate pavement markings
2) Inadequate signing
3) Inadequate road design and/or maintenance
4) Roadside features

OVERTURNING ACCIDENTS

Definition [1]:

A crash in which a vehicle overturns on or off the roadway without first having been involved in some other type single or multiple vehicle crash. This includes motorcycle crashes in which the operator loses control of and drops the bike, but had not initially struck another motor vehicle, fixed or non-fixed object, animal, bicyclist or pedestrian.

Event Sequence Diagrams [2]:

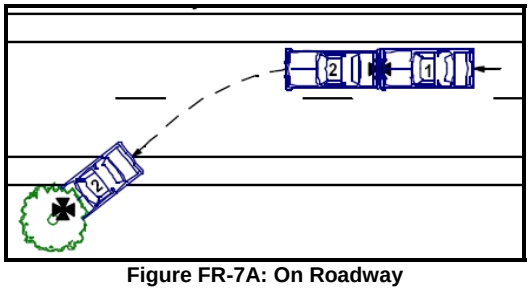


Figure FR-7A: On Roadway

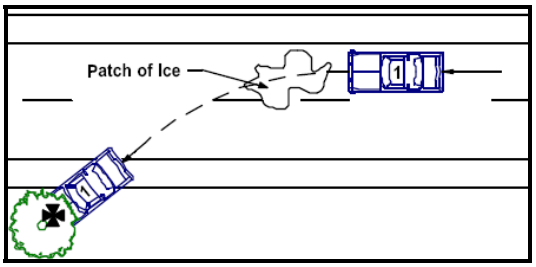


Figure FR-7A: Ran off left side

Probable Causes:

Overturning accidents are typically attributable to:

1) Roadside features
2) Inadequate shoulder / recovery zone
3) Pavement features

SIDESWIPE ACCIDENTS (OPPOSITE DIRECTION)

Definition [1]:

Two vehicles approaching opposite directions and intending to continue in opposite directions collide in a sideswiping manner as a result of one or both vehicles crossing the painted or unpainted centerline or divided median of the roadway. This also includes a collision resulting from one vehicle traveling the wrong way down a divided highway.

Event Sequence Diagrams [2]:

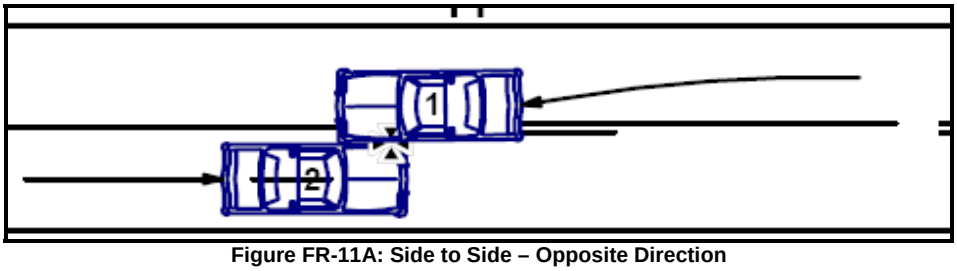


Figure FR-11A: Side to Side – Opposite Direction

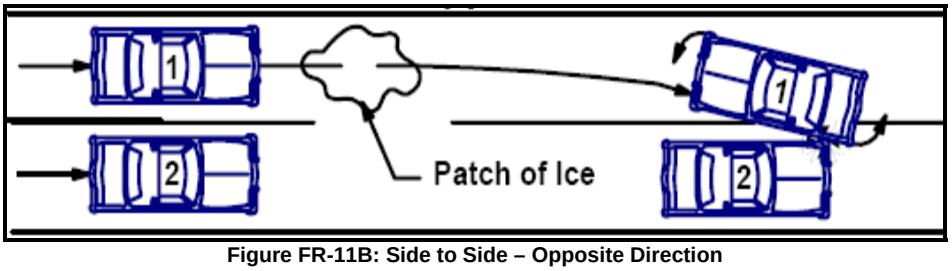


Figure FR-11B: Side to Side – Opposite Direction

Probable Causes:

Side swipe accidents are typically attributable to:

1) Inadequate road design and/or maintenance
2) Inadequate shoulders
3) Excessive vehicle speed
4) Inadequate pavement markings
5) Inadequate channelization
6) Inadequate signing

SIDESWIPE ACCIDENTS (SAME DIRECTION)

Definition [1]:

Two vehicles moving alongside each other and collide, with at least one of the vehicles being struck on the side. This type would include a collision resulting from one of the vehicles making an improper turn such as a left from the right lane or vice-versa or turning right from the appropriate outside lane and striking a vehicle passing on the right shoulder.

Event Sequence Diagrams [2]:

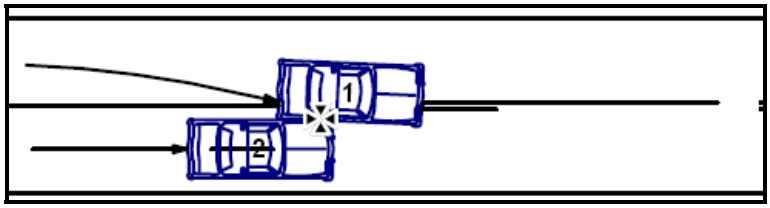


Figure FR-10A: Side to Side – Same Direction

Figure FR-10B: Side to Side – Same Direction

Probable Causes:

Side swipe accidents are typically attributable to:

1) Inadequate road design and/or maintenance
2) Inadequate shoulders
3) Excessive vehicle speed
4) Inadequate pavement markings
5) Inadequate channelization
6) Inadequate signing

REAR END ACCIDENTS

Definition [1]:

Two vehicles in a position of one behind the other and collide, regardless of what movement(s) either vehicle was in the process of making with the exception of one or both vehicles backing. This type includes a collision in which the leading vehicle spun out and became turned 180 degrees around such that the resulting same direction collision had it strike front end to front end with the following vehicle.

Event Sequence Diagrams [2]:

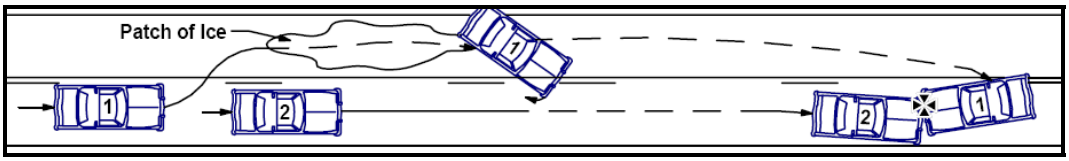


Figure FR-9A: Front to Front

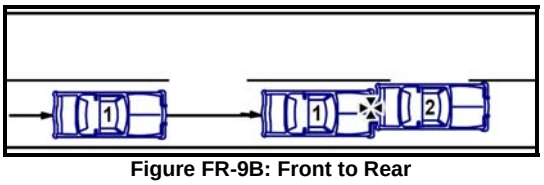


Figure FR-9B: Front to Rear

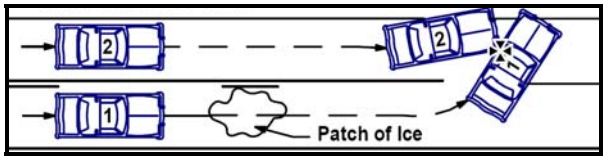


Figure FR-9C: Front to Side

Rear-End accidents at signalized intersections are typically attributable to:

1) Slippery road surface
2) Large turning volume
3) Poor Visibility of signals
4) Inadequate signal timing
5) Unwarranted signal
6) Inadequate roadway lighting
7) Excessive speed on approaches
8) Crossing pedestrians
9) Uncontrolled access at intersection
10) Short turning radius
11) Inadequate directional signing

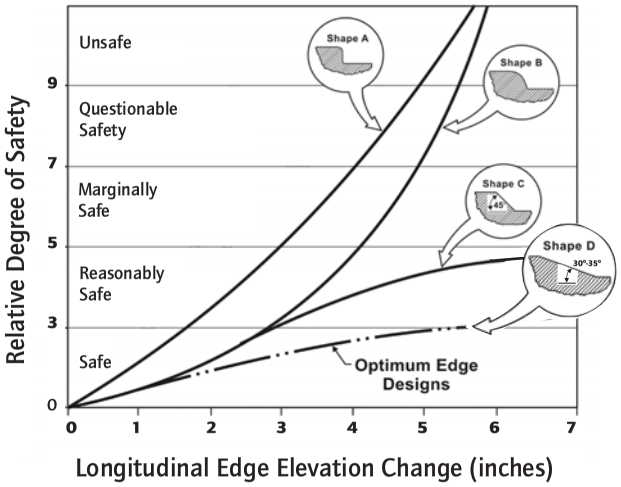
Rear-End accidents at un-signalized intersections are typically attributable to:

1) Drivers unaware of intersection
2) Slippery road surface
3) Large turning volume

4) Inadequate roadway lighting
5) Excessive speed on approaches
6) Lack of adequate gaps for turning vehicles
7) Absence of turning lanes
8) Crossing pedestrians
9) Uncontrolled access at intersection
10) Short turning radius
11) Inadequate directional signing

Relative Safety of Various Edge Elevations and Shapes

The chart below shows how various edge shapes relate to safety at speeds of up to 70 mph.



Graphic Source: Zimmer and Ivey, Texas Transportation Institiute

The Safety Wedge Shoe is a special edging device that asphalt paving contractors can install on new or existing resurfacing equipment to shape the Safety Edge.

Contact the FHWA for More Information about the Safety Edge and other Roadway Departure Crash Countermeasures

For more information about Roadway Departure issues and effective countermeasures to prevent Roadway Departure crashes, go to the FHWA Office of Safety's Web site at **http://safety.fhwa.dot.gov/** and click on "Road Departure." FHWA contacts for technical assistance with the Safety Edge are listed below.

CONTACTS

Frank Julian
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Frank.Julian@dot.gov

Chris Wagner
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Roadway Departure Team
(202) 366-0087
Mark.Bloschock@dot.gov

1. Hallmark et. al: Safety Impacts of Pavement Edge Drop-Offs, AAA Foundation for Highway Safety, Washington, DC, September 2006.

U.S. Department of Transportation
Federal Highway Administration

Publication Number FHWA-SA-07-023

YOU CAN REDUCE PAVEMENT EDGE DROP-OFF HAZARDS

THE SAFETY EDGE

PAVEMENT EDGE TREATMENT

Saves Lives

Reduces Tort Liability

Reduces Maintenance Expense

Costs Less than 1 Percent of Pavement Resurfacing Budget

Safe Roads for a Safer Future
Investment in roadway safety saves lives

Pavement Edges Can Pose Serious Safety Hazards

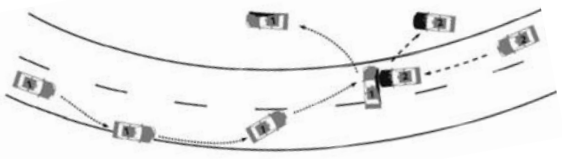
Run-off-the-road (ROR) crashes account for 58 percent of highway fatalities. While national data documenting the role of pavement edge configuration in the sequence of events leading to crashes are not available, some State-level studies sponsored by the AAA Foundation for Highway Safety point to the life-saving potential of safety edges. For example, researchers studying crashes in Iowa during 2002-2004 reported that pavement edges may have been a contributing factor in as many as 18 percent of ROR crashes, and crashes caused by pavement dropoffs resulted in fatalities more often than other types of ROR crashes.[1]

How Hazardous Pavement Edges Contribute to Crash Severity

A vehicle that has departed a paved surface can have difficulty re-entering the roadway if the pavement edge is vertical—especially if the edge of the pavement is significantly higher than 2" above the shoulder. When a driver drifts onto the roadway shoulder and tries to steer back onto the pavement, the vertical pavement edge can create a "tire scrubbing" condition that may result in over-steering. If drivers over-steer to return to the roadway without reducing speed, they are prone to lose control of the vehicle. The vehicle may veer into the adjacent lane, where it may collide with, or sideswipe oncoming cars; overturn; or run off the opposite side of the road and crash.

PHOTO SOURCE: FHWA

Sharp, steep pavement edge dropoffs can contribute to crashes.



This is a typical diagram for a crash caused by tire scrubbing. The vehicle at left scrubbed the edge of the pavement, and when it returned, the driver overcorrected, lost control, crossed into the adjacent lane, and struck an oncoming vehicle.

Graphic Source: AAA Foundation for Highway Safety

Increase Roadway Safety at No or Low Cost by Specifying the Safety Edge

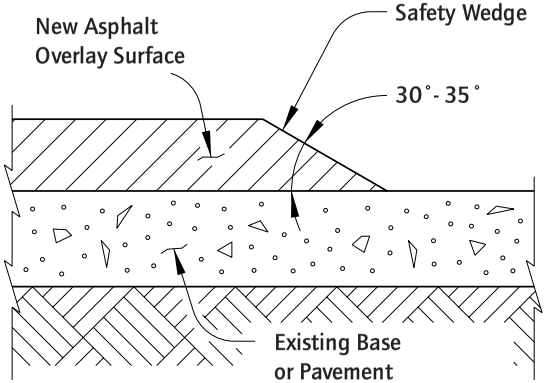
A simple and cost-effective way to promote pavement edge safety is to adopt a standard specification for all resurfacing projects that requires a 30° - 35° angle "Safety Edge" that interfaces with the graded shoulder.

Solutions to the Pavement Edge Drop-off Hazard

- Require a 30° - 35° angle asphalt wedge "Safety Edge" at the graded shoulder interface in asphalt resurfacing projects.
- Routinely resurface shoulders when roadways are resurfaced, and add the Safety Edge.
- Many highway agencies aim to maintain edge dropoff depths at 2" or less on high-speed highways.

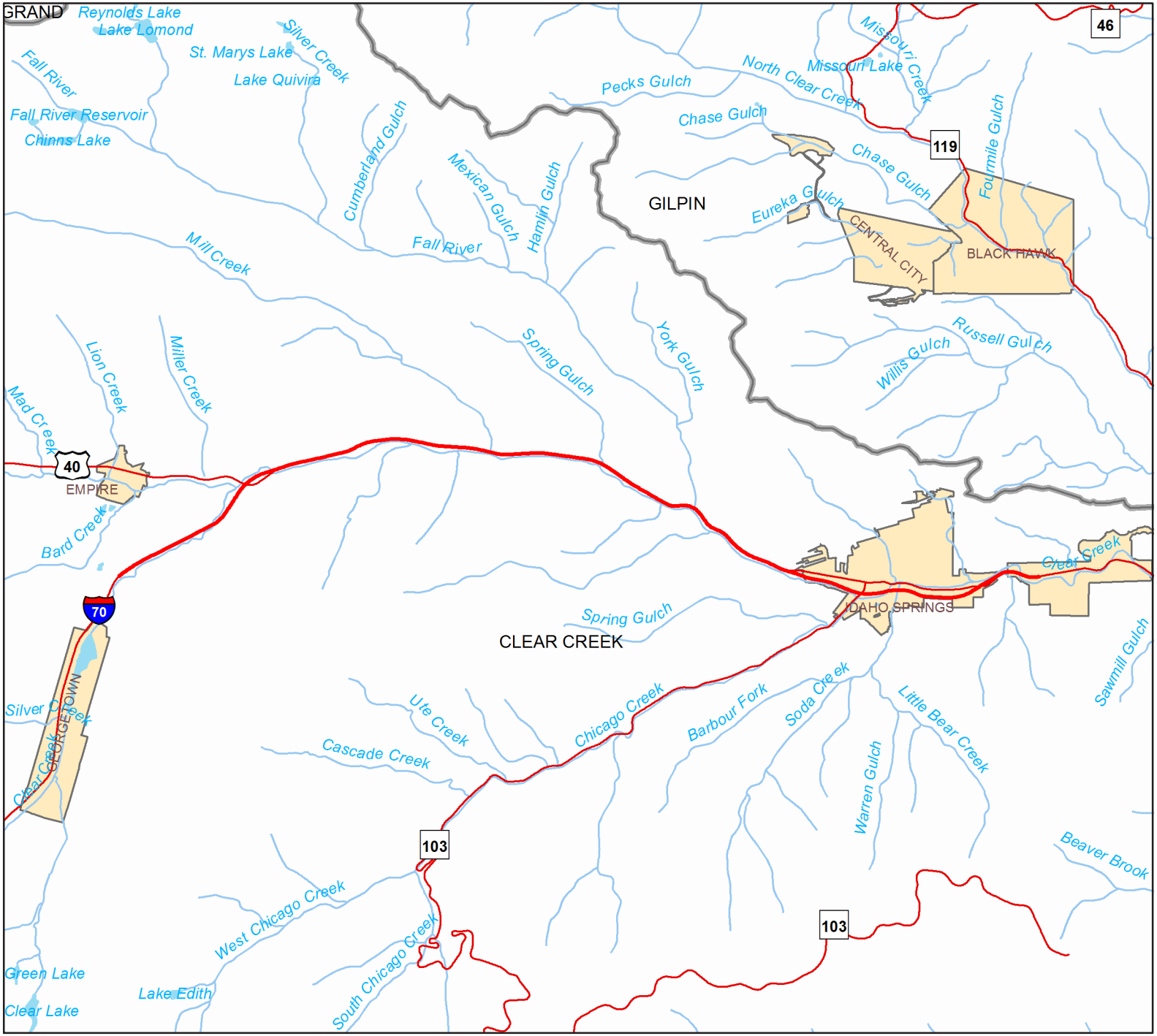
The asphalt wedge provides a safer roadway edge, and a stronger interface between the roadway and the graded shoulder. The additional cost of the asphalt wedge is minimal when included as part of resurfacing projects. Benefits include the avoided economic and social impacts of fatalities, injuries, and property damage.

The placement of the asphalt wedge during resurfacing operations mitigates the hazard posed by edge dropoffs as soon as the paving machine lays down the asphalt mat, allowing the highway agency reasonable time to restore the shoulder.



Graphic Source: J. Pitzer

Route 070A From 230 To 242



Legend

- Highways
- Streams - 24K
- Lakes
- Cities
- Counties

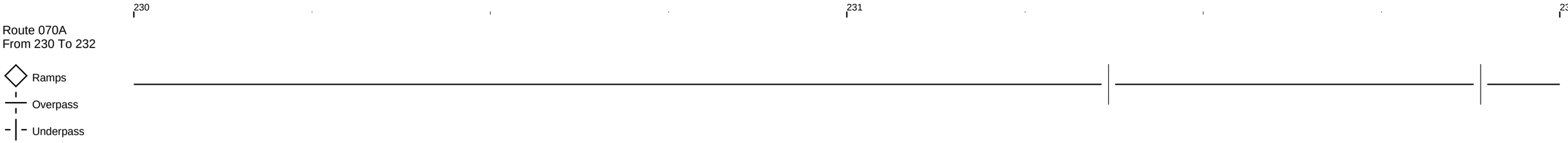
Created:
10/24/2013 9:09:17 PM

1 0 1 2 3 Miles

N

DOT
DEPARTMENT OF TRANSPORTATION

The information contained in this map is based on the most currently available data and has been checked for accuracy. CDOT does not guarantee the accuracy of any information presented, is not liable in any respect for any errors or omissions, and is not responsible for determining "fitness for use".



CLASSIFICATION

	230	231	232
Access Control	FW F-W: Interstate System, Freeway Facils		

GEOMETRICS

	230	231	232
Is Divided (Yes=1,No = 0)	1		
Median Type	21 Depressed		
Median Width	30		16
Operation	2 Two-Way		
Primary Inside Shoulder Width	4		
Primary Outside Shoulder	2 Bituminous		
Primary Outside Shoulder Width	10		
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Secondary Inside Shoulder Width	4		
Secondary Outside Shoulder Width	10	4	10
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Through Lane Quantity	4		

SAFETY

	230	231	232
Speed Limit	65		

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.

Route 070A
From 232 To 234

CLASSIFICATION

Access Control	FW F-W: Interstate System, Freeway Facils

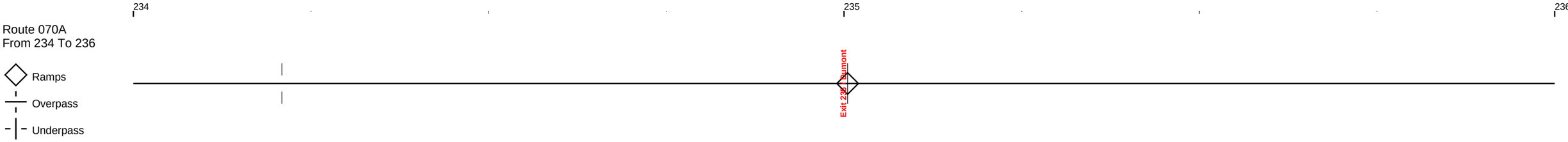
GEOMETRICS

Is Divided (Yes=1,No = 0)	1						
Median Type	21 Depressed			14 Level		21 Depressed	
Median Width	16			4		6	
Operation	2 Two-Way						
Primary Inside Shoulder Width	4						
Primary Outside Shoulder	2 Bituminous						
Primary Outside Shoulder Width	4	10	4	10		4	10
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)						
Secondary Inside Shoulder Width	4						
Secondary Outside Shoulder Width	10				4	10	
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)						
Through Lane Quantity	4						

SAFETY

Speed Limit	65

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.



CLASSIFICATION

Access Control	FW F-W: Interstate System, Freeway Facils

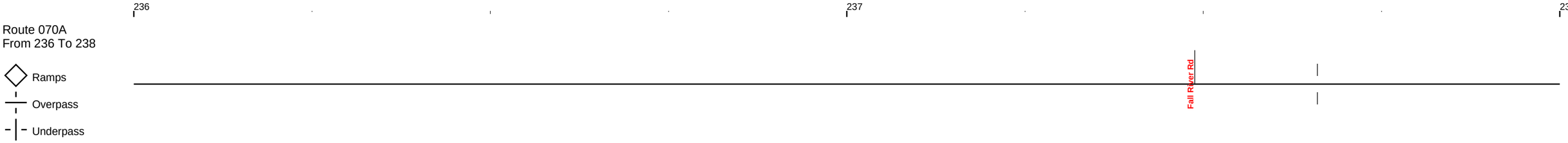
GEOMETRICS

Is Divided (Yes=1,No = 0)	1		
Median Type	21 Depressed		
Median Width	6	20	
Operation	2 Two-Way		
Primary Inside Shoulder Width	4		
Primary Outside Shoulder	2 Bituminous		
Primary Outside Shoulder Width	10	8	
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Secondary Inside Shoulder Width	4		
Secondary Outside Shoulder Width	10	4	10
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Through Lane Quantity	4		

SAFETY

Speed Limit	65

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.



CLASSIFICATION

Access Control	FW F-W: Interstate System, Freeway Facils

GEOMETRICS

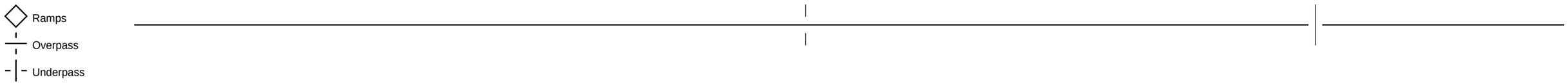
Is Divided (Yes=1,No = 0)	1		
Median Type	21 Depressed		
Median Width	20		
Operation	2 Two-Way		
Primary Inside Shoulder Width	4		
Primary Outside Shoulder	2 Bituminous		
Primary Outside Shoulder Width	8		
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Secondary Inside Shoulder Width	4		
Secondary Outside Shoulder Width	10	4	10
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)		
Through Lane Quantity	4		

SAFETY

Speed Limit	65	60

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.

Route 070A
From 238 To 240



CLASSIFICATION

Access Control	FW F-W: Interstate System, Freeway Facils

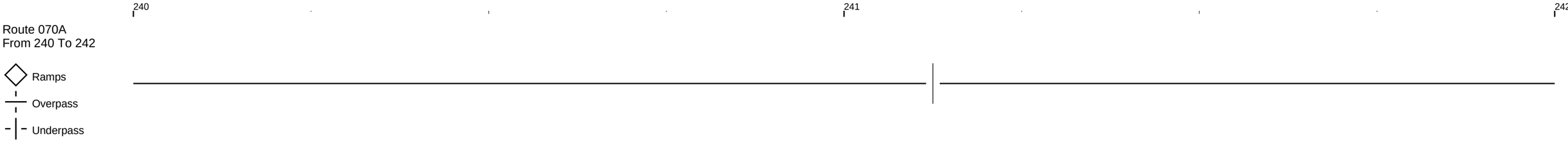
GEOMETRICS

Is Divided (Yes=1,No = 0)	1										
Median Type	21 Depressed							14 Level			
Median Width	20			6		2		5			
Operation	2 Two-Way										
Primary Inside Shoulder Width	4										
Primary Outside Shoulder	2 Bituminous										
Primary Outside Shoulder Width	8							10	4	10	2	10
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)										
Secondary Inside Shoulder Width	4										
Secondary Outside Shoulder Width	10								4	10	4	10
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)										
Through Lane Quantity	4										

SAFETY

Speed Limit	65

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.



CLASSIFICATION

Access Control	FW F-W: Interstate System, Freeway Facils

GEOMETRICS

Is Divided (Yes=1,No = 0)	1						
Median Type	14 Level					21 Depressed	
Median Width	5					6	30
Operation	2 Two-Way						
Primary Inside Shoulder Width	4						
Primary Outside Shoulder	2 Bituminous						
Primary Outside Shoulder Width	10	4	10	4	20	10	
Primary Surface Type	2 AC - Asphalt Concrete (Bituminous)						
Secondary Inside Shoulder Width	4						
Secondary Outside Shoulder Width	10	4	10	4	10	4	10
Secondary Surface Type	2 AC - Asphalt Concrete (Bituminous)						
Through Lane Quantity	4						

SAFETY

Speed Limit	65	55

It may appear that information is missing from the straight line diagram. If so, reduce the number of miles/page and re-submit the request.

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
1	070A	230.00	9/15/2012	2015	PDO	12517494	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
2	070A	230.00	11/23/2009	0515	PDO	09318571	OFF LEFT	NON-INTERSECTION	3	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
3	070A	230.00	3/29/2011	0525	PDO	11305490	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
4	070A	230.00	12/23/2009	1650	PDO	09327348	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
5	070A	230.10	12/22/2009	0915	PDO	09322977	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
6	070A	230.10	7/7/2008	2315	PDO	08312178	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
7	070A	230.10	1/17/2011	2020	PDO	11301519	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
8	070A	230.10	12/31/2011	0745	PDO	11513693	OFF RIGHT	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
9	070A	230.20	11/27/2010	1909	PDO	10315563	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
10	070A	230.24	5/1/2011	1133	PDO	11307286	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
11	070A	230.30	2/1/2009	1745	PDO	09329422	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
12	070A	230.30	4/1/2008	1658	PDO	08311501	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
13	070A	230.30	11/28/2011	1115	PDO	11510156	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
14	070A	230.40	4/9/2009	1354	PDO	09327716	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
15	070A	230.40	7/6/2010	1035	PDO	10306360	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
16	070A	230.50	1/29/2010	0635	PDO	10325716	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
17	070A	230.50	11/29/2008	0920	PDO	08300791	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
18	070A	230.60	12/19/2008	1637	PDO	08303102	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
19	070A	230.60	6/26/2011	1640	PDO	11313334	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
20	070A	230.60	3/17/2008	0855	PDO	08308224	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
21	070A	230.70	7/13/2008	1644	PDO	08303791	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
22	070A	230.80	2/24/2008	1435	PDO	08312363	ON	NON-INTERSECTION	2	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
23	070A	230.90	2/24/2008	1515	PDO	08312364	ON	NON-INTERSECTION	2	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
24	070A	230.90	12/7/2008	1530	PDO	08329370	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
25	070A	230.90	1/4/2009	1330	PDO	09301370	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
26	070A	230.90	7/25/2010	1545	PDO	10310981	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
27	070A	230.90	3/10/2011	0935	PDO	11312608	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
28	070A	230.90	6/19/2012	2200	PDO	12511400	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
29	070A	230.90	11/9/2009	1437	PDO	09323049	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
30	070A	230.90	12/7/2008	1525	PDO	08301341	OFF LEFT	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
31	070A	231.00	8/10/2011	1000	INJ	11500693	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
32	070A	231.00	1/1/2011	0615	PDO	11300013	OFF RIGHT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	WIND	N
33	070A	231.00	8/5/2012	1622	PDO	12514639	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
34	070A	231.00	8/9/2009	1943	PDO	09310575	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
35	070A	231.00	6/5/2010	1802	PDO	10305574	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
36	070A	231.00	8/23/2011	1100	PDO	11513475	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
37	070A	231.00	6/15/2012	1500	PDO	12511625	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
38	070A	231.00	12/1/2008	1520	PDO	08310634	ON	NON-INTERSECTION	2	WET	DAYLIGHT	WIND	N
39	070A	231.10	9/28/2008	1920	PDO	08306493	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
40	070A	231.10	12/22/2010	1620	PDO	10317616	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
41	070A	231.10	4/22/2008	1307	PDO	08315252	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
42	070A	231.10	5/26/2012	1840	PDO	12509599	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
43	070A	231.10	12/9/2012	0810	PDO	12523961	OFF RIGHT	RAMP	1	ICY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	Y (D)
44	070A	231.14	4/10/2009	1330	PDO	09315468	ON	RAMP	1	DRY	DAYLIGHT	NONE	Y (E)
45	070A	231.15	9/12/2010	0730	PDO	10312377	OFF RIGHT	RAMP	1	DRY	DAYLIGHT	NONE	Y (E)
46	070A	231.20	4/1/2008	0220	FAT	08330799	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
47	070A	231.20	6/24/2012	1445	PDO	12512649	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
48	070A	231.20	10/12/2008	0900	PDO	08317233	ON	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
49	070A	231.20	4/1/2008	0220	PDO	08316502	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
50	070A	231.20	4/1/2008	0220	PDO	08316503	ON	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
51	070A	231.30	4/11/2008	1808	PDO	08305831	OFF RIGHT	NON-INTERSECTION	1	SLUSHY	DAYLIGHT	SNOW/SLEET/HAIL	N
52	070A	231.30	2/22/2010	0915	PDO	10324949	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
53	070A	231.30	1/13/2008	1555	PDO	08308527	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
54	070A	231.30	2/14/2010	1430	PDO	10300955	ON	NON-INTERSECTION	2	WET	DAYLIGHT	NONE	N
55	070A	231.30	4/25/2011	0545	PDO	11307078	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	NONE	N
56	070A	231.30	11/19/2012	1324	PDO	12522355	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
1	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	62	GOING STRAIGHT
2	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
3	GUARD RAIL	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	GOING STRAIGHT
4	EMBANKMENT	E	SUV	DISTRACTED/OTHER	65	GOING STRAIGHT
5	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	65	WEAVING
6	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
7	EMBANKMENT	W	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	55	SPUN OUT OF CONTROL
8	EMBANKMENT	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	50	SLOWING
9	REAR END	E	SUV	DRIVER UNFAMILIAR W/AREA	40	SLOWING
10	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
11	REAR END	E	SUV	NONE APPARENT	20	GOING STRAIGHT
12	CABLE RAIL	E	SUV	ASLEEP AT THE WHEEL	60	GOING STRAIGHT
13	CABLE RAIL	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	65	SPUN OUT OF CONTROL
14	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
15	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER FATIGUE	75	GOING STRAIGHT
16	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	5	MAKING LEFT TURN
17	EMBANKMENT	W	SUV	NONE APPARENT	40	SPUN OUT OF CONTROL
18	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	15	SLOWING
19	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	35	GOING STRAIGHT
20	GUARD RAIL	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
21	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
22	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	35	GOING STRAIGHT
23	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	25	GOING STRAIGHT
24	REAR END	E	SUV	DISTRACTED/OTHER	50	GOING STRAIGHT
25	REAR END	E	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	20	GOING STRAIGHT
26	REAR END	E	PASSENGER CAR/VAN	DISTRACTED/OTHER	30	GOING STRAIGHT
27	REAR END	W	SUV	OTHER FACTOR	60	SLOWING
28	WILD ANIMAL	W	SUV	NONE APPARENT	65	GOING STRAIGHT
29	VEHICLE DEBRIS OR CARGO	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	50	GOING STRAIGHT
30	EMBANKMENT	E	PASSENGER CAR/VAN	NONE APPARENT	65	SLOWING
31	OVERTURNING	W	PASSENGER CAR/VAN	OTHER FACTOR	75	SPUN OUT OF CONTROL
32	OTHER NON-COLLISION	E	VEH COMBO (10,001 LBS AND OVER)	DRIVER UNFAMILIAR W/AREA	55	SPUN OUT OF CONTROL
33	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	10	GOING STRAIGHT
34	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	70	PASSING
35	SIDESWIPE (SAME DIRECTION)	E	SUV	DISTRACTED/OTHER	65	WEAVING
36	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	DRIVER FATIGUE	50	GOING STRAIGHT
37	VEHICLE DEBRIS OR CARGO	E	MOTOR HOME	NONE APPARENT	60	GOING STRAIGHT
38	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	AVOIDING OBJECT IN ROAD
39	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
40	REAR END	E	SUV	NONE APPARENT	25	GOING STRAIGHT
41	WILD ANIMAL	W	SUV	NONE APPARENT	50	GOING STRAIGHT
42	WILD ANIMAL	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	SLOWING
43	OVERTURNING	W	SUV	DRIVER UNFAMILIAR W/AREA	45	GOING STRAIGHT
44	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	GOING STRAIGHT
45	EMBANKMENT	W	PASSENGER CAR/VAN	DUI, DWAI, DUID	50	SPUN OUT OF CONTROL
46	OVERTURNING	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
47	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	15	WEAVING
48	ROAD MAINTENANCE EQUIPMENT	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
49	INVOLVING OTHER OBJECT	W	SUV	NONE APPARENT	50	GOING STRAIGHT
50	INVOLVING OTHER OBJECT	W	PASSENGER CAR/VAN	NONE APPARENT	40	GOING STRAIGHT
51	OVERTURNING	W	SUV	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
52	OVERTURNING	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
53	REAR END	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	10	GOING STRAIGHT
54	REAR END	E	SUV	NONE APPARENT	25	SLOWING
55	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	SPUN OUT OF CONTROL
56	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	70	GOING STRAIGHT

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
57	070A	231.30	4/25/2011	0500	PDO	11306963	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	NONE	N
58	070A	231.30	8/26/2012	2345	PDO	12516457	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
59	070A	231.40	7/12/2010	1450	PDO	10326849	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
60	070A	231.40	1/15/2011	1730	PDO	11300621	ON	NON-INTERSECTION	3	DRY	DAWN OR DUSK	WIND	N
61	070A	231.40	7/1/2012	1400	PDO	12512005	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
62	070A	231.50	1/2/2008	1530	PDO	08308518	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
63	070A	231.50	3/1/2008	1522	PDO	08312405	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
64	070A	231.50	7/17/2011	1255	PDO	11311494	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
65	070A	231.50	12/27/2012	1515	PDO	12525771	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
66	070A	231.50	10/12/2008	0905	PDO	08330885	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
67	070A	231.50	12/1/2008	1520	PDO	08303809	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
68	070A	231.50	8/4/2008	1755	PDO	08308584	ON	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
69	070A	231.60	1/12/2008	1550	PDO	08312142	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
70	070A	231.60	2/2/2008	1540	PDO	08312147	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
71	070A	231.60	12/30/2009	1559	PDO	09327344	ON	NON-INTERSECTION	2	WET	DAYLIGHT	NONE	N
72	070A	231.60	12/26/2012	1550	PDO	12525776	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
73	070A	231.60	9/10/2011	2250	PDO	11502407	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
74	070A	231.60	7/4/2012	0545	PDO	12512209	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
75	070A	231.60	3/19/2010	1955	PDO	10301899	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
76	070A	231.60	11/11/2010	0215	INJ	10319795	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
77	070A	231.60	3/2/2011	1330	PDO	11304114	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
78	070A	231.60	4/26/2011	0515	PDO	11307031	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
79	070A	231.70	12/6/2008	1800	PDO	08302599	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
80	070A	231.70	2/27/2010	1600	PDO	10301804	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
81	070A	231.70	12/23/2011	1550	PDO	11513060	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
82	070A	231.70	12/23/2011	1615	PDO	11513062	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
83	070A	231.70	3/31/2008	2345	PDO	08308556	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
84	070A	231.70	2/26/2011	0850	PDO	11303766	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (E)
85	070A	231.78	12/19/2008	1723	PDO	08302978	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
86	070A	231.78	2/14/2010	1721	PDO	10300958	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
87	070A	231.80	1/1/2008	1430	PDO	08311454	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
88	070A	231.80	2/7/2009	1550	PDO	09302148	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
89	070A	231.80	9/19/2010	1340	PDO	10312539	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
90	070A	231.80	2/20/2011	1455	PDO	11303346	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
91	070A	231.80	12/23/2011	1655	PDO	11513064	ON	NON-INTERSECTION	3	DRY	DARK-UNLIGHTED	NONE	N
92	070A	231.80	10/8/2010	1915	PDO	10314102	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	WIND	N
93	070A	231.80	6/9/2009	2140	PDO	09307435	ON	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	NONE	N
94	070A	231.86	7/11/2012	0420	PDO	12512879	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
95	070A	231.88	3/31/2008	2155	PDO	08308555	OFF RIGHT	RAMP	1	ICY	DARK-UNLIGHTED	NONE	Y (D)
96	070A	231.90	3/9/2008	1355	PDO	08312152	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
97	070A	231.90	3/20/2008	1715	PDO	08312156	ON	NON-INTERSECTION	2	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
98	070A	231.90	10/21/2008	0753	PDO	08317229	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
99	070A	231.90	10/21/2008	2100	PDO	08310558	OFF LEFT	NON-INTERSECTION	1	WET W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
100	070A	231.90	12/4/2011	0520	PDO	11510970	OFF LEFT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
101	070A	232.00	1/27/2012	0855	INJ	12501620	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
102	070A	232.00	1/2/2008	1530	PDO	08308519	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
103	070A	232.00	1/4/2008	1528	PDO	08308521	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
104	070A	232.00	9/21/2008	1340	PDO	08310552	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
105	070A	232.00	12/6/2008	1540	PDO	08301310	ON	NON-INTERSECTION	3	WET	DAYLIGHT	NONE	N
106	070A	232.00	12/19/2008	1625	PDO	08330871	ON	NON-INTERSECTION	3	DRY	DAWN OR DUSK	NONE	N
107	070A	232.00	12/21/2008	1530	PDO	08302850	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
108	070A	232.00	1/5/2009	1530	PDO	09300200	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
109	070A	232.00	1/1/2010	1530	PDO	10325719	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
110	070A	232.00	12/23/2011	1510	PDO	11513067	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
111	070A	232.00	3/17/2012	1100	PDO	12505336	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
112	070A	232.00	11/22/2008	1630	PDO	08310631	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
57	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	NONE APPARENT	55	PASSING
58	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
59	REAR END	E	SUV	NONE APPARENT	70	GOING STRAIGHT
60	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
61	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	GOING STRAIGHT
62	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
63	REAR END	E	SUV	NONE APPARENT	35	GOING STRAIGHT
64	REAR END	E	PASSENGER CAR/VAN	DISTRACTED/OTHER	15	GOING STRAIGHT
65	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	50	GOING STRAIGHT
66	GUARD RAIL	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
67	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
68	LARGE ROCKS/BOULDER	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
69	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
70	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	35	GOING STRAIGHT
71	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	40	SLOWING
72	REAR END	E	SUV	AGRESSIVE DRIVING	25	GOING STRAIGHT
73	WILD ANIMAL	W	SUV	NONE APPARENT	60	GOING STRAIGHT
74	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
75	SIGN	W	SUV	NONE APPARENT	45	GOING STRAIGHT
76	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	65	SPUN OUT OF CONTROL
77	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER EMOTIONALLY UPSET	65	GOING STRAIGHT
78	GUARD RAIL	W	SUV	DRIVER UNFAMILIAR W/AREA	45	GOING STRAIGHT
79	REAR END	E	SUV	NONE APPARENT	45	GOING STRAIGHT
80	REAR END	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	40	GOING STRAIGHT
81	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
82	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	30	GOING STRAIGHT
83	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	45	SPUN OUT OF CONTROL
84	GUARD RAIL	E	SUV	AGRESSIVE DRIVING	15	BACKING
85	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	35	CHANGING LANES
86	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	GOING STRAIGHT
87	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	15	GOING STRAIGHT
88	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	GOING STRAIGHT
89	REAR END	E	MOTORCYCLE	NONE APPARENT	60	GOING STRAIGHT
90	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	35	SLOWING
91	REAR END	E	HIT & RUN - UNKNOWN	NONE APPARENT	0	CHANGING LANES
92	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	AVOIDING OBJECT IN ROAD
93	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
94	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	70	GOING STRAIGHT
95	OVERTURNING	W	SUV	DRIVER INEXPERIENCE	25	SPUN OUT OF CONTROL
96	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
97	REAR END	E	SUV	NONE APPARENT	10	GOING STRAIGHT
98	GUARD RAIL	W	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	65	GOING STRAIGHT
99	OVERTURNING	W	SUV	NONE APPARENT	65	GOING STRAIGHT
100	GUARD RAIL	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	60	SPUN OUT OF CONTROL
101	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
102	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
103	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	35	GOING STRAIGHT
104	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	PASSING
105	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
106	REAR END	E	SUV	NONE APPARENT	65	CHANGING LANES
107	REAR END	E	SUV	NONE APPARENT	50	GOING STRAIGHT
108	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
109	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	10	GOING STRAIGHT
110	REAR END	E	SUV	NONE APPARENT	50	GOING STRAIGHT
111	REAR END	W	SUV	NONE APPARENT	60	SLOWING
112	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	65	PASSING

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
113	070A	232.00	11/21/2011	2245	PDO	11509402	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
114	070A	232.00	1/22/2011	1447	PDO	11301498	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
115	070A	232.00	4/17/2008	0915	PDO	08304117	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
116	070A	232.00	2/21/2010	0511	PDO	10301591	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
117	070A	232.00	11/26/2011	0730	PDO	11509861	OFF RIGHT	RAMP	1	ICY	DAYLIGHT	NONE	Y (L)
118	070A	232.00	11/26/2011	0000	PDO	11509856	OFF RIGHT	RAMP	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	Y (L)
119	070A	232.01	1/11/2009	1453	PDO	09314159	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	WIND	N
120	070A	232.02	12/16/2011	0645	PDO	11512200	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
121	070A	232.08	11/22/2009	1340	PDO	09323414	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
122	070A	232.08	12/17/2009	0750	PDO	09323793	OFF LEFT	RAMP	1	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	Y (H)
123	070A	232.08	12/24/2012	0639	PDO	12525298	OFF RIGHT	RAMP	1	WET W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	NONE	Y (H)
124	070A	232.09	6/6/2009	1510	PDO	09315472	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
125	070A	232.09	5/4/2010	0815	PDO	10303912	OFF RIGHT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
126	070A	232.10	3/31/2008	1900	PDO	08311486	OFF LEFT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
127	070A	232.10	4/13/2008	1830	PDO	08311507	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
128	070A	232.10	12/21/2008	1400	PDO	08302849	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
129	070A	232.10	2/20/2011	1659	PDO	11303342	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
130	070A	232.10	12/19/2009	0920	PDO	09323797	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
131	070A	232.10	8/9/2008	0745	PDO	08311519	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
132	070A	232.10	4/6/2010	2145	PDO	10302766	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	WIND	N
133	070A	232.10	11/22/2010	0845	PDO	10314804	OFF RIGHT	NON-INTERSECTION	1	ICY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
134	070A	232.10	4/24/2012	1620	PDO	12507709	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
135	070A	232.10	4/3/2009	1350	PDO	09305309	OFF LEFT	RAMP	1	WET W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	Y (H)
136	070A	232.10	11/6/2009	1510	PDO	09317806	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
137	070A	232.10	4/16/2010	1643	PDO	10325724	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
138	070A	232.20	6/21/2009	1330	PDO	09316438	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
139	070A	232.20	1/16/2010	1540	PDO	10325826	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
140	070A	232.20	12/26/2011	1545	PDO	11513341	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
141	070A	232.20	1/8/2012	1500	PDO	12500306	ON	NON-INTERSECTION	2	WET	DAYLIGHT	NONE	N
142	070A	232.20	6/26/2009	0845	PDO	09308087	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
143	070A	232.20	7/14/2011	2110	PDO	11311498	ON	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	NONE	N
144	070A	232.20	3/31/2008	2015	PDO	08308554	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
145	070A	232.20	3/10/2010	0856	PDO	10325832	OFF LEFT	NON-INTERSECTION	1	WET W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
146	070A	232.20	2/28/2012	1705	PDO	12504225	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
147	070A	232.30	2/25/2008	1115	PDO	08304436	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
148	070A	232.30	3/7/2008	1700	PDO	08310503	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
149	070A	232.30	3/21/2008	1519	PDO	08308568	ON	NON-INTERSECTION	5	DRY	DAYLIGHT	NONE	N
150	070A	232.30	3/21/2008	1519	PDO	08308569	ON	NON-INTERSECTION	5	DRY	DAYLIGHT	NONE	N
151	070A	232.30	2/22/2010	0915	PDO	10301230	ON	NON-INTERSECTION	2	SLUSHY	DAYLIGHT	NONE	N
152	070A	232.30	9/19/2010	1715	PDO	10312538	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
153	070A	232.30	11/22/2010	0550	PDO	10314806	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
154	070A	232.30	11/30/2008	1400	PDO	08310627	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
155	070A	232.30	12/24/2010	1129	PDO	10317793	ON	RAMP	3	DRY	DAYLIGHT	NONE	Y (D)
156	070A	232.40	10/25/2010	1645	PDO	10319042	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
157	070A	232.40	2/23/2008	1510	PDO	08304433	ON	NON-INTERSECTION	4	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
158	070A	232.40	1/10/2009	1425	PDO	09300589	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
159	070A	232.40	1/16/2010	1534	PDO	10324796	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
160	070A	232.40	10/25/2010	1700	PDO	10326580	OFF RIGHT	NON-INTERSECTION	3	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
161	070A	232.40	10/30/2008	2050	INJ	08306501	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
162	070A	232.40	1/26/2009	0707	PDO	09301202	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
163	070A	232.50	7/29/2009	1400	INJ	09309539	ON	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
164	070A	232.50	12/7/2008	1500	PDO	08302600	ON	NON-INTERSECTION	3	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
165	070A	232.50	3/15/2009	1625	PDO	09304443	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
166	070A	232.50	3/15/2009	1625	PDO	09304444	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
167	070A	232.50	2/1/2009	1110	PDO	09315373	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
168	070A	232.50	6/26/2011	1250	PDO	11310887	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
113	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
114	GUARD RAIL	W	SUV	NONE APPARENT	60	GOING STRAIGHT
115	EMBANKMENT	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
116	DELINEATOR POST	E	NON-SCHOOL BUS IN COMMERCE (>=9 PEO	DRIVER FATIGUE	65	GOING STRAIGHT
117	OVERTURNING	W	SUV	DRIVER UNFAMILIAR W/AREA	40	GOING STRAIGHT
118	SIGN	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
119	SIGN	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
120	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
121	SIGN	E	PASSENGER CAR/VAN	NONE APPARENT	60	OTHER
122	TREE	N	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	30	OTHER
123	TREE	E	SUV	DRIVER INEXPERIENCE	50	GOING STRAIGHT
124	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	35	MAKING RIGHT TURN
125	TREE	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	50	SPUN OUT OF CONTROL
126	OVERTURNING	W	SUV	NONE APPARENT	60	GOING STRAIGHT
127	REAR END	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	20	GOING STRAIGHT
128	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
129	REAR END	E	SUV	NONE APPARENT	25	SLOWING
130	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	NONE APPARENT	10	CHANGING LANES
131	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	DRIVER FATIGUE	60	CHANGING LANES
132	SIGN	W	SUV	NONE APPARENT	50	GOING STRAIGHT
133	TREE	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
134	TREE	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
135	TREE	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	56	MAKING RIGHT TURN
136	SIGN	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	35	GOING STRAIGHT
137	TREE	E	PASSENGER CAR/VAN	NONE APPARENT	55	MAKING RIGHT TURN
138	REAR END	E	SUV	NONE APPARENT	50	GOING STRAIGHT
139	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	SLOWING
140	REAR END	E	SUV	NONE APPARENT	10	SLOWING
141	REAR END	E	SUV	DRIVER UNFAMILIAR W/AREA	50	CHANGING LANES
142	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
143	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
144	GUARD RAIL	W	SUV	DRIVER UNFAMILIAR W/AREA	45	SPUN OUT OF CONTROL
145	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
146	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
147	OVERTURNING	E	PASSENGER CAR/VAN	NONE APPARENT	35	SPUN OUT OF CONTROL
148	REAR END	E	SUV	NONE APPARENT	15	SLOWING
149	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
150	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
151	REAR END	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	55	GOING STRAIGHT
152	REAR END	E	SUV	NONE APPARENT	15	GOING STRAIGHT
153	SIGN	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
154	TREE	W	SUV	DRIVER INEXPERIENCE	60	SPUN OUT OF CONTROL
155	OTHER NON-COLLISION	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	UK	SLOWING
156	OVERTURNING	W	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
157	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	25	GOING STRAIGHT
158	REAR END	E	SUV	NONE APPARENT	65	GOING STRAIGHT
159	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
160	PARKED MOTOR VEHICLE	W	SUV	NONE APPARENT	50	SPUN OUT OF CONTROL
161	ROAD MAINTENANCE EQUIPMENT	E	PASSENGER CAR/VAN	DISTRACTED/OTHER	55	GOING STRAIGHT
162	TREE	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
163	OVERTURNING	E	MOTORCYCLE	NONE APPARENT	20	SLOWING
164	REAR END	E	SUV	DISTRACTED/OTHER	60	GOING STRAIGHT
165	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
166	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
167	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	65	SLOWING
168	SIDESWIPE (SAME DIRECTION)	E	MOTORCYCLE	NONE APPARENT	45	PASSING

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
169	070A	232.50	12/15/2012	0939	PDO	12525388	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
170	070A	232.50	10/1/2012	2035	PDO	12518966	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
171	070A	232.50	1/17/2011	1610	PDO	11301517	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
172	070A	232.50	4/24/2011	2200	PDO	11306966	OFF LEFT	NON-INTERSECTION	1	SLUSHY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
173	070A	232.50	3/28/2011	2250	PDO	11305469	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
174	070A	232.55	8/15/2010	2020	PDO	10307849	ON	NON-INTERSECTION	3	DRY	DAWN OR DUSK	NONE	N
175	070A	232.56	2/21/2009	1624	PDO	09321774	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
176	070A	232.60	12/10/2011	1520	PDO	11511819	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
177	070A	232.60	3/31/2008	0558	PDO	08310498	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
178	070A	232.60	2/25/2008	0430	PDO	08304437	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
179	070A	232.60	2/25/2008	0650	PDO	08304434	OFF LEFT	RAMP	1	ICY	DAYLIGHT	NONE	Y (D)
180	070A	232.63	3/1/2008	1630	PDO	08312370	ON	AT INTERSECTION	2	DRY	DAYLIGHT	NONE	Y (N)
181	070A	232.70	3/31/2008	0520	PDO	08310497	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
182	070A	232.70	6/20/2010	1310	PDO	10309777	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
183	070A	232.70	3/23/2011	1655	PDO	11305122	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
184	070A	232.70	12/30/2010	1230	PDO	10318368	ON	NON-INTERSECTION	3	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
185	070A	232.70	12/13/2009	2335	PDO	09320044	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
186	070A	232.77	12/30/2008	1805	PDO	08328057	ON	NON-INTERSECTION	3	DRY	DARK-UNLIGHTED	NONE	N
187	070A	232.80	12/30/2010	1239	PDO	10318362	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
188	070A	232.80	1/11/2009	1515	PDO	09301374	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
189	070A	232.80	1/16/2011	1845	PDO	11305496	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
190	070A	232.90	4/24/2011	0330	PDO	11307285	OFF LEFT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	NONE	N
191	070A	232.96	7/30/2012	1330	INJ	12514300	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
192	070A	232.98	8/3/2012	2140	PDO	12514883	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
193	070A	233.00	12/7/2008	1545	PDO	08300857	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
194	070A	233.00	12/31/2008	1600	PDO	08327721	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
195	070A	233.00	3/8/2009	1325	PDO	09303709	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
196	070A	233.00	3/27/2008	1725	PDO	08308552	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
197	070A	233.00	7/5/2009	1027	PDO	09317490	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
198	070A	233.00	2/22/2010	1000	PDO	10301582	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
199	070A	233.00	9/14/2012	1444	PDO	12517822	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
200	070A	233.00	10/27/2009	1915	PDO	09325930	OFF RIGHT	NON-INTERSECTION	2	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
201	070A	233.00	10/26/2011	1345	PDO	11504890	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
202	070A	233.00	1/9/2011	1136	PDO	11301385	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
203	070A	233.00	7/3/2012	1334	PDO	12512207	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
204	070A	233.00	12/28/2011	0830	PDO	11513553	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	WIND	N
205	070A	233.01	2/1/2009	1345	PDO	09313659	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
206	070A	233.09	6/11/2008	2215	PDO	08308576	ON	RAMP	1	DRY	DARK-UNLIGHTED	NONE	Y (D)
207	070A	233.10	10/29/2009	1229	PDO	09324250	OFF LEFT	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
208	070A	233.10	5/21/2011	1845	INJ	11309919	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
209	070A	233.20	8/14/2009	1520	PDO	09310277	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
210	070A	233.20	12/28/2009	1540	PDO	09323788	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
211	070A	233.20	11/28/2010	1440	PDO	10315565	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
212	070A	233.20	8/26/2012	1300	PDO	12516455	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
213	070A	233.20	8/26/2012	1307	PDO	12516456	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
214	070A	233.20	6/11/2010	1700	PDO	10312037	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
215	070A	233.20	3/17/2012	1100	PDO	12507209	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
216	070A	233.30	2/19/2009	1700	PDO	09302832	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
217	070A	233.30	7/6/2012	1650	PDO	12512642	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
218	070A	233.30	4/12/2009	1416	PDO	09312904	OFF LEFT	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
219	070A	233.30	4/12/2009	1949	PDO	09313666	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
220	070A	233.40	1/11/2008	1615	PDO	08312345	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
221	070A	233.40	4/6/2010	1830	PDO	10302763	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
222	070A	233.40	4/27/2009	0528	PDO	09306317	OFF RIGHT	NON-INTERSECTION	1	SLUSHY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
223	070A	233.40	2/14/2010	0940	PDO	10300913	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
224	070A	233.47	2/21/2010	0703	PDO	10301584	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
169	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	CHANGING LANES
170	WILD ANIMAL	W	SUV	NONE APPARENT	65	GOING STRAIGHT
171	GUARD RAIL	W	SUV	NONE APPARENT	40	SPUN OUT OF CONTROL
172	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
173	DELINEATOR POST	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
174	REAR END	E	SUV	DISTRACTED/OTHER	60	GOING STRAIGHT
175	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	30	GOING STRAIGHT
176	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
177	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	GOING STRAIGHT
178	EMBANKMENT	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
179	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	25	GOING STRAIGHT
180	BROADSIDE	E	SUV	NONE APPARENT	10	ENTERING/LEAVING PARKED POSITION
181	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	SPUN OUT OF CONTROL
182	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	SLOWING
183	REAR END	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	65	GOING STRAIGHT
184	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	30	SPUN OUT OF CONTROL
185	GUARD RAIL	W	SUV	NONE APPARENT	55	GOING STRAIGHT
186	REAR END	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	30	SLOWING
187	REAR END	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	DRIVER UNFAMILIAR W/AREA	20	SLOWING
188	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
189	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	10	CHANGING LANES
190	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
191	OVERTURNING	E	PASSENGER CAR/VAN	NONE APPARENT	65	CHANGING LANES
192	WILD ANIMAL	W	SUV	NONE APPARENT	65	GOING STRAIGHT
193	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	30	GOING STRAIGHT
194	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	30	SLOWING
195	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
196	SIDESWIPE (SAME DIRECTION)	E	SUV	DISTRACTED/CELL PHONE	65	CHANGING LANES
197	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	35	GOING STRAIGHT
198	SIDESWIPE (SAME DIRECTION)	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	GOING STRAIGHT
199	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	CHANGING LANES
200	GUARD RAIL	W	SUV	NONE APPARENT	40	SPUN OUT OF CONTROL
201	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
202	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER UNFAMILIAR W/AREA	55	SPUN OUT OF CONTROL
203	CONCRETE HIGHWAY BARRIER	E	SUV	OTHER FACTOR	68	GOING STRAIGHT
204	VEHICLE DEBRIS OR CARGO	W	SUV	NONE APPARENT	65	GOING STRAIGHT
205	REAR END	E	SUV	OTHER FACTOR	65	GOING STRAIGHT
206	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
207	CONCRETE HIGHWAY BARRIER	E	SUV	NONE APPARENT	60	GOING STRAIGHT
208	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	SPUN OUT OF CONTROL
209	OTHER NON-COLLISION	E	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	65	GOING STRAIGHT
210	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	25	SLOWING
211	REAR END	E	SUV	NONE APPARENT	45	GOING STRAIGHT
212	REAR END	E	SUV	NONE APPARENT	15	GOING STRAIGHT
213	REAR END	E	PASSENGER CAR/VAN	OTHER FACTOR	45	GOING STRAIGHT
214	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
215	WILD ANIMAL	W	SUV	NONE APPARENT	65	GOING STRAIGHT
216	REAR END	E	SUV	NONE APPARENT	65	GOING STRAIGHT
217	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	40	SPUN OUT OF CONTROL
218	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	55	GOING STRAIGHT
219	GUARD RAIL	E	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
220	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
221	EMBANKMENT	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
222	LARGE ROCKS/BOULDER	W	PASSENGER CAR/VAN	NONE APPARENT	30	SPUN OUT OF CONTROL
223	LARGE ROCKS/BOULDER	W	SUV	NONE APPARENT	55	GOING STRAIGHT
224	LARGE ROCKS/BOULDER	W	SUV	DRIVER UNFAMILIAR W/AREA	60	GOING STRAIGHT

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
225	070A	233.48	3/29/2011	0445	PDO	11305237	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
226	070A	233.50	1/24/2009	0645	PDO	09301201	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
227	070A	233.50	1/11/2009	1730	PDO	09300554	ON	NON-INTERSECTION	2	WET	DAWN OR DUSK	NONE	N
228	070A	233.50	2/22/2009	0810	PDO	09303161	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
229	070A	233.50	4/4/2009	0650	PDO	09315377	ON	NON-INTERSECTION	2	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
230	070A	233.50	12/28/2010	1525	PDO	10318139	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
231	070A	233.50	7/8/2012	1143	PDO	12513787	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
232	070A	233.50	6/14/2011	1200	PDO	11313021	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
233	070A	233.50	5/18/2012	2215	PDO	12509271	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
234	070A	233.50	12/9/2008	1320	PDO	08300684	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
235	070A	233.50	5/12/2010	1700	PDO	10311603	OFF RIGHT	NON-INTERSECTION	1	SLUSHY	DAYLIGHT	SNOW/SLEET/HAIL	N
236	070A	233.50	1/23/2009	2225	PDO	09301168	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
237	070A	233.50	2/21/2010	0950	PDO	10301233	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
238	070A	233.50	12/18/2012	1650	PDO	12524839	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
239	070A	233.50	4/26/2011	0625	PDO	11307030	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
240	070A	233.50	10/26/2011	1720	INJ	11504888	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
241	070A	233.60	3/1/2009	1555	INJ	09303441	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
242	070A	233.60	1/17/2010	0810	PDO	10324797	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
243	070A	233.60	10/24/2009	0910	PDO	09323048	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
244	070A	233.64	3/4/2010	1400	PDO	10326030	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
245	070A	233.70	1/30/2009	1040	PDO	09313652	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
246	070A	233.70	12/29/2009	0645	PDO	09325793	OFF LEFT	NON-INTERSECTION	2	ICY	DARK-LIGHTED	NONE	N
247	070A	233.70	7/10/2009	1335	PDO	09308769	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
248	070A	233.70	6/14/2012	0800	PDO	12510943	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
249	070A	233.70	7/10/2008	0615	PDO	08306485	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
250	070A	233.80	2/24/2009	0050	INJ	09303168	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
251	070A	233.80	6/29/2008	1730	PDO	08304126	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
252	070A	233.80	6/5/2011	1500	PDO	11310352	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
253	070A	233.80	11/14/2008	0815	PDO	08306522	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
254	070A	233.90	1/23/2010	1615	PDO	10300550	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
255	070A	233.90	11/14/2008	0735	PDO	08306521	OFF LEFT	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
256	070A	233.94	5/30/2009	1150	PDO	09314168	ON	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
257	070A	234.00	6/10/2012	1349	PDO	12510601	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
258	070A	234.00	8/7/2011	1930	PDO	11500286	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
259	070A	234.00	3/14/2008	0855	PDO	08308561	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
260	070A	234.00	2/1/2008	0740	PDO	08308536	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
261	070A	234.00	2/1/2008	0750	PDO	08315231	OFF RIGHT	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
262	070A	234.00	6/17/2008	1555	PDO	08315255	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
263	070A	234.00	7/11/2010	1620	PDO	10310171	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
264	070A	234.00	4/24/2008	1401	PDO	08308571	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
265	070A	234.00	4/2/2012	1020	PDO	12506154	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
266	070A	234.00	8/22/2012	1900	PDO	12515940	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
267	070A	234.00	12/4/2008	1300	PDO	08301070	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
268	070A	234.00	8/23/2008	2115	PDO	08315575	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
269	070A	234.00	6/2/2010	2000	PDO	10305465	ON	NON-INTERSECTION	1	WET	DAWN OR DUSK	RAIN	N
270	070A	234.07	3/19/2008	0850	PDO	08311493	ON	RAMP	1	DRY	DAYLIGHT	WIND	Y (T)
271	070A	234.07	3/19/2008	0850	PDO	08311494	ON	RAMP	1	DRY	DAYLIGHT	WIND	Y (T)
272	070A	234.07	5/18/2008	2025	PDO	08325288	ON	RAMP	1	DRY	DARK-LIGHTED	NONE	Y (T)
273	070A	234.08	9/6/2011	0438	PDO	11502409	OFF RIGHT	PARKING LOT	1	DRY	DARK-LIGHTED	NONE	Y (T)
274	070A	234.10	12/19/2008	1630	PDO	08302848	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
275	070A	234.10	1/16/2011	1615	PDO	11301478	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	WIND	N
276	070A	234.10	3/19/2010	1323	INJ	10301781	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
277	070A	234.10	4/12/2009	1340	PDO	09315469	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
278	070A	234.10	3/19/2010	1323	PDO	10302211	OFF RIGHT	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
279	070A	234.10	3/19/2010	1323	PDO	10304263	OFF LEFT	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
280	070A	234.10	7/30/2010	1945	PDO	10307271	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
225	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	GOING STRAIGHT
226	OVERTURNING	W	SUV	DRIVER UNFAMILIAR W/AREA	60	SPUN OUT OF CONTROL
227	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
228	REAR END	W	SUV	NONE APPARENT	45	SLOWING
229	REAR END	W	SUV	NONE APPARENT	55	GOING STRAIGHT
230	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	50	SLOWING
231	REAR END	E	SUV	NONE APPARENT	20	GOING STRAIGHT
232	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	CHANGING LANES
233	WILD ANIMAL	W	SUV	NONE APPARENT	68	GOING STRAIGHT
234	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	DRIVER FATIGUE	65	SPUN OUT OF CONTROL
235	GUARD RAIL	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
236	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
237	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER INEXPERIENCE	50	SPUN OUT OF CONTROL
238	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER INEXPERIENCE	65	GOING STRAIGHT
239	EMBANKMENT	W	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	55	SPUN OUT OF CONTROL
240	LARGE ROCKS/BOULDER	W	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
241	REAR END	E	SUV	NONE APPARENT	50	GOING STRAIGHT
242	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	DISTRACTED/OTHER	60	GOING STRAIGHT
243	WILD ANIMAL	E	SUV	NONE APPARENT	65	GOING STRAIGHT
244	REAR END	W	SUV	ILLNESS/MEDICAL	60	GOING STRAIGHT
245	REAR END	W	SUV	NONE APPARENT	30	GOING STRAIGHT
246	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
247	CONCRETE HIGHWAY BARRIER	E	SUV	ASLEEP AT THE WHEEL	65	GOING STRAIGHT
248	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	60	SPUN OUT OF CONTROL
249	VEHICLE DEBRIS OR CARGO	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	0	STOPPED IN TRAFFIC
250	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	40	SPUN OUT OF CONTROL
251	REAR END	E	MOTORCYCLE	NONE APPARENT	30	GOING STRAIGHT
252	REAR END	E	SUV	NONE APPARENT	35	GOING STRAIGHT
253	OVERTURNING	W	SUV	NONE APPARENT	50	SPUN OUT OF CONTROL
254	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
255	GUARD RAIL	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
256	OTHER NON-COLLISION	W	VEH COMBO (10,001 LBS AND OVER)	DRIVER UNFAMILIAR W/AREA	40	CHANGING LANES
257	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	0	CHANGING LANES
258	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	35	GOING STRAIGHT
259	SIDESWIPE (SAME DIRECTION)	W	SUV	NONE APPARENT	25	SPUN OUT OF CONTROL
260	SIDESWIPE (SAME DIRECTION)	W	SUV	NONE APPARENT	65	GOING STRAIGHT
261	OVERTURNING	W	SUV	NONE APPARENT	55	GOING STRAIGHT
262	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	WEAVING
263	SIDESWIPE (SAME DIRECTION)	W	MOTOR HOME	NONE APPARENT	65	CHANGING LANES
264	GUARD RAIL	W	SUV	ASLEEP AT THE WHEEL	65	WEAVING
265	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
266	GUARD RAIL	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
267	CONCRETE HIGHWAY BARRIER	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	70	GOING STRAIGHT
268	INVOLVING OTHER OBJECT	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
269	INVOLVING OTHER OBJECT	W	SUV	NONE APPARENT	65	GOING STRAIGHT
270	OTHER FIXED OBJECT	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
271	OTHER FIXED OBJECT	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
272	OTHER FIXED OBJECT	W	VEH COMBO (10,001 LBS AND OVER)	DRIVER UNFAMILIAR W/AREA	5	BACKING
273	CONCRETE HIGHWAY BARRIER	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	2	BACKING
274	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
275	REAR END	E	SUV	NONE APPARENT	20	GOING STRAIGHT
276	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	30	AVOIDING OBJECT IN ROAD
277	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
278	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	55	SPUN OUT OF CONTROL
279	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	45	AVOIDING OBJECT IN ROAD
280	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	SPUN OUT OF CONTROL

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
281	070A	234.10	11/16/2010	2150	PDO	10319957	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	WIND	N
282	070A	234.10	3/29/2011	0743	PDO	11305492	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
283	070A	234.10	3/29/2011	0743	PDO	11305493	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
284	070A	234.10	3/29/2011	0743	INJ	11305729	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
285	070A	234.10	10/26/2012	0100	PDO	12520320	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
286	070A	234.10	10/26/2012	0552	PDO	12522622	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
287	070A	234.12	5/17/2009	1735	PDO	09307078	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
288	070A	234.20	4/17/2008	0415	PDO	08329546	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
289	070A	234.20	8/1/2008	1845	PDO	08311518	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
290	070A	234.20	1/8/2009	0940	PDO	09300196	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
291	070A	234.20	12/13/2009	1230	PDO	09326984	ON	NON-INTERSECTION	2	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
292	070A	234.20	10/1/2008	1515	PDO	08306502	OFF RIGHT	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
293	070A	234.20	12/23/2008	1810	PDO	08329372	OFF RIGHT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
294	070A	234.23	8/2/2009	1555	PDO	09321806	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
295	070A	234.30	1/11/2009	1530	PDO	09301375	ON	NON-INTERSECTION	2	WET	DAYLIGHT	WIND	N
296	070A	234.30	12/17/2011	1600	PDO	11512213	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
297	070A	234.30	1/18/2011	0902	PDO	11300931	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
298	070A	234.30	4/15/2011	0800	PDO	11306666	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
299	070A	234.33	6/13/2012	0950	PDO	12510949	ON	RAMP	2	DRY	DAYLIGHT	NONE	Y (D)
300	070A	234.33	2/26/2008	0830	PDO	08304409	OFF RIGHT	INTERSECTION RELATED	1	ICY	DAYLIGHT	NONE	Y (O)
301	070A	234.40	10/26/2011	1715	PDO	11504670	ON	NON-INTERSECTION	2	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
302	070A	234.40	9/14/2008	1300	PDO	08312193	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
303	070A	234.40	3/9/2012	1625	PDO	12504809	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
304	070A	234.40	3/28/2009	0700	PDO	09306110	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
305	070A	234.40	10/25/2009	1925	PDO	09324282	OFF RIGHT	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DARK-LIGHTED	SNOW/SLEET/HAIL	N
306	070A	234.40	12/10/2009	1950	PDO	09323723	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
307	070A	234.45	3/29/2009	1640	PDO	09320759	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
308	070A	234.50	2/15/2010	1410	PDO	10324278	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
309	070A	234.50	3/6/2010	1100	PDO	10324280	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
310	070A	234.50	12/9/2012	1412	PDO	12523763	ON	NON-INTERSECTION	3	WET W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
311	070A	234.50	12/1/2008	1340	PDO	08310633	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	WIND	N
312	070A	234.50	8/19/2011	1253	INJ	11501370	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
313	070A	234.58	2/6/2010	1600	PDO	10326054	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
314	070A	234.60	1/24/2008	1328	PDO	08308530	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
315	070A	234.60	8/4/2009	0530	PDO	09309799	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
316	070A	234.60	7/19/2012	0450	PDO	12513266	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
317	070A	234.70	8/14/2010	1240	PDO	10307731	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
318	070A	234.70	12/23/2011	1600	PDO	11513065	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
319	070A	234.80	12/9/2011	1515	PDO	11511443	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
320	070A	234.80	1/4/2009	1318	PDO	09314465	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
321	070A	234.80	7/3/2009	1815	PDO	09308725	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
322	070A	234.80	1/15/2008	1500	PDO	08308528	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
323	070A	234.90	12/29/2008	0910	PDO	08328637	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
324	070A	234.90	8/15/2010	1315	PDO	10307819	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
325	070A	234.90	11/26/2010	0820	PDO	10316068	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
326	070A	234.90	11/26/2010	0840	PDO	10316067	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
327	070A	234.90	8/27/2011	1600	PDO	11501344	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
328	070A	234.90	3/12/2009	1910	PDO	09304105	ON	NON-INTERSECTION	2	SLUSHY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
329	070A	234.90	1/17/2011	2240	PDO	11300933	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
330	070A	234.90	4/4/2009	0535	PDO	09313661	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
331	070A	234.90	10/21/2008	1940	INJ	08306509	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
332	070A	234.98	6/29/2008	1430	PDO	08306473	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
333	070A	234.98	4/11/2009	1222	PDO	09317566	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
334	070A	235.00	3/19/2008	1000	PDO	08308228	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
335	070A	235.00	4/24/2011	1515	PDO	11306974	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
336	070A	235.00	6/24/2011	1525	PDO	11311262	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
281	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	30	SPUN OUT OF CONTROL
282	GUARD RAIL	W	SUV	ASLEEP AT THE WHEEL	65	GOING STRAIGHT
283	GUARD RAIL	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
284	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
285	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	DISTRACTED/OTHER	55	GOING STRAIGHT
286	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
287	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	80	GOING STRAIGHT
288	OVERTURNING	W	SUV	DISTRACTED/OTHER	50	SPUN OUT OF CONTROL
289	REAR END	W	SUV	NONE APPARENT	40	GOING STRAIGHT
290	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	15	GOING STRAIGHT
291	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	40	GOING STRAIGHT
292	GUARD RAIL	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	UK	BACKING
293	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
294	REAR END	W	SUV	NONE APPARENT	65	CHANGING LANES
295	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
296	REAR END	E	SUV	NONE APPARENT	15	SLOWING
297	SIDESWIPE (SAME DIRECTION)	W	SUV	DRIVER UNFAMILIAR W/AREA	50	SPUN OUT OF CONTROL
298	LIGHT/UTILITY POLE	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
299	PARKED MOTOR VEHICLE	W	PASSENGER CAR/VAN	DRIVER FATIGUE	55	GOING STRAIGHT
300	EMBANKMENT	E	SUV	NONE APPARENT	20	MAKING LEFT TURN
301	OTHER NON-COLLISION	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	35	CHANGING LANES
302	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
303	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	20	GOING STRAIGHT
304	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	CHANGING LANES
305	GUARD RAIL	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
306	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
307	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	10	GOING STRAIGHT
308	REAR END	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	65	GOING STRAIGHT
309	REAR END	W	SUV	NONE APPARENT	45	GOING STRAIGHT
310	REAR END	E	SUV	NONE APPARENT	UK	GOING STRAIGHT
311	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
312	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	ASLEEP AT THE WHEEL	60	GOING STRAIGHT
313	REAR END	E	SUV	DRIVER INEXPERIENCE	50	GOING STRAIGHT
314	REAR END	E	SUV	NONE APPARENT	25	GOING STRAIGHT
315	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
316	WILD ANIMAL	W	SUV	NONE APPARENT	65	GOING STRAIGHT
317	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	40	GOING STRAIGHT
318	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	20	GOING STRAIGHT
319	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	UK	PASSING
320	REAR END	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	25	GOING STRAIGHT
321	REAR END	W	SUV	NONE APPARENT	35	GOING STRAIGHT
322	CABLE RAIL	E	SUV	ASLEEP AT THE WHEEL	65	GOING STRAIGHT
323	REAR END	W	PASSENGER CAR/VAN	DISTRACTED/OTHER	20	GOING STRAIGHT
324	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
325	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
326	REAR END	W	SUV	NONE APPARENT	70	GOING STRAIGHT
327	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
328	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	DRIVER INEXPERIENCE	40	SPUN OUT OF CONTROL
329	SIGN	W	PASSENGER CAR/VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
330	GUARD RAIL	W	SUV	NONE APPARENT	30	SPUN OUT OF CONTROL
331	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
332	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
333	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
334	REAR END	W	SUV	NONE APPARENT	10	GOING STRAIGHT
335	REAR END	E	SUV	NONE APPARENT	20	GOING STRAIGHT
336	REAR END	W	SUV	DUI, DWAI, DUID	35	GOING STRAIGHT

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
337	070A	235.00	8/19/2011	1427	PDO	11501373	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
338	070A	235.00	11/26/2011	1530	PDO	11509853	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
339	070A	235.00	1/18/2012	1230	PDO	12500944	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
340	070A	235.00	9/12/2009	1515	PDO	09328887	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
341	070A	235.00	12/2/2009	1650	PDO	09320748	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	NONE	N
342	070A	235.00	7/6/2012	2115	INJ	12512906	OFF LEFT	NON-INTERSECTION	2	WET	DARK-UNLIGHTED	RAIN	N
343	070A	235.00	1/30/2010	1600	PDO	10324936	ON	AT INTERSECTION	2	DRY	DAYLIGHT	NONE	Y (N)
344	070A	235.06	2/29/2008	0845	PDO	08308535	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
345	070A	235.10	3/14/2008	0615	PDO	08305822	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
346	070A	235.10	3/14/2008	0723	PDO	08305823	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
347	070A	235.10	2/22/2009	0845	PDO	09303139	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
348	070A	235.10	12/28/2010	1235	PDO	10318005	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
349	070A	235.10	4/1/2011	1640	PDO	11305510	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
350	070A	235.10	6/5/2011	1400	PDO	11310214	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
351	070A	235.10	6/11/2010	1318	PDO	10312051	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
352	070A	235.10	8/1/2012	1620	PDO	12514825	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
353	070A	235.20	12/14/2008	2315	INJ	08330894	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
354	070A	235.20	12/29/2009	0855	PDO	09323057	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
355	070A	235.20	3/19/2010	1430	PDO	10304303	ON	NON-INTERSECTION	2	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
356	070A	235.20	4/2/2010	1713	PDO	10302501	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
357	070A	235.20	2/4/2008	2008	PDO	08311470	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
358	070A	235.20	2/23/2012	2130	PDO	12503881	ON	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
359	070A	235.20	11/15/2009	1545	PDO	09324623	OFF LEFT	NON-INTERSECTION	1	SLUSHY	DAYLIGHT	SNOW/SLEET/HAIL	N
360	070A	235.20	5/15/2009	0640	PDO	09314074	ON	RAMP	1	DRY	DAYLIGHT	NONE	Y (D)
361	070A	235.30	3/9/2012	1605	PDO	12504811	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
362	070A	235.30	5/16/2009	0720	PDO	09315471	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
363	070A	235.30	1/17/2011	1525	PDO	11301651	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
364	070A	235.30	2/14/2010	1509	PDO	10300963	ON	RAMP	2	DRY	DAYLIGHT	NONE	Y (D)
365	070A	235.40	2/20/2010	0745	INJ	10301109	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
366	070A	235.40	1/1/2010	1315	PDO	10326047	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
367	070A	235.40	9/16/2012	1215	PDO	12517495	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
368	070A	235.40	9/30/2012	1610	PDO	12518560	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
369	070A	235.40	8/21/2008	0615	PDO	08320182	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
370	070A	235.40	4/7/2009	2050	PDO	09316435	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
371	070A	235.40	11/21/2009	1755	PDO	09320431	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
372	070A	235.40	8/9/2009	0725	INJ	09310187	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
373	070A	235.50	3/14/2008	0724	PDO	08308560	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
374	070A	235.50	12/6/2008	0900	PDO	08301073	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
375	070A	235.50	12/23/2009	0905	PDO	09322978	ON	NON-INTERSECTION	3	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
376	070A	235.50	6/10/2012	1830	PDO	12510597	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
377	070A	235.50	11/30/2008	0630	PDO	08310626	OFF RIGHT	NON-INTERSECTION	2	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
378	070A	235.50	11/14/2008	0830	PDO	08303803	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
379	070A	235.50	9/12/2009	1518	INJ	09320839	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
380	070A	235.50	1/17/2011	2215	PDO	11300944	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
381	070A	235.50	12/30/2012	1940	PDO	12526254	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
382	070A	235.50	12/30/2011	0935	PDO	11513690	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	WIND	N
383	070A	235.51	11/14/2008	0940	PDO	08306523	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
384	070A	235.55	2/18/2011	0930	PDO	11303206	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
385	070A	235.60	3/13/2010	0715	PDO	10324528	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
386	070A	235.60	2/13/2011	1140	PDO	11302778	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
387	070A	235.60	2/27/2011	1100	PDO	11303761	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
388	070A	235.60	10/14/2011	1625	PDO	11503942	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
389	070A	235.70	1/23/2010	1500	PDO	10300551	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
390	070A	235.70	2/18/2011	1550	INJ	11303675	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
391	070A	235.70	9/30/2009	2310	PDO	09311887	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
392	070A	235.70	11/30/2008	0508	PDO	08317322	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
337	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	35	GOING STRAIGHT
338	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	25	CHANGING LANES
339	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	70	PASSING
340	GUARD RAIL	E	SUV	NONE APPARENT	50	SPUN OUT OF CONTROL
341	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
342	GUARD RAIL	E	SUV	DRIVER UNFAMILIAR W/AREA	65	SPUN OUT OF CONTROL
343	BROADSIDE	N	SUV	NONE APPARENT	5	MAKING LEFT TURN
344	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	10	GOING STRAIGHT
345	OVERTURNING	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	40	SPUN OUT OF CONTROL
346	OVERTURNING	W	SUV	DRIVER INEXPERIENCE	50	SPUN OUT OF CONTROL
347	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	10	CHANGING LANES
348	REAR END	W	SUV	NONE APPARENT	65	GOING STRAIGHT
349	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	25	SLOWING
350	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	65	CHANGING LANES
351	SIGN	W	SUV	AGRESSIVE DRIVING	60	SPUN OUT OF CONTROL
352	OTHER FIXED OBJECT	E	SUV	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
353	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
354	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
355	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	GOING STRAIGHT
356	REAR END	E	SUV	NONE APPARENT	35	GOING STRAIGHT
357	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	50	PASSING
358	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
359	EMBANKMENT	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
360	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
361	REAR END	E	SUV	NONE APPARENT	30	GOING STRAIGHT
362	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
363	TREE	W	PASSENGER CAR/VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
364	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	5	PASSING
365	OVERTURNING	E	SUV	NONE APPARENT	65	GOING STRAIGHT
366	REAR END	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	55	GOING STRAIGHT
367	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	GOING STRAIGHT
368	REAR END	E	SUV	NONE APPARENT	50	GOING STRAIGHT
369	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	DISTRACTED/OTHER	60	PASSING
370	WILD ANIMAL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	GOING STRAIGHT
371	WILD ANIMAL	E	SUV	NONE APPARENT	65	GOING STRAIGHT
372	EMBANKMENT	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	65	GOING STRAIGHT
373	OVERTURNING	W	SUV	NONE APPARENT	45	SPUN OUT OF CONTROL
374	REAR END	W	HIT & RUN - UNKNOWN	NONE APPARENT	0	CHANGING LANES
375	REAR END	W	PASSENGER CAR/VAN	AGRESSIVE DRIVING	45	GOING STRAIGHT
376	REAR END	E	SUV	NONE APPARENT	60	GOING STRAIGHT
377	EMBANKMENT	W	PASSENGER CAR/VAN	NONE APPARENT	45	SPUN OUT OF CONTROL
378	SIGN	W	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	40	SPUN OUT OF CONTROL
379	GUARD RAIL	W	SUV	AGRESSIVE DRIVING	50	SPUN OUT OF CONTROL
380	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
381	GUARD RAIL	E	SUV	OTHER FACTOR	60	SPUN OUT OF CONTROL
382	INVOLVING OTHER OBJECT	W	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	65	GOING STRAIGHT
383	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
384	REAR END	W	PICKUP TRUCK/UTILITY VAN	DISTRACTED/OTHER	30	SLOWING
385	REAR END	W	SUV	NONE APPARENT	65	GOING STRAIGHT
386	REAR END	E	SUV	NONE APPARENT	35	SLOWING
387	REAR END	E	SUV	NONE APPARENT	60	GOING STRAIGHT
388	REAR END	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	80	PASSING
389	REAR END	E	SUV	NONE APPARENT	60	GOING STRAIGHT
390	REAR END	E	PASSENGER CAR/VAN	OTHER FACTOR	40	SLOWING
391	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
392	EMBANKMENT	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	35	SPUN OUT OF CONTROL

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
393	070A	235.70	8/14/2011	1930	PDO	11501120	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
394	070A	235.80	8/1/2008	1845	PDO	08311517	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
395	070A	235.80	11/26/2008	1620	PDO	08310560	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
396	070A	235.80	12/26/2012	0945	PDO	12525669	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
397	070A	235.90	6/15/2008	1445	INJ	08329823	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
398	070A	235.90	10/21/2008	1640	PDO	08306508	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
399	070A	235.90	2/15/2009	0740	PDO	09314755	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
400	070A	235.90	2/15/2009	0740	PDO	09314754	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
401	070A	235.90	1/30/2011	1105	PDO	11301727	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
402	070A	235.90	9/3/2010	1630	PDO	10321376	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
403	070A	235.90	8/11/2010	0935	PDO	10307986	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
404	070A	235.96	1/22/2011	1820	PDO	11301442	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
405	070A	235.96	1/22/2011	1820	PDO	11315550	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
406	070A	236.00	2/3/2008	1545	PDO	08308541	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
407	070A	236.00	1/25/2009	1255	PDO	09301629	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
408	070A	236.00	12/14/2008	1130	PDO	08329742	ON	NON-INTERSECTION	2	SNOWY	DAYLIGHT	NONE	N
409	070A	236.00	8/23/2012	1445	PDO	12515931	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
410	070A	236.00	7/10/2012	1426	PDO	12513079	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
411	070A	236.10	2/15/2009	0740	PDO	09303132	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
412	070A	236.20	5/1/2008	0919	PDO	08306464	ON	NON-INTERSECTION	2	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
413	070A	236.20	12/30/2009	1520	PDO	09326230	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
414	070A	236.20	6/30/2012	1715	PDO	12511947	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
415	070A	236.30	6/26/2009	1920	PDO	09308069	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
416	070A	236.30	2/22/2009	0710	PDO	09303128	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
417	070A	236.30	3/8/2009	1245	PDO	09303707	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
418	070A	236.30	1/3/2011	0850	PDO	11300061	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
419	070A	236.30	1/22/2011	1840	PDO	11301479	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
420	070A	236.30	8/30/2012	1435	PDO	12516996	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	RAIN	N
421	070A	236.30	8/30/2012	1435	INJ	12516320	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
422	070A	236.40	7/1/2012	1135	PDO	12511943	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
423	070A	236.40	9/16/2012	1335	PDO	12517506	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
424	070A	236.48	7/23/2010	1050	PDO	10311003	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
425	070A	236.48	7/23/2010	1050	PDO	10311002	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
426	070A	236.50	2/29/2008	0850	PDO	08312354	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	SNOW/SLEET/HAIL	N
427	070A	236.50	11/27/2010	0920	PDO	10315532	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
428	070A	236.50	2/4/2008	1730	PDO	08309099	OFF RIGHT	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
429	070A	236.50	1/22/2011	1710	PDO	11301441	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
430	070A	236.60	9/27/2008	1315	PDO	08315268	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
431	070A	236.60	3/11/2011	0910	PDO	11312581	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
432	070A	236.60	1/17/2011	1620	INJ	11312277	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
433	070A	236.60	9/11/2008	1835	INJ	08306495	OFF LEFT	NON-INTERSECTION	1	WET	DAWN OR DUSK	RAIN	N
434	070A	236.70	2/2/2009	0848	INJ	09302116	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
435	070A	236.70	9/7/2011	1415	PDO	11508844	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
436	070A	236.80	5/12/2010	0720	INJ	10311619	OFF RIGHT	NON-INTERSECTION	1	SLUSHY	DAYLIGHT	NONE	N
437	070A	236.80	12/19/2012	0935	INJ	12524957	ON	NON-INTERSECTION	2	ICY W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
438	070A	236.80	1/13/2010	2259	INJ	10322912	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
439	070A	236.90	6/19/2011	1325	PDO	11310686	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
440	070A	236.90	10/31/2009	2040	PDO	09324276	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
441	070A	236.90	7/6/2010	2321	PDO	10306376	OFF LEFT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	RAIN	N
442	070A	237.00	2/2/2008	1744	PDO	08312399	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
443	070A	237.00	8/12/2012	1715	PDO	12515749	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
444	070A	237.00	1/7/2010	0900	PDO	10323380	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
445	070A	237.00	2/19/2010	0937	PDO	10301325	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
446	070A	237.00	12/30/2010	2045	PDO	10318899	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
447	070A	237.10	9/11/2008	0700	PDO	08308591	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
448	070A	237.10	7/15/2011	1200	PDO	11311699	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
393	EMBANKMENT	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
394	REAR END	W	SUV	NONE APPARENT	50	GOING STRAIGHT
395	REAR END	E	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	55	GOING STRAIGHT
396	REAR END	W	SUV	DRIVER INEXPERIENCE	55	GOING STRAIGHT
397	REAR END	E	MOTORCYCLE	DRIVER UNFAMILIAR W/AREA	60	GOING STRAIGHT
398	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
399	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
400	REAR END	W	SUV	NONE APPARENT	60	GOING STRAIGHT
401	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	45	SLOWING
402	SIDESWIPE (SAME DIRECTION)	W	SUV	NONE APPARENT	35	GOING STRAIGHT
403	LARGE ROCKS/BOULDER	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
404	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	SPUN OUT OF CONTROL
405	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	SPUN OUT OF CONTROL
406	REAR END	E	SUV	NONE APPARENT	5	GOING STRAIGHT
407	REAR END	E	SUV	NONE APPARENT	40	GOING STRAIGHT
408	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	NONE APPARENT	40	CHANGING LANES
409	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
410	EMBANKMENT	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
411	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SLOWING
412	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	0	STOPPED IN TRAFFIC
413	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	45	AVOIDING OBJECT IN ROAD
414	WILD ANIMAL	E	SUV	NONE APPARENT	60	GOING STRAIGHT
415	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	60	GOING STRAIGHT
416	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	55	GOING STRAIGHT
417	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
418	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
419	REAR END	W	SUV	NONE APPARENT	35	SLOWING
420	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	70	GOING STRAIGHT
421	EMBANKMENT	W	PASSENGER CAR/VAN	AGRESSIVE DRIVING	70	SPUN OUT OF CONTROL
422	REAR END	W	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	15	GOING STRAIGHT
423	REAR END	E	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	45	GOING STRAIGHT
424	REAR END	W	PICKUP TRUCK/UTILITY VAN	DISTRACTED/OTHER	45	GOING STRAIGHT
425	REAR END	W	PASSENGER CAR/VAN	DISTRACTED/OTHER	60	GOING STRAIGHT
426	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	35	GOING STRAIGHT
427	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	25	GOING STRAIGHT
428	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
429	GUARD RAIL	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
430	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
431	REAR END	W	SUV	DRIVER UNFAMILIAR W/AREA	50	GOING STRAIGHT
432	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
433	EMBANKMENT	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
434	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER FATIGUE	60	GOING STRAIGHT
435	EMBANKMENT	W	PASSENGER CAR/VAN W/TRAILER	NONE APPARENT	65	SPUN OUT OF CONTROL
436	OVERTURNING	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
437	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
438	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	80	SPUN OUT OF CONTROL
439	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	10	GOING STRAIGHT
440	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
441	GUARD RAIL	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	65	SPUN OUT OF CONTROL
442	REAR END	E	SUV	NONE APPARENT	60	GOING STRAIGHT
443	REAR END	E	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	30	GOING STRAIGHT
444	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
445	GUARD RAIL	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
446	EMBANKMENT	E	SUV	DRIVER UNFAMILIAR W/AREA	55	SPUN OUT OF CONTROL
447	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	50	CHANGING LANES
448	REAR END	W	SUV	DRIVER INEXPERIENCE	50	AVOIDING OBJECT IN ROAD

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
449	070A	237.10	10/3/2011	1308	PDO	11503610	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
450	070A	237.10	10/23/2011	1913	PDO	11504845	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
451	070A	237.10	4/3/2012	0801	PDO	12506372	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
452	070A	237.10	12/16/2009	0921	PDO	09320744	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
453	070A	237.20	3/19/2009	0530	PDO	09304610	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
454	070A	237.20	3/19/2011	0415	PDO	11304954	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
455	070A	237.20	1/5/2010	1835	PDO	10325736	ON	NON-INTERSECTION	3	DRY	DARK-UNLIGHTED	NONE	N
456	070A	237.20	1/26/2008	1645	PDO	08308602	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
457	070A	237.20	12/30/2008	0900	PDO	08303374	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	WIND	N
458	070A	237.20	2/14/2010	0820	PDO	10301590	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
459	070A	237.20	2/2/2011	1730	PDO	11307945	ON	NON-INTERSECTION	2	ICY	DAWN OR DUSK	NONE	N
460	070A	237.20	7/15/2011	1145	PDO	11311493	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
461	070A	237.20	7/27/2012	1850	PDO	12514441	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
462	070A	237.20	10/10/2010	1437	PDO	10314053	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
463	070A	237.20	3/13/2011	0805	PDO	11304655	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
464	070A	237.20	3/19/2009	0652	PDO	09329126	OFF RIGHT	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
465	070A	237.20	2/14/2010	0820	PDO	10300954	OFF RIGHT	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
466	070A	237.20	2/14/2010	0820	PDO	10300953	OFF RIGHT	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
467	070A	237.20	9/21/2012	2050	PDO	12518340	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
468	070A	237.20	5/19/2012	1500	PDO	12509189	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
469	070A	237.20	3/3/2008	0755	PDO	08307748	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
470	070A	237.20	2/2/2011	1725	INJ	11307964	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
471	070A	237.30	12/15/2011	1715	PDO	11512214	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
472	070A	237.30	7/25/2009	1710	PDO	09316441	ON	NON-INTERSECTION	2	WET	DAYLIGHT	NONE	N
473	070A	237.30	2/14/2010	0820	PDO	10301588	ON	NON-INTERSECTION	3	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
474	070A	237.30	12/12/2009	2230	PDO	09320060	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
475	070A	237.30	2/14/2010	0850	PDO	10300914	OFF RIGHT	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
476	070A	237.30	12/1/2011	0740	PDO	11510159	OFF RIGHT	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
477	070A	237.30	11/8/2008	2210	PDO	08304449	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
478	070A	237.30	12/3/2011	0830	PDO	11510389	OFF RIGHT	NON-INTERSECTION	1	SNOWY W/VIS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N
479	070A	237.30	1/10/2011	0803	PDO	11301388	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
480	070A	237.40	12/22/2010	1540	PDO	10317790	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
481	070A	237.40	12/25/2008	1930	PDO	08328061	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
482	070A	237.40	12/30/2008	2055	PDO	08331317	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
483	070A	237.40	11/27/2010	0200	PDO	10315946	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
484	070A	237.40	1/6/2012	2120	PDO	12500322	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
485	070A	237.40	12/11/2012	1140	PDO	12523968	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
486	070A	237.49	12/19/2009	1620	PDO	09323728	ON	INTERSECTION RELATED	2	DRY	DAYLIGHT	NONE	Y (N)
487	070A	237.50	8/3/2008	1255	PDO	08315263	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
488	070A	237.50	2/20/2009	1915	PDO	09303322	ON	NON-INTERSECTION	3	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
489	070A	237.50	2/20/2009	1910	PDO	09303315	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
490	070A	237.50	12/23/2012	0040	PDO	12525294	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
491	070A	237.50	2/20/2009	1910	PDO	09316427	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
492	070A	237.50	2/20/2009	1913	PDO	09303321	OFF LEFT	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
493	070A	237.50	2/3/2011	1632	PDO	11307965	OFF RIGHT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	NONE	N
494	070A	237.50	10/26/2011	1705	PDO	11504668	OFF LEFT	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
495	070A	237.50	10/31/2008	0919	PDO	08304138	OFF LEFT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
496	070A	237.50	8/4/2011	2120	PDO	11500203	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
497	070A	237.51	7/5/2009	0313	INJ	09313669	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
498	070A	237.54	4/26/2008	0550	PDO	08304108	OFF LEFT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
499	070A	237.60	2/3/2010	0515	INJ	10323385	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
500	070A	237.60	4/3/2008	0830	PDO	08306447	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
501	070A	237.60	4/26/2009	0415	PDO	09306638	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
502	070A	237.60	12/11/2009	1940	PDO	09323724	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
503	070A	237.60	5/7/2010	0515	PDO	10303998	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
504	070A	237.60	11/3/2011	0930	PDO	11505826	ON	RAMP	2	DRY	DAYLIGHT	NONE	Y (J)

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
449	REAR END	W	SUV	NONE APPARENT	45	GOING STRAIGHT
450	REAR END	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	65	GOING STRAIGHT
451	SIDESWIPE (SAME DIRECTION)	E	SUV	DRIVER INEXPERIENCE	55	SPUN OUT OF CONTROL
452	GUARD RAIL	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	65	GOING STRAIGHT
453	OVERTURNING	E	PASSENGER CAR/VAN	DUI, DWAI, DUID	75	GOING STRAIGHT
454	OVERTURNING	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	GOING STRAIGHT
455	OTHER NON-COLLISION	E	PASSENGER CAR/VAN	NONE APPARENT	70	SPUN OUT OF CONTROL
456	REAR END	E	PICKUP TRUCK/UTILITY VAN	ILLNESS/MEDICAL	UK	DROVE WRONG WAY
457	REAR END	W	SUV	NONE APPARENT	50	GOING STRAIGHT
458	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	15	GOING STRAIGHT
459	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
460	REAR END	W	SUV	NONE APPARENT	45	GOING STRAIGHT
461	REAR END	W	SUV	NONE APPARENT	45	GOING STRAIGHT
462	SIDESWIPE (SAME DIRECTION)	E	SUV	DUI, DWAI, DUID	65	CHANGING LANES
463	SIDESWIPE (SAME DIRECTION)	W	SUV	NONE APPARENT	40	SPUN OUT OF CONTROL
464	PARKED MOTOR VEHICLE	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
465	PARKED MOTOR VEHICLE	W	SUV	NONE APPARENT	45	GOING STRAIGHT
466	PARKED MOTOR VEHICLE	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
467	WILD ANIMAL	E	SUV	NONE APPARENT	65	GOING STRAIGHT
468	GUARD RAIL	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	SPUN OUT OF CONTROL
469	EMBANKMENT	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
470	EMBANKMENT	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
471	SIDESWIPE (SAME DIRECTION)	E	HIT & RUN - UNKNOWN	NONE APPARENT	65	CHANGING LANES
472	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	40	SLOWING
473	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	10	GOING STRAIGHT
474	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
475	PARKED MOTOR VEHICLE	W	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
476	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	45	GOING STRAIGHT
477	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	80	SPUN OUT OF CONTROL
478	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	35	GOING STRAIGHT
479	LARGE ROCKS/BOULDER	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	55	SPUN OUT OF CONTROL
480	OVERTURNING	E	SUV	ASLEEP AT THE WHEEL	55	GOING STRAIGHT
481	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
482	GUARD RAIL	E	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
483	GUARD RAIL	E	PASSENGER CAR/VAN	DUI, DWAI, DUID	80	SPUN OUT OF CONTROL
484	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	75	SPUN OUT OF CONTROL
485	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	SPUN OUT OF CONTROL
486	BROADSIDE	W	PASSENGER CAR/VAN	DUI, DWAI, DUID	50	MAKING RIGHT TURN
487	REAR END	E	PICKUP TRUCK/UTILITY VAN	DISTRACTED/OTHER	20	GOING STRAIGHT
488	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
489	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	60	STOPPED IN TRAFFIC
490	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
491	GUARD RAIL	E	SUV	NONE APPARENT	60	GOING STRAIGHT
492	GUARD RAIL	E	SUV	NONE APPARENT	60	AVOIDING OBJECT IN ROAD
493	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
494	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
495	OVERTURNING	E	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
496	INVOLVING OTHER OBJECT	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	UK	SPUN OUT OF CONTROL
497	OVERTURNING	E	PASSENGER CAR/VAN	DUI, DWAI, DUID	90	SPUN OUT OF CONTROL
498	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
499	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	NONE APPARENT	60	PASSING
500	GUARD RAIL	W	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
501	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
502	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	80	SPUN OUT OF CONTROL
503	GUARD RAIL	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	60	SPUN OUT OF CONTROL
504	REAR END	W	SUV	DUI, DWAI, DUID	30	GOING STRAIGHT

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
505	070A	237.66	3/11/2009	1430	INJ	09304206	ON	AT INTERSECTION	2	DRY	DAYLIGHT	NONE	Y (N)
506	070A	237.70	5/29/2009	2335	PDO	09316562	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
507	070A	237.70	12/6/2008	0738	PDO	08301076	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	WIND	N
508	070A	237.70	3/29/2011	0830	PDO	11315636	ON	NON-INTERSECTION	3	WET	DAYLIGHT	NONE	N
509	070A	237.70	10/23/2011	1942	PDO	11504528	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
510	070A	237.70	3/5/2008	0603	PDO	08330097	OFF RIGHT	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
511	070A	237.80	2/17/2009	2355	PDO	09302759	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
512	070A	237.80	3/30/2008	1545	PDO	08312151	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
513	070A	237.80	12/30/2008	0900	PDO	08303403	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
514	070A	237.80	11/9/2010	1735	PDO	10319500	ON	NON-INTERSECTION	2	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
515	070A	237.80	4/26/2010	0720	PDO	10303304	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
516	070A	237.80	4/26/2010	0720	PDO	10303305	OFF RIGHT	NON-INTERSECTION	2	ICY	DAWN OR DUSK	NONE	N
517	070A	237.90	12/17/2010	1153	PDO	10317242	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
518	070A	237.90	12/12/2012	2315	PDO	12524184	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
519	070A	237.90	12/14/2012	1650	PDO	12524457	ON	NON-INTERSECTION	2	WET	DAWN OR DUSK	NONE	N
520	070A	237.90	7/17/2009	1710	PDO	09309444	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
521	070A	237.90	12/17/2010	1755	PDO	10317229	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
522	070A	237.90	1/7/2011	1957	PDO	11301390	OFF LEFT	NON-INTERSECTION	1	WET W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	NONE	N
523	070A	237.94	12/13/2012	1410	PDO	12525053	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
524	070A	238.00	1/8/2011	1805	PDO	11301293	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
525	070A	238.00	4/24/2011	1600	PDO	11315601	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
526	070A	238.00	7/10/2011	1800	PDO	11312108	ON	NON-INTERSECTION	3	WET	DAYLIGHT	RAIN	N
527	070A	238.00	8/23/2008	2030	PDO	08308589	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
528	070A	238.00	6/23/2009	1457	PDO	09308113	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
529	070A	238.00	11/13/2010	1325	PDO	10319742	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
530	070A	238.00	8/16/2012	1630	PDO	12515884	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
531	070A	238.00	2/26/2008	1008	PDO	08312352	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
532	070A	238.01	6/24/2012	1245	PDO	12511634	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
533	070A	238.10	2/4/2008	1704	PDO	08331067	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
534	070A	238.10	1/21/2012	1700	PDO	12501306	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
535	070A	238.10	6/28/2012	1630	PDO	12511848	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
536	070A	238.10	12/23/2009	1530	PDO	09327016	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
537	070A	238.10	11/7/2011	1430	PDO	11505796	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
538	070A	238.20	4/13/2012	1940	PDO	12506913	ON	NON-INTERSECTION	3	DRY	DARK-UNLIGHTED	NONE	N
539	070A	238.20	1/31/2011	1030	INJ	11312400	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
540	070A	238.30	3/2/2008	1855	PDO	08310500	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
541	070A	238.30	1/3/2011	0940	PDO	11300060	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
542	070A	238.30	3/25/2010	1617	FAT	10309209	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
543	070A	238.30	5/28/2008	0820	PDO	08306461	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
544	070A	238.40	3/3/2012	2250	PDO	12504547	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	WIND	N
545	070A	238.40	4/26/2010	0525	PDO	10303310	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
546	070A	238.50	9/5/2010	1820	PDO	10313371	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
547	070A	238.50	12/16/2010	1455	PDO	10317352	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
548	070A	238.60	3/12/2011	0750	PDO	11304657	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
549	070A	238.60	1/13/2009	1330	PDO	09301759	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	WIND	N
550	070A	238.70	3/25/2011	2015	PDO	11305733	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	NONE	N
551	070A	238.70	11/26/2011	0730	PDO	11509863	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	NONE	N
552	070A	238.70	9/5/2011	0548	PDO	11508944	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
553	070A	238.80	2/18/2011	2110	PDO	11303347	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
554	070A	238.80	1/10/2010	1025	PDO	10326053	OFF RIGHT	RAMP	1	ICY	DAYLIGHT	NONE	Y (B)
555	070A	238.89	3/26/2008	1620	PDO	08311480	ON	INTERSECTION RELATED	2	DRY	DAYLIGHT	NONE	Y (O)
556	070A	238.90	4/26/2010	0625	PDO	10303311	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
557	070A	238.90	5/24/2011	1452	PDO	11309329	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
558	070A	238.90	4/26/2010	0635	PDO	10303317	OFF LEFT	NON-INTERSECTION	2	ICY	DAWN OR DUSK	NONE	N
559	070A	238.90	5/23/2010	1445	PDO	10309334	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	WIND	N
560	070A	238.94	7/21/2011	0206	PDO	11311682	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	Y (A)

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
505	BROADSIDE	S	PASSENGER CAR/VAN	NONE APPARENT	5	MAKING LEFT TURN
506	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	65	GOING STRAIGHT
507	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	10	GOING STRAIGHT
508	REAR END	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	50	GOING STRAIGHT
509	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
510	GUARD RAIL	E	SUV	DRIVER FATIGUE	55	GOING STRAIGHT
511	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	AVOIDING OBJECT IN ROAD
512	REAR END	E	SUV	NONE APPARENT	10	GOING STRAIGHT
513	REAR END	W	SUV	NONE APPARENT	50	SLOWING
514	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
515	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
516	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
517	OVERTURNING	E	SUV	NONE APPARENT	65	SPUN OUT OF CONTROL
518	OVERTURNING	E	PASSENGER CAR/VAN	NONE APPARENT	75	SPUN OUT OF CONTROL
519	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	GOING STRAIGHT
520	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	65	WEAVING
521	GUARD RAIL	W	PASSENGER CAR/VAN	DUI, DWAI, DUID	65	MAKING RIGHT TURN
522	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	65	SPUN OUT OF CONTROL
523	OVERTURNING	W	SUV	ILLNESS/MEDICAL	65	GOING STRAIGHT
524	REAR END	E	SUV	DISTRACTED/OTHER	35	GOING STRAIGHT
525	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	30	GOING STRAIGHT
526	REAR END	E	SUV	NONE APPARENT	20	SLOWING
527	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	40	GOING STRAIGHT
528	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
529	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	40	CHANGING LANES
530	SIDESWIPE (SAME DIRECTION)	E	HIT & RUN - UNKNOWN	NONE APPARENT	UK	WEAVING
531	EMBANKMENT	W	SUV	NONE APPARENT	50	GOING STRAIGHT
532	WILD ANIMAL	W	SUV	NONE APPARENT	55	AVOIDING OBJECT IN ROAD
533	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	50	GOING STRAIGHT
534	REAR END	E	SUV	NONE APPARENT	65	GOING STRAIGHT
535	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	CHANGING LANES
536	LIGHT/UTILITY POLE	W	SUV	DRIVER UNFAMILIAR W/AREA	65	SPUN OUT OF CONTROL
537	VEHICLE DEBRIS OR CARGO	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	GOING STRAIGHT
538	REAR END	W	SUV	DISTRACTED/OTHER	20	GOING STRAIGHT
539	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	ILLNESS/MEDICAL	30	GOING STRAIGHT
540	OVERTURNING	E	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
541	REAR END	W	SUV	NONE APPARENT	55	GOING STRAIGHT
542	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	70	SPUN OUT OF CONTROL
543	CONCRETE HIGHWAY BARRIER	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	SPUN OUT OF CONTROL
544	GUARD RAIL	W	SUV	DRIVER INEXPERIENCE	60	PASSING
545	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
546	REAR END	E	PASSENGER CAR/VAN	DISTRACTED/PASSENGER	15	GOING STRAIGHT
547	SIGN	E	PASSENGER CAR/VAN	NONE APPARENT	65	WEAVING
548	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	GOING STRAIGHT
549	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	CHANGING LANES
550	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
551	REAR END	W	SUV	DRIVER INEXPERIENCE	50	CHANGING LANES
552	GUARD RAIL	W	SUV	DISTRACTED/OTHER	65	SPUN OUT OF CONTROL
553	CABLE RAIL	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	GOING STRAIGHT
554	LIGHT/UTILITY POLE	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	DRIVER INEXPERIENCE	35	SPUN OUT OF CONTROL
555	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	GOING STRAIGHT
556	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
557	CABLE RAIL	W	SUV W/TRAILER	NONE APPARENT	55	GOING STRAIGHT
558	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	45	SPUN OUT OF CONTROL
559	DELINEATOR POST	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
560	SIGN	S	PASSENGER CAR/VAN	EVADING LAW ENFORCEMENT OFFICER	70	SPUN OUT OF CONTROL

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
561	070A	239.00	3/29/2011	0040	PDO	11016072	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
562	070A	239.00	6/21/2009	1910	PDO	09033271	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
563	070A	239.00	12/4/2010	0730	PDO	10066972	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
564	070A	239.00	6/5/2010	1300	PDO	10032126	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
565	070A	239.00	4/26/2011	0520	PDO	11021623	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
566	070A	239.00	11/14/2008	0840	PDO	08070815	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
567	070A	239.00	12/28/2008	0250	PDO	08076984	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	WIND	N
568	070A	239.00	6/11/2010	1345	PDO	10031027	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
569	070A	239.00	12/17/2010	1016	PDO	10073082	OFF LEFT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
570	070A	239.00	5/12/2012	1920	PDO	12024431	OFF LEFT	NON-INTERSECTION	2	WET	DAWN OR DUSK	RAIN	N
571	070A	239.00	10/29/2012	0745	PDO	12058665	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
572	070A	239.10	11/27/2012	0601	PDO	12523450	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
573	070A	239.20	1/6/2009	0156	PDO	09300057	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
574	070A	239.20	5/21/2011	1940	INJ	11027500	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
575	070A	239.20	10/22/2010	1240	PDO	10058663	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
576	070A	239.20	8/22/2012	1650	PDO	12045391	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
577	070A	239.20	4/12/2010	1530	PDO	10019759	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
578	070A	239.22	5/25/2009	1710	PDO	09027478	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
579	070A	239.25	12/1/2008	0110	PDO	08076966	ON	NON-INTERSECTION	1	WET	DARK-LIGHTED	SNOW/SLEET/HAIL	N
580	070A	239.27	3/13/2011	0855	PDO	11014340	ON	NON-INTERSECTION	2	SLUSHY	DAWN OR DUSK	NONE	N
581	070A	239.30	4/17/2008	0805	PDO	08030227	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
582	070A	239.30	4/17/2008	0615	PDO	08030225	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
583	070A	239.30	3/15/2010	1020	PDO	10301913	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
584	070A	239.38	9/18/2008	1910	INJ	08052683	OFF LEFT	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
585	070A	239.40	4/16/2008	2100	PDO	08030224	OFF LEFT	NON-INTERSECTION	1	SLUSHY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
586	070A	239.40	9/8/2010	1720	PDO	10074545	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
587	070A	239.46	1/9/2012	1840	PDO	12002075	OFF LEFT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
588	070A	239.48	1/8/2011	1850	PDO	11000556	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
589	070A	239.50	7/7/2012	2230	PDO	12039746	ON	NON-INTERSECTION	2	WET	DARK-LIGHTED	RAIN	N
590	070A	239.50	6/20/2009	1440	PDO	09076348	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
591	070A	239.50	8/15/2010	1800	PDO	10044443	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
592	070A	239.50	10/31/2012	1945	PDO	12520793	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
593	070A	239.50	10/5/2008	1815	PDO	08064328	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
594	070A	239.50	1/29/2009	1435	INJ	09005536	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
595	070A	239.50	3/24/2010	1105	PDO	10027234	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
596	070A	239.50	4/7/2010	0650	PDO	10018234	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
597	070A	239.50	6/13/2010	2046	PDO	10032127	OFF LEFT	NON-INTERSECTION	1	WET	DARK-LIGHTED	RAIN	N
598	070A	239.50	8/14/2011	1925	PDO	11048157	OFF LEFT	NON-INTERSECTION	1	WET	DAWN OR DUSK	RAIN	N
599	070A	239.58	4/3/2012	0815	PDO	12015653	OFF LEFT	RAMP	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	Y (B)
600	070A	239.60	7/5/2012	1520	PDO	12041008	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
601	070A	239.61	2/26/2008	1050	INJ	08014166	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
602	070A	239.64	6/1/2009	0655	INJ	09033261	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
603	070A	239.64	6/23/2009	1455	PDO	09033266	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
604	070A	239.65	4/17/2008	0700	PDO	08304116	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
605	070A	239.65	10/11/2010	1541	INJ	10058664	ON	AT INTERSECTION	2	DRY	DAYLIGHT	NONE	Y (O)
606	070A	239.65	10/16/2010	2050	PDO	10058670	ON	AT INTERSECTION	2	DRY	DARK-LIGHTED	NONE	Y (O)
607	070A	239.65	10/31/2010	1640	PDO	10065041	ON	AT INTERSECTION	2	DRY	DAYLIGHT	NONE	Y (O)
608	070A	239.70	9/28/2008	1500	PDO	08058509	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
609	070A	239.70	7/5/2010	1940	PDO	10036480	ON	NON-INTERSECTION	3	DRY	DAWN OR DUSK	NONE	N
610	070A	239.70	7/29/2012	1740	PDO	12040672	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
611	070A	239.70	5/24/2008	1609	PDO	08035710	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
612	070A	239.75	5/22/2012	0135	PDO	12025331	ON	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
613	070A	239.78	4/4/2009	0600	PDO	09021416	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
614	070A	239.80	3/14/2009	0800	PDO	09015526	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
615	070A	239.80	11/19/2008	2130	PDO	08070814	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
616	070A	239.80	4/17/2008	0005	PDO	08030218	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
561	OVERTURNING	W	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
562	REAR END	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	40	SLOWING
563	REAR END	W	PASSENGER CAR/VAN	OTHER FACTOR	20	STOPPED IN TRAFFIC
564	SIGN	W	SUV	ASLEEP AT THE WHEEL	60	GOING STRAIGHT
565	SIGN	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
566	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER INEXPERIENCE	60	GOING STRAIGHT
567	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	GOING STRAIGHT
568	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	GOING STRAIGHT
569	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
570	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	OTHER FACTOR	UK	SPUN OUT OF CONTROL
571	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	UK	GOING STRAIGHT
572	CABLE RAIL	E	PASSENGER CAR/VAN	DUI, DWAI, DUID	60	GOING STRAIGHT
573	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	82	AVOIDING OBJECT IN ROAD
574	GUARD RAIL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
575	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	GOING STRAIGHT
576	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	GOING STRAIGHT
577	VEHICLE DEBRIS OR CARGO	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	60	GOING STRAIGHT
578	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	GOING STRAIGHT
579	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	GOING STRAIGHT
580	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	30	SLOWING
581	LIGHT/UTILITY POLE	W	PASSENGER CAR/VAN	NONE APPARENT	45	SLOWING
582	EMBANKMENT	W	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	45	SPUN OUT OF CONTROL
583	TREE	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	40	SPUN OUT OF CONTROL
584	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	CHANGING LANES
585	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	ILLNESS/MEDICAL	60	GOING STRAIGHT
586	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	UK	GOING STRAIGHT
587	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	50	SPUN OUT OF CONTROL
588	SIDESWIPE (SAME DIRECTION)	E	SUV	DUI, DWAI, DUID	10	WEAVING
589	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	60	WEAVING
590	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	OTHER FACTOR	55	GOING STRAIGHT
591	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	PASSING
592	GUARD RAIL	E	SUV	DRIVER UNFAMILIAR W/AREA	55	AVOIDING OBJECT IN ROAD
593	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	60	GOING STRAIGHT
594	CONCRETE HIGHWAY BARRIER	E	SUV	AGRESSIVE DRIVING	78	GOING STRAIGHT
595	CONCRETE HIGHWAY BARRIER	E	SUV	NONE APPARENT	62	GOING STRAIGHT
596	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	50	GOING STRAIGHT
597	CONCRETE HIGHWAY BARRIER	E	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	55	GOING STRAIGHT
598	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	NONE APPARENT	65	SPUN OUT OF CONTROL
599	SIGN	E	SCHOOL BUS (ALL SCHOOL BUSSES)	NONE APPARENT	20	CHANGING LANES
600	CONCRETE HIGHWAY BARRIER	S	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	MAKING RIGHT TURN
601	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	65	GOING STRAIGHT
602	GUARD RAIL	E	PASSENGER CAR/VAN	ILLNESS/MEDICAL	45	SPUN OUT OF CONTROL
603	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	GOING STRAIGHT
604	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	SPUN OUT OF CONTROL
605	BROADSIDE	E	SUV	OTHER FACTOR	10	MAKING LEFT TURN
606	BROADSIDE	E	SUV	NONE APPARENT	5	MAKING LEFT TURN
607	BROADSIDE	E	SUV	DRIVER UNFAMILIAR W/AREA	15	GOING STRAIGHT
608	REAR END	W	PASSENGER CAR/VAN	NONE APPARENT	10	GOING STRAIGHT
609	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	15	SLOWING
610	REAR END	E	SUV	DISTRACTED/OTHER	20	GOING STRAIGHT
611	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	40	GOING STRAIGHT
612	WILD ANIMAL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	GOING STRAIGHT
613	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	GOING STRAIGHT
614	REAR END	W	SUV	DRIVER INEXPERIENCE	55	GOING STRAIGHT
615	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
616	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	40	CHANGING LANES

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
617	070A	239.80	7/29/2009	1850	PDO	09041481	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
618	070A	239.80	7/21/2010	1553	PDO	10310803	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
619	070A	239.80	4/30/2011	1200	PDO	11050531	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
620	070A	239.85	3/11/2011	1740	PDO	11014338	ON	NON-INTERSECTION	2	DRY	DAWN OR DUSK	NONE	N
621	070A	239.85	9/14/2012	1531	INJ	12049491	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
622	070A	239.87	5/1/2011	1355	PDO	11023357	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
623	070A	239.90	2/15/2008	1010	PDO	08012312	ON	NON-INTERSECTION	6	DRY	DAYLIGHT	NONE	N
624	070A	239.90	2/12/2012	0556	PDO	12008449	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
625	070A	239.90	2/14/2010	0915	PDO	10008938	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
626	070A	239.90	4/17/2008	0734	PDO	08030226	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
627	070A	239.90	6/10/2009	0650	PDO	09033263	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
628	070A	239.94	7/26/2008	1615	INJ	08047237	OFF RIGHT	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
629	070A	240.00	2/23/2008	1000	PDO	08010652	ON	NON-INTERSECTION	5	DRY	DAYLIGHT	NONE	N
630	070A	240.00	12/6/2008	1845	PDO	08076971	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
631	070A	240.00	1/10/2009	1915	PDO	09300544	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
632	070A	240.00	7/27/2009	1225	PDO	09039764	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
633	070A	240.00	7/25/2011	1605	PDO	11043101	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
634	070A	240.00	10/1/2011	1620	PDO	11053890	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
635	070A	240.00	11/25/2011	1340	PDO	11067348	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
636	070A	240.00	3/4/2012	1610	PDO	12011901	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
637	070A	240.00	8/28/2012	1420	PDO	12046815	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
638	070A	240.00	7/7/2010	1500	PDO	10038536	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
639	070A	240.00	9/14/2011	1050	PDO	11050547	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
640	070A	240.00	10/18/2009	0320	PDO	09058996	ON	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
641	070A	240.00	7/14/2009	1515	PDO	09036632	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
642	070A	240.00	4/26/2010	0555	PDO	10022077	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
643	070A	240.00	12/30/2010	1930	PDO	10073658	OFF RIGHT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
644	070A	240.00	10/13/2008	0340	PDO	08064336	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
645	070A	240.00	10/13/2008	0345	PDO	08064361	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
646	070A	240.00	4/26/2010	0445	PDO	10022073	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
647	070A	240.00	8/3/2010	2120	PDO	10041594	OFF LEFT	NON-INTERSECTION	1	WET	DARK-LIGHTED	RAIN	N
648	070A	240.00	12/3/2011	0605	PDO	11067347	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
649	070A	240.00	11/2/2010	0942	PDO	10060416	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
650	070A	240.00	2/22/2010	1043	PDO	10009373	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
651	070A	240.03	2/22/2010	1023	PDO	10015580	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
652	070A	240.10	6/25/2012	1430	PDO	12034437	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
653	070A	240.10	7/15/2009	0600	PDO	09041479	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
654	070A	240.10	2/4/2008	1655	PDO	08027115	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
655	070A	240.10	6/25/2012	1420	PDO	12034436	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
656	070A	240.10	2/5/2008	1045	PDO	08007646	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
657	070A	240.10	1/19/2011	0830	PDO	11001704	OFF LEFT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
658	070A	240.10	9/4/2011	0155	PDO	11050543	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
659	070A	240.10	1/12/2012	1845	PDO	12002073	OFF LEFT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DARK-UNLIGHTED	NONE	N
660	070A	240.10	1/7/2008	2030	PDO	08001437	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
661	070A	240.11	2/5/2008	1025	PDO	08008246	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
662	070A	240.20	8/14/2011	1410	PDO	11046614	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
663	070A	240.20	4/4/2009	0705	PDO	09021420	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
664	070A	240.20	8/28/2011	0505	PDO	11045404	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
665	070A	240.20	4/15/2010	0530	PDO	10021250	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
666	070A	240.25	3/5/2010	0900	PDO	10010732	ON	NON-INTERSECTION	4	ICY	DAYLIGHT	NONE	N
667	070A	240.30	7/1/2009	2130	PDO	09076347	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
668	070A	240.30	8/14/2012	0600	INJ	12042651	OFF RIGHT	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
669	070A	240.40	7/11/2009	1135	PDO	09039759	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
670	070A	240.40	3/29/2009	1448	INJ	09015541	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
671	070A	240.50	3/15/2008	0900	PDO	08019372	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
672	070A	240.50	4/13/2008	2025	PDO	08030223	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
617	GUARD RAIL	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	GOING STRAIGHT
618	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DUI, DWAI, DUID	60	WEAVING
619	VEHICLE DEBRIS OR CARGO	E	OTHER - SEE REPORT	NONE APPARENT	60	GOING STRAIGHT
620	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	75	SPUN OUT OF CONTROL
621	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	60	GOING STRAIGHT
622	CONCRETE HIGHWAY BARRIER	W	SUV W/TRAILER	OTHER FACTOR	60	SPUN OUT OF CONTROL
623	REAR END	W	PASSENGER CAR/VAN	AGRESSIVE DRIVING	35	GOING STRAIGHT
624	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	AVOIDING OBJECT IN ROAD
625	SIGN	W	SUV	NONE APPARENT	50	GOING STRAIGHT
626	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	GOING STRAIGHT
627	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER UNFAMILIAR W/AREA	65	GOING STRAIGHT
628	GUARD RAIL	W	PASSENGER CAR/VAN	AGRESSIVE DRIVING	70	PASSING
629	REAR END	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	35	GOING STRAIGHT
630	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	15	GOING STRAIGHT
631	REAR END	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	CHANGING LANES
632	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	10	GOING STRAIGHT
633	REAR END	E	SUV	NONE APPARENT	25	CHANGING LANES
634	REAR END	E	SUV	DRIVER INEXPERIENCE	30	GOING STRAIGHT
635	REAR END	W	SUV	AGRESSIVE DRIVING	60	GOING STRAIGHT
636	REAR END	E	SUV	NONE APPARENT	15	SLOWING
637	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	60	SPUN OUT OF CONTROL
638	SIDESWIPE (SAME DIRECTION)	W	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	0	CHANGING LANES
639	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	EVADING LAW ENFORCEMENT OFFICER	75	SPUN OUT OF CONTROL
640	WILD ANIMAL	W	SUV	NONE APPARENT	60	GOING STRAIGHT
641	GUARD RAIL	E	SUV	DISTRACTED/OTHER	60	GOING STRAIGHT
642	GUARD RAIL	W	SUV	DRIVER INEXPERIENCE	60	GOING STRAIGHT
643	GUARD RAIL	E	SUV	NONE APPARENT	50	SPUN OUT OF CONTROL
644	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	65	GOING STRAIGHT
645	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	65	GOING STRAIGHT
646	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER INEXPERIENCE	60	GOING STRAIGHT
647	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	70	GOING STRAIGHT
648	CONCRETE HIGHWAY BARRIER	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	40	WEAVING
649	VEHICLE DEBRIS OR CARGO	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	60	GOING STRAIGHT
650	EMBANKMENT	E	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	55	GOING STRAIGHT
651	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	NONE APPARENT	55	GOING STRAIGHT
652	REAR END	E	SUV	NONE APPARENT	20	CHANGING LANES
653	WILD ANIMAL	E	SUV	NONE APPARENT	50	GOING STRAIGHT
654	GUARD RAIL	E	SUV	DRIVER UNFAMILIAR W/AREA	40	SPUN OUT OF CONTROL
655	GUARD RAIL	E	PASSENGER CAR/VAN	DRIVER FATIGUE	60	GOING STRAIGHT
656	CONCRETE HIGHWAY BARRIER	E	SUV	DRIVER UNFAMILIAR W/AREA	50	GOING STRAIGHT
657	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	70	SPUN OUT OF CONTROL
658	CONCRETE HIGHWAY BARRIER	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	OTHER FACTOR	70	GOING STRAIGHT
659	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	68	GOING STRAIGHT
660	EMBANKMENT	E	SUV	OTHER FACTOR	40	GOING STRAIGHT
661	GUARD RAIL	E	SUV	OTHER FACTOR	45	SPUN OUT OF CONTROL
662	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	30	GOING STRAIGHT
663	GUARD RAIL	W	SUV	DRIVER INEXPERIENCE	60	GOING STRAIGHT
664	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	ASLEEP AT THE WHEEL	60	GOING STRAIGHT
665	EMBANKMENT	E	VEH COMBO (10,001 LBS AND OVER)	DRIVER UNFAMILIAR W/AREA	UK	GOING STRAIGHT
666	SIDESWIPE (SAME DIRECTION)	E	SUV	AGRESSIVE DRIVING	60	GOING STRAIGHT
667	VEHICLE DEBRIS OR CARGO	E	HIT & RUN - UNKNOWN	NONE APPARENT	UK	GOING STRAIGHT
668	EMBANKMENT	E	SUV	ASLEEP AT THE WHEEL	60	GOING STRAIGHT
669	EMBANKMENT	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
670	OTHER FIXED OBJECT	E	PICKUP TRUCK/UTILITY VAN	DRIVER FATIGUE	60	GOING STRAIGHT
671	REAR END	W	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	20	GOING STRAIGHT
672	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	30	SLOWING

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
673	070A	240.50	9/5/2008	0815	PDO	08058503	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
674	070A	240.50	6/14/2009	1445	PDO	09033265	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
675	070A	240.50	9/7/2009	1730	PDO	09051267	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	RAIN	N
676	070A	240.50	11/8/2009	1550	PDO	09062451	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
677	070A	240.50	11/18/2012	1541	PDO	12062835	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
678	070A	240.50	11/14/2009	1500	PDO	09064668	ON	NON-INTERSECTION	2	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
679	070A	240.50	1/12/2012	2028	PDO	12002096	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
680	070A	240.50	3/18/2009	0305	PDO	09322570	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
681	070A	240.50	5/9/2010	0655	PDO	10025399	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
682	070A	240.50	9/14/2012	2020	PDO	12049490	ON	NON-INTERSECTION	2	DRY	DARK-UNLIGHTED	NONE	N
683	070A	240.50	2/22/2010	0826	INJ	10009369	OFF LEFT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
684	070A	240.50	1/1/2011	2105	PDO	11000395	OFF RIGHT	NON-INTERSECTION	1	WET	DARK-UNLIGHTED	NONE	N
685	070A	240.50	3/5/2011	1735	PDO	11013101	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
686	070A	240.50	6/13/2010	0800	PDO	10800028	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
687	070A	240.50	5/4/2012	2012	PDO	12023664	OFF LEFT	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
688	070A	240.50	3/18/2009	0230	PDO	09015524	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
689	070A	240.50	2/1/2011	0600	PDO	11008264	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	NONE	N
690	070A	240.60	5/11/2012	1340	PDO	12024432	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	SNOW/SLEET/HAIL	N
691	070A	240.60	5/14/2008	1040	PDO	08017620	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
692	070A	240.80	5/12/2009	2130	PDO	09027489	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
693	070A	240.80	10/7/2012	2320	PDO	12054856	OFF LEFT	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
694	070A	240.80	11/14/2009	1530	PDO	09064767	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
695	070A	240.92	11/14/2009	1750	PDO	09064768	ON	NON-INTERSECTION	2	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
696	070A	241.00	3/30/2008	1805	PDO	08019371	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
697	070A	241.00	4/6/2008	1735	PDO	08030237	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
698	070A	241.00	1/16/2009	1850	PDO	09005532	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
699	070A	241.00	1/16/2009	1850	PDO	09005533	ON	NON-INTERSECTION	2	DRY	DARK-LIGHTED	NONE	N
700	070A	241.00	1/16/2010	0945	PDO	10003051	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
701	070A	241.00	6/27/2010	1400	PDO	10034283	ON	NON-INTERSECTION	5	DRY	DAYLIGHT	NONE	N
702	070A	241.00	11/17/2010	1148	PDO	10065004	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
703	070A	241.00	11/17/2010	1240	PDO	10065042	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
704	070A	241.00	12/5/2010	1725	PDO	10066980	ON	NON-INTERSECTION	3	DRY	DARK-LIGHTED	NONE	N
705	070A	241.00	12/11/2010	0653	PDO	10069787	ON	NON-INTERSECTION	2	ICY	DAWN OR DUSK	NONE	N
706	070A	241.00	1/30/2012	1515	PDO	12003788	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
707	070A	241.00	8/19/2012	1645	PDO	12043518	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
708	070A	241.00	11/18/2012	1500	PDO	12062832	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
709	070A	241.00	11/18/2012	1525	PDO	12062831	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
710	070A	241.00	10/28/2009	1750	PDO	09324620	ON	NON-INTERSECTION	2	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
711	070A	241.00	1/30/2009	1625	PDO	09005548	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
712	070A	241.00	3/27/2012	1020	PDO	12018096	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
713	070A	241.10	9/18/2010	1756	PDO	10051671	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
714	070A	241.10	7/8/2012	1430	PDO	12039790	ON	NON-INTERSECTION	2	WET	DAYLIGHT	RAIN	N
715	070A	241.10	11/18/2012	1550	PDO	12522701	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
716	070A	241.10	10/11/2008	1445	INJ	08064333	OFF RIGHT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
717	070A	241.12	6/6/2012	1412	PDO	12028117	ON	RAMP	4	DRY	DAYLIGHT	NONE	Y (B)
718	070A	241.16	1/28/2009	2025	PDO	09005538	OFF RIGHT	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
719	070A	241.20	8/2/2009	1205	PDO	09041489	ON	NON-INTERSECTION	7	DRY	DAYLIGHT	NONE	N
720	070A	241.20	3/21/2012	1525	PDO	12013556	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
721	070A	241.20	11/25/2011	1620	PDO	11065030	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
722	070A	241.20	4/7/2011	1820	PDO	11018094	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
723	070A	241.28	1/5/2008	0710	PDO	08001502	ON	NON-INTERSECTION	3	DRY W/VIS ICY ROAD TREATMENT	DAWN OR DUSK	NONE	N
724	070A	241.28	1/5/2008	0710	PDO	08001435	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAWN OR DUSK	NONE	N
725	070A	241.28	2/21/2010	1637	PDO	10009381	OFF LEFT	RAMP	1	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	Y (B)
726	070A	241.29	8/26/2009	1220	PDO	09046621	OFF LEFT	RAMP	1	DRY	DAYLIGHT	NONE	Y (H)
727	070A	241.30	6/6/2012	1510	PDO	12028116	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
728	070A	241.30	11/17/2010	1333	PDO	10073656	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
673	REAR END	W	PICKUP TRUCK/UTILITY VAN W/TRAILER	AGRESSIVE DRIVING	60	GOING STRAIGHT
674	REAR END	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	45	CHANGING LANES
675	REAR END	E	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	10	GOING STRAIGHT
676	REAR END	E	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	15	GOING STRAIGHT
677	REAR END	E	PASSENGER CAR/VAN	DISTRACTED/RADIO	15	SLOWING
678	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	NONE APPARENT	10	SPUN OUT OF CONTROL
679	SIDESWIPE (SAME DIRECTION)	E	HIT & RUN - UNKNOWN	OTHER FACTOR	55	CHANGING LANES
680	PARKED MOTOR VEHICLE	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	1	ENTERING/LEAVING PARKED POSITION
681	WILD ANIMAL	E	SUV	NONE APPARENT	60	GOING STRAIGHT
682	WILD ANIMAL	W	SUV	NONE APPARENT	45	GOING STRAIGHT
683	GUARD RAIL	E	SUV	OTHER FACTOR	UK	GOING STRAIGHT
684	GUARD RAIL	E	PASSENGER CAR/VAN	NONE APPARENT	70	SPUN OUT OF CONTROL
685	GUARD RAIL	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	75	SPUN OUT OF CONTROL
686	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	SPUN OUT OF CONTROL
687	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	DISTRACTED/CELL PHONE	70	GOING STRAIGHT
688	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	GOING STRAIGHT
689	LARGE ROCKS/BOULDER	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	60	SPUN OUT OF CONTROL
690	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	65	SPUN OUT OF CONTROL
691	OTHER NON-COLLISION	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	50	SLOWING
692	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
693	CONCRETE HIGHWAY BARRIER	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	70	GOING STRAIGHT
694	TREE	W	SUV	NONE APPARENT	40	SPUN OUT OF CONTROL
695	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	DRIVER INEXPERIENCE	25	SPUN OUT OF CONTROL
696	REAR END	E	SUV	DRIVER UNFAMILIAR W/AREA	35	GOING STRAIGHT
697	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	20	SLOWING
698	REAR END	W	PICKUP TRUCK/UTILITY VAN	DRIVER UNFAMILIAR W/AREA	10	SLOWING
699	REAR END	W	PICKUP TRUCK/UTILITY VAN	OTHER FACTOR	10	SLOWING
700	REAR END	W	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	25	SLOWING
701	REAR END	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	NONE APPARENT	60	GOING STRAIGHT
702	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	SLOWING
703	REAR END	E	PASSENGER CAR/VAN	OTHER FACTOR	35	GOING STRAIGHT
704	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	20	GOING STRAIGHT
705	REAR END	W	SUV	NONE APPARENT	5	SLOWING
706	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	15	GOING STRAIGHT
707	REAR END	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	20	GOING STRAIGHT
708	REAR END	E	SUV	NONE APPARENT	15	GOING STRAIGHT
709	REAR END	E	SUV	DRIVER UNFAMILIAR W/AREA	20	STOPPED IN TRAFFIC
710	SIDESWIPE (SAME DIRECTION)	E	SUV	NONE APPARENT	50	SPUN OUT OF CONTROL
711	LIGHT/UTILITY POLE	E	PICKUP TRUCK/UTILITY VAN	ASLEEP AT THE WHEEL	55	GOING STRAIGHT
712	VEHICLE DEBRIS OR CARGO	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
713	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	10	SLOWING
714	REAR END	E	SUV	NONE APPARENT	25	GOING STRAIGHT
715	REAR END	E	SUV	NONE APPARENT	30	GOING STRAIGHT
716	LIGHT/UTILITY POLE	E	PASSENGER CAR/VAN	ILLNESS/MEDICAL	60	GOING STRAIGHT
717	REAR END	E	PICKUP TRUCK/UTILITY VAN	DISTRACTED/PASSENGER	40	CHANGING LANES
718	SIGN	W	SUV	ILLNESS/MEDICAL	50	GOING STRAIGHT
719	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	40	SLOWING
720	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	5	OTHER
721	WILD ANIMAL	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	55	GOING STRAIGHT
722	CONCRETE HIGHWAY BARRIER	E	SUV	DRIVER UNFAMILIAR W/AREA	65	SPUN OUT OF CONTROL
723	REAR END	W	PASSENGER CAR/VAN	AGRESSIVE DRIVING	30	GOING STRAIGHT
724	REAR END	W	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	30	SLOWING
725	OTHER FIXED OBJECT	E	PASSENGER CAR/VAN	NONE APPARENT	25	MAKING RIGHT TURN
726	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	50	GOING STRAIGHT
727	REAR END	E	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	25	SLOWING
728	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	DISTRACTED/CELL PHONE	40	CHANGING LANES

#	Hwy	MP	Date	Time	Severity	Serial #	Location	Road Description	Vehicles	Road Condition	Lighting	Weather	Ramp
729	070A	241.30	11/9/2010	1750	PDO	10062186	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
730	070A	241.30	11/9/2010	1750	PDO	10062178	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
731	070A	241.35	3/31/2010	1340	PDO	10027484	ON	RAMP	2	DRY	DAYLIGHT	NONE	Y (C)
732	070A	241.50	1/7/2008	1925	PDO	08001439	ON	NON-INTERSECTION	2	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
733	070A	241.50	3/7/2010	1420	PDO	10014917	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
734	070A	241.50	10/26/2011	0730	PDO	11059563	ON	NON-INTERSECTION	7	SNOWY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
735	070A	241.50	10/21/2012	1150	PDO	12058489	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
736	070A	241.50	12/14/2012	1700	PDO	12071003	ON	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAWN OR DUSK	NONE	N
737	070A	241.50	8/6/2012	1640	PDO	12041030	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
738	070A	241.50	11/20/2008	1045	PDO	08317328	ON	NON-INTERSECTION	1	WET	DAYLIGHT	NONE	N
739	070A	241.50	11/25/2009	2205	PDO	09069502	ON	NON-INTERSECTION	1	DRY	DARK-UNLIGHTED	NONE	N
740	070A	241.50	2/3/2012	1655	PDO	12005931	OFF RIGHT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
741	070A	241.50	1/7/2008	1925	PDO	08001436	OFF LEFT	NON-INTERSECTION	1	SNOWY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
742	070A	241.50	10/5/2008	1120	PDO	08064338	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
743	070A	241.50	4/26/2009	0535	PDO	09021426	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N
744	070A	241.50	5/3/2010	0054	PDO	10025395	OFF RIGHT	NON-INTERSECTION	1	SLUSHY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
745	070A	241.50	8/3/2010	1630	PDO	10041592	OFF LEFT	NON-INTERSECTION	1	WET	DAYLIGHT	RAIN	N
746	070A	241.50	3/13/2011	0820	PDO	11014339	OFF LEFT	NON-INTERSECTION	1	SLUSHY	DAWN OR DUSK	NONE	N
747	070A	241.50	4/26/2011	0305	PDO	11021621	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
748	070A	241.50	4/26/2011	0400	PDO	11021622	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-UNLIGHTED	NONE	N
749	070A	241.50	2/3/2012	1719	PDO	12004348	OFF LEFT	NON-INTERSECTION	1	ICY	DAWN OR DUSK	SNOW/SLEET/HAIL	N
750	070A	241.50	1/10/2012	0755	PDO	12001352	OFF RIGHT	NON-INTERSECTION	1	ICY	DAYLIGHT	NONE	N
751	070A	241.50	12/22/2012	0835	PDO	12071006	OFF RIGHT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAWN OR DUSK	NONE	N
752	070A	241.50	12/22/2012	0840	PDO	12071005	OFF RIGHT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAWN OR DUSK	NONE	N
753	070A	241.60	5/27/2009	0500	PDO	09027476	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
754	070A	241.75	3/19/2010	1320	PDO	10014919	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
755	070A	241.80	2/19/2010	1818	PDO	10009370	ON	NON-INTERSECTION	2	ICY	DARK-LIGHTED	SNOW/SLEET/HAIL	N
756	070A	241.80	2/21/2010	0714	PDO	10009372	OFF RIGHT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
757	070A	241.82	12/31/2010	0351	PDO	10073661	OFF LEFT	NON-INTERSECTION	1	ICY	DARK-LIGHTED	NONE	N
758	070A	241.88	11/2/2011	1334	PDO	11062200	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
759	070A	241.90	2/9/2009	0810	PDO	09010681	OFF LEFT	NON-INTERSECTION	1	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	WIND	N
760	070A	242.00	3/2/2008	1130	PDO	08019365	ON	NON-INTERSECTION	3	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N
761	070A	242.00	3/8/2008	1430	PDO	08019368	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
762	070A	242.00	3/8/2008	1430	PDO	08019367	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
763	070A	242.00	3/18/2011	0550	PDO	11014342	ON	NON-INTERSECTION	2	ICY	DARK-LIGHTED	NONE	N
764	070A	242.00	7/4/2011	1445	PDO	11036601	ON	NON-INTERSECTION	3	DRY	DAYLIGHT	NONE	N
765	070A	242.00	3/10/2012	0845	PDO	12012239	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
766	070A	242.00	7/19/2012	1345	PDO	12039750	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
767	070A	242.00	11/18/2012	1415	PDO	12062830	ON	NON-INTERSECTION	4	DRY	DAYLIGHT	NONE	N
768	070A	242.00	5/2/2012	1500	PDO	12023662	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
769	070A	242.00	12/1/2012	1245	PDO	12066078	ON	NON-INTERSECTION	2	DRY	DAYLIGHT	NONE	N
770	070A	242.00	7/21/2009	2227	PDO	09316565	ON	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N
771	070A	242.00	9/22/2009	1630	PDO	09056116	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
772	070A	242.00	8/29/2010	0545	PDO	10051668	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
773	070A	242.00	8/4/2012	0500	PDO	12045390	ON	NON-INTERSECTION	1	DRY	DAWN OR DUSK	NONE	N
774	070A	242.00	8/6/2012	1115	PDO	12043952	ON	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
775	070A	242.00	12/20/2008	1040	PDO	08076980	OFF LEFT	NON-INTERSECTION	2	DRY W/VIS ICY ROAD TREATMENT	DAYLIGHT	NONE	N
776	070A	242.00	2/22/2010	0757	PDO	10009371	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	NONE	N
777	070A	242.00	2/23/2011	1430	PDO	11011997	OFF RIGHT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
778	070A	242.00	8/6/2011	1050	PDO	11041923	OFF LEFT	NON-INTERSECTION	1	DRY	DAYLIGHT	NONE	N
779	070A	242.00	4/3/2012	1030	PDO	12015802	OFF LEFT	NON-INTERSECTION	1	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N
780	070A	242.00	6/9/2010	2200	PDO	10031028	ON	NON-INTERSECTION	1	DRY	DARK-LIGHTED	NONE	N

#	Accident Type	Direction 1	Vehicle 1	Factor 1	Speed 1	Vehicle Movement 1
729	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER UNFAMILIAR W/AREA	40	GOING STRAIGHT
730	CONCRETE HIGHWAY BARRIER	W	SUV	DRIVER UNFAMILIAR W/AREA	45	GOING STRAIGHT
731	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	OTHER FACTOR	60	CHANGING LANES
732	REAR END	E	SUV	OTHER FACTOR	40	CHANGING LANES
733	REAR END	E	SUV	NONE APPARENT	40	SLOWING
734	REAR END	E	VEH COMBO (10,001 LBS AND OVER)	NONE APPARENT	10	ENTERING/LEAVING PARKED POSITION
735	REAR END	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	UK	GOING STRAIGHT
736	REAR END	E	SUV	NONE APPARENT	10	GOING STRAIGHT
737	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	20	OTHER
738	WILD ANIMAL	W	SUV	NONE APPARENT	60	GOING STRAIGHT
739	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
740	GUARD RAIL	W	SUV	NONE APPARENT	UK	SPUN OUT OF CONTROL
741	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	NONE APPARENT	40	GOING STRAIGHT
742	CONCRETE HIGHWAY BARRIER	W	SUV	ILLNESS/MEDICAL	60	GOING STRAIGHT
743	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	65	GOING STRAIGHT
744	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	55	SPUN OUT OF CONTROL
745	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	NONE APPARENT	65	GOING STRAIGHT
746	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER INEXPERIENCE	55	SPUN OUT OF CONTROL
747	CONCRETE HIGHWAY BARRIER	W	PASSENGER CAR/VAN	NONE APPARENT	50	SPUN OUT OF CONTROL
748	CONCRETE HIGHWAY BARRIER	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	60	SPUN OUT OF CONTROL
749	CONCRETE HIGHWAY BARRIER	W	SUV	NONE APPARENT	UK	GOING STRAIGHT
750	EMBANKMENT	E	PASSENGER CAR/VAN	NONE APPARENT	60	MAKING LEFT TURN
751	EMBANKMENT	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	SPUN OUT OF CONTROL
752	INVOLVING OTHER OBJECT	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	70	SPUN OUT OF CONTROL
753	WILD ANIMAL	E	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
754	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	55	SPUN OUT OF CONTROL
755	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	40	SLOWING
756	GUARD RAIL	E	PASSENGER CAR/VAN	OTHER FACTOR	55	GOING STRAIGHT
757	GUARD RAIL	W	SUV	EVADING LAW ENFORCEMENT OFFICER	45	DROVE WRONG WAY
758	CRASH CUSHION/TRAFFIC BARREL	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	70	GOING STRAIGHT
759	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	60	SPUN OUT OF CONTROL
760	REAR END	E	PASSENGER CAR/VAN	DRIVER UNFAMILIAR W/AREA	15	SLOWING
761	REAR END	E	SUV	NONE APPARENT	15	SLOWING
762	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	15	GOING STRAIGHT
763	REAR END	W	PICKUP TRUCK/UTILITY VAN	AGRESSIVE DRIVING	55	GOING STRAIGHT
764	REAR END	E	PASSENGER CAR/VAN	DISTRACTED/PASSENGER	25	SLOWING
765	REAR END	W	SUV	AGRESSIVE DRIVING	UK	GOING STRAIGHT
766	REAR END	E	PASSENGER CAR/VAN	NONE APPARENT	15	GOING STRAIGHT
767	REAR END	E	SUV	NONE APPARENT	15	SLOWING
768	SIDESWIPE (SAME DIRECTION)	E	PICKUP TRUCK/UTILITY VAN	DUI, DWAI, DUID	75	GOING STRAIGHT
769	SIDESWIPE (SAME DIRECTION)	E	SUV	AGRESSIVE DRIVING	60	CHANGING LANES
770	WILD ANIMAL	W	SUV	NONE APPARENT	60	GOING STRAIGHT
771	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
772	WILD ANIMAL	W	PICKUP TRUCK/UTILITY VAN	NONE APPARENT	57	GOING STRAIGHT
773	WILD ANIMAL	W	PASSENGER CAR/VAN	NONE APPARENT	60	GOING STRAIGHT
774	WILD ANIMAL	W	SUV	NONE APPARENT	55	GOING STRAIGHT
775	GUARD RAIL	E	PASSENGER CAR/VAN	AGRESSIVE DRIVING	75	PASSING
776	GUARD RAIL	W	PASSENGER CAR/VAN	OTHER FACTOR	55	GOING STRAIGHT
777	GUARD RAIL	W	SUV	ASLEEP AT THE WHEEL	55	GOING STRAIGHT
778	GUARD RAIL	W	PASSENGER CAR/VAN	DUI, DWAI, DUID	60	WEAVING
779	CONCRETE HIGHWAY BARRIER	E	PASSENGER CAR/VAN	NONE APPARENT	40	SPUN OUT OF CONTROL
780	LARGE ROCKS/BOULDER	W	PASSENGER CAR/VAN	NONE APPARENT	60	OTHER

APPENDIX B SAFETY IMPLICATION OF GEOMETRIC CHANGES USING CRASH MODIFICATION FACTORS (CMF)

PPSL Safety Calculations
I-70 (MP 230.0 to 242.0)
Eastbound Only

Crash Analyses Related to Changes in Shoulder/Lane Widths & Rumble Strips

Mainline Total Crashes (1/1/2008 to 12/31/2012 – 5 years)

Eastbound				Westbound				
Weekday (M-F)	**Saturday**	**Sunday**	**Total**	**Weekday (M-F)**	**Saturday**	**Sunday**	**Total**	**Total**
206	66	128	400	234	53	50	337	737

Crash Modification Factor (CMF) Calculations for changes in shoulder and lane widths
Off-Peak

39' (off-peak) S&L CMF:1.03	12' wide Shldr: 4' to 12'(8') CMF: 0.92 (HSM 13-8)	combined w/shldr	11' wide Lane width: 12' to 11' CMF: 1.03 (HSM 13-4)	12' wide Lane width: 12' CMF: 1.00	4' wide Shldr: 10'(8') to 4' CMF: 1.09' (HSM - 13-8)

Reference: *Highway Safety Manual, 1st Edition*, AASHTO, 2010, Volume 3

Calculation:	Off-peak crashes – Monday through Saturday:	272
	Off-peak CMF:	1.03
	Increased crashes:	280
	Delta:	+8 additional crashes

Crash Modification Factor (CMF) Calculations for changes in shoulder and lane widths
Peak

39' (peak) S&L CMF:1.23	1' wide (equivalent) Shldr: 4' to 1' CMF: 1.06 (HSM 13-8)	11' wide Lane width: 12' to 11' CMF: 1.03 (HSM 13.4)	11' wide Lane width: 12' to 11' CMF: 1.03 (HSM 13-4)	12' wide Lane width: 12' CMF: 1.00	4' wide Shldr: 10'(8') to 4' CMF: 1.09' (HSM - 13-8)

Reference: *Highway Safety Manual, 1st Edition*, AASHTO, 2010, Volume 3

Calculation:	Off-peak crashes – Sunday:	128
	Off-peak CMF:	1.23
	Increased crashes:	157
	Delta:	+29 additional crashes

Total Additional Crashes of all types: +37 additional crashes

Single Vehicle Run of the Road (SVROR) Crashes – Eastbound

Mainline SVROR Crashes (1/1/2008 to 12/31/2012 – 5 years)

Eastbound				Westbound				
Weekday (M-F)	**Saturday**	**Sunday**	**Total**	**Weekday (M-F)**	**Saturday**	**Sunday**	**Total**	**Total**
73	12	16	101	103	18	17	138	239

Crash Modification Factor (CMF) Calculations for changes in rumble strips
Off-Peak

39' (off-peak) SVROR CMF:1.00	12' wide Rumble strip: right edge of shoulder CMF: 1.00	combined w/shldr	11' wide	12' wide	4' wide Rumble strip: yes CMF: 1.00

Reference: *Highway Safety Manual, 1st Edition*, AASHTO, 2010, Volume 3

Calculation: Off-peak crashes – Monday through Saturday: No Change

Crash Modification Factor (CMF) Calculations for changes in rumble strips
Peak

39' (peak) – middle & right lanes SVROR CMF:1.00	1' wide (equivalent) Rumble strip: yes CMF: 1.00	11' wide Rumble strip: right edge of lane CMF: 1.00	11' wide	12' wide	4' wide Rumble strip: yes CMF: 1.00

39' (peak) – managed lane only SVROR CMF:1.10	1' wide (equivalent) Rumble strip: no CMF: 1.10	11' wide Rumble strip: right edge of lane CMF: 1.00	11' wide	12' wide	4' wide Rumble strip: yes CMF: 1.00

Reference: *Highway Safety Manual, 1st Edition*, AASHTO, 2010, Volume 3

Calculation:
Peak crashes – Sunday: 16
Off-peak CMF (modified to account for ML volume: 1.0 + (0.10 * 23%) = 1.023
Increased crashes: 16.4 (say 17)
Delta: +1 additional crashes

Total Additional Crashes attributable to Shoulder/Lane Widths & Rumble Strips: +38 crashes

APPENDIX C SAFETY IMPLICATIONS OF CONGESTION REDUTION

Crash Analyses Related to Congestion Reduction during Peak Periods

Analyses based on: *Relationship between Traffic Density, Speed and Safety and Implication on Setting Variable Speed Limits on Freeways*, Kononov, et. al., TRB 2012.

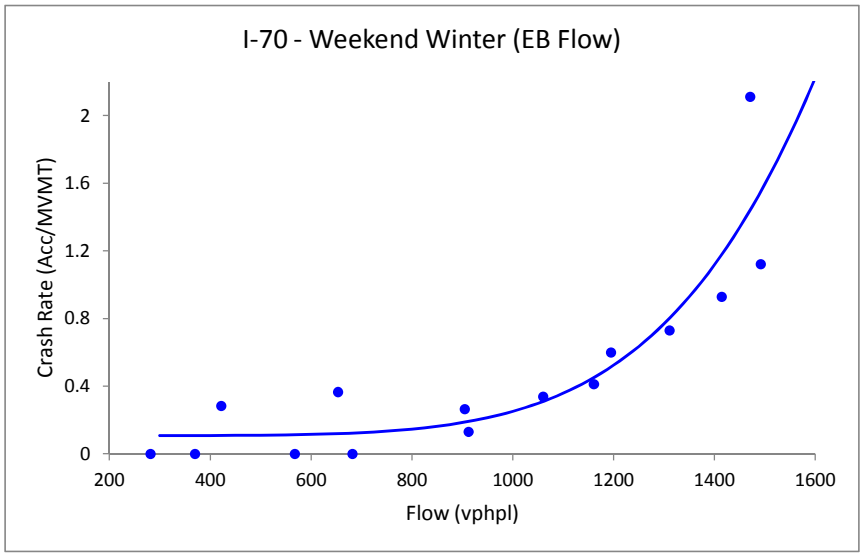
As shown on following sheets:

- Crash Rate increases with higher hourly volumes
- Calculation of Crash Rate reduction with reduced congestion:
    - Current crash rate (index): 37.32
    - Crash rate index with PPSL/ML: 18.68
    - Reduction factor: 0.5006

- Net reduction in total crashes: 128 * 0.5006 = 64
    - Net reduction: -64 crashes
    - Total reduction: 38 – 64 = -26 (-26/400 = 6.5%)

- Net reduction in Rear-end crashes: 94 * 0.5006 = 47
    - Net reduction: -47 crashes
    - Total reduction: 38 – 47 = -9 (-9/400 = 2.2%)

EB Flow (vphpl)	Model EB Crash Rate	DS^2		Model DS2		Vmax	n	Km	D	Model Formula
300	0.107319998		30000	0.163894127		23.5354	5.917004	2366.321	0.107204	(D+((Vmax*(x^n))/((x^n)+(Km^n))))
400	0.107840363		35000	0.163894726	A		B	C	D	Model Formula
500	0.109586809		40000	0.163897296	216.5955		11.32497	196049.1	0.163894	(D+((Vmax*(x^n))/((x^n)+(Km^n))))
600	0.114210795		45000	0.16390651						
700	0.124640166		50000	0.163935255						
800	0.145592598		55000	0.164015407						
900	0.184145132		60000	0.164219235						
1000	0.250316923		65000	0.164699149						
1100	0.35758609		70000	0.165757653						
1200	0.523208542		75000	0.167964925						
1300	0.76814074		80000	0.172348906						
1400	1.116307137		85000	0.180692346						
1500	1.592935113		90000	0.195983444						
1600	2.221766607		95000	0.223081576						
1700	3.021210073		100000	0.269677174						
1800	3.999932633		105000	0.347644417						
1900	5.152900919		110000	0.474904902						
2000	6.459196108		115000	0.677935337						
2100	7.882738347		120000	0.99505322						
2200	9.376238711		125000	1.480584172						
2300	10.88754157		130000	2.209923139						
2400	12.36663017		135000	3.285301818						
2500	13.77144278		140000	4.841699509						



Fitted Curve for I-70 Mountain Corridor

Relationship between Traffic Denvisy, Speed and Safety and Implication on Settin gVariable Speed Limits on Freeways, Kononov, et. al., TRB 2012.

EB Flow (vphpl)	Model EB Crash Rate
300	0.107319998
400	0.107840363
500	0.109586809
600	0.114210795
700	0.124640166
800	0.145592598
900	0.184145132
1000	0.250316923
1100	0.35758609
1200	0.523208542
1300	0.76814074
1400	1.116307137
1500	1.592935113
1600	2.221766607
1700	3.021210073
1800	3.999932633
1900	5.152900919
2000	6.459196108

Existing Volumes - January 30, 2011

	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	Total	10a to 8p Average	per lane volume
1/30/11	1826	2909	2806	3308	3303	3460	3356	3294	3035	3062	2962	2379	991		3150	1575
Volume per lane	913	1455	1403	1654	1652	1730	1678	1647	1518	1531	1481	1190	496			
EB Crash Rate	0.1927	1.3761	1.1306	2.6535	2.6335	3.3148	2.8453	2.5975	1.7030	1.7879	1.5024	0.5058	0.1094			
MVMT (MP 231 to 241)	0.9601	1.5295	1.4753	1.7393	1.7366	1.8192	1.7645	1.7319	1.5957	1.6099	1.5573	1.2508	0.5210			
Crashes/Yr for Sundays	0.19	2.10	1.67	4.62	4.57	6.03	5.02	4.50	2.72	2.88	2.34	0.63	0.06	37.32		

I-70 PPSL - Volumes from DynusT Model (from Atkins) (based on January 30, 2011 or January 31, 2010)

Hourly	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM			10a to 8p Average	per lane volume
GPL	817	2112	2439	2620	2934	2830	2964	2958	2976	2972	2647	2627	1973	588	33457		2745	1373
GPL - Volume per lane	409	1056	1220	1310	1467	1415	1482	1479	1488	1486	1324	1314	987	294			1373	
	0.1080	0.3104	0.5710	0.8030	1.4356	1.1878	1.5071	1.4928	1.5357	1.5262	0.8500	0.8151	0.2414					
MVMT (MP 231 to 241)	0.4296	1.1104	1.2824	1.3775	1.5426	1.4879	1.5584	1.5552	1.5647	1.5626	1.3917	1.3812	1.0373					
Crashes/Yr for Sundays	0.05	0.34	0.73	1.11	2.21	1.77	2.35	2.32	2.40	2.38	1.18	1.13	0.25			18.23		
ML	0	270	524	594	829	659	762	724	703	675	565	432	200	22	6959		631	631
		0.1073	0.1107	0.1139	0.1568	0.1204	0.1376	0.1297	0.1253	0.1220	0.1126	0.1084	0.10732		40416			
MVMT (MP 231 to 241)	0.0000	0.1420	0.2755	0.3123	0.4359	0.3465	0.4006	0.3807	0.3696	0.3549	0.2971	0.2271	0.1052					
Crashes/Yr for Sundays	0.00	0.02	0.03	0.04	0.07	0.04	0.06	0.05	0.05	0.04	0.03	0.02	0.01			0.45		
Total Volume	817	2382	2963	3214	3763	3489	3726	3682	3679	3647	3212	3059	2173	610			3376	1125
															Total Crash Rate	18.68		
															Crash Reduction:	**50.06%**		

APPENDIX D MANAGED LANE ACCESS AND VARIABLE SPEED LIMITS (MEMORADUM DATED NOVEMBER 4, 2013)

FELSBURG HOLT & ULLEVIG

engineering paths to transportation solutions

November 4, 2013

MEMORANDUM

TO: Andi Schmidt, David Swenka, Laycee Kolkman, Scott Thomas

FROM: David E. Hattan, P.E.

SUBJECT: Managed Lane Access and Variable Speed Limits
PROJECT: I-70 Peak Period Shoulder Lane (PPSL)
FHU # 11-111-09 SA 17

Based on recent discussions about the safety implications of the speed differential that will be created during peak periods on eastbound I-70 between the managed lane (ML) and the adjacent general purpose lane (GPL), I have reviewed published research on this topic. As a result, CDOT should consider not providing secondary access/egress points for the ML. On the other hand, CDOT should consider including variable speed limit signs (VSL) as an element of the proposed facility.

Background

A managed lane on eastbound I-70 is proposed between Empire Junction (Exit 231) and US 6 (Exit 244) at the base of Floyd Hill. The ML will have many operational characteristics of other preferential lane treatments, such as a high occupancy vehicle lane (HOV) or a high occupancy toll lane (HOT). The ML will operate during peak Sunday afternoons (and holidays and some Saturdays). At all other times, the ML serve as a wide (12 feet) breakdown shoulder on the left side of the road. Due to the pavement width available on I-70, the proposed ML will be a unique facility with certain characteristics of all three types of preferential lane separation (see following paragraph). It will appear to have contiguous separation since there will only be an 8-inch solid white stripe to designate the ML/shoulder. However, rumble strips will be grooved into the pavement along the white stripe that serve two purposes: 1) warn drivers that they are leaving the travel lane during non-peak time and 2) deter drivers from crossing the line when the ML is operational by giving them tactile feedback that they entering or leaving the ML where they shouldn't be.

There are three different ways that preferential lanes can be separated from the adjacent GPL:

- Barrier separation - essentially a parallel roadway separated from the adjacent GPL by a permanent concrete barrier (typically Type 7). There are a limited number of well-designed access points. These lanes have shoulders and acceleration or deceleration lanes at ingress and egress points. The bus/HOT lane along I-25 north of downtown Denver is a local example.

- Buffer separation – The HOV lane is separated from the adjacent GPL by a two- to four-foot painted buffer. There are two solid white stripes that prohibit cars from crossing between

the lanes. This separation is intended to allow fewer interruptions to traffic flows and offer protection to freely flowing traffic in the HOV lane independent of traffic conditions in the GPL. There are typically access points to the HOV lane between interchanges where the double solid lines are dropped and a single skip stripe line is used. There is appropriate signing at these locations. US 36 in the vicinity of Federal Boulevard is a local example. It is currently being extended to the west.

- Contiguous separation– These facilities are adjacent to the general purpose lane with no buffer separation – only a single or double paint stripe. Vehicles can enter or exit the preferential lane facility at specified locations or continuously along the freeway such that lane changing maneuvers are not concentrated at specified locations. Traffic operations in a continuous access preferential lane are more frequently interrupted by the lane changing vehicles. There are a number of facilities with continuous access in Northern California.

Research Findings

Managed and High Occupancy Vehicle Lanes

The literature applicable to the proposed I-70 ML is primarily based on experience with HOV lanes around the country. In 2005, the Texas Transportation Institute (1) found that during peak traffic time, traffic in HOV lanes could at times move up to 35 mph faster than general purpose lanes, which is consistent with the fundamental theory the HOV lane concept. When slower cars tried to merge into the faster HOV lane, they were often rear-ended by traffic unable to slow down in time. Likewise, the faster HOV traffic trying to merge into slower, regular traffic also caused crashes. As a result, the left-lane injury rate soared by at least 150 percent. This study also found that only HOV lanes separated by permanent concrete barriers had a lower overall risk of crashes.

A more recent Texas Transportation Institute study (2) reviewed two highly congested freeways with HOV lanes in Dallas. From the freeway characteristics and a review of crash data within each corridor, it appears that the extensive congestion in the general purpose lanes (i.e., bumper-to-bumper traffic) makes it difficult for vehicles in the HOV lane to find gaps in Lane 1 to change lanes easily. Also, vehicles in the slow-moving general purpose lanes that want to enter the HOV lane must first change lanes in the HOV lane and then accelerate up to speed. In either situation, the speed differential between the HOV lane and Lane 1 appears to be a factor in crash occurrence. The following factors all contribute to increased injury crash rates:

- High daily traffic volumes and extensive congestion in the general purpose lanes,
- Ramp-pair combinations at or near the minimum ramp terminal spacing as recommended by AASHTO,
- Reduced HOV cross section, and
- Speed differential between the HOV and adjacent general purpose-lane traffic.

It is believed that the last two items in this list are the most significant factors.

A California study (3) isolated likely causes for the higher accident rates. Because HOV facilities take up a significant amount of additional road space compared to GPL, the amount of shoulder space is often reduced. This created a source of conflict. Collision rates diminish with an increase in shoulder width, regardless of the type of access associated with the HOV lane. In addition, the highest accident rates were found to be within 0.3 miles of an on-ramp or off-ramp for the limited access lanes. This suggests that concentrating the merge areas compounded the risk of accidents caused by the radical speed differential between HOV and general purpose traffic. A more detail investigation of three locations that showed significantly higher collision rates than average revealed that they possessed high traffic volumes in the HOV lane during peak hours (1,000 –

1,200 vehicles per hour versus 700 – 800 vph on average). The findings from this research show that the HOV facility with limited access offers no safety advantages over the one with continuous access. The combined collision rates of the HOV and its adjacent lane were higher for the HOV facility with limited access.

Variable Speed Limits

One control measure that is proposed for the PPSL is variable speed limits (VSLs) where the display on the speed limits signs can be changed in response to prevailing traffic conditions. VSL installations were first introduced in Germany more than three decades ago; today, numerous VSL installations are encountered in many European countries, in North America, and elsewhere (4). In most cases, VSLs are mandatory, that is, legally equivalent to fixed speed limits and may ever be enforced to increase driver compliance and hence impact. A main targeted impact of VSLs is enhanced traffic safety. This positive impact on traffic safety is due to speed reduction and speed homogenization, which are correlated with a reduction in accident probability. Multiyear evaluations of VSL impact on traffic safety indicate a reduction in accident numbers by as much as 20% to 30%. On a number of freeways in Europe (5), shoulders are used dynamically to create an additional travel lane when conditions are appropriate. Each country has a general practice of reducing speeds when the shoulder is being used as a travel lane.

Recommendations

CDOT should consider the following information in its efforts to improve safety in designing the I-70 PPSL:

- Since there is no space available to create a shoulder or a buffer for the ML, it is important to consider that rumble strips be grooved in the pavement at the right edge of the ML/breakdown shoulder. This would serve as substitute for either a buffer or a barrier and hopefully reduce the amount of lane changing.

- CDOT should consider limiting the number of access points to the ML, possibly only an entrance downstream of the US 40 on-ramp (Exit 231 – Empire Junction) might be provided. A secondary access east of the Dumont interchange (Exit 235) has been considered. Since both the Dumont and Downieville (Exit 234) interchanges do no serve large traffic generators, there limited on-ramp volumes at both on-ramps. The primary users of a secondary access point would be traffic already on I-70 (from beyond Georgetown on I-70 or US 40) that didn't take advantage of the initial access point. They would likely make the decision to now use the ML based on congested conditions in the GPL. This could create the differential in speeds that has been found to cause crashes at access points to buffer separated HOV lanes in Texas and California.

- CDOT should likewise consider limiting the number of exit points, with possibly only an exit/closure before the US 6 interchange (Exit 244 – Kermitts). A secondary egress has been considered west of the West Idaho Springs interchange (Exit 239). This has been proposed to allow I-70 motorists in the ML to exit and patronize the businesses in Idaho Springs. Again, there could be safety concerns with this proposed egress due to the possible speed differential of traffic in the adjacent lanes. The assumption is that almost all users of the ML would be paying the toll so minimize their travel time to the Denver area and would not want to stop at an intermediate point. However, there could be just enough drivers wanting to make this maneuver that their slowing down to merge would be unexpected and thus could lead to crashes.

- The toll rate charged for the ML will have a number of objectives and should undergo an on-going optimization process:
    - High enough to limit volumes to keep the lane as safe as possible given the very limited shoulder space available.
    - Low enough to encourage use of the lane and keep ML traffic volumes high enough that they don't travel too fast but still provide a travel time advantage for ML traffic.

- Variable Speed Limit (VSL) signs should be considered through the PPSL/ML corridor. They would serve to moderate speed differentials and harmonize traffic between the ML and GPL. ML speeds will always be higher than the adjacent general purpose lane but not too high.

- All aspects of the PPSL/ML should be closely monitored on an on-going basis so that safety and capacity are appropriately balanced for motorists on I-70 and residents in the corridor.

References

(1) *Crash Analysis of Selected High-Occupancy Vehicle Facilities in Texas: Methodology, Findings, and Recommendations*, Cothron, Ranft, et.al. Texas Transportation Institute, May 2004.
(2) *Safety Evaluation of Buffer-Separated High-Occupancy Vehicle Lanes in Texas,* Cooner and Ranft, Transportation Research Board, TRR 1958, 2006.
(3) *Safety Performance of High-Occupancy Vehicle (HOV) Facilities: Evaluation of HOV Lane Configurations in California,* Jang, Chung, et.al. Transportation Research Board, TRR 2099, 2009.
(4) *Effects of Variable Speed Limits on Motorway Traffic Flow,* Papageorgiou, et.al. Transportation Research Board, TRR 2047, 2008.
(5) *Freeway Geometric Design for Active Traffic management in Europe*, FHWA, March 2011