Manitoba Transportation and Infrastructure

IN-SERVICE ROAD SAFETY REVIEW – PTH 1 AND PTH 5 INTERSECTION

FINAL REPORT

DECEMBER 2023

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1 INTRODUCTION

1.1 BACKGROUND

At the request of Manitoba Transportation and Infrastructure (MTI), WSP Canada Inc. (WSP) has conducted an in-service road safety review (ISRSR) for the two-way stop-controlled intersection of PTH 1 and PTH 5 located near Carberry, Manitoba. The layout of the intersection is displayed in **Figure 1.1** below.

The purpose of the ISRSR was to identify safety performance issues associated with the intersection and to suggest potential safety enhancements for consideration by MTI. The ISRSR was conducted in accordance with the Transportation Association of Canada (TAC) Canadian Guide to In-service Road Safety Reviews and was an independent and formal process, conducted by a multidisciplinary team who, based on their experience and expertise, provided opinions on safety issues from the perspective of all road users.

Note: While the ISRSR was initiated as a result of a fatal collision that occurred on June 15th, 2023, this review did not examine the details of this incident, as it is part of an ongoing RCMP investigation.

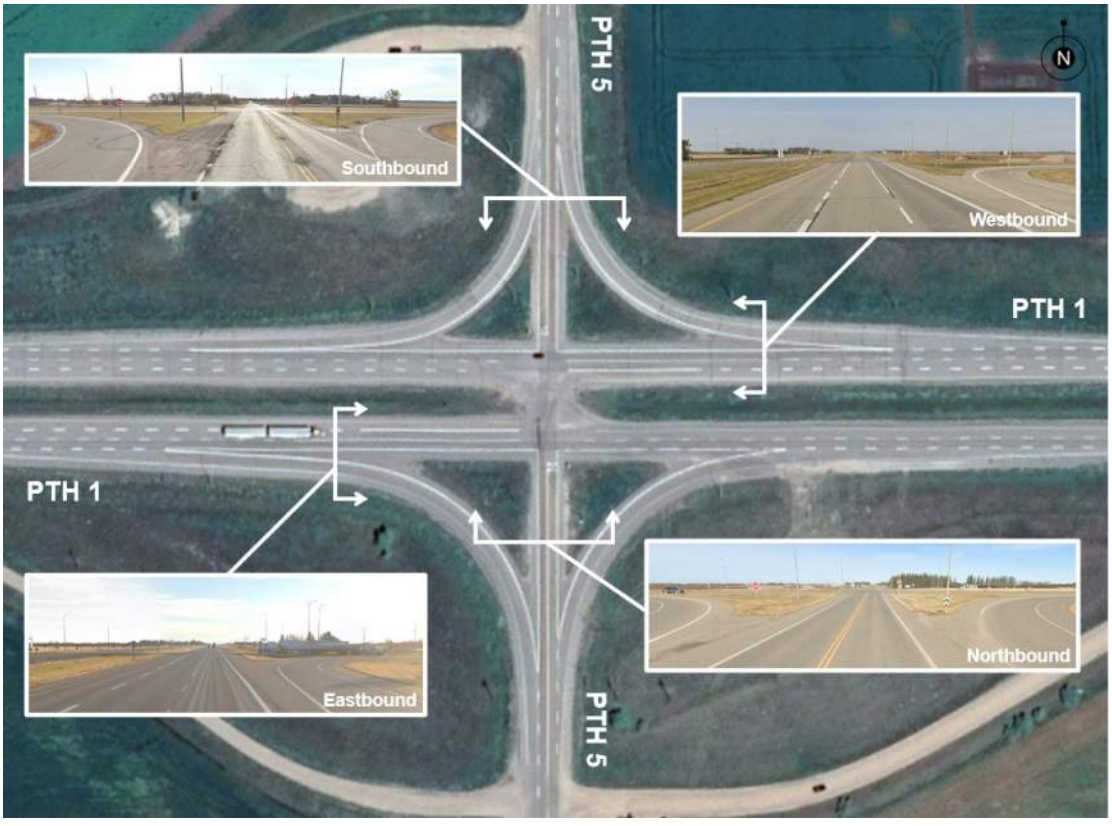


Figure 1.1: PTH 1 and PTH 5 Intersection

1.2 FOCUS OF ISRSR

The goal of the ISRSR is to improve safety. To do this, the ISRSR identifies safety issues and recommends options to address the safety issues. In carrying out the work, a site investigation of the intersection study area was conducted, and plans and documents supplied by MTI were reviewed.

The various issues identified in this report come from a road safety, human factors, and operational perspective only. Any recommendations are intended to address the identified issues from these perspectives. The recommendations do not consider other influencing factors such as cost-effectiveness, land requirements or environmental issues. Readers of this report should recognize that road design and construction decisions are influenced by the need to provide cost-effective solutions. While improved safety is a key objective of the In-Service Road Safety Review, it is not the only factor that will influence the long-term solution of the road safety issues under consideration.

1.3 THE ISRSR AND THE DESIGN PROCESS

ISRSRs are separate from the design process. ISRSRs are not intended to identify one single safety solution for an intersection or roadway segment. Rather, the ISRSR typically identifies several potential countermeasures for further consideration by the road agency. These countermeasures will include short-term recommendations (such as sign upgrades or reapplication of pavement markings) to long-term recommendations (such as intersection reconfiguration or interchange construction).

It is important to note that multiple longer term safety options may be identified for consideration that are alternatives (i.e., traffic signals, roundabout, or other treatment). Where the recommendations for long-term options are identified, a functional design is needed to evaluate the options and identify the optimal solution. The evaluation of options in a functional design will consider safety and operational issues as well as other items such as cost, environmental implications, drainage, land acquisition and construction traffic management requirements. At the conclusion of the functional design, the optimal treatment will be identified, and the project can proceed to the detailed design phase and subsequent construction.

1.4 BASIS OF ISRSR

Except as specifically noted in the text, this road safety review has been based on the following:

- A start-up meeting held with MTI representatives on July 13th, 2023.
- A day and night field review of the study area conducted between July 18th and July 19th, 2023.

- Ten years (2012 to 2021) of MTI summary level collision data for the intersection. It is noted data from 2012 and 2013 was incomplete due to Manitoba's collision data reporting procedure at that time.
- Intersection traffic count data for PTH 1 & PTH 5 collected by WSP between July 18th and July 19th, 2023.
- Results from MTI's intersection safety network screening tool.
- Speed data collected by WSP on July 19th and August 8th, 2023.
- As-built drawings and aerial imagery of the intersection.
- Video footage collected by WSP between July 17th and July 21st, 2023, for the purpose of the video conflict analysis.

1.5 START-UP MEETING

On July 13th, 2023, a virtual project start-up meeting was held between key members of the road safety team and MTI representatives. The following people attended this meeting:

- Russ Andrushuk, Assistant Deputy Minister, Engineering and Technical Services Division, MTI
- Dustin Booy, Executive Director, Highway Engineering Services, MTI
- Glenn Cuthbertson, Director, Traffic Engineering Branch, MTI
- Kelvin Shuvera, Director, Regional Operations, Western Region, MTI
- Derek Durant, Manager, Highway Geometric Design Standards and Practices, MTI
- Warren Borgford, Traffic Services Engineer, MTI
- Denise Jubenvill, Technical Services Engineer, MTI
- Jennifer Chapman, Traffic Analysis Engineer, MTI
- Jena Gordon, Highway Design Engineer, MTI
- Diana Emerson, Project Manager, WSP
- Geoff Millen, Senior Road Safety Advisor, WSP
- Brant Magnusson, Geometric Analysis, WSP
- Jaime Lacoste, Collision and Operational Analysis, WSP
- Tom Smahel, Human Factors Analysis, Human Factors North

The following points summarize the key background information obtained during this meeting:

- The study area includes:
    - A posted speed limit of 100 kilometers per hour (km/h) on PTH 1;
    - High traffic volumes and percentage of truck traffic;
    - Narrow median width;
    - Stop control on the north and south sides of the intersection;
    - An access road located in close proximity to the intersection; and
    - Channelized right-turn tapers.
- There will be a memorial located near the intersection in the future to memorialize the people that died in the tragic collision that occurred on Thursday, June 15th, 2023.
- In the past, the Town of Carberry has indicated a desire for traffic signals installed at this location. It was noted that isolated traffic signals present road safety concerns and that speed management measures would be required if signals were to be specified at this location.
- Several measures have been implemented over the years to improve safety at the intersection (prior to the June 15th collision). These include the provision of transverse rumble strips on the minor leg approaches, right-turn and left-turn auxiliary lanes, and oversized Stop signs with flashing beacons.
- It was noted that there is significant driver workload at these types of intersections (two-way stop-controlled intersections with narrow medians), which may limit a driver's ability to properly assess gaps in traffic and the speed of approaching traffic.
- Agricultural industries in the area are operating large tandem trailer trucks. In addition to increased truck traffic at the intersection, these long trucks may contribute to speed differentials and operational issues at the intersection.
- A portion of PTH 5 is getting upgraded to accommodate the Road Transportation Association of Canada (RTAC), now known as Transportation Association of Canada (TAC) RTAC loading, which is a national standard for highway truck weights and Manitoba's heaviest regulated loading classification. However, there are no new developments that are expected to increase heavy truck traffic on PTH 5 from current levels.

2 METHODOLOGY

2.1 OVERVIEW

In carrying out this work, an assessment of the existing road safety performance of the study area was conducted using a “lines of evidence” approach, followed by a risk level evaluation. This approach involved examining the safety performance of the study area using a range of tools and techniques, each of which were assessed first individually, and then as a whole. Where lines of evidence “overlapped” and pointed to a common conclusion regarding a particular element of the roadway or location, that conclusion was strengthened by the independence of the indicators and the multiplicity of their occurrence.

The lines of evidence framework examined the performance of the intersection using six distinct examination methods as illustrated in **Figure 2.1**. Findings from a synthesis of the lines of evidence and risk-level evaluation were then used to identify priority road safety issues and opportunities for road safety improvement. Each step in this framework is described in further detail in the following sections.

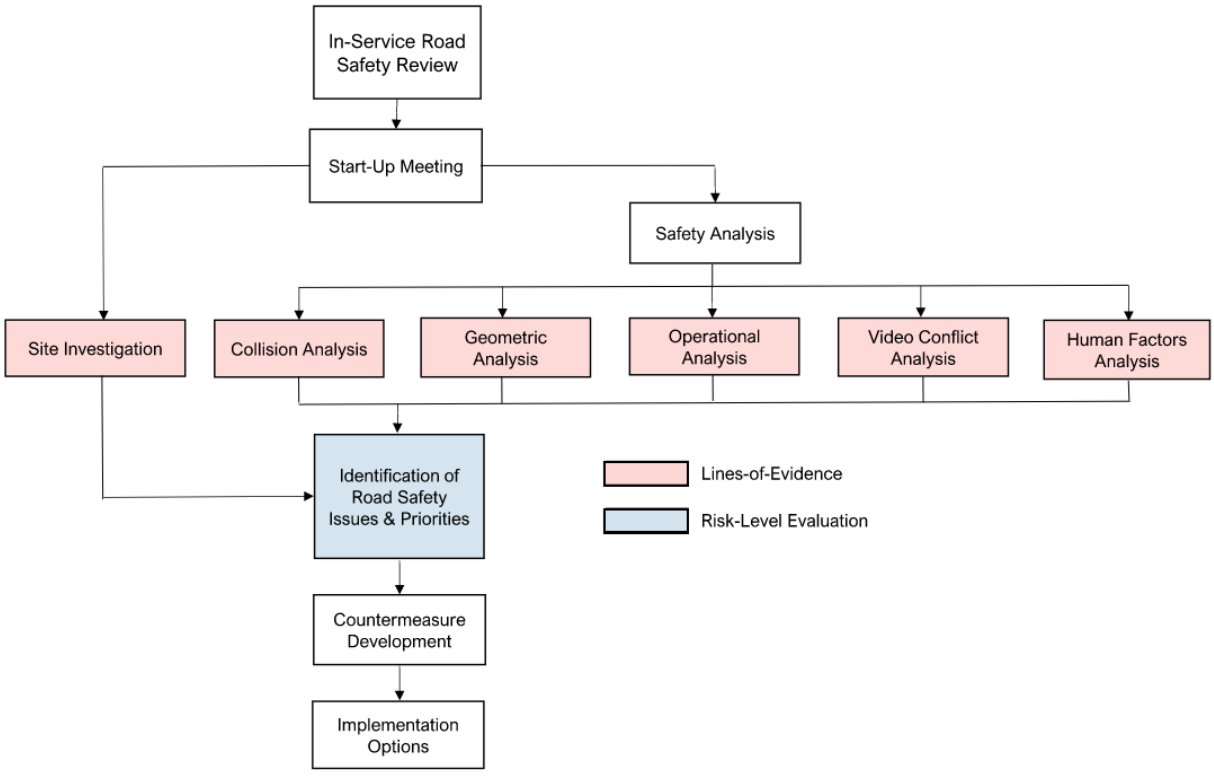


Figure 2.1: Lines of Evidence Framework

2.2 SITE INVESTIGATION

The site investigation was an important element of the ISRSR as it provided the team with an opportunity to observe in-service conditions in the field and to collect information on road safety and operational characteristics of the facility including how drivers interact with the infrastructure and each other.

The site investigation team was multidisciplinary and included road safety, traffic engineering, geometric design, and human factors experts. The site was examined based on the needs of all relevant users and modes (vehicular traffic, heavy trucks, buses, pedestrians, and bicycles). The site investigation examined the facility during the a.m. and p.m. peak hour periods and during day and night conditions.

2.3 SAFETY ANALYSIS

The safety analysis was a critical component of the audit process and involved problem definition and assessment. Historical collision data provided the primary foundation for this analysis. However, traffic and geometric characteristics as well as human factors considerations were also reviewed. A description of each task in the safety analysis process is provided below.

2.3.1 COLLISION ANALYSIS

Using the most recent 10 years of collision data provided by MTI, an analysis of collision patterns and trends was conducted to develop a clear understanding of the road safety performance characteristics on the facility.

2.3.2 GEOMETRIC ANALYSIS

A review of geometric design elements (horizontal alignment, vertical alignment, cross-section elements, design consistency, sight distance, auxiliary lanes, access management, drainage, pavement condition, etc.) was conducted based on the TAC Geometric Design Guide for Canadian Roads and local design standards. While this analysis examined geometrics in the context of current practices, it was not intended to constitute a comprehensive geometric standards compliance check. Rather, the emphasis was on attempting to identify any correlations that may exist between infrastructure characteristics and collision occurrence.

2.3.3 OPERATIONAL ANALYSIS

A traffic operational analysis was undertaken to identify operational issues that may be contributing to collision risk at the intersection. The methodologies contained in the Transportation Research Board's Highway Capacity Manual were applied to the evaluation of the intersection.

In addition, an assessment of speed limits on PTH 1 and PTH 5 approaching the intersection was conducted to determine if the current posted speed limits are appropriate for the conditions

present. In accordance with MTI's speed limit setting practices, this involved collecting operational speed data and conducting an assessment in accordance with the Institute of Transportation Engineers (ITE's) Speed Zone Guidelines – A Proposed Recommended Practice and MTI's Guide for Setting Posted Speed Limits on Manitoba Roadways.

2.3.4 VIDEO CONFLICT ANALYSIS

A traffic conflict analysis was conducted using video recordings collected from several locations at the intersection. This analysis examined near miss events between road users to gain an understanding of the probable causes of potential collisions. The results from this analysis provide useful information on the following:

- Near-misses: Interactions between two road users that cross each other's path (or are expected to do so) within five seconds of one another.
- Stop-sign compliance: Stop-sign compliance for the northbound and southbound movements at the intersection.
- Volume data: Turning movement volumes for each road user within the intersection.

Using the results from this analysis, the most critical movements and their conflicting scenarios can be identified and ranked based on the level of road safety risk.

2.3.5 HUMAN FACTORS ANALYSIS

WSP's Road Safety Team in association with Human Factors North provided analysis of the relevant human factors issues in the context of this in-service road safety review. This team consisted of experts with extensive experience in applying human factors to road safety audits and the development of road safety improvement options. Elements examined included driver workload, visual complexity, sign and pavement marking effectiveness, factors influencing speed selection, gap search and manoeuvre distance and decision point spacing.

2.4 IDENTIFICATION OF ROAD SAFETY ISSUES AND PRIORITIES

Findings from the site investigation and the safety analysis were used to identify road safety issues and develop a list of priorities for road safety improvements.

2.5 COUNTERMEASURE DEVELOPMENT

Using the prioritized list of road safety and operational issues discussed in the section above, the road safety team identified potential countermeasures. As part of this task, estimates of countermeasure effectiveness were provided where possible. High-level cost-estimates were also prepared for each countermeasure.

2.6 IMPLEMENTATION OPTIONS

Using the results from the countermeasure development task discussed above, short, medium, and long-term implementation options focused on improving road safety and traffic operations at the intersection were developed.

3 SITE INVESTIGATION

3.1 OVERVIEW

The following sections summarize observations from the site investigation conducted on July 18th and 19th, 2023.

For the purpose of this report, observations made during the site investigation have been organized into the following categories:

- Intersection configuration (Section 3.2)
- Positive guidance and signage (Section 3.3)
- General maintenance (Section 3.4)

Figure 3.1 shows the intersection of PTH 1 and PTH 5 and includes comment location identifiers associated with the comments in **Section 3.2** to **Section 3.4**.

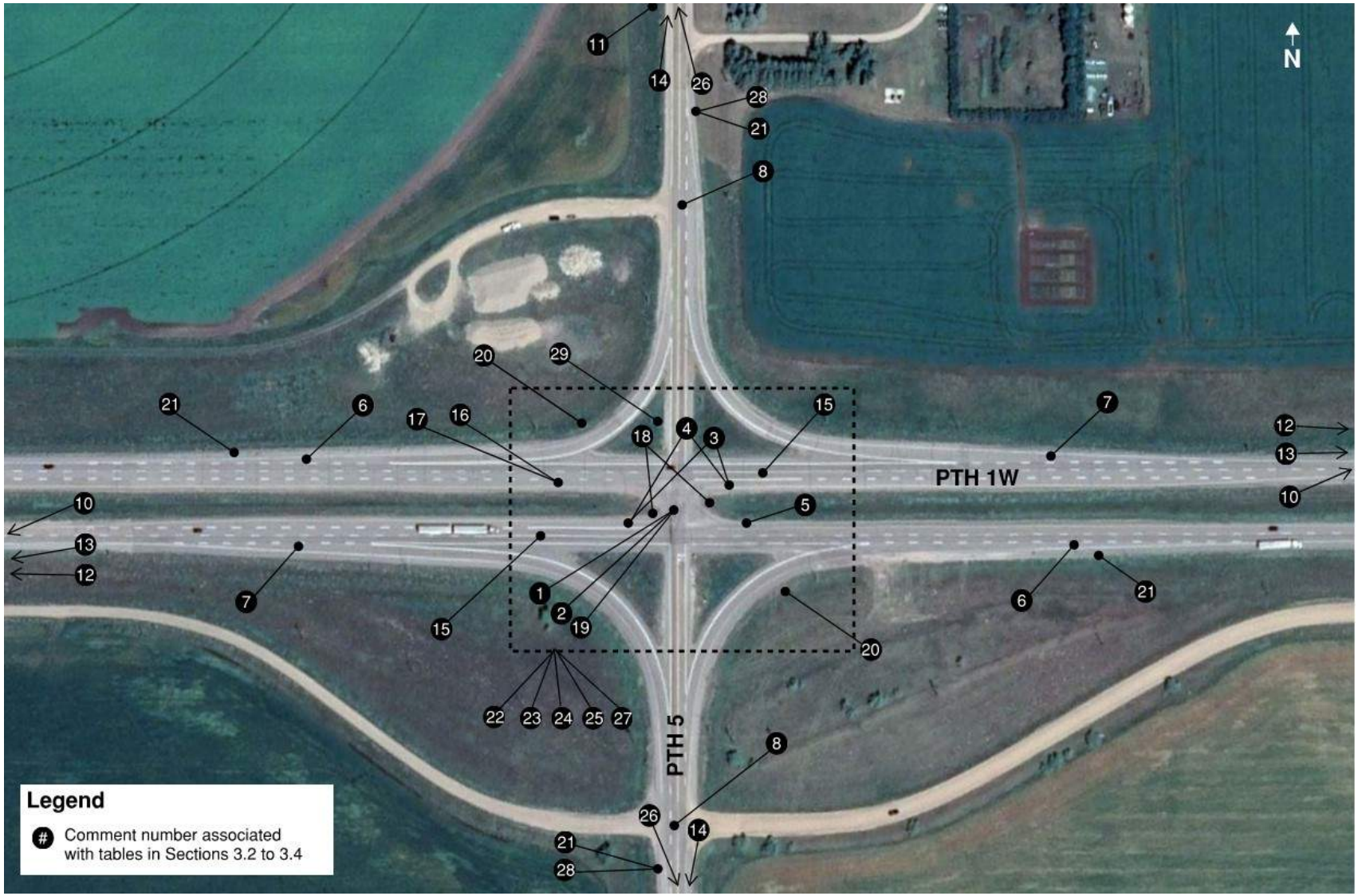


Figure 3.1: PTH 1 at PTH 5 intersection layout with comment numbers

3.2 INTERSECTION CONFIGURATION

Specific comments regarding the intersection configuration observed during the site investigation are noted below.

Comment #1	
The narrow median width at this intersection (24.4m) limits the available storage and refuge area for vehicles using the median as a two-stage crossing. Of particular concern is the accommodation of long vehicles (heavy trucks, trailers, etc.) crossing PTH 1 or turning left from PTH 5 onto PTH 1 and their ability to fit in the median. Long and heavy trucks accounted for 28% of 2023 traffic volumes, including 13% of the through traffic on PTH 5 and 18% of left-turning traffic in all directions. Field observations, indicate that long trucks crossing PTH 1 or turning left from PTH 5 onto PTH 1 do so in one continuous movement due to the narrow median width. This appears to be of particular concern for trucks entering the intersection from PTH 5 southbound as a left-turn median acceleration lane is not provided to accommodate this continuous movement. For northbound traffic turning left onto PTH 1 heavy trucks generally turn directly into the left-turn median acceleration lane in a continuous movement.	 **Truck crossing narrow median as a single stage crossing**  **Truck and passenger vehicle crossing narrow median at same time**  **Pick-up truck with trailer stopped within narrow median**

Comment #2	
Several vehicles were observed occupying the narrow median at the same time. This provides significant opportunities for conflict, including conflicting vehicle orientations while waiting in the median and the potential for queuing traffic to extend into the high speed through lanes. Vehicles occupying the median also create sightline obstructions for other vehicles.	 **Truck making eastbound left blocking access to the median**  **Two northbound vehicles occupying the median at the same time**  **Two southbound vehicles occupying the median at the same time**

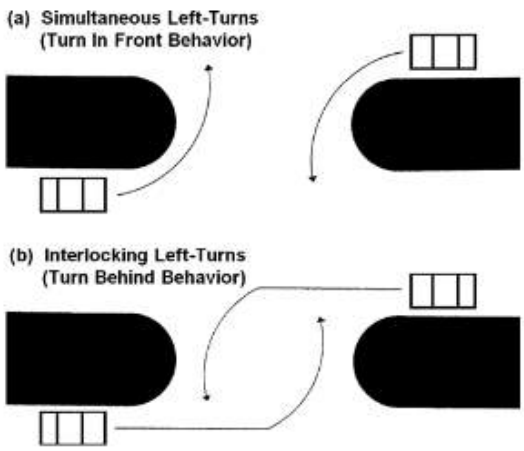
Comment #3	
The PTH 1 left-turn lanes have a negative offset which can limit sightlines for opposing left-turning vehicles. Large trucks occupying these left-turn lanes as they wait for the median to clear can also obstruct sightlines for other traffic crossing or waiting in the median.	 **Truck waiting in the left-turn lane limits sightlines for vehicles using the median**  **Two pick-up trucks making opposing left-turns from PTH 1 onto PTH 5 at the same time**

Comment #4

Different driving behaviors were observed at the median for vehicles making left-turns from both PTH 1 and PTH 5. Some drivers make “simultaneous left-turns”, while others make “interlocking left-turns.”

The literature indicates that drivers leaving an expressway generally tend to turn in front of each other (simultaneous left turns) when the median width is 50 ft (15.2m) or less but tend to turn behind one another (interlocking left-turns) when the median width is greater than 50 ft (15.2m). The literature also notes that there is no implication that one behavior is more desirable than another. The existing median width at this intersection is approximately 80 ft (24.4m) when measured from the edge of the eastbound travel lane to the edge of the westbound travel lane.

In addition to the left-turn issue identified above, vehicles were observed turning left from PTH 1 at the same time vehicles were turning left from PTH 5. These conflicting turning behaviours contribute to an increased risk of driver error and collision at the intersection.



Left-Turn Behaviors (NCHRP Report 650)

Turn Behind Behavior (Interlocking Left-Turns) between two mainline left-turning vehicles

Turn In Front Behavior (Simultaneous left-turns) between a mainline and sideroad left-turning vehicle

Comment #5	
Field observations suggest a significant volume of traffic is turning left from PTH 5 southbound onto PTH 1 eastbound. No median left-turn acceleration lane is provided in the eastbound direction on PTH 1. As a result, southbound to eastbound left-turning vehicles merge directly into the high-speed mainline lane or use the median shoulder to accelerate. This introduces a speed differential on the mainline lanes and an increased risk of collision. This is a particular concern for large trucks that generally take longer to accelerate and often merging at lower speed.	 **Passenger vehicle making left-turn directly into eastbound through lane**  **Truck making left-turn directly into eastbound through lane**

Comment #6	
Although both right-turn (taper-type) acceleration lanes on PTH 1 may meet provincial geometric guidelines, TAC recommends a longer parallel speed change lane on high-speed facilities such as PTH 1. During the site investigation, vehicles were observed merging onto the mainline lanes at speeds much lower than the approaching mainline traffic. This can result in significant speed differential and an increased risk of collision.	 **Southbound to westbound channelized right-turn lane with taper-type acceleration lane**

Comment #7	
The right-turn deceleration lanes provided at this intersection feature a taper-type lane with a 40 km/h exit advisory speed. Vehicles were observed slowing down on the mainline lanes prior to entering the deceleration lane. This may result in speed differentials in advance of the intersection and an increased risk of rear-end collision.	 **Eastbound to southbound channelized right-turn lane with taper-type deceleration lane**

Comment #8

Adjacent service roads, north and south of PTH 1, are located in close proximity to the main intersection (PTH 1 / PTH 5).

The close proximity of these intersections (located within the right turn merge and diverge points and the main intersection area of influence) may cause conflicts between through traffic and vehicles turning to/from the service road, especially if there are northbound or southbound queues at the intersection. During the site visit, queues were occasionally observed to extend to the service roads when there were limited gaps available in traffic on PTH 1.

The proximity of these intersections may also distract PTH 5 drivers' attention from the PTH 1 intersection.

Service Road, north of intersection

Service Road, south of intersection

Comment #9

The merge tapers from PTH 1 right-turn lanes onto PTH 5 extend through the service road intersections north and south of the main intersection. As a result, vehicles slowing or stopping to turn left or right from PTH 5 onto the service road at these locations may not be anticipated by drivers approaching from behind. This may contribute to an increased risk of rear end and sideswipe collisions at these locations.

Merge taper at Service Road, south of the intersection

3.3 POSITIVE GUIDANCE AND SIGNAGE

Specific concerns regarding positive guidance and signage are noted below.

Comment #10	
When approaching the intersection on PTH 1, there is little contrast between the mainline lanes and the intersection. Also, drivers on PTH 1 are provided with limited advanced warning of the approaching intersection with PTH 5. As a result, the intersection conspicuity is limited. Given the east-west orientation of PTH 1, sunlight glare may impair driver vision on the approach to the intersection at certain times of the day.	 **PTH 1 eastbound approach to intersection**  **PTH 1 westbound approach to intersection**

Comment #11	
A Divided Highway Ahead Warning Sign (WA-34) is provided on the PTH 5 southbound approach to the intersection. This sign is not provided on the PTH 5 northbound approach. This is a consistency issue.	 **Divided Highway Ahead Sign on the PTH 5 southbound approach**

Comment #12	
Guide signage on the eastbound and westbound approaches to the intersection is not consistent. On the eastbound approach, an advance destination distance sign and destination direction sign are provided. On the westbound approach, only a destination direction sign is provided. There are also numerous information and tourist-oriented signage tabs that create sign clutter that may reduce the effectiveness of the guide sign.	 **Advance destination distance sign on the eastbound approach to the intersection**  **Destination direction sign on the westbound approach to the intersection**

Comment #13	
A speed limit reduction zone (reduction from 110 km/h to 100 km/h) is introduced on PTH 1 in both the eastbound and westbound directions due to the presence of a rail crossing west of the PTH 1 and PTH 5 intersection. In the westbound direction, the speed reduction zone starts approximately 1.6 km east of the PTH 5 intersection and ends approximately 4.0 km west of PTH 5. In the eastbound direction, the speed reduction zone starts approximately 5.5 km west of the PTH 5 intersection (approximately 3.0 km west of the at-grade rail crossing) and ends immediately east of the PTH 5 intersection. These speed reduction zones are long (approximately 5.5-5.6 km in length), and no speed management is provided to promote and reinforce the reduced speed within these zones. As a result, the effectiveness of the speed reduction zones may be limited.	 **Westbound approach double posted "Maximum 100 km/h" signage**  **Eastbound approach double posted "Maximum 100 km/h" signage (approximately 5.5 km from intersection)**  **Eastbound approach single posted "Maximum 100 km/h" signage (approximately 4.0 km from intersection)**

Comment #14	
The posted speed on PTH 5 is 100 km/h and no speed reduction zone is provided on the approaches to the stop-controlled intersection.	 **PTH 5 approach to intersection with no speed limit reduction**

Comment #15	
The solid line pavement markings provided between the mainline travel lanes (including the left turn lanes) immediately in advance of the intersection (on both eastbound and westbound approaches) are approximately 55 metres in length. This short length may encourage drivers to perform a passing manoeuvre on the immediate approach and within the intersection as was observed during field observations.	 **Solid line on approach in advance of the intersection**

Comment #16

A left-turn acceleration lane is provided in the westbound direction on PTH 1. During the site investigation, northbound left turning vehicles were observed turning directly into the westbound mainline travel lanes or only used the left-turn acceleration lane for a short distance. The left-turn acceleration lane is currently delineated with dashed line, which may encourage drivers to merge into the high-speed mainline lane directly or shortly after entering the acceleration lane. This behaviour can result in significant speed differential and an increased risk of collision.

Dashed line pavement marking delineation for westbound left-turn acceleration lane

Comment #17

As noted above, the manner in which drivers use the left-turn acceleration lane in the westbound direction is inconsistent.

Although signage informing drivers about the median left-turn acceleration lane is provided, its effectiveness may be limited. This signage includes the following:

- White information sign "Left Turn Traffic, Use Acceleration Lane on PTH 1" provided on the PTH 5 northbound approach to the intersection (approximately 250 m upstream). This sign is small and may be difficult for some drivers to read.
- Double posted warning signs "Traffic Merging from Left" provided on the PTH 1 westbound approach to the intersection.

Double posted warning signs "Traffic Merging from Left" on westbound approach

"Left Turn Traffic, Use Acceleration Lane on PTH 1" sign on northbound approach

Comment #18	
Due to the wide median opening, the yield signs in the median are located at an increased offset from the travel path. As a result, the effectiveness of these signs may be reduced.	 **Large yield signs are located at increased offset from the travel path**

Comment #19	
Due to the narrow median, no positive guidance is provided to help drivers navigate and position themselves in the median. This absence of positive guidance contributes to an increased risk of collision.	 **No positive guidance in the median**

Comment #20	
The right-turn acceleration lane geometry (in both eastbound and westbound direction) suggests to drivers that they should speed up and merge onto PTH 1. However, the yield signs provided suggest drivers should slow down and yield to oncoming traffic. This sends a mixed message to drivers and may contribute to speed differentials at this location. The provincial standard for signing this type of ramp should be confirmed to ensure appropriate signage has been provided.	 **Southbound to westbound channelized right-turn lane with yield sign**  **Example of channelized right-turn lane with merging roadways ahead sign**

Comment #21	
During the field review, trucks stopped on the roadway shoulder were observed on all quadrants of the intersection at the end of the channelized right-turn lanes. These locations are currently posted with “No stopping” signs. Trucks stopped on the shoulder limit opportunities for evasive maneuvers at the end of the ramp tapers.	 **Truck stopped at end of right-turn channel on northwest corner**  **“No Stopping” signage on PTH 1**

Comment #22	
Field observations from the nighttime review include the following: – Illumination at the intersection is limited. This creates shadowed areas within the intersection and limits intersection conspicuity when approaching the intersection on PTH 1 in both the eastbound and westbound directions. – There is no direct illumination of the PTH 1 left-turn lanes and the median cross-over. – Deteriorated pavement markings offer reduced positive guidance to drivers at night. – Several signs were observed to have low reflectivity. – Some headlight glare was observed from opposing traffic on both PTH 1 and PTH 5 approaches to the intersection. Of particular concern is the following: • Glare from opposing PTH 1 traffic while a vehicle is waiting in the median left turn lane. • PTH 5 traffic stopped in the median to cross or turn left onto PTH 1 experience glare from opposing traffic on the opposite leg of PTH 5.	 **Approaching intersection on PTH 1 while travelling eastbound at night**  **Approaching intersection on PTH 1 while travelling westbound at night**

3.4 GENERAL MAINTENANCE

The intersection has several features that require ongoing maintenance to ensure that they remain effective. These features include:

- Pavement Markings
- Signage
- Rumble Strips
- Roadway Pavement
- Gravel Shoulders
- Lighting

Concerns regarding maintenance are noted below.

Comment #23	
In general, line painting is deteriorated. As a result, the effectiveness of positive guidance offered to drivers is reduced. This contributes to increased driver workload and risk of driver error.	 **Example of pavement marking deterioration at stop line**  **Example of pavement marking deterioration on northbound approach**

Comment #24	
Some signs on the approaches to the intersection were deteriorated, damaged, or exhibited low reflectivity at night. This can reduce sign effectiveness and contributes to increased driver workload and risk of driver error.	 Example of Sign deterioration  Example of Sign Deterioration

Comment #25	
Several signs located within the intersection clear zone are mounted on single 6x4 inch (15x10cm) wooden posts that are not equipped with shear holes. As such, these posts present a roadside hazard as they would be less likely to give way if impacted.	 Example of Sign without shear holes

Comment #26	
The transverse rumble strips on both PTH 5 approaches to the intersection are worn in the wheel paths. This may impact their effectiveness. The shoulder rumble strips on PTH 1 are also worn and should be reviewed for refurbishing. Since conducting the field review, MTI has refurbished the transverse rumble strip installations on PTH 5 (full lane width).	 **Transverse Rumble strips on the northbound approach**  **Rumble strips on the eastbound approach**

Comment #27	
Pavement on the approaches to the intersection exhibit cracking and other surface deterioration. These discontinuities may impact surface drainage and contribute to further pavement deterioration.	 **Pavement cracking on the eastbound approach**  **Pavement cracking at intersection (facing south)**  **Pavement cracking at the right-turn channel at the northeast corner**

Comment #28	
At several locations on PTH 5, the granular shoulders have deteriorated. This condition creates shoulder discontinuities that may impact drainage and vehicle stability.	 Gravel shoulder deterioration on the north leg  Gravel shoulder deterioration on the south leg

Comment #29	
The nighttime field review identified one bulb on the double davit in the northwest corner of the intersection that was no longer working.	No photo available

4 SAFETY ANALYSIS

4.1 OVERVIEW

The following sections summarize results for the Safety Analysis component of the ISRSR. The Safety Analysis included the following tasks:

- Collision Analysis
- Geometric Analysis
- Operational Analysis
- Video Conflict Analysis
- Human Factors Analysis

4.2 COLLISION ANALYSIS

Collision analysis is a useful tool at the diagnostic stage of a safety review. It also provides valuable clues as to candidate countermeasures that should be considered for addressing safety and operational concerns. The following sections provide a summary of the collision analyses undertaken for the PTH 1 and PTH 5 intersection.

Note: The ISRSR was initiated as a result of a fatal collision that occurred on June 15th, 2023. It is the ISRSR study team's understanding that this collision involved a bus travelling south on PTH 5 that collided with a semi-trailer traveling east on PTH 1. It is also the ISRSR team's understanding that the bus was crossing the eastbound lanes when a semi-trailer struck the bus at the intersection of the two highways. Six weeks later on July 31st, 2023, another severe injury collision occurred between a pickup truck travelling south on PTH 5 and an SUV travelling east on PTH 1. Similar to the June 15th collision, it is the ISRSR study team's understanding that the pickup truck was crossing the eastbound lanes when the SUV collided with the pickup truck. The pickup truck then rolled and collided with another vehicle stopped at the northbound stop sign on PTH 5. As the details of both collisions were under examination by the RCMP at the time of this review, only details provided by media reports were available to the ISRSR study team.

The June 15th and July 31st collisions are not included in the collision data set analyzed as part of this study, in addition to any other collisions reported after 2021. Although these collisions are not part of the collision data that was provided to the ISRSR study team for review, the ISRSR team recognizes that details from these collisions suggest similar collision characteristics to some historical collisions reported at the intersection between 2012 and 2021.

As a result, the ISRSR study team considered these more recent collisions during the process of identifying key road safety concerns, priorities, and potential treatment measures discussed in later sections of this report.

4.2.1 NETWORK SCREENING

As part of the historical background information, network screening results were provided by MTI for the intersection of PTH 1 and PTH 5. The results are summarized in **Table 4.1** and include Level of Service of Safety (LOSS) for total collisions (combined property damage only, injury, and fatal collisions), fatal and injury collisions, and Excess Collisions for total collisions and fatal and injury collisions.

LOSS is a measure of a highway's safety performance relative to other similar highway facilities on the network and uses a scale of one to four. When compared to other similar facilities:

- LOSS 1 indicates better safety performance than average for similar facilities and a low potential for crash reduction through implementation of countermeasures;
- LOSS 2 indicates slightly better safety performance than average for similar facilities and a low to moderate potential for crash reduction;
- LOSS 3 indicates slightly poorer safety performance than average for similar facilities and a moderate to high potential for crash reduction; and
- LOSS of 4 indicates poorer safety performance than average and a high potential for crash reduction.

Excess Collisions is another measure of a highway's safety performance. It provides an estimate of the number of collisions expected to occur (at an intersection or for a highway segment) above or below the predicted number of collisions for similar facility types. Excess collisions are expressed in number of collisions per five years.

Table 4.1: PTH 1 and PTH 5 Network Screening

Intersection	Loss (N_Total[1])	Loss (N_Fi[2])	Excess Collisions (N_Total) / 5 Years	Excess Collisions (N_Fi) / 5 Years
PTH 1 & PTH 5	3	3	+0.551	+0.194

[1] N_Total includes property damage only collisions, injury collisions and fatal collisions.
[2] N_fi includes injury collisions and fatal collisions.

As shown in **Table 4.1**, the LOSS values of 3 indicate safety performance slightly poorer than average for similar intersections on MTI's network and a moderate to high potential for crash reduction. The Excess Collisions indicate that a slightly higher number of collisions will occur every five years compared to other similar intersections.

This network screening was conducted by MTI to identify priority intersections for road safety improvement and was based on 2005-2009 collision data. It is noted that since the time of the available network screening data, the westbound left turn acceleration lane was constructed (in

2010/11) and the southwest right-turn cut-off island was upgraded to meet MTI's design standards in 2014.

As the network screening results are based on collision and traffic volume data more than ten years old and there have been modifications to the intersection since that time, these network screening results have been provided for historical background information only. WSP understands that MTI is actively working to update their network screening results based on updated collision and traffic volume data.

4.2.2 COLLISION DATA

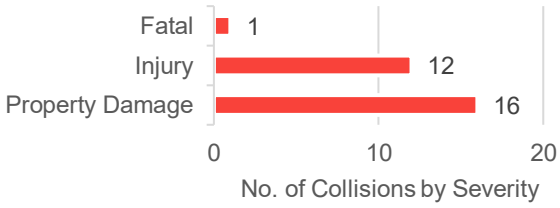
For the intersection of PTH 1 and PTH 5, 10 years (2012 to 2021) of summary level collision data was provided by MTI. MTI's collision database is populated using available Traffic Accident Reports (TARs) completed by law enforcement agencies as well as claims records from Manitoba Public Insurance (MPI). It is noted that MTI advises that collision data in their database for 2012 to 2013 may be incomplete due to an initial adjustment period experienced by MPI and law enforcement agencies following an amendment to the Highway Traffic Act (HTA) which made changes to the collision reporting process in Manitoba at the end of 2011.

4.2.3 COLLISION PATTERNS

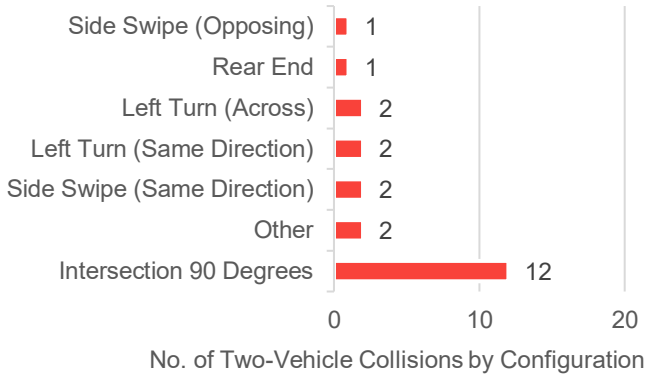
Collision pattern analysis consists of a breakdown and summary of relevant fields and records from available collision data and can be particularly useful in identifying contributing and causal factors associated with collisions.

This section provides a summary of key collision characteristics for the intersection. A full overview of collision parameters examined is presented in **Appendix A** of this report.

- **General:** Over the 10-year analysis period (2012 to 2021), a total of 29 collisions were reported at this intersection.
- **Collision Severity:** Of the 29 total collisions, one fatal collision (3.4%), 12 injury related collisions (41.4%) and 16 property damage only (PDO) collisions (55.2%) were reported. The fatal collision occurred in 2016 and was identified as a right-angle collision between an eastbound semi-truck and northbound pick-up truck. The collision data indicates that a contributing factor for the pick-up truck was "disobeying traffic control device". The majority of injury related collisions were right-angle collisions with the predominant contributing factors being either "failing to yield the right-of-way" or "leaving stop sign before safe to do so".

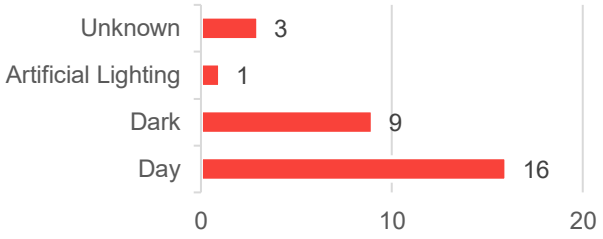


- **Collision Type and Configuration:** Collisions with other motor vehicle (22 collisions – 75.9%) were the most common collision type at this intersection. Of the 22 collisions with another motor vehicle, 12 collisions (54.6%) were identified as right-angle (90-degree) collisions, four collisions (18.2%) were identified as left turn collisions, three collisions (13.6%) were identified as sideswipe collisions, one collision (4.5%) was identified as a rear end collision, and two collisions (9.1%) did not have the collision configuration identified. Contributing factors for the majority of the right-angle collisions included failing to yield right-of-way and leaving the stop sign before safe to do. Animal related collisions were the next most common collision type (seven collisions – 24.1%). All of the animal related collisions occurred at night, as this is typically when wildlife is active.



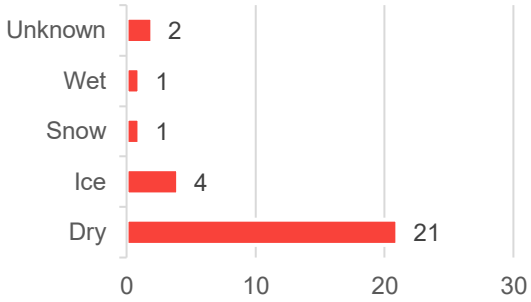
No. of Two-Vehicle Collisions by Configuration

- **Light Condition:** A total of 10 collisions (34.5%) occurred during periods of reduced lighting levels (dark or artificial lighting). 16 collisions (55.2%) occurred during the day, and three collisions (10.3%) had unknown lighting conditions.



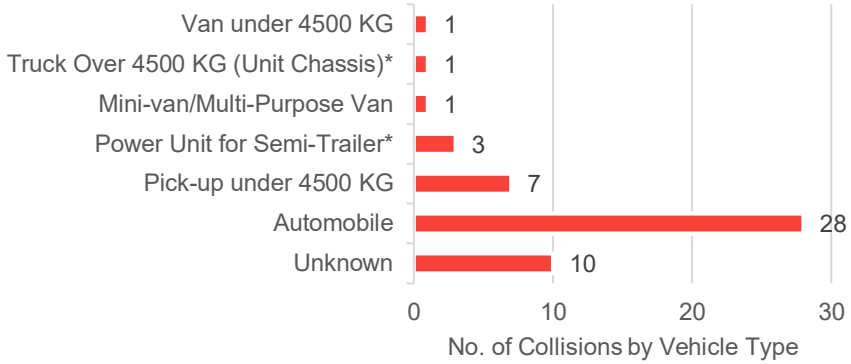
No. of Collisions by Light Condition

- **Road Surface Condition:** Ice, snow, and wet road surface conditions were present in six collisions (20.7%). Four of these collisions resulted in a collision with another motor vehicle and two resulted in a collision with an animal. 21 of the collisions (72.4%) occurred during dry road surfaces conditions and two collisions (6.9%) had unknown road surface condition.

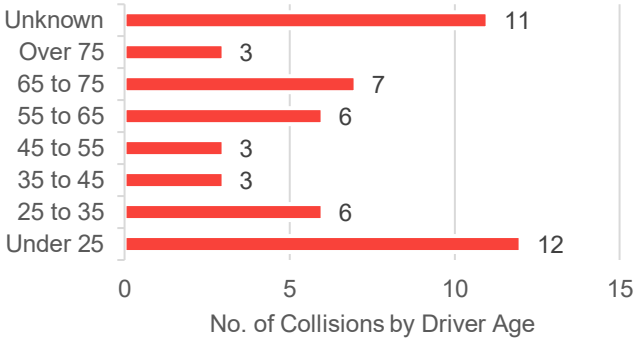


No. of Collisions by Road Surface Condition

- **Vehicle Type:** The 29 total collisions reported at this intersection involved 51 vehicles. Automobiles were involved in 28 collisions (54.9%), pick-ups or vans (including minivans) under 4500 kg were involved in nine collisions (17.7%), and heavy trucks (including power units for semi-trailers and trucks over 4500 kg) were involved in four collisions (7.8%). There were 10 collisions (19.6%) with an unknown vehicle type.



- **Driver Age:** Drivers under the age of 25 were the most represented in collisions (12 collisions – 23.5%), followed by ages 65 to 75 (7 collisions – 13.7%), 55 to 65 (six collisions – 11.8%), 25 to 35 (six collisions – 11.8%), 35 to 45 (3 collisions – 5.9%), 45 to 55 (3 collisions – 5.9%), and over 75 (3 collisions – 5.9%).



Key findings from the collision patterns review clude the following:

- Almost half of the collisions at the intersection (45%) involve fatality or injury . This finding suggesting that high-severity collision types are an issue at this location.
- Right angle (intersection 90 degree) collisions were the most common collision type when considering collisions between two or more vehicles (54.9%). This collision type is typically associated with increased collision severity. Common contributing factors included "failing to yield the right-of-way" and "leaving the stop sign before safe to do so". This suggests that the drivers on PTH 5 are having difficulty assessing when it is safe to cross PTH 1 or turn left onto PTH 1.
- Over a third of collisions (34.5%) occurred during reduced lighting levels (dark or artificial lighting). This suggests that illumination may be a contributing factor for some collisions. However, it is important to note that 60% of collisions with reduced lighting also involved animals which are typically more active at night.
- Poor road surface conditions (ice, snow or wet) were reported in 20.7% of collisions)

- Passenger vehicles (automobiles, pick-up trucks, and vans) were most represented in collisions (72.6%). Of the four heavy trucks involved in collisions, all were travelling on PTH 1 and collided with either a passenger vehicle which “failed to yield the right-of-way” or an animal.
- Younger (under 25) and older drivers (over 65) were most represented in collisions (43.1%), suggesting that driver inexperience / risk-taking behavior (in the case of younger drivers) and driver decline in mental and physical ability (in the case of older drivers) may be contributing factors for some collisions.

4.2.4 COLLISION DIAGRAM

A collision diagram indicating the spatial location, type, and severity of each recorded collision was prepared as part of this analysis. By providing a visual representation of historical collisions, collision clusters and problematic vehicle movements can be identified. **Figure 4.1** displays the collision diagram prepared for the intersection of PTH 1 and PTH 5.

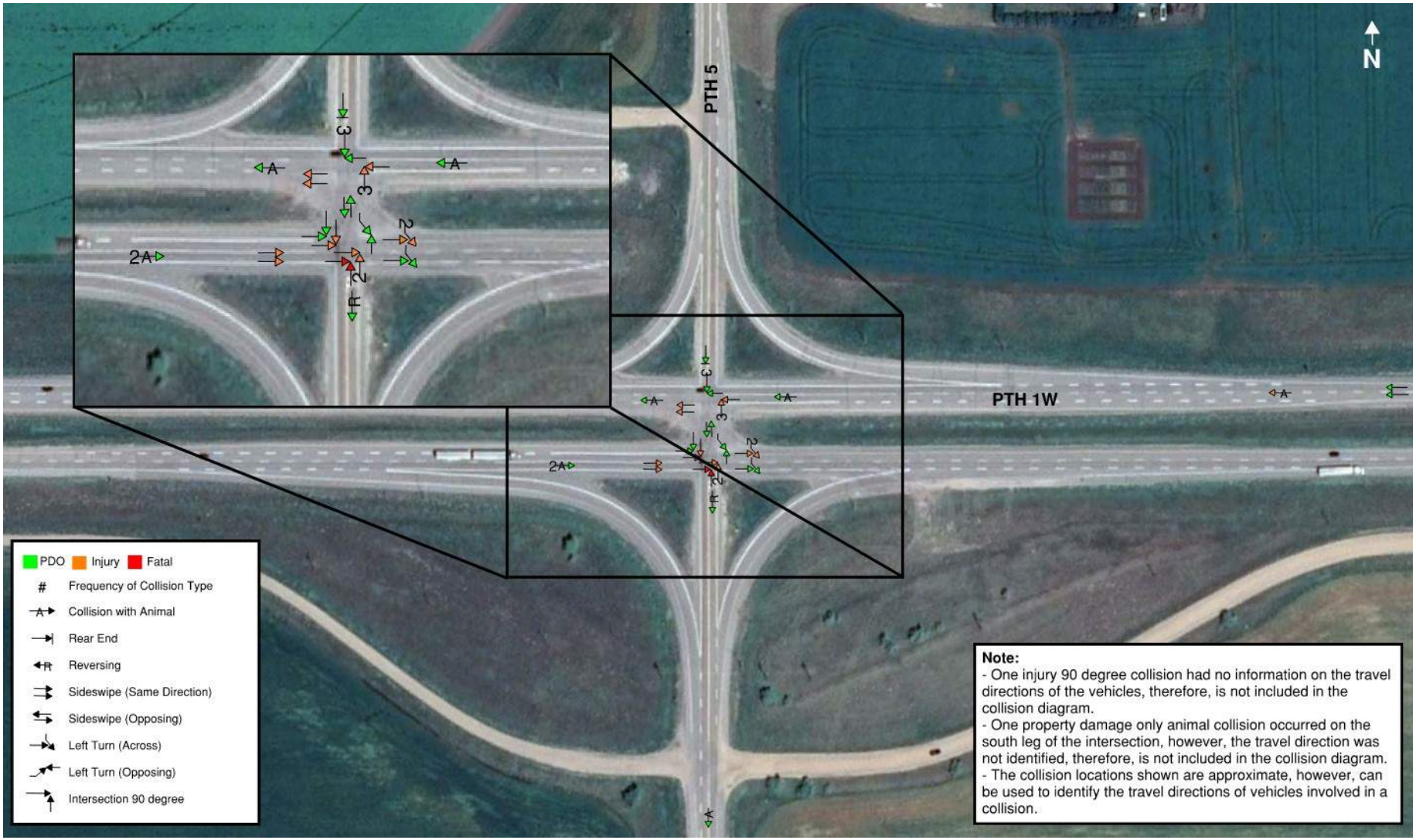


Figure 4.1: Collision Diagram

Key findings from an examination of the collision diagram (**Figure 4.1**) include the following:

- The majority of collisions involve vehicles departing the median (left-turns from PTH 1 and PTH 5, and PTH 5 traffic crossing PTH 1).
- Left-turn maneuvers are most problematic for vehicles turning left from the median onto the eastbound mainline lanes. The absence of a left-turn acceleration lane to accommodate this manoeuvre may be a contributing factor.
- Right-angle collisions accounted for 12 of the reported collisions (55% of collisions with other motor vehicles) and include one fatal collision, seven injury collisions, and four PDO collisions. These right-angle collisions were distributed as follows:
    - One collision (fatal) occurred between a northbound and eastbound vehicle.
    - Two collisions (one injury and one PDO collision) occurred between southbound and eastbound vehicles.
    - Two collisions (both injury collisions) occurred between northbound and eastbound vehicles.
    - Three collisions (all injury collisions) occurred between northbound and westbound vehicles.
    - Three collisions (all PDO collisions) occurred between southbound and westbound vehicles.
    - One collision (injury collision) had no information on the travel directions of the vehicles.

  Based on the points above, the majority of right-angle collisions occurred when a vehicle is leaving the median on the far side of the intersection. Contributing factors may include the following:

    - Drivers on PTH 5 may have difficulty assessing when it is safe to cross the highway.
    - Drivers may have difficulty in assessing the rate at which distant vehicles are approaching on PTH 1.
- Three sideswipe (same direction) collisions were reported on PTH 1. These collisions included the following:
    - One injury related collision between a northbound left-turning vehicle and a westbound vehicle.
    - One injury related collision between two eastbound vehicles.
    - One PDO collision between two westbound vehicles.

Speed differentials and the increased driver workload associated with the intersection may be contributing factors to these collisions. Additional details on each collision (by severity) are included in **Appendix A**.

4.3 GEOMETRIC ANALYSIS

Although a detailed standards compliance check was not conducted as part of this in-service road safety audit, a review of geometric design elements was conducted to identify existing conditions which may increase collision potential and to identify any correlations that may exist between infrastructure characteristics and collision history. The following sections summarize the key findings from this analysis.

4.3.1 GEOMETRIC DESIGN ELEMENTS

A review of geometric design elements (vertical elements, horizontal elements, roadside elements, cross-section elements, and intersection elements) was conducted based on the TAC Geometric Design Guide for Canadian Roads and the MTI Blue Sheet Supplement to the TAC Guide.

MTI Detailed Design Drawings #7393, #7414, and #7528 along with highway inventory information, photographic evidence, and Google Earth images were used to identify actual values for the purpose of this review.

A summary of MTI's current desired Geometric Design Criteria compared to actual conditions is provided in the **Table 4.2**, areas that fall below the desired minimum criteria are highlighted in blue.

Table 4.2: Geometric Design Criteria Comparison to Actual Design

Item		Reference	PTH 1		PTH 5	
			Design Criteria	Actual	Design Criteria	Actual
Speed	Current Posted Speed (km/h)	N/A	100	100	100	100
	Design Speed (DS) (km/h)	TAC Table 1.3.2.1M	130	130	120	120
Vertical Elements	Maximum Gradient (%)		3	< 3	3	< 3
	Minimum Stopping Sight Distance (m)		260	EB: >260 WB: >260	240	SB >240 NB >240
	Minimum Decision Sight Distance1 (DSD) (m)	TAC Table 2.5.6	415	EB: > 415 WB: > 415	415	NB >415 SB >415
	Minimum K Value - Sag Curve (Ks) (Headlight)	TAC Table 1.3.2.1M	65	N/A	60	N/A
	Minimum K Value - Crest Curve (Kc)		120	N/A	105	N/A
Horizontal Elements	Curvature - Minimum Radius (m, e_{max} = 6%)		950	5650	750	N/A
	Maximum Superelevation (%m/m)	TAC 2.1.2.2M	6.0%	2.0%	6.0%	N/A
	Minimum Distance - Intersection to Horizontal Curve (m)	TAC 2.1.2.6M	300	>300	300	>300
Roadside Elements	Minimum Median Slope	TAC Figure 4.51	4H:1V (median < 25m)	4H:1V	N/A	N/A
	Minimum Side Slope	TAC 7.3	4H:1V	4H:1V	4H:1V	4H:1V
Cross-Section	Lane Widths (m)	TAC Table 1.3.2.1M	3.7	3.7	3.7	3.7
	Median Width (m)		15 minimum 20-40 normal	24.4	N/A	N/A
	Left Shoulder (m)		1.5 paved	1.5 paved	N/A	N/A
	Right Shoulder (m)		3.0m paved	3.0m paved	0.8 paved/1.7 gravel	0.00 paved/3.0 gravel
Intersection	Intersection Sight Distance (m)	TAC 9.9*	N/A	N/A	289 (PC) 441 (WB-20)	>441
	Left Turn Lane Deceleration Length (m)	TAC 2.3.6.4M	100 Taper 150 Parallel	EB 94.3 Taper EB 205.5 Parallel WB 100 Taper WB 210 Parallel	N/A	N/A

Item		Reference	PTH 1		PTH 5	
			Design Criteria	Actual	Design Criteria	Actual
	Left Turn Acceleration Length(m)	TAC Table 10.6.5	100 Taper 885 Parallel	WB 200 Taper WB 1000 Parallel	N/A	N/A
	Right Turn Deceleration Length(m)	TAC 2.3.8.5M	100 Taper 150 Parallel	200 Taper 0 Parallel	N/A	N/A
	Right Turn Acceleration Length(m)	TAC Table 10.6.5	500	0 (on Yield control)	N/A	N/A

* Two-stage left turn from minor road using median.

4.3.2 KEY FINDINGS

The following design criteria and general geometric observations are noted:

Design Criteria:

- The shoulders on PTH 5 are constructed with a 2.0 m to 3.0 m wide fully gravel surface. The current MTI standards would recommend a 2.5 m wide shoulder including a 0.8 m partially paved strip for these shoulders.
- The westbound left turn lane taper is slightly sub-standard at 94.3m as opposed to the 100m taper length currently recommended.
- The right turn deceleration lanes on PTH 1 use a direct taper design which does not include a parallel lane prior to the taper. Current MTI standard TAC 2.3.8.5M suggest a 150 m parallel lane plus a 100 m taper for this treatment.

Additional Observations:

- The provided median width of 24.4 m between EB and WB through lanes is above the recommended minimum dimension. It is noted however, that the addition of left turn deceleration lanes and left turn acceleration lanes in the vicinity of the intersection reduces the actual physical median width to between 17m and 20.7m. The overall length of a WB-20 design vehicle is 22.7m, meaning that these widths are insufficient to store these vehicles.
- The PTH 1 left-turn lanes have a negative offset, meaning that opposing left turn vehicles can block each others view of the traffic in adjacent through lanes (**Figure 4.2**).
- There are no right-turn acceleration lanes provided in the eastbound or westbound direction. A yield/direct taper design is used in these quadrants which may result in significant speed differentials between entering traffic and through traffic on PTH 1, as the acceleration length is short, vehicles entering the PTH 1 do so at speeds well below the 100 km/h posted speed limit. Speed differentials between entering traffic and through traffic on PTH 1 were also observed during the field investigation.
- The service road intersections on the north and south legs of PTH 5 are placed within the right turn acceleration and deceleration tapers. This may result in conflicts between service road traffic and traffic entering/exiting PTH 1 at this location.

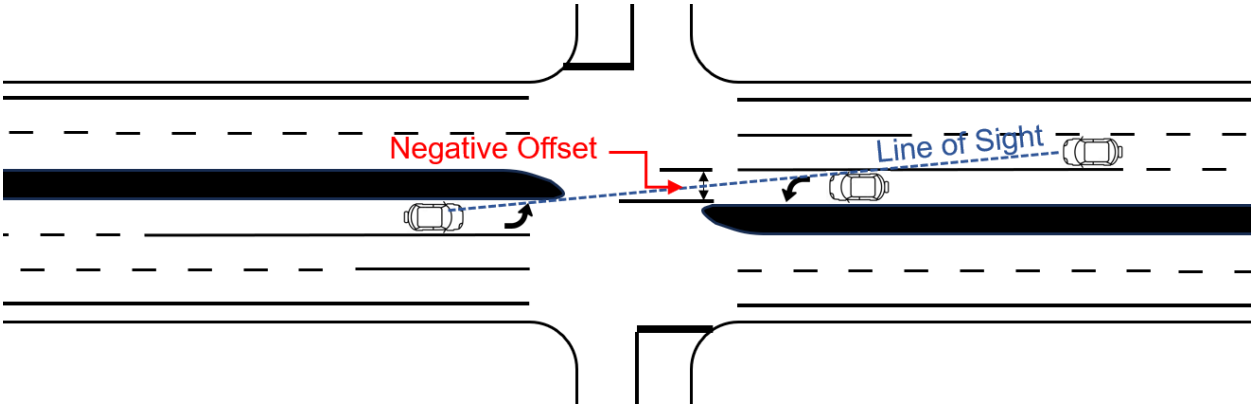


Figure 4.2: Negative Offset Example

4.4 OPERATIONAL ANALYSIS

As part of this task, traffic volumes for the PTH 1 and PTH 5 intersection were reviewed to determine the peak and daily traffic volumes (including truck traffic) at the intersection. An operational analysis of the intersection was conducted to determine whether there are any operational issues during peak traffic periods. A review of operating speeds and a speed limit assessment was also conducted using data obtained from speed surveys. The results of these reviews are provided in the following sections.

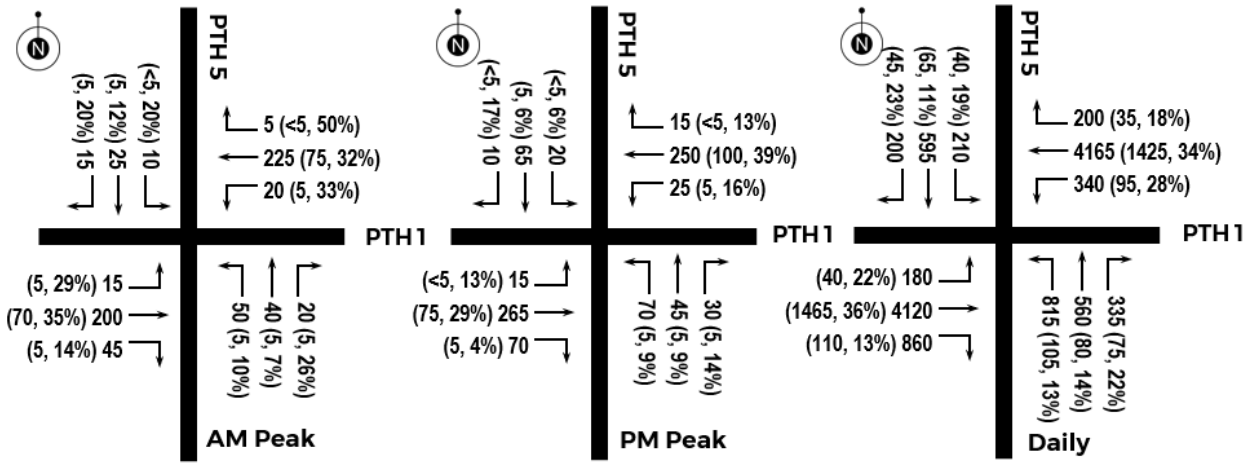
4.4.1 TRAFFIC VOLUMES

Traffic counts were collected at the PTH 1 and PTH 5 intersection on July 18th and 19th, 2023, using Miovision Scout Video Collection Units, which is an industry-leading, portable, camera-based traffic data collection device. The traffic counts were collected between 7:00 a.m. and 9:00 p.m. (14-hours each day) and were recorded in 15-minute intervals (e.g., 7:00 a.m. to 7:15 a.m., 7:15 a.m. to 7:30 a.m., etc.). A copy of the collected data is provided in **Appendix B**.

The a.m. and p.m. peak hour volumes were used for the operational assessment of the intersection as these time periods are generally when traffic volumes are highest. Based on the traffic data collected, the a.m. peak hour occurred between 8:00 a.m. and 9:00 a.m. (recorded on July 19th, 2023) and the p.m. peak hour occurred between 4:00 p.m. and 5:00 p.m. (recorded on July 18th, 2023).

Daily traffic volumes were calculated by averaging the two 14-hour counts and multiplying by 1.3, which is a typical MTI practice for converting 14-hour counts to daily counts.

Truck percentages were calculated by dividing the total heavy vehicle volume (Federal Highway Administration (FHWA) Classes 4-13 which includes buses, single-unit trucks, single-trailer trucks, and multi-trailer trucks) by the total volume of traffic for each movement. The resulting traffic volumes for the weekday a.m. and p.m. peak average daily traffic, and percentage of trucks are shown in **Figure 4.3**.



Note:
- ##(##) = Traffic Volume (Truck Volume, Truck %)
- Volumes are rounded to the nearest 5 vehicles per hour
- Daily volumes are calculated by averaging two 14-hour counts and multiplying by 1.3 to estimate the 24-hour daily traffic volumes

Figure 4.3: 2023 Traffic Volumes and Truck Percentages at PTH 1 & PTH 5

The traffic volumes indicate that truck traffic accounts for 28% of daily traffic, with the highest daily truck traffic volumes occurring on the PTH 1 through movements and turning to/from the south leg of PTH 5.

No pedestrian or cyclists were recorded in the traffic count data collected in July 2023 and none were observed during the site investigation. Pedestrian and cycling volumes at the intersection are assumed to be very low as no pedestrian and cycling infrastructure currently exists in the vicinity of the intersection.

The time-of-day distribution of traffic (recorded in 15-minute intervals) is shown in **Figure 4.4**. The graph shows that traffic steadily increases throughout the day and drops off in the evening. Total traffic volumes are highest around 4:30 p.m., while truck traffic volumes are highest at 12:30 p.m.

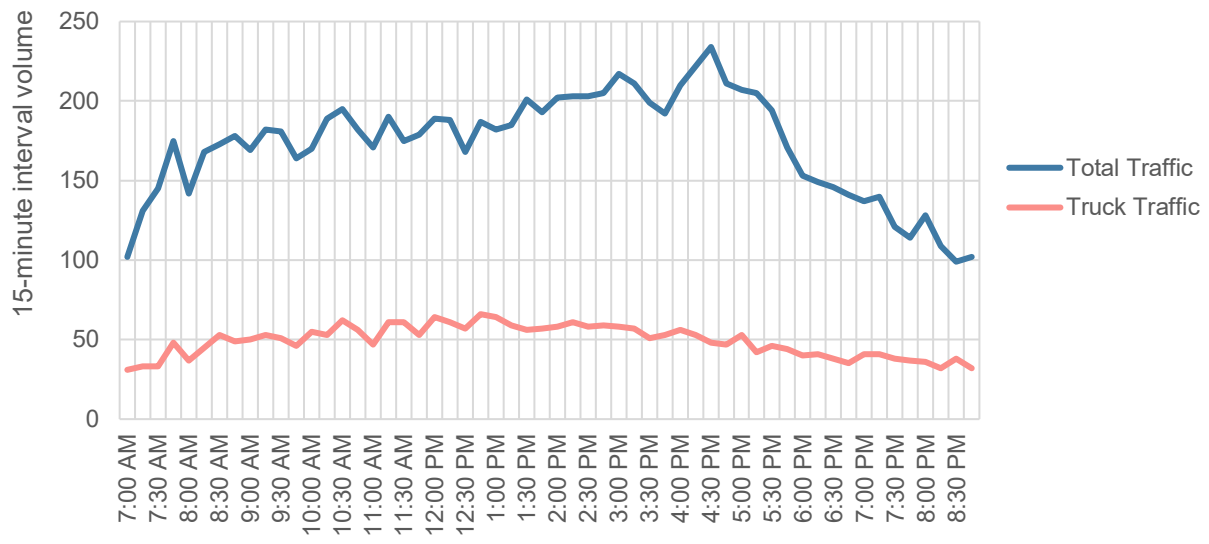


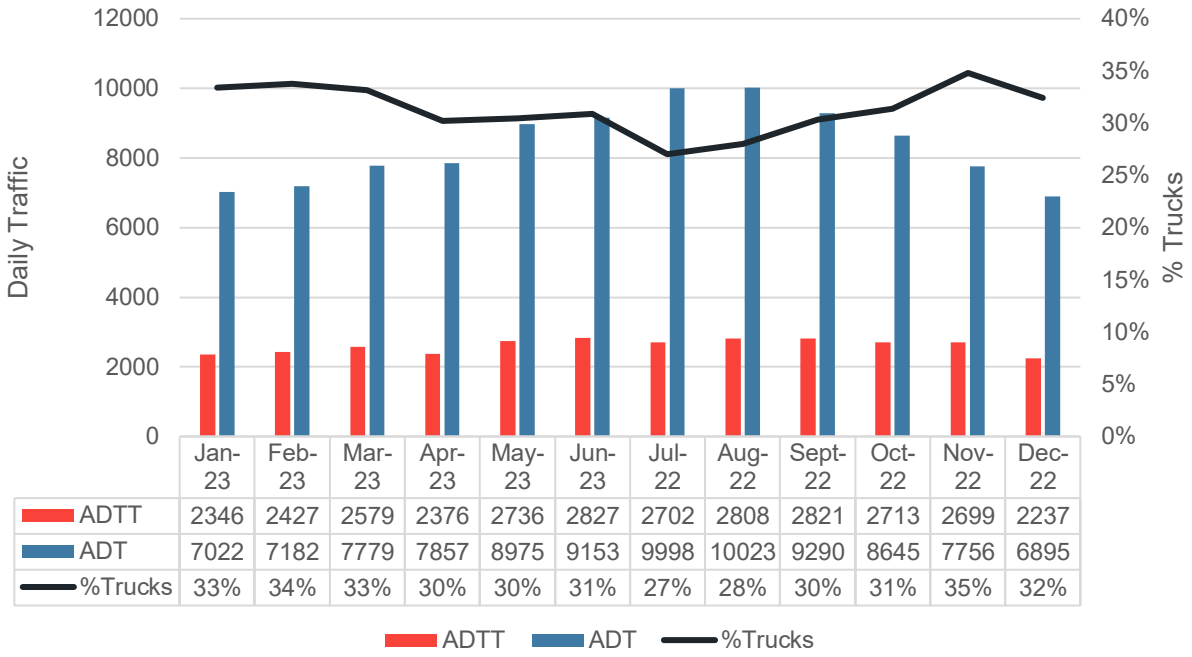
Figure 4.4: Time-of-Day Distribution of Traffic

It was noted through discussions with MTI that truck traffic volumes may be higher during the potato harvesting season in September and October. The increased traffic generated by these harvesting activities includes semi-tractor trailers and B-Trains traveling through the intersection.

The monthly distribution of traffic on PTH 1 (obtained from permanent count Station 79, located approximately 4.3 kilometers west of PTH 5) was examined and is shown in **Figure 4.5**. The graph shows that average daily traffic (ADT) volumes are highest during the summer months and lowest during the winter months. Average daily truck traffic (ADTT) volumes follow a similar pattern, however, remain high (similar to the summer months) during harvest season through September and October. In addition, the proportion of trucks increases in the fall and through the winter, as passenger vehicle traffic decreases (compared to the summer months).

This information indicates that the truck volumes collected during the traffic count in July 2023 are similar to those experienced during harvest season, and that the passenger vehicle volume were higher than what would be experienced during harvest season. As a result, the traffic volumes collected in July 2023 reflect a highest volume case scenario for both passenger vehicles and truck traffic.

Based on the review of historical traffic volumes and collisions, no direct correlation between temporal traffic volumes (time-of-day and month-of-year) and collisions at the intersection is evident.



	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-22	Aug-22	Sept-22	Oct-22	Nov-22	Dec-22
ADTT	2346	2427	2579	2376	2736	2827	2702	2808	2821	2713	2699	2237
ADT	7022	7182	7779	7857	8975	9153	9998	10023	9290	8645	7756	6895
%Trucks	33%	34%	33%	30%	30%	31%	27%	28%	30%	31%	35%	32%

Figure 4.5: Monthly Distribution of Traffic – Average Daily Traffic (ADT), Average Daily Truck Traffic (ADTT) and % Trucks

4.4.2 TRAFFIC OPERATIONAL ANALYSIS

The traffic operational analysis for the intersection was undertaken using the HCM 6th Edition methodology by utilizing Synchro 11.0 traffic analysis software and SimTraffic simulation software. Several metrics are used to examine intersection performance. These include:

- Level of Service (LOS)
- Volume to capacity ratio (V/C)
- 95th percentile queue length

Each of these metrics is described below.

The relative performance of an intersection is measured in terms of Level of Service (LOS), ranging from A (excellent) to F (beyond capacity). In general, LOS E is considered to be at capacity.

LOS for unsignalized intersections is defined in terms of delay. Delay is the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last in queue position to the first.

The volume to capacity (v/c) ratio is used to determine the level of congestion for each lane group. If the v/c ratio is greater than or equal to 1.00, that lane group is operating above capacity.

The 95th queue length is the maximum length of the back of the traffic queue with 95th percentile traffic volumes. This measure is often used to determine whether the length of the left-turn storage lane is sufficient.

The PTH 1 and PTH 5 intersection was modelled as a four-legged, two-way stop-controlled intersection with the following configuration:

- The eastbound and westbound approaches are free-flowing, and each consist of a left-turn lane, two through lanes and a channelized right-turn lane.
- The northbound and southbound approaches are stop-controlled, and both consist of a shared left-turn/through lane and a channelized right-turn lane. Northbound left-turning traffic has a median westbound acceleration lane.

The results of the traffic operational analysis indicate that the overall intersection is operating at LOS A during both AM and PM peak hours. The results for the individual movements are shown in **Table 4.3** and indicate that all movements are operating at acceptable levels from an operations perspective. The northbound left / through movement has the highest delay (around 17 seconds) and operates at LOS C in both peak hours. No issues were observed during the SimTraffic simulations. The detailed traffic model reports are provided in **Appendix C**.

Table 4.3: PTH 1 & PTH 5 Operational Performance

Individual Movement [1]	HCM 6th Edition Operational Metrics									
	Weekday AM Peak Hour					Weekday PM Peak Hour				
	Capacity (veh/h)	V/C Ratio	LOS	Delay (sec)	95% queue length (veh)	Capacity (veh/h)	V/C Ratio	LOS	Delay (sec)	95% queue length (veh)
Westbound Left	1131	0.02	A	8.3	0.1	1167	0.03	A	8.2	0.1
Eastbound Left	1134	0.02	A	8.2	0.1	1207	0.02	A	8.1	0.1
Northbound Left / Through	474	0.39	C	17.3	1.8	516	0.38	C	16.2	1.8
Southbound Left / Through	530	0.15	B	13.0	0.5	495	0.25	B	14.7	1.0

[1] The HCM 6th Edition methodology in the Synchro 11.0 traffic analysis software analyses the movements at the immediate intersection; therefore, the median westbound acceleration lane merge movement and right-turn lane merge movements (in all directions) are not included in the table. SimTraffic simulations for the median westbound acceleration lane and right-turn lanes indicated no issues.

In addition to the analyses above, a traffic signal warrant analysis was conducted by MTI. MTI uses a 50-point warrant based on the TAC Traffic Signal & Pedestrian Signal Head Warrant Analysis and MTI's Policy/Standard No. 400-A-2 Traffic Signal Warrants. MTI advised the results of the warrant analysis indicated that a traffic signal is not warranted at this time based on MTI's standard.

4.4.3 OPERATING SPEEDS AND SPEED LIMIT ASSESSMENT

As part of the in-service road safety review, the road safety team reviewed the speed survey data collected during the site investigation to analyze vehicle operating speeds on the intersection approaches.

The speed surveys were conducted in accordance with the guidance provided in MTI's Guide for Setting Speed Limits on Manitoba Roadways. Speeds were collected using a handheld radar device (Scout 2, Decatur Electronics), where the person holding the device and recording the speeds was sitting in a vehicle located on the shoulder of the highway. While this method of speed data collection is an industry accepted practice and every effort was made to conduct the speed surveys in an inconspicuous manner, some drivers may have been influenced (e.g., slowed down) by the presence of a vehicle parked on the shoulder of a highway.

The speed data was reviewed to assess the appropriateness of current speed limits on both PTH 1 and PTH 5, but also to determine the effectiveness of the localized speed reduction zone on the PTH 1 approaches and to determine the effectiveness of the rumble strip installations provided on the PTH 5 approaches.

PTH 1 APPROACHES

On the PTH 1 approaches to the intersection, the posted speed limit is reduced from 110 km/h to 100 km/h in advance of the intersection approximately 1.6 km to the east and 5.5 km to the west. For the purpose of determining the effectiveness of this localized speed reduction zone, the speed surveys were conducted at the locations illustrated in **Figure 4.6** and listed below:

- Location 1 - PTH 1 eastbound approach in the 110 km/h speed zone, at 6.8 km west of PTH 5 (200 meters west of Road 87W), to assess the eastbound operating speeds outside of the speed reduction zone.
- Location 2 - PTH 1 eastbound approach in the 100 km/h speed zone, immediately west of the PTH 1 and PTH 5 intersection to assess the eastbound operating speeds of traffic approaching and traveling through the intersection.
- Location 3 - PTH 1 westbound approach in the 100 km/h zone, immediately east of the PTH 1 and PTH 5 intersection, to assess the westbound operating speeds of traffic approaching and traveling through the intersection.

– Location 4 - PTH 1 westbound approach in the 110 km/h speed zone, at 3.5 km east of PTH 5 (100 meters west of Road 81W), to assess the westbound operating speeds outside of the speed reduction zone.

Figure 4.6: PTH 1 Speed Survey Locations

Table 4.4 and Table 4.5 summarizes the results of the speed surveys. Additional speed survey information is provided in Appendix D.

Table 4.4: PTH 1 Speed Survey Results – Eastbound Direction

Measure	PTH 1 Eastbound – 110 km/h Location 1			PTH 1 Eastbound – 100 km/h Location 2		
	Passenger Vehicles	Heavy Vehicles	All Vehicles	Passenger Vehicle	Heavy Vehicles	All Vehicles
Sample Size	60	52	112	57	43	100
85th percentile speed (km/h)	117.4	108.8	115.8	108.5	107.3	108.0
15 km/h Pace	-	-	100-114	-	-	95-109
Percent in Pace	-	-	74%	-	-	82%

Table 4.5: PTH 1 Speed Survey Results – Westbound Direction

Measure	PTH 1 Westbound – 110 km/h Location 4			PTH 1 Westbound – 100 km/h Location 3		
	Passenger Vehicles	Heavy Vehicles	All Vehicles	Passenger Vehicle	Heavy Vehicles	All Vehicles
Sample Size	60	60	120	65	35	100
85th percentile speed (km/h)	118.6	111.1	117.1	108.8	103.7	108.0
15 km/h Pace	-	-	100-114	-	-	95-109
Percent in Pace	-	-	68%	-	-	80%

Results from the survey indicate the following:

- In the 110 km/h speed zones located on the distant approaches to the intersection, 85th percentile operating speeds (the maximum speed that 85% of drivers did not exceed) range from 116 km/h in the eastbound lanes to 117 km/h in the westbound lanes.
- Within the 100 km/h speed zone in the vicinity of the study area intersection, 85th percentile operating speeds were 108 km/h in both the eastbound and westbound lanes.
- When the 15 km/h Pace (the range of speed at which the majority of vehicles are traveling) is considered for the 100 km/h speed zone, the results indicate that 82% of drivers in the eastbound lanes and 80% of drivers in the westbound lanes travel between 95 km/h and 109 km/h.
- Truck speeds in the eastbound 100 km/h speed zone are approximately 7 km/h above the speed limit and similar to passenger vehicle speeds.

Based on the findings discussed in the points directly above, reducing the speed from 110 km/h to 100 km/h results in a speed reduction ranging from 8 km/h to 9 km/h in the vicinity of the intersection. The upper limit of the 15 km/h Pace is within 10 km/h of the posted speed limit, also suggesting relative compliance to the posted speed limit.

We note that, as there was significant media attention to safety at this intersection in the weeks prior to the collection of speed data, driver speed choices may have been influenced during the speed data collection period. As a result, it is recommended that a follow-up speed survey be conducted to confirm operating speeds at the intersection.

Concern has been raised regarding the appropriateness of the 100 km/h posted speed limit in the vicinity of this intersection and the need to further reduce the mainline speed limit. We note that, research indicates that simply reducing the speed limit to less then 100 km/h on a high-speed facility can create other challenges. These include the following:

- Localized speed reduction zones on high-speed freeways are contrary to driver expectation. As a result, driver compliance to the to the localized speed reduction will likely be poor.
- The highway appearance within the localized speed reduction zone would still be consistent with other portions of the highway posted at 110 km/h located upstream and downstream of the intersection, and there would be no visual cues (other than the speed limit signage) of the need to change driving behavior. This would contribute to poor compliance with the reduced speed limit.
- Drivers would likely have been driving at high speed for long periods of time. As a result, they will be speed adapted. Speed adaptation is a driver's underestimation of their actual speed after transitioning from a higher speed-limit facility or highway section.

Poor compliance with the reduced speed limit may contribute to increased speed differentials and an increased risk of collision. Based on the concerns outlined in the points above, the

adoption of a reduced speed limit (less then 100 km/h) on the PTH 1 approaches to the intersection would not be recommended as a standalone treatment.

PTH 5 APPROACHES

The posted speed limit is 100 km/h on PTH 5, and no speed reduction is introduced on the approaches to the intersection. However, three sets of transverse rumble strips are provided on both approaches over a 200m distance (starting 400m away and ending 200m away from the intersection) to warn driver of the approaching intersection. Each set of transverse rumble strips is 20m long and separated by 70m. To assess the effectiveness of these rumble strip installations, speed data was collected at the locations illustrated in **Figure 4.7** and listed below:

- Location 1 – before the set of rumble strips that was furthest away from the intersection.
- Location 2 – after the set of rumble strips that was closest to the intersection.

Figure 4.7: PTH 5 Speed Survey Locations

Results from these speed surveys are summarized in **Table 4.6**. Additional speed survey information is provided in **Appendix D**.

Table 4.6: PTH 5 Speed Survey Results

Measure	PTH 5 Northbound			PTH 5 Southbound		
	Before Rumble Strips Location 1	After Rumble Strips Location 2	Speed Reduction	Before Rumble Strips Location 1	After Rumble Strips Location 2	Speed Reduction
Sample Size	42			47		
85th percentile speed (km/h)	**97.0**	**77.8**	**18.8** [1]	**101.8**	**75.8**	**26.0** [1]
15 km/h	**85 - 99**	**60 - 74**	**-**	**90 - 105**	**60 - 75**	**-**
% in pace	**57%**	**52%**	**-**	**43%**	**46%**	**-**

[1] 85th percentile speed reduction is the difference between the 85th percentile speeds before and after the rumble strips.

The results of the survey indicate that the 85th percentile speed before the rumble strips was 97.0 km/h in the northbound direction approaching the intersection and 101.8 km/h in the southbound direction approaching the intersection. After passing through the rumble strips these 85th percentile operating speeds dropped to 77.8 km/h on the approach and 75.8 km/h on the southbound approach. This results in an 85th percentile speeds reduction of 18.8 km/h in the northbound direction and 26.0 km/h in the southbound direction. In the northbound direction, the 15 km/h pace reduced from 85 to 99 km/h before the rumble strips to 60 to 74 km/h after the rumble strips. In the southbound direction, the 15 km/h pace reduced from 90 to 105 km/h before the rumble strips to 60 to 74 km/h after the rumble strip. The percent in pace for both directions, and both before and after the rumble strips, ranged from 43% to 57%. As this is less than 60%, this suggests that the speed drivers are choosing as they approach the intersection is not consistent.

Although the transverse rumble strips result in a significant speed reduction, the majority of the speed reduction on these approaches occurred within 200 m of the intersection. The introduction of a reduced speed zone supported with appropriate speed management on the approaches to the intersection may be an option to support a more gradual reduction in speed approaching the intersection.

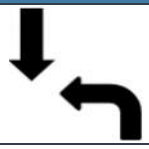
4.5 VIDEO CONFLICT ANALYSIS

In this line of evidence, intersection video recordings were used to examine vehicle interactions including conflicts and near-miss events, and stop sign compliance to obtain an understanding of probable causes of potential collisions. As part of this work, 60 hours of video recording collected (between July 17th and July 21st, 2023) was processed and analyzed.

4.5.1 VEHICLE INTERACTIONS

Vehicle interactions, including conflicts and near-miss events were analyzed by focusing on conflicts with the highest probable collision severity and collision likelihood. For this purpose, the main focus of the analysis was on crossing (right-angle) conflict types, as these conflict types are typically associated with higher severity collision outcomes. **Table 4.7** illustrates three typical crossing conflict configurations considered for this purpose.

Table 4.7: Typical crossing conflict configurations

Left-Turn vs. Through Oncoming	Through vs. Through	Left-Turn vs. Through from Left
		

Each configuration illustrated in **Table 4.7** features two possible scenarios of potential conflict, including the following:

- Scenario 1 – where the vehicle with higher speed and the right-of-way reaches the conflict point first, and the slower vehicle approaching from a controlled approach (such as a stop-controlled approach) reaches the conflict point after. This type of conflict would be considered a lower-risk conflict. One example at the PTH 1 and PTH 5 intersection is when the eastbound through movement is compared to the northbound through movement (stop-controlled movement), and when the northbound vehicle has carefully passed after the eastbound through vehicle.
- Scenario 2 – where the slower vehicle approaching from a controlled approach (such as a stop-controlled approach) reaches the conflict point first, and the vehicle with higher speed and the right-of-way reaches the conflict point after. This type of conflict would be considered a higher-risk conflict. One example at the PTH 1 and PTH 5 intersection is when the eastbound through movement is compared to the northbound through movement (stop-controlled movement), and when the northbound vehicle has passed briefly before the eastbound through vehicle.

For the purpose of this analysis, the Scenario 2 type of conflicts were selected and further evaluated.

In the next step, the post-encroachment time (PET) value was used to assess the likelihood of a collision occurring for these movements. Post-Encroachment Time (PET) is a surrogate safety measure used to measure the available reaction time that road users typically experience when interacting with one another in a conflict. Lower PET value suggests less reaction time that drivers have to react and therefore this suggests a higher likelihood of collision. For the purpose of this analysis, PET values less than five seconds were selected.

Finally, to quantify the level of risk present at this intersection, eight crossing conflicting movement types were identified at the intersection and were further individually analyzed and assigned a risk level based on the PET value and maximum speed of vehicles involved in the conflict. The risk rating was performed using risk level categories indicated in **Figure 4.8** and **Table 4.8** below.

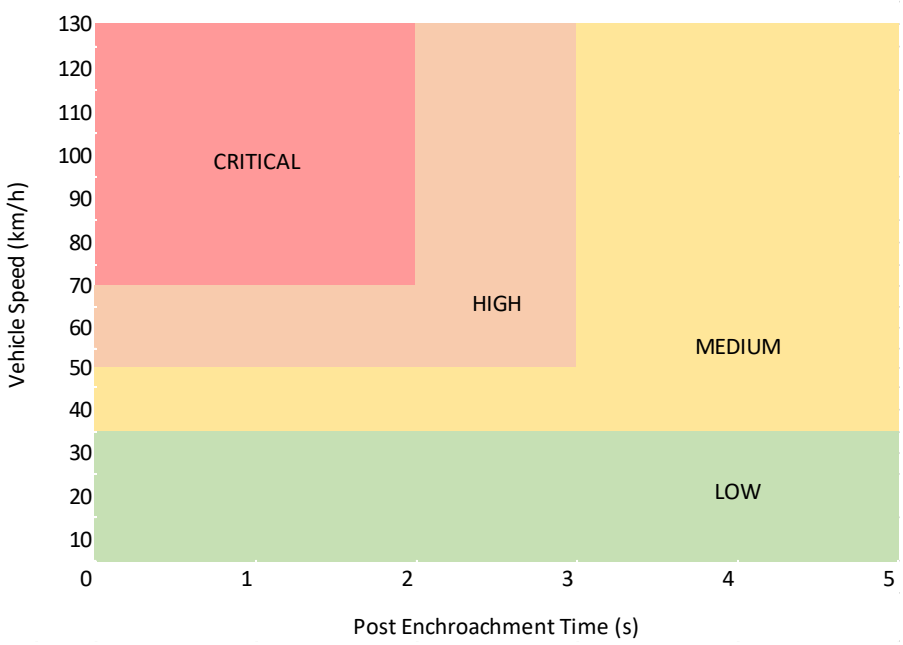


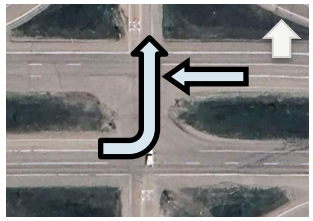
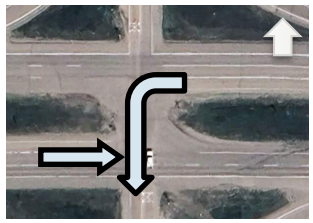
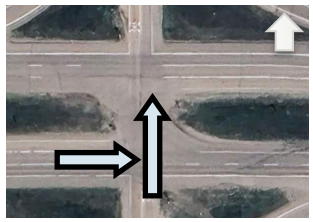
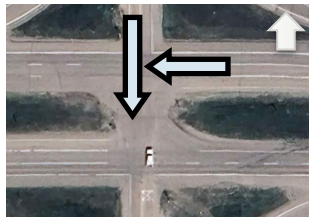
Figure 4.8: Risk Level Categories

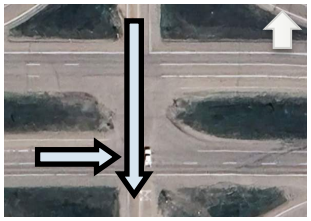
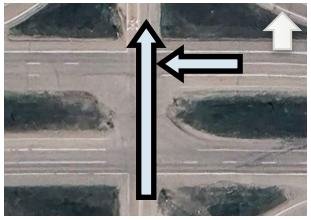
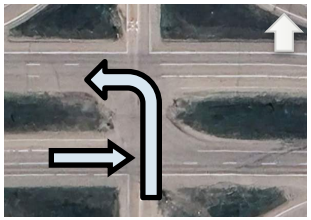
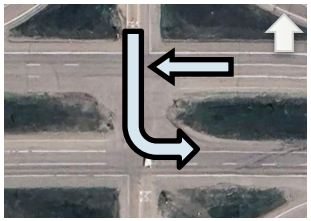
Table 4.8: Risk Level Category Thresholds

Critical Risk (C)	High Risk (H)		Medium Risk (M)		Low Risk (L)
PET<= 2 sec AND Speed > 70 km/h	PET<= 2 sec AND Speed 70-50 km/h	PET 2-3 sec AND Speed > 50 km/h	PET <= 3 AND Speed 50-35 km/h	PET 3-5 sec AND Speed > 35 km/h	PET <= 5 sec AND Speed < 35 km/h

The results of the risk rating exercise are summarized in **Table 4.9** and **Figure 4.9** below. Details specific for each conflicting movement are presented in **Appendix E** of this report.

Table 4.9: Summary of Risk Level Rating for Crossing Conflicts

No.	Conflicting Movements		Crossing Conflict Type	Total Number of Crossing Conflicts (PET < 5 sec)	Risk Level Rating			
					CRITICAL	HIGH	MEDIUM	LOW
1	Eastbound-Left vs Westbound-Through		Left-Turn vs. Through Oncoming	21	1	0	20	0
2	Westbound-Left vs Eastbound-Through		Left-Turn vs. Through Oncoming	40	0	3	37	0
3	Northbound-Through vs Eastbound-Through		Through vs. Through	23	0	0	23	0
4	Southbound-Through vs Westbound-Through		Through vs. Through	16	0	0	16	0

No.	Conflicting Movements		Crossing Conflict Type	Total Number of Crossing Conflicts (PET < 5 sec)	Risk Level Rating			
					CRITICAL	HIGH	MEDIUM	LOW
5	Southbound-Through vs Eastbound-Through		Through vs. Through	37	1	0	36	0
6	Northbound-Through vs Westbound-Through		Through vs. Through	37	0	1	36	0
7	Northbound-Left vs Eastbound-Through		Left-Turn vs. Through from Left	57	0	0	57	0
8	Southbound-Left vs Westbound-Through		Left-Turn vs. Through from Left	22	0	1	21	0

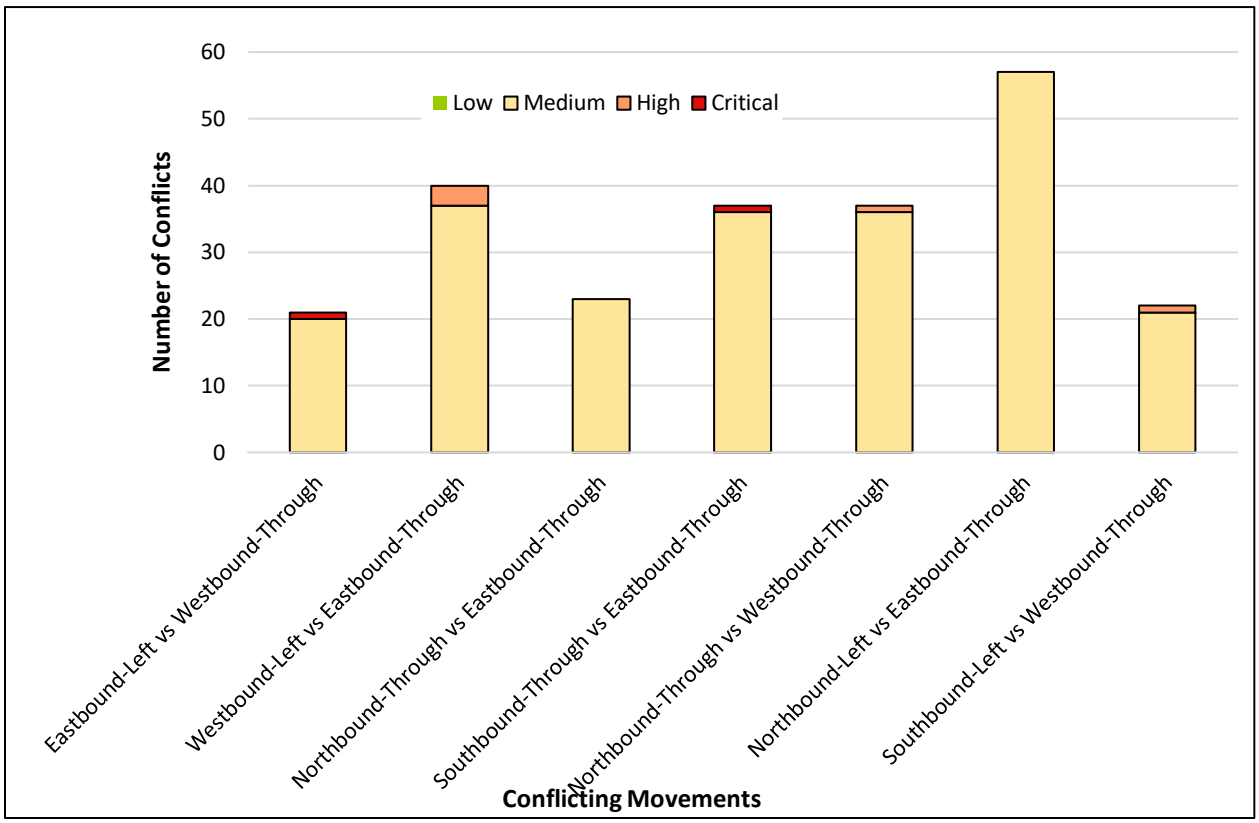


Figure 4.9: Summary of Risk Level Rating for Crossing Conflicts

The following points summarize key findings from this analysis:

- The most frequent conflicts are illustrated in **Figure 4.10**. Three of the four illustrated conflicts are occurring at the south part of the intersection.

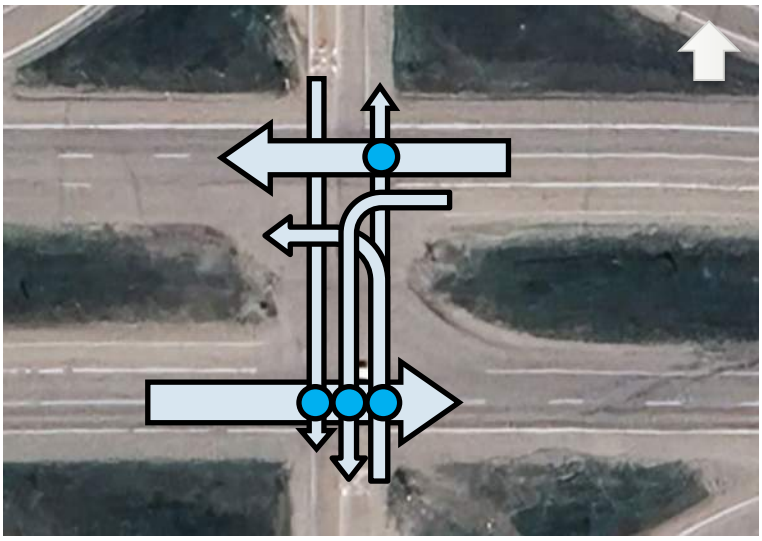


Figure 4.10: The Most Frequent Crossing Conflicts

The highest frequency of conflicts involved the following movements:

- Northbound-Left vs. Eastbound Through (57 conflicts)
- Westbound-Left vs. Eastbound-Through (40 conflicts)
- Southbound-Through vs. Eastbound-Through (37 conflicts)
- Northbound Through vs. Westbound Through (37 conflicts)

Most of these conflicts involved medium-risk conflicts. One critical-level conflict was recorded for the Southbound-Through vs. Eastbound-Through movement, and a few high-risk conflicts were recorded for Westbound-Left vs. Eastbound-Through and Northbound-Through vs. Westbound-Through movements.

In addition, critical and high-risk conflicts were also recorded for the following movements:

- Eastbound-Left vs. Westbound-Through
- Southbound-Left vs. Westbound-Through

Critical and high-risk conflicts present the greatest potential for collision as the available reaction time for drivers is less than three seconds, which is less than the PET comfort boundary for many drivers. This indicates that drivers crossing the mainline lanes may be more frustrated due to higher waiting times and are willing to take more risk by selecting smaller gaps within the high-volume mainline traffic stream. Movements resulting in critical and high-risk conflicts are illustrated in **Figure 4.11**.

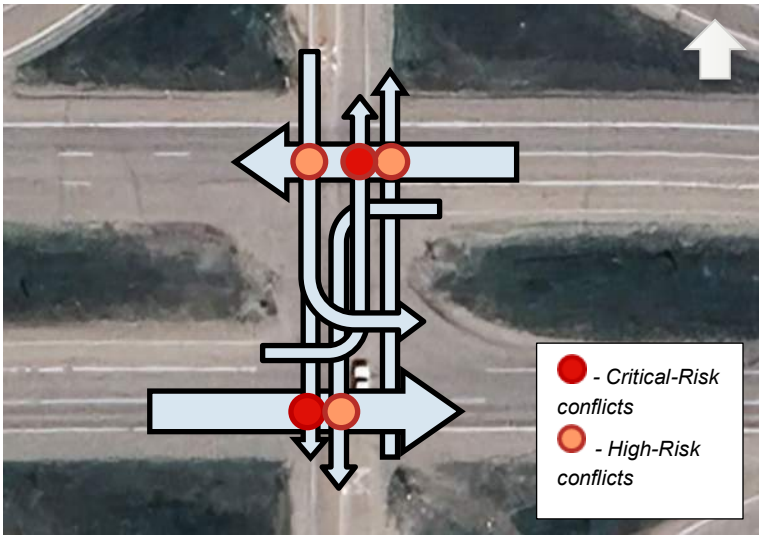


Figure 4.11: Movements with Critical and High-Risk conflicts

Based on the above, critical and/or high-risk conflicts are occurring between PTH 1 traffic and several movements including:

- Southbound traffic turning left from PTH 5

- Traffic turning left from PTH 1
- Through traffic from PTH 5

Of particular concern are conflicts with through traffic from PTH 5 as these conflicts are occurring on the far side of the intersection. After reviewing the video footage for these specific conflicts, it was observed that vehicles from PTH 5 are stopping in the median before proceeding to the far side of PTH 1 where the conflicts are occurring. This suggests that these drivers may see the traffic approaching on PTH 1 but are have difficulty in assessing the rate at which distant vehicles are approaching.

4.5.2 STOP SIGN COMPLIANCE

For the purpose of this analysis, the compliance with the stop sign was analyzed for both northbound and southbound approaches to the intersection. The results of this analysis are presented in **Table 4.10**. For the purposes of this analysis, rolling stops less than 20 km/h were classified as compliant stops.

Table 4.10: Stop Sign Compliance

Vehicle Movement	Estimated Vehicle Volume	Vehicles Violating Stop Sign	% of Vehicles Violating Stop Sign
Northbound-Through	1656	10	0.60%
Northbound-Left	2728	16	0.58%
Southbound-Through	1748	30	1.71%
Southbound-Left	596	24	4.02%

The results from this analysis indicate that the southbound approach to the intersection had a higher percentage of vehicles violating the stop sign. Of particular concern are southbound vehicles turning left. This may be a contributing factor to the high-risk conflicts observed in the conflict analysis in the section above.

After reviewing the video footage for these specific conflicts, it was observed that some vehicles were only slowing down on the approach to the stop sign after which they would accelerate and proceed through the intersection without stopping. This behaviour suggests that after visually scanning for PTH 1 traffic while approaching the intersection these drivers may feel comfortable to proceed without stopping.

The review of the video footage also indicated that in situations when one vehicle is waiting at the stop sign on PTH 5, and another vehicle is waiting in the median wanting to turn left onto

PTH 1, some drivers hesitate, indicating they may be confused in regard to who has the right-of-way.

4.6 HUMAN FACTORS ANALYSIS

This section summarizes the analysis of the relevant human factors issues in the context of this in-service road safety review for the PTH 1 and PTH 5 intersection.

4.6.1 RELEVANT HUMAN FACTORS TOPICS

As part of the human factors analysis, the road safety team examined the study area by focusing on the most relevant human factors including:

- Limitations in information processing
- Visual patterns while driving
- Detection of hazards in peripheral vision
- Visual and mental demands during left turns
- Left turn gap acceptance
- Positive guidance
- Expectancy
- Conspicuity
- Factors that affect driver speed choice
- Perception of closing velocity
- A-pillar obstruction

Each of these human factors topics are further described below.

Limitations in Information Processing

Human attention and abilities in information processing are limited. While attention can be switched rapidly from one information source to another, humans only attend well to one source at a time. Given the limitations in driver information processing, it is not surprising that drivers are more likely to make errors when they are faced with high demands from more than one information source. The faster we move, the more we are taxing our information processing capacity. Consequently, we rely on pattern recognition and expectations developed based on prior experience in responding to the roadway environment.

Visual Search Patterns While Driving

Even though the visual field of view is very wide, approximately 180 degrees, only a small cone of about 2 to 4 degrees allows for accurate vision. Beyond 4 degrees is defined as peripheral

vision. The quality of vision (i.e., peripheral vision) falls off rapidly outside of this 2-to-4-degree cone of vision. For this reason, in order to identify targets, drivers need to look directly at them.

Drivers continuously scan the road environment through a series of eye fixations, looking for information relevant to their driving task. Research has shown that the duration of eye fixations in the forward field ranges from 0.25 to 1.5 seconds.[1] This means that the number of fixations that can be made, and the number of objects that can be identified as a driver drives through a particular area is very limited.

Detection of Hazards in Peripheral Vision

Peripheral vision detects targets of interest that are outside the narrow cone of vision and then our eyes must move to look directly at the target in order to identify it by looking directly at the target. It is always being used to direct an observer to the next point of interest to fixate on. This is important because drivers are continuously scanning the road environment for information and cannot see everything at the same time. This is also an important consideration for drivers who have to look for potential hazards approaching from different directions at the same time.

The conclusion from on-road studies is that the further a potential hazard is off a driver's line of sight and the more attention demanding the central task, the less likely a target seen at an angle is to be detected.[2]

Visual and Mental Demands During Left Turns

Research has shown that there are significant increases in driver head movements and mental workload during turn sequences, and in particular, left turns, when compared to straight driving.[3] This is due in part to the fact that drivers are required to complete a series of tasks that occur sequentially and partly depend on each other.[4] In the context of the PTH 1 and PTH 5 intersection, the same concept can be applied to northbound and southbound through movements as completing these movements would also require a series of several sequential tasks including head movement and mental workload while scanning for traffic to cross PTH 1.

Left Turn Gap Acceptance

Gap acceptance distances depend on a driver's ability to accurately judge the time available to execute a traffic-crossing manoeuvre, such as a left turn.

According to National Cooperative Highway Research Program (NCHRP) Report 600, entitled *"Human Factors Guidelines for Road Systems"*, car drivers turning left from a minor road onto a 4-lane major road with no median require a time gap of 7.5 seconds between vehicles

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[1] Olson, Dewar, & Farber (2010). Forensic aspects of driver response (p.86)
[2] Cole & Hughes, 1984
[3] Hancock et al (1990). Driver workload during differing maneuvers
[4] Ringhand et al (2022). Approaching intersections – Gaze behavior of drivers

approaching from the right. For each additional lane width that is required, an additional 0.5 seconds should be added. In the context of the PTH 1 and PTH 5 intersection, a driver turning left from PTH 5 to PTH 1 would need to travel an additional 3-4 lane widths (the median is approximately three lanes wide plus one lane median acceleration lane for southbound to eastbound turning vehicles to cross). This means that a driver making a continuous left turn would require an additional 1.5 - 2 seconds between vehicles approaching from the right. A truck driver would require an even a larger gap as it takes more time to complete the turn. The NCHRP Report 600 indicates that this time would be at least 12.3 seconds.

Positive Guidance

The theory of positive guidance was developed by psychologists employed by the U.S. Federal Highway Administration and is based on the understanding that drivers have limitations in perception, information processing, and memory, and that these have important implications in the design of safe road systems.

> *"The positive guidance approach emphasizes primacy (placing signs according to importance), spreading (spread out over space to reduce information load), coding (by colour and shape to speed information processing), and redundancy (giving the message in more than one location or format)" (Smiley & Smahel, 2015) in (Smiley, 2015) (p.394).*

Expectancy

Expectancy refers to the predisposition that people have, that things will happen or be arranged in a certain way.[5] For example, when driving on a rural road, if several relatively sharp curves are preceded by curve warning signs, driver's expectancy is that similar curves will be similarly signed. If a sharp downstream curve is not preceded by a curve warning sign, thereby violating the driver's expectancy, drivers may not respond properly. Unfamiliar drivers may misinterpret the sharpness of the curve, take it too fast, and run off the road. In the section on Driver Expectancy in *Forensic Aspects of Driver Perception and Response*, the authors note that,

> *"It is fair to say that a prudent driver should recognize the possibility that some emergency situation may develop at any time. On the other hand, experience teaches us that other drivers will virtually always respect STOP signs and traffic signals and will stay in their lane when movement out of their lane could cause problems for other drivers"[6].*

Regarding highway signing, research [7] also indicates that the key to effective expectancy structuring is uniformity and standardization. Standard devices inconsistently applied create expectancy problems for drivers". It is also noted that: "Regardless of the signing method

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[5] Olson et al. 2010 (p.21)
[6] Olson et al. 2010; p.23
[7] Ontario Traffic Manual, Book 1C, 2001; p.11

chosen, consistency in sign placement and type should be carried out through the road network."[8] For example, in an on-road study of the effectiveness of street name signs for the City of Toronto it was determined that unexpected placement of street name signs increased the likelihood that they would be missed by drivers who were actively looking for them.[9]

Conspicuity

Conspicuity refers to the characteristics of an object that determine the likelihood that it will be noticed by an observer who is not expecting it to be there. Attributes of an object that make it more likely to be noticed include object size (larger rather than smaller), location (closer to the centre of a driver's field of view), colour and colour contrast. Conspicuity may be affected by lighting.

The more conspicuous a sign is, the more quickly a driver will detect it. Poor conspicuity can contribute to drivers missing signs. Sign attributes that contribute to poor conspicuity include small size and unexpected sign placement.[10]

Factors that affect driver speed choice

Key factors include the following:

- Speed Adaptation: Once drivers are used to driving at a higher speed it can be difficult for them to adjust to a lower speed limit.
- Speed Limit Signs: Reducing the speed limit with only a sign, and no other changes to the cross section of the roadway, has minimal effects on driver speed.
- Presence of Speed Reducing Countermeasures: The following changes to the roadway can enhance a driver's perception of speed which encourage them to slow down:
    - narrower lanes,
    - landscaping / side friction,
    - speed feedback signs,
    - optical speed bars (e.g., peripheral lane markings or full transverse lines).

Perception of Closing Velocity

According to driver behaviour research, "drivers are relatively poor at estimating the velocity of a vehicle traveling in the same direction ahead of them and also the relative velocity between the vehicle ahead of them and their own vehicle. These deficiencies in the driver's perception capabilities provide a strong clue to the occurrence of many rear-end crashes because poor

[8] Ontario Traffic Manual, Book 8, 2010; p.109
[9] Smiley, Courage, Smahel, Fitch, & Currie, 2001
[10] Smiley and Smahel, Smiley 2015; p.395

sensitivity to lead-vehicle velocity or the relative velocity does not allow drivers to estimate adequately the time remaining to close the gap with a vehicle ahead of them."[11]

Research of drivers' ability to judge closing speed and distance to a lead vehicle has found that the most important cue is the rate of change of the apparent size of the lead vehicle on the eye of the following driver[12]. However, at a higher distance the apparent size of the lead vehicle is very small. As the distance closes the apparent size of the lead vehicle increases very slowly and then increases rapidly when the distance between the two vehicles is very short (**Figure 4.12**). This helps to explain why crash risk increases dramatically as the speed difference between two vehicles increases.

Speed perception is also influenced by the size of the vehicle. Large objects, while travelling the same speed as small ones, appear to be moving slower.[13]

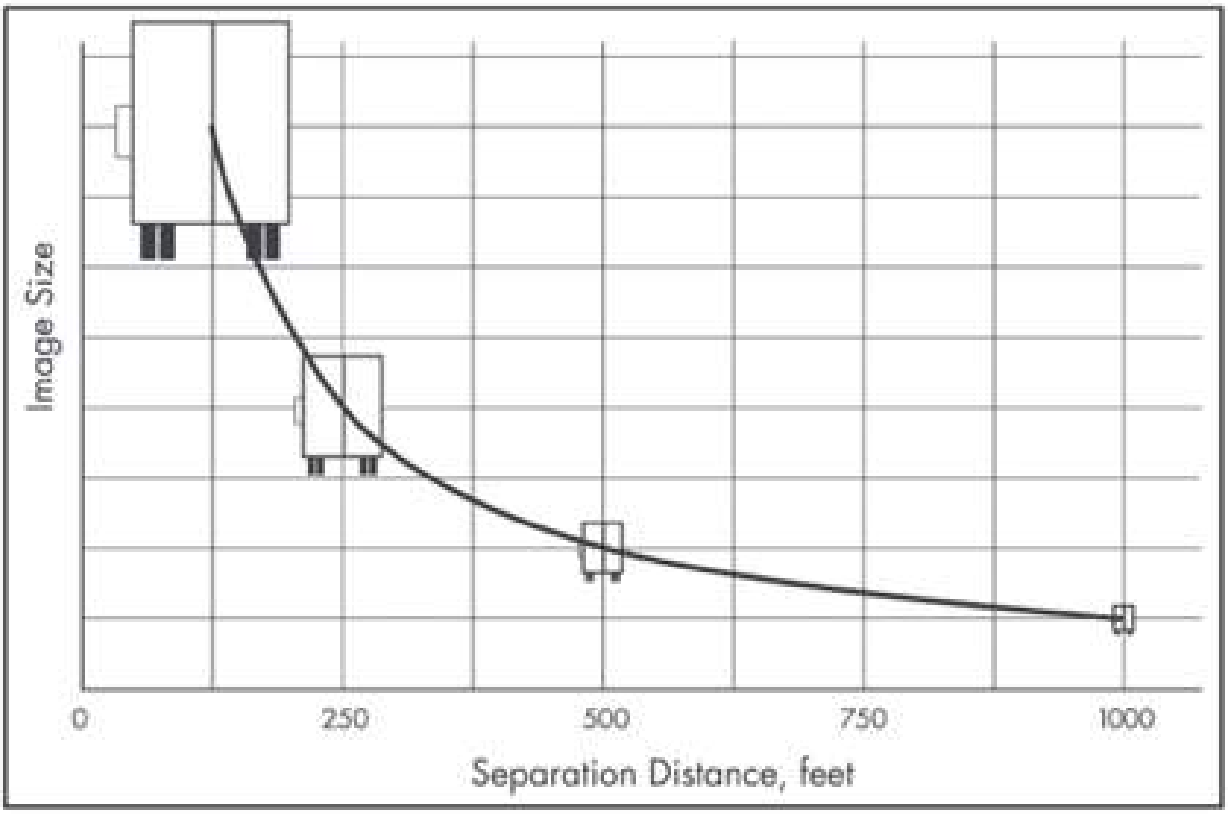


Figure 4.12: The relationship between viewing distance and image size[14]

[11] Mortimer, Blomberg, Alexander, & Vingilis, 2005
[12] Dewar & Olson, 2016; in Smiley, 2016; p.30
[13] Dewar, 2015) in (Smiley, 2015) (p. 450)
[14] Olson Dewar & Farber, 2010; p. 135

A-Pillar Obstruction

There are a number of scenarios where the A-pillar (i.e., the frame of the vehicle that defines the left and right side of the front windshield) can obstruct a driver's view to vehicles approaching from an intersecting road. Depending on the design of the vehicle and the seated position of the driver, the left A-pillar will be somewhere between 30 and 50 degrees to the left of the driver's straight-ahead line of sight (**Figure 4.13**). Similarly, a typical right A-pillar will be about 60 to 70 degrees to the right of the driver's straight-ahead line of sight (**Figure 4.14**).

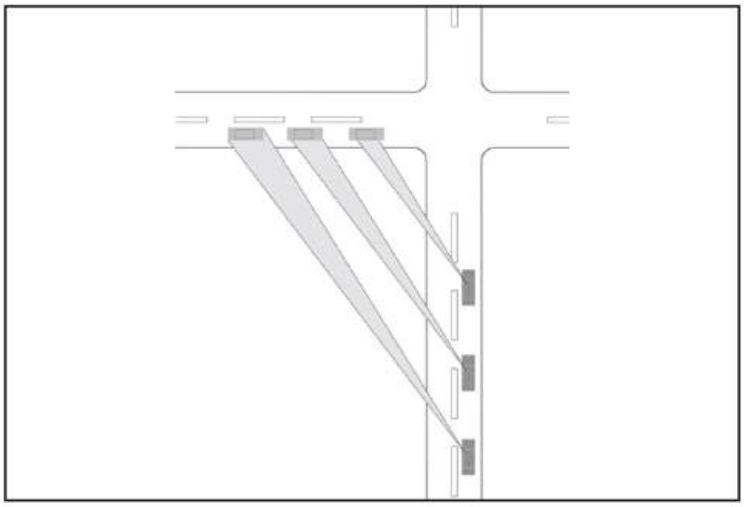


Figure 4.13: Left A-pillar obstruction of a vehicle on a collision course at an intersection[15]

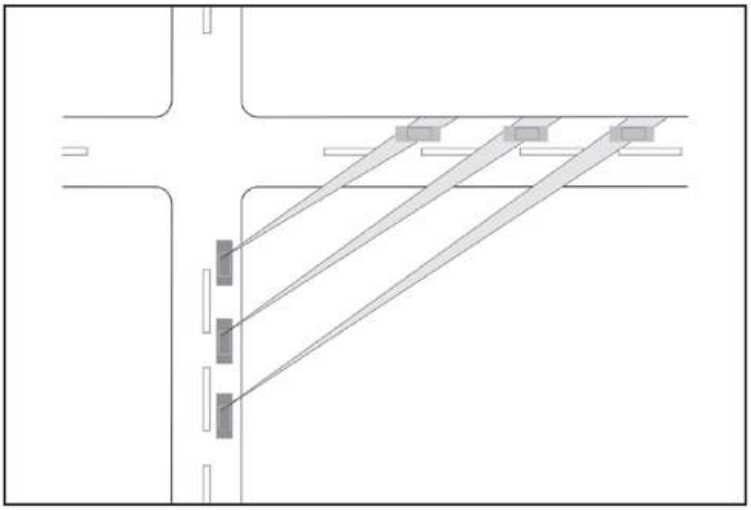


Figure 4.14: Right A-pillar obstruction of a vehicle on a collision course at an intersection[16]

[15] Olson Dewar, & Farber, 2010; p. 154
[16] Ibid; p.155

4.6.2 ANALYSIS OF KEY ROAD SAFETY ISSUES

The key road safety issues identified at the PTH 1 and PTH 5 intersection during the field investigation were analyzed using the key Human Factors principles and topics discussed in the section above. These issues include the following:

1. Vehicles crossing straight through or turning left from PTH 5 to PTH 1 (the use of the median)
2. Vehicles turning left from PTH 5 to PTH 1 (the use of the median acceleration lane)
3. Left turn movement from PTH 1 to PTH 5
4. Right turn movement from PTH 1 to PTH 5
5. Right turn movement from PTH 5 to PTH 1
6. Intersection conspicuity
7. Speed management

Each of these issues is discussed below.

Issue 1: Vehicles crossing straight through or turning left from PTH 5 to PTH 1 (the use of the median)

The field investigation comments (**Section 3**) directly related to this issue include the following:

- Comment #1 (narrow median limits the available storage for two-stage crossing)
- Comment #2 (several vehicles occupying narrow median at same time)
- Comment #4 (interlocking left-turn behavior within the median)
- Comment #11 (the WA-34 warning sign missing at northbound approach)
- Comment #18 (placement of yield sign in the median)
- Comment #19 (lack of delineation in the median)

Human Factors comments include the following:

- The vehicle storage available in the median between the yield sign and travel lane (approximately 14 m) may provide enough room for at most two passenger vehicles to stop and complete a two-stage crossing, but this width does not provide enough space for larger vehicles, such as transport trucks or buses to stop within the median. This means that drivers of vehicles that are longer than 14 meters in length will need to carry out their crossing or left turn maneuver in one continuous movement rather than in two stages, so their vehicle does not encroach the travel lane while stopped in the median. This is a significant concern at this intersection as long and heavy trucks account for 28% of traffic, and 18% of left-turning traffic in all directions. Completing a left turning maneuver across two streams of high-speed traffic requires drivers to look for simultaneous gaps to their left and

to their right, which consists of visually and mentally demanding maneuvers that result in a very high workload activity.

- Also, even though there are clear sightlines in both directions, as the road is straight and flat, drivers have difficulty assessing the rate at which distant vehicles are approaching. As noted above, drivers also underestimate how fast large vehicles are approaching as larger vehicles appear to be moving slower than smaller vehicles. To complicate this task even more, the vehicle A-pillars can obstruct the view to approaching vehicles on PTH 1, which is particularly a problem when looking to the right during a left turn as the A-pillar blocks the view of a driver on PTH 5 to approaching vehicles on PTH 1 as they drive towards the intersection. **Figure 4.15**, **Figure 4.16** and **Figure 4.17** illustrate the view of a northbound driver on PTH 5 stopped at the PTH 1 intersection. The view obstruction from the A-pillar is indicated in **Figure 4.17**.

Figure 4.15: Northbound position, looking left through driver's window

Figure 4.16: Northbound position, looking straight

Figure 4.17: Northbound position, looking right

- As described in Section 4.6.1, drivers require large gaps when making a left turn because they need to cross several lanes of traffic and need to search for simultaneous gaps in both directions. This is a high workload activity and drivers have difficulty in estimating the time to arrival for traffic on the mainline.
- The lack of delineation identified within the median may contribute to negative outcomes such as several vehicles occupying the narrow median at the same time and the presence of interlocking left-turn behavior which interferes with the flow of traffic. We note that delineation serves a useful purpose as it provides a clear indication of the path that drivers should take. Where delineation is absent, there will be a greater variability in driver actions, which could lead to negative safety outcomes.

Issue 2: Vehicles turning left from PTH 5 to PTH 1 (the use of the median acceleration lane)

The field investigation comments directly related to this issue include the following:

- Comment 5 (southbound to eastbound acceleration lane is not provided)
- Comment 16 (limited delineation of northbound to westbound acceleration lane)
- Comment 17 (placement of “Left Turn Traffic Use Acceleration Lane on PTH 1” sign)

Human Factors comments include the following:

- Left turn lanes are desirable for traffic turning onto PTH 1, especially for large, heavy vehicles. This is because their rate of acceleration is low and it takes a long distance (and time) for them to reach highway speed. This can result in large speed differences in the eastbound direction on PTH 1 where an acceleration lane is not provided. At this location, large speed differences are expected, and crashes are much more likely to occur since, as described in the discussion on perception of closing velocity in Section 4.6.1, drivers have difficulty assessing the rate at which the distance between their vehicle and the vehicle ahead is decreasing when the difference in speed is large. The view of drivers turning left onto PTH 1 are shown below in Figure 4.18 and Figure 4.19.

Figure 4.18: Southbound to eastbound left turn view

Figure 4.19: Northbound to westbound left turn view

- In the westbound direction on PTH 1, a 1000m parallel acceleration lane with 200m taper is provided. However, this acceleration lane is not marked with signs or pavement markings specific for the acceleration lane and could be misunderstood to be a passing lane. A small sign is provided on the northbound approach on PTH 5 which informs left turning drivers that they should use the acceleration lane on PTH 1 (**Figure 4.20** and **Figure 4.21**). This sign is not placed where drivers would be looking to receive this information. It is also a small sign with small letter heights, which makes it more likely to be missed (by comparison, the adjacent commercial billboard has larger letter heights). We note that traffic control devices such as signs and pavement markings are important roadway features as they provide positive guidance which leads to more predictable driving behaviour and greater overall safety.

Figure 4.20: Northbound approach: Left Turning Traffic Use Acceleration Lane sign

Figure 4.21: Northbound approach: Left Turning Traffic Use Acceleration Lane sign

Issue 3: Left turn movement from PTH 1 to PTH 5

The field investigation comments directly related to this issue include the following:

- Comment #1 (narrow median limits the available storage for two-stage crossing)
- Comment #3 (negative offset left-turn lanes)
- Comment #4 (interlocking left-turn behavior within the median)
- Comment #15 (short solid line pavement markings on PTH 1 approaches)
- Comment #19 (lack of delineation in the median)

Human Factors comments include the following:

- Left turn lanes are helpful to allow drivers who want to turn left to decelerate in an auxiliary lane so that they do not slow down traffic in the left through lane. Left turn lanes on PTH 1 develop 280 m upstream from the intersection (**Figure 4.22** and **Figure 4.23**), equivalent to 10 seconds of travel time at the posted speed limit. Although the left turn lanes may meet provincial geometric guidelines, some drivers of heavy trucks may need to decelerate in the left through lane before moving into the left turn lane to decelerate to a stop at a comfortable rate. Drivers slowing down in the through lane increases speed variability, which increases crash risk. As described above, drivers have difficulty assessing the rate at which they are approaching slower moving vehicles ahead, which increases the risk of rear-end collisions.
- Also, these left turn lanes are not marked with signs or pavement markings. This could give drivers the impression that the additional lane can be used for passing. The provision of these traffic control devices is important as they provide positive guidance to drivers.

Figure 4.22: Eastbound approach on PTH 1 to PTH 5

Figure 4.23: Westbound approach on PTH 1 to PTH 5

Issue 4: Right turn movement from PTH 1 to PTH 5

The field investigation comments directly related to this issue include the following:

- Comment #7 (short right-turn deceleration lanes on PTH 1)

Human Factors comments include the following:

- The PTH 1 right-turn deceleration lanes are provided with a 40 km/h advisory speed but the deceleration lanes are very short. Based on a review of the most recent available aerial photograph, these lanes are also not wide enough to accommodate a vehicle until the last 35 to 40 metres before the painted gore **(**Figure 4.24 and Figure 4.25). As a result, drivers are required to decelerate while in the right through lane of PTH 1 which increases speed variability. As described above, drivers have difficulty assessing the rate at which they are approaching slower moving vehicles ahead, which increases the risk of rear-end collisions.

Figure 4.24: Eastbound approach on PTH 1 to PTH 5

Figure 4.25: Westbound approach on PTH 1 to PTH 5

Issue 5: Right turn movement from PTH 5 to PTH 1

The field investigation comments directly related to this issue include the following:

- Comment #6 (short right-turn acceleration lanes on PTH 1)
- Comment #20 (right-turn acceleration lanes signed with a YIELD sign)

Human Factors comments include the following:

- Based on measurements from the most recent available aerial photograph, the length of the eastbound and westbound right-turn acceleration lanes were 100 m and 40 m, respectively (**Figure 4.26** and **Figure 4.27**). This is not enough distance to allow drivers of motorized vehicles to accelerate up to freeway speed. This is particularly a problem with heavy trucks which require much more distance to reach highway speed. As a result, large speed differences are likely to be present on PTH 1 downstream of PTH 5 in both directions. When there are large speed differences crashes are much more likely to occur since drivers have difficulty assessing the rate at which the distance between their vehicle and the vehicle ahead is decreasing when the difference in speed is large.

Figure 4.26: Eastbound onramp from PTH 5 to PTH 1

Figure 4.27: Westbound onramp from PTH 5 to PTH 1

Issue 6: Intersection Conspicuity

The following observations were made during the site visit:

- Comment 10 (limited advance warning of the intersection)
- Comment 12 (inconsistent advance guide signage)
- Comment 22 (limited illumination at intersection)

Human Factors comments include the following:

- The combination of signage observed on the PTH 1 approaches to the intersection provided a clear message that there was a junction ahead. However, the application of guide signage for each approach was not completely consistent and a more significant concern at the intersection was limited illumination.
- In addition to the above, given the east-west orientation of PTH 1 on both approaches to PTH 5, sunlight glare during the 30-minute period before sunset and after sunrise may contribute to impaired driver vision to the road ahead, making it more challenging to respond to potential hazards, such as slower moving vehicles that are either accelerating or decelerating at the PTH 5 intersection.

Issue 7: Speed Management

The following observations were made during the site visit:

- Comment #13 (effectiveness of speed reduction zones on PTH 1)
- Comment #14 (no speed reduction provided on PTH 5)

Human Factors comments include the following:

- With respect to speeds collected on PTH 1 for the purpose of this in-service road safety review, in the 100 km/h speed limit zone the mean and 85th percentile speeds were measured to be 101.7 km/h and 108.0 km/h, respectively. This represents an 8 to 9 km/h reduction from the 85th percentile speeds of 115.8 km/h that were measured a short distance away in the 110 km/h. This reduction is greater than generally expected as the implementation of a speed limit sign with a reduced speed limit typically only results in a 3 to 4 km/h change in travel speeds and usually results in greater speed variability. It is our understanding that there had been a lot of local media attention to the safety at this intersection in the weeks before the speed data were collected which could have influenced driver speeds during the speed data collection period. A follow-up data collection effort is recommended to further evaluate and confirm travel speeds on the approaches to this intersection.
- We note that, in general, without changes to the cross-section elements or the “road message”, drivers are unlikely to reduce their speed substantially in response to a lower speed limit sign only. One low-cost measure that has been demonstrated to help reduce

speeds is the use of optical speed bars at progressively reduced spacing to give drivers the impression of increased speed which encourages them to reduce their speed. These are typically applied over a distance of 200m to 400m in the area between the advance and reduced speed limit sign. In conjunction with the optical speed bars, speed feedback signs placed above speed limit signs can be effective at reducing driver speeds.

- With respect to speeds on PTH 5, the posted speed limit is 100 km/h, and no speed reduction zone is provided in advance of the PTH 1 intersection.

5 IDENTIFICATION OF ROAD SAFETY RISK AND PRIORITIES

5.1 OVERVIEW

The work conducted up to this point has focused on documenting the existing road safety characteristics of the facility. In this phase of the analysis, the knowledge gained from the various lines of evidence is summarized to provide guidance with regards to prioritizing key issues at the intersection for road safety improvement.

As discussed earlier in this report, a lines of evidence approach has been applied to this analysis to identify road safety priorities at the PTH 1 and PTH 5 intersection. This approach involves examining the safety performance of the study area using a range of tools and techniques, each of which was assessed in the sections above.

In this next stage of the lines of evidence approach, findings from the individual analyses are combined and examined as a whole. Where lines of evidence overlap and point to a common conclusion regarding a particular issue at the intersection, that conclusion is strengthened by the independence of the indicators and the multiplicity of its occurrence.

5.2 RISK LEVEL RATING

To further assist in the lines of evidence prioritization process, the road safety team has applied a risk level evaluation tool to the road safety issues identified. This risk level evaluation tool has been adapted from the Australian Road Safety Audit Guide and is based on establishing two criteria associated with a specific issue:

- Frequency that the issue is likely to cause a collision; and
- Severity of the collision that would result from the issue.

The general rating scheme used to define each of these two rating criteria is defined in **Table 5.1** and **Table 5.2**.

Table 5.1: Risk Level Rating: Frequency that the Road Safety Issue is Likely to Lead to a Collision

FREQUENCY	DESCRIPTION
Frequent	Once or more per week
Probable	One or more per year (< 1 per week)
Occasional	Once every 5 to 10 years
Improbable	Less often than once every 10 years

Table 5.2: Risk Level Rating: Likely Severity of a Collision Resulting from the Road Safety Issue

SEVERITY	DESCRIPTION
Catastrophic	Likely Multiple Deaths
Serious	Likely Death or Serious Injury
Minor	Likely Minor Injury
Limited	Likely Trivial Injury or Property Damage Only

The two rating criteria defined above are combined into an overall priority rating based on the matrix in **Table 5.3**. The risk levels are colour coded and have been applied in the section below.

Table 5.3: Level of Risk

Severity	Frequency			
	Frequent	Probable	Occasional	Improbable
Catastrophic	Very High	Very High	Very High	High
Serious	Very High	Very High	High	Medium
Minor	Very High	High	Medium	Low
Limited	High	Medium	Low	Low

5.3 LINES OF EVIDENCE SUMMARY

Table 5.4 presents a summary of findings from the lines of evidence evaluation. In the table, issues identified through each line of evidence are compared to identify commonalities. As noted in the section above, where lines of evidence overlap and point to a common conclusion regarding a particular issue, that conclusion is strengthened by the independence of the indicators and the multiplicity of their occurrence.

When a road safety issue has been identified by a particular line of evidence analysis, it is indicated in the summary table with an “X”. The frequency, severity and risk level rating for each road safety issue is also presented.

Table 5.4: Lines of Evidence Summary

Road Safety Issues		Risk Level Rating			Site Investigation	Safety Analysis				
		Frequency	Severity	Risk Level		Collision Analysis	Geometric Analysis	Operational Analysis	Video Conflict Analysis	Human Factors Analysis
Intersection Configuration										
Median Operations	The narrow median width limits the available storage and refuge area.	Probable	Serious	Very High	X	X	X	X	X	X
	The narrow median is often occupied by several vehicles at the same time.	Probable	Serious	Very High	X	X			X	X
	Different driving behaviors for left-turning vehicles were observed within the median.	Occasional	Serious	High	X	X			X	X
Left Turns from PTH 1	The negative offset of the PTH 1 left-turn lanes can create sightline obstructions.	Occasional	Serious	High	X	X	X		X	X
	The length of the left turn deceleration lanes from PTH 1 is short.	Occasional	Limited	Low			X			X
Left Turns from PTH 5	There is no eastbound median left-turn acceleration lane.	Occasional	Minor	Medium	X	X				X
Right Turns from PTH 1	The length of the right-turn deceleration lanes is short.	Occasional	Limited	Low	X		X			X
Right Turns from PTH 5	The length of the right-turn acceleration lanes is short.	Occasional	Limited	Low	X		X			X
Proximity of Service Roads	There is a potential for vehicle queues on PTH 5 to extend into the service road intersections.	Improbable	Limited	Low	X		X			
	The right-turn merge tapers from PTH 1 extend through the service road intersections.	Improbable	Limited	Low	X		X			
PTH 5 Shoulder	Portions of the PTH 5 shoulder are narrow and a 0.8m partially paved shoulder is not provided.	Improbable	Limited	Low			X			
Positive Guidance and Signage										
Intersection Conspicuity	On PTH 1, there is little contrast between the mainline lanes and the intersection. Advanced warning of the approaching intersection is limited. Sunlight glare may contribute to impaired driver vision at certain times of the day.	Occasional	Serious	High	X					X

Road Safety Issues		Risk Level Rating			Site Investigation	Safety Analysis				
		Frequency	Severity	Risk Level		Collision Analysis	Geometric Analysis	Operational Analysis	Video Conflict Analysis	Human Factors Analysis
Warning Signage	No Divided Highway Ahead Warning Sign (WA-34) is provided on the PTH 5 northbound approach.	Improbable	Minor	Low	X					
Guide Signage	Guide signage on the eastbound and westbound approaches to the intersection are not consistent.	Improbable	Limited	Low	X					
PTH 1 Speeds	The 100 km/h speed reduction zones are long with no additional enforcement.	Improbable	Minor	Low	X			X		X
PTH 5 Speed Reduction Zone	Posted speed on PTH 5 is 100 km/h and no speed reduction zone is provided on the approaches to the stop-controlled intersection.	Improbable	Minor	Low	X			X		X
PTH 5 Stop Sign Compliance	The results of the video analysis suggest a reduced level of compliance with the Stop signs on PTH 5, particularly for the southbound left turn movement.	Probable	Serious	Very High		X			X	
PTH 1 Pavement Markings	The solid line pavement markings on PTH 1 between the mainline travel lanes and the left-turn lanes in advance of the intersection are short. In addition, limited positive guidance (signs or pavement markings) is provided for the left-turn lanes on PTH 1.	Occasional	Limited	Low	X	X				X
	The westbound median left-turn acceleration lane is currently delineated with dashed lines, which may encourage drivers to merge directly into the high-speed mainline lane.	Occasional	Limited	Low	X	X				X
Signage specific for median acceleration lanes	The effectiveness of the advanced signage for the northbound to westbound median left-turn acceleration lane is limited.	Occasional	Minor	Medium	X					X
Median Yield Sign Location	The yield signs in the median are located at an increased offset from the travel path. This may reduce their effectiveness.	Improbable	Serious	Medium	X	X				
Limited Positive Guidance in the Median	No positive guidance is provided in the median to help drivers position their vehicles and navigate through the median.	Probable	Minor	High	X				X	X
Right Turn from PTH 5 (yield sign)	The right-turn acceleration lane geometry (in both eastbound and westbound direction) suggests to drivers that they should merge into traffic, while the yield signs suggests that drivers should yield to traffic.	Occasional	Limited	Low	X					
Trucks Stopped in Prohibited Locations	Trucks are violating the existing “No stopping” signs at the intersection.	Improbable	Serious	Medium	X					

Road Safety Issues		Risk Level Rating			Site Investigation	Safety Analysis				
		Frequency	Severity	Risk Level		Collision Analysis	Geometric Analysis	Operational Analysis	Video Conflict Analysis	Human Factors Analysis
Limited Intersection Illumination	Conspicuity of the intersection and the PTH 1 left-turn lanes is limited at night.	Occasional	Minor	Medium	X	X				X
Headlight Glare	Some headlight glare was observed from opposing traffic on both PTH 1 and PTH 5 approaches to the intersection. Of particular concern is glare for the PTH 5 traffic that is using the median cross-over as it may impact driver perception of traffic conditions.	Improbable	Serious	Medium	X					
A-pillar obstruction	The vehicle A-pillars can obstruct the sightlines to approaching vehicles on PTH 1. This is a particular problem when looking to the right when making a left turn.	Improbable	Serious	Medium		X				X
General Maintenance										
Deteriorated Pavement Markings	In general, line painting is deteriorated.	Improbable	Limited	Low	X					
Signage Condition	Some signs on the approaches to the intersection were deteriorated, damaged, or exhibited low reflectivity at night.	Improbable	Limited	Low	X					
Signage Posts	Several signs located within the intersection clear zone are mounted on a single 6x4 in (15x10cm) wooden post that are not equipped with shear holes.	Improbable	Minor	Low	X					
PTH 5 Rumble Strips	The transverse rumble strips on both PTH 5 approaches to the intersection are worn in the wheel paths and this impacts their effectiveness. MTI advised that the rumble strips were refurbished on August 10, 2023 (following the WSP site investigation).	Occasional	Serious	High	X					
Pavement Conditions	Pavement cracking and discontinuities within the intersection may impact drainage and lead to further deterioration.	Improbable	Limited	Low	X					
PTH 5 Shoulder Conditions	The shoulders on PTH 5 are deteriorated and may affect drainage and vehicle stability.	Improbable	Limited	L	X					
Illumination Maintenance	A light bulb on the double davit in the northwest corner of the intersection is not working.	Improbable	Minor	L	X					

5.4 INTERSECTION PRIORITIES

An examination of the overlapping lines of evidence outlined in the table above helps identify intersection priorities, i.e., the key elements of the intersection that offer the greatest potential for road safety improvement. For the purposes of this analysis, the following criteria have been used to sort the various road safety issues identified into appropriate priority categories:

- High Priority: This category includes road safety issues assigned Very High and High risk levels and road safety issues that were identified in four or more lines of evidence.
- Medium Priority: This category includes road safety issues assigned a Medium risk level and road safety issues that were identified in three lines of evidence.
- Low Priority: This category includes safety issues assigned a Low risk level and road safety issues that were identified in two or less lines of evidence.

The results of this prioritization exercise are presented in **Table 5.5**.

Table 5.5: Intersection Priorities

Priority Level	Road Safety Issue
High Priority	Median operations: - Narrow median width limiting the available storage and refuge area - Narrow median occupied by several vehicles at the same time - Different driving behaviors for left-turning vehicles observed within the median
	Left turns from PTH 1 - negative offset for left-turn lanes
	Intersection conspicuity
	PTH 5 stop sign compliance
	Limited positive guidance in the median
	PTH 5 rumble strips
Medium Priority	Left turns from PTH 5 - absence of eastbound median left-turn acceleration lane
	Right turns from PTH 1 - length of the right-turn deceleration lanes
	Right turns from PTH 5 - length of the right-turn acceleration lanes
	PTH 1 speeds
	PTH 5 speed reduction zone
	PTH 1 pavement markings - short solid line pavement markings between the mainline travel lanes

Priority Level	Road Safety Issue
	PTH 1 pavement markings - delineation of westbound median left-turn acceleration lane
	Signage specific for median acceleration lane
	Median yield sign location
	Trucks stopping on shoulder at prohibited locations
	Intersection illumination
	Headlight glare
	A-pillar obstructions
Low Priority	Left turns from PTH 1 - length of the left-turn deceleration lanes
	Proximity of service roads – potential for queues within the service road intersection
	Proximity of service roads – merge taper from PTH 1 within the service road intersection
	PTH 5 shoulder width
	Warning signage
	Guide signage
	Right-turn from PTH 5 yield sign
	Deteriorated pavement markings
	Signage condition
	Signage posts
	Pavement conditions
	PTH 5 shoulder conditions
	Illumination maintenance

6 COUNTERMEASURE DEVELOPMENT

6.1 OVERVIEW

Using the prioritized list of road safety issues discussed in the section above, the road safety team identified potential countermeasures to address the concerns identified. As part of this task, estimates of countermeasure effectiveness were provided.

6.2 COST EFFECTIVENESS

Cost-effectiveness is an important consideration in the selection of safety countermeasure treatments. The following approach was applied to the prioritised list of road safety issues when considering the cost effectiveness of countermeasures. **Table 6.1** summarizes this approach.

Table 6.1: Countermeasure Cost Effectiveness Model

Priority Level	Cost-Effectiveness Guide
High Priority	Should be corrected or the risk significantly reduced, even if the treatment cost is high.
Medium Priority	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
Low Priority	Should be corrected or the risk reduced if the treatment cost is low.

For the purposes of this analysis, the following cost threshold levels were applied:

- **High cost:** Greater than $500,000
- **Moderate cost:** $100,000 to $500,000
- **Low cost:** Less than $100,000

6.3 QUANTIFYING COUNTERMEASURE EFFECTIVENESS

The goal of the countermeasure evaluation process was to quantify the potential road safety benefits associated with each of the countermeasures identified – where possible - using a toolset of evaluation techniques. Given the diverse nature of the countermeasures identified, several different analytical tools were applied to quantify potential road safety benefits.

For this analysis, the toolsets applied included the following:

- **Highway Safety Manual (HSM) and MTI Safety Performance Functions (SPF's):** Crash Reduction Factors from the FHWA's CMF Clearinghouse, AASHTO Highway Safety Manual and the FHWA's Desktop Reference for Crash Reduction Factors were applied to the

relevant SPFs to determine estimated levels of crash reduction that might be expected after implementing a given countermeasure at a specific site.

- **AASHTO Roadside Safety Analysis Program software (RSAP):** The AASHTO Roadside Safety Analysis Program (RSAP) is a cost-effectiveness analysis procedure for use in assessing roadside safety improvements. The analysis technique used was a before-and-after study approach. The before condition represents the existing condition of a typical road safety risk (i.e., a critical embankment slope located near the driving lane). The after condition was then represented by making changes to the before situation based on the countermeasures identified above (flattening the slope or shielding the slope with a barrier).
- **FHWA CMF Clearinghouse:** Crash Modification Factors from the FHWA's CMF Clearinghouse used to estimate the level of crash reduction that might be expected after implementing a given countermeasure at a specific site.

6.4 RESULTS OF COUNTERMEASURE EFFECTIVENESS ANALYSIS

A detailed examination of the potential countermeasures identified to address road safety issues identified in the ISRSR is provided in tabular format in **Appendix F** of this report. The table provides a description of the countermeasure, details on the analysis tool or techniques applied, a discussion on any assumptions or Crash Reduction Factors used, details on application locations, estimated impacts of the countermeasure on collisions, and an indication of cost-effectiveness.

The results of this detailed analysis was used to identify a short list of countermeasures for implementation. This short list of countermeasures is presented in **Table 6.2**.

Table 6.2: Intersection Priorities and Selected Countermeasures

Priority Level	Road Safety Issue	Selected Countermeasure
High Priority	Median operations: - Narrow median width limiting the available storage and refuge area - Narrow median occupied by several vehicles at the same time - Different driving behaviors for left-turning vehicles observed within the median	Implementation of an alternative intersection configuration (Intersection Median Widening, Roundabout, RCUT)
		The provision of a grade-separation (interchange)

Priority Level	Road Safety Issue	Selected Countermeasure
	Left turns from PTH 1 - negative offset for left-turn lanes	Implementation of an alternative intersection configuration
	Intersection conspicuity	Install a Dynamic Advance Intersection Warning System
		Install the Concealed or Unexpected Intersection (WA-11) sign – alternative countermeasure
	PTH 5 stop sign compliance	Implementation of an alternative intersection configuration
	Limited positive guidance in the median	Implementation of an alternative intersection configuration
	PTH 5 rumble strips	The condition and design of the rumble strips should be reviewed and repaired/adjusted as necessary
Medium Priority	Left turns from PTH 5 - absence of eastbound median left-turn acceleration lane	Provision of southbound to eastbound median acceleration lane
		Implementation of an alternative intersection configuration
	Right turns from PTH 1 - length of the right-turn deceleration lanes	Extend speed-change lanes as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange
	Right turns from PTH 5 - length of the right-turn acceleration lanes	
	PTH 1 speeds	Conduct a follow-up speed study on PTH 1
	PTH 5 speed reduction zone	Consider for further review a speed reduction on PTH 5 as part of MTI's ongoing initiative to develop systemic response plans for intersections
	PTH 1 pavement markings - short solid line pavement markings between the mainline travel lanes	Extend solid line pavement markings
	PTH 1 pavement markings - delineation of westbound median left-turn acceleration lane	Provision of a solid line pavement markings
	Signage specific for median acceleration lanes	Provision of signage specific for median acceleration lanes, designed with input from a human factors expert
	Median yield sign location	Review the locations of yield signs to reduce the sign offset
		Implementation of an alternative intersection configuration
	Trucks stopping in prohibited locations	Engage with the Manitoba Trucking Association
		Enforcement of the "no stopping" signage
	Limited intersection illumination	Reevaluate intersection illumination and enhance if necessary
	Headlight glare	
	A-pillar obstruction	Implementation of an alternative intersection configuration

Priority Level	Road Safety Issue	Selected Countermeasure
Low Priority	Left turns from PTH 1 - length of the left-turn deceleration lanes	Extend speed-change lanes as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange.
		Extend solid line pavement markings
	Proximity of service roads – potential for queues within the service road intersection	Realignment of the service roads to increase the separation between the intersections
	Proximity of service roads – merge taper from PTH 1 within the service road intersection	
	PTH 5 shoulder width	Provision of paved shoulders on PTH 5 following MTI standards
	Warning signage	Provide the necessary signage
	Guide signage	
	Right-turn from PTH 5 (yield sign)	Review for compliance with the provincial standard requirements
	Deteriorated pavement markings	Reapply line painting and pavement markings
	Signage condition	Review signage for deterioration and reflectivity
	Signage posts	Provide shear holes as necessary
	Pavement conditions	Assess to determine if patch repairs, rehabilitation, or replacement is warranted.
	PTH 5 shoulder conditions	Grading of existing shoulders to ensure smooth surface
	Illumination maintenance	Replace bulbs as necessary

6.5 ADDITIONAL DISCUSSION ON ALTERNATIVE INTERSECTION CONFIGURATION OPTIONS

As part of the countermeasure development analysis summarized in **Appendix F**, several alternative intersection configurations were examined to address the road safety concerns present at the intersection. These alternative configurations are discussed in more detail in the sections below. It should be noted that an in-depth evaluation of the alternative intersection configurations presented below will be required as part of a future functional level study to select the most appropriate option based on site conditions, safety, and traffic operations.

6.5.1 TRAFFIC SIGNAL

Although a traffic signal can provide some operational benefits when properly applied, the isolated nature of the study area intersection raises concern regarding the presence of speed

adapted drivers, the potential for signal violations, and the risk of high-speed rear-end collisions. Based on relevant North American road safety research, the provision of isolated traffic signals on high-speed facilities such as PTH 1 can result in increased total collision frequency, as well as fatal and injury collision frequency.

Table 6.3 presents the results of the quantitative road safety analysis conducted using the methodologies outlined in the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM). In this analysis, safety performance functions (SPFs) from the HSM were applied to estimate the expected change in annual collision frequency associated with changing the existing stop-controlled intersection to a traffic signal. The results of this analysis indicate that installing a traffic signal at this location would result in a significant increase in total collisions annually.

Table 6.3: Expected collision predictions for the installation of a traffic signal

INTERSECTION CONFIGURATION	ANNUAL EXPECTED COLLISION FREQUENCY		
	PROPERTY DAMAGE ONLY COLLISIONS	FATAL AND INJURY COLLISIONS	TOTAL COLLISIONS
Existing Stop-Control	1.58	1.63	3.21
Signalized Intersection	4.66	3.70	8.36

Based on the above, the provision of a traffic signal has not been included in the short list of countermeasures considered for implementation at this location.

6.5.2 INTERSECTION MEDIAN WIDENING

Although it may require significant changes to the highway alignment, providing a wider median at the intersection can be considered as an alternative configuration. Literature indicates that in general, four-legged, two-way-stop-controlled intersections on rural expressways are safer if the median is wider, and this is most likely due to the fact that wider medians allow for two-stage gap selection (i.e., minor road left-turning or crossing vehicles can safely stop in the median area to evaluate the adequacy of the gap in expressway traffic coming from the right, thereby reducing the relative crash risk associated with these manoeuvres). In addition to providing the benefits of extra median storage for large vehicles, this treatment can also help emphasize the presence of the intersection, encourage more consistent left-turn behavior in the median, and provide opportunity for enhanced delineation and better positive guidance within the median. If widened enough to accommodate storage of the design vehicle, Stop control can be considered in the median.

6.5.3 ROUNDABOUT

A roundabout can provide significant road safety benefits due to its characteristic low-speed operations and reduced vehicle conflicts and collision severity. When compared to a stop-controlled intersection, the majority of conflict points that are eliminated are crossing type conflicts occurring at the median crossovers that in general result in higher severity outcomes. Roundabout conflicts are generally low-speed, sideswipe collisions that result in low severity outcomes.

However, the application of a roundabout in a high-speed rural environment and the isolated nature of this intersection can raise concern regarding driver expectation. As such, careful consideration of a system of speed management measures focused on reducing vehicle approach speeds for a significant distance would be required as part of this option. These speed management measures can include advanced warning provisions, speed feedback signs, the application of peripheral pavement markings, and the introduction of alignment shifts using long splitter islands. The operational characteristics of long combination vehicles would also need to be considered.

To help quantify the relative change in road safety performance associated with changing the existing stop-controlled intersection to a multi-lane roundabout, an analysis was conducted using safety performance functions (SPFs) from the Federal Highway Administration (FHWA) Highway Safety Manual (HSM) to estimate the expected collision frequency for the existing stop-controlled configuration, and using Collision Modification Factors (CMFs) from both the FHWA HSM and the TAC Roundabout Design Guide to estimate the expected collision frequency for a multilane roundabout configuration. These CMFs suggest a 44% reduction in total collisions and an 82% reduction in fatal and injury collisions. **Table 6.4** presents the findings from this review.

Table 6.4: Expected collision predictions for the installation of roundabout

INTERSECTION CONFIGURATION	ANNUAL EXPECTED COLLISION FREQUENCY		
	PROPERTY DAMAGE ONLY COLLISIONS	FATAL AND INJURY COLLISIONS	TOTAL COLLISIONS
Existing Stop-Control	1.58	1.63	3.21
Roundabout Intersection	1.51	0.29	1.80

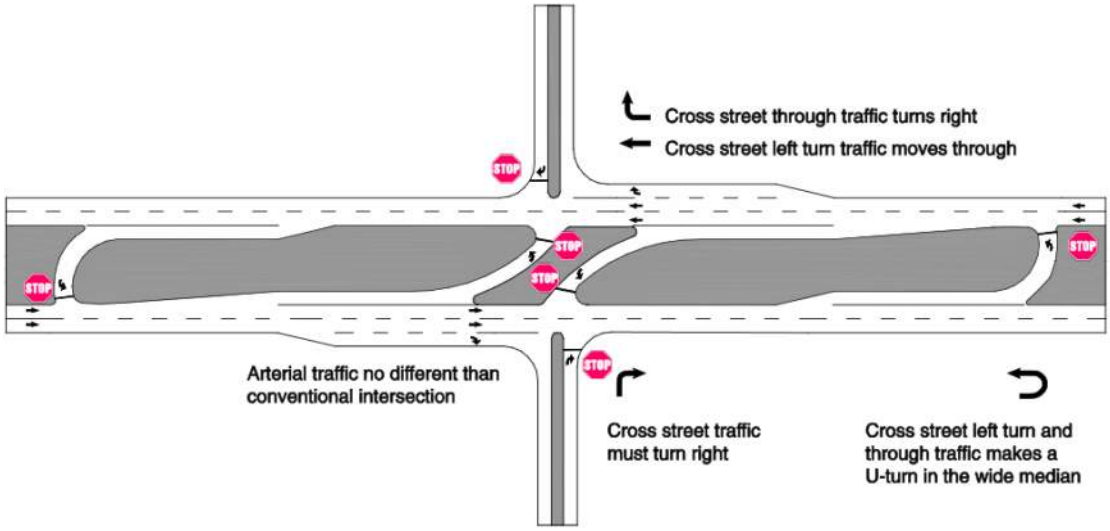
As shown in the table, the installation of a multilane roundabout is expected to result in lower total, PDO and fatal and injury annual expected collision frequencies when compared to the existing stop-control configuration.

In addition to the analysis above, safety performance functions (SPFs) specific to estimating roundabout related collisions were reviewed from the National Cooperative Highway Research

Program (NCHRP) Report No. 888. These SPFs suggest that a similar trend in reducing fatal and injury collisions is expected when converting the existing stop-controlled intersection to a multilane roundabout.

6.5.4 RESTRICTED CROSSING U-TURN (RCUT)

A stop-controlled or yield-controlled RCUT intersection can be used as a safety treatment at isolated intersections on four-lane divided highways in rural areas. There are known safety benefits associated with this type of intersection. The RCUT intersection, also known as a J-Turn or Superstreet, differs from a conventional intersection by eliminating the left-turn and through movements from crossroad approaches. To accommodate these movements, the RCUT intersection requires drivers to turn right onto the main road and then make a U-turn maneuver at a one-way median opening located downstream of the intersection. On the major road approaches, the left turns are typically accommodated similar to left turns at conventional intersections. **Figure 6.1** illustrates the movements at an RCUT intersection.



Source: FHWA Restricted Crossing U-Turn Intersection Informational Guide (August 2014)

Figure 6.1: Rural stop controlled RCUT configuration

Due to the significant truck volumes on both PTH 1 and PTH 5, the application of this configuration would require careful consideration. Of particular concern is providing adequate gap search and maneuver distance between the main intersection and the upstream U-turn provisions to ensure heavy trucks have sufficient distance to merge onto the highway, make the necessary lane change maneuvers, and decelerate into the U-turn. If the median width is less than adequate for larger vehicle U-turns, additional pavement can be added at the far side of the U-turn crossover in the form of “loons” to accommodate this movement as shown in **Figure 6.2** below. These would need to be sized to accommodate the required design vehicle.

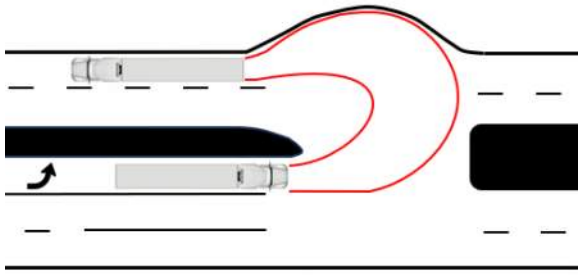
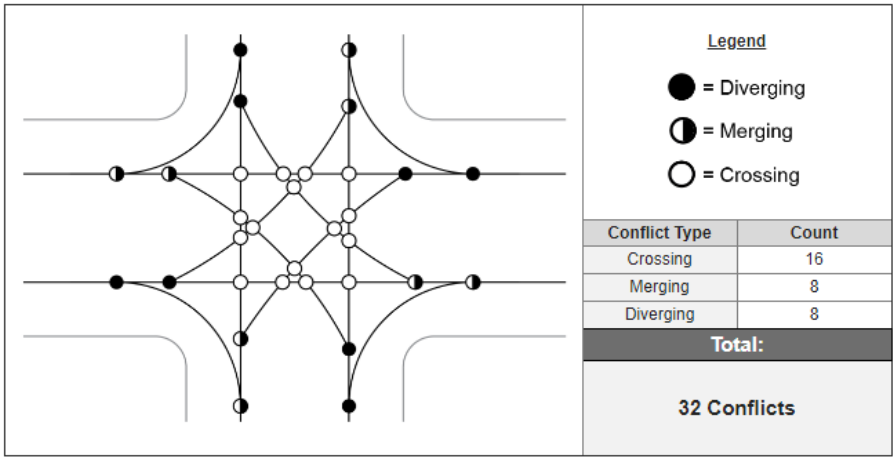


Figure 6.2: Example of a truck turning loon

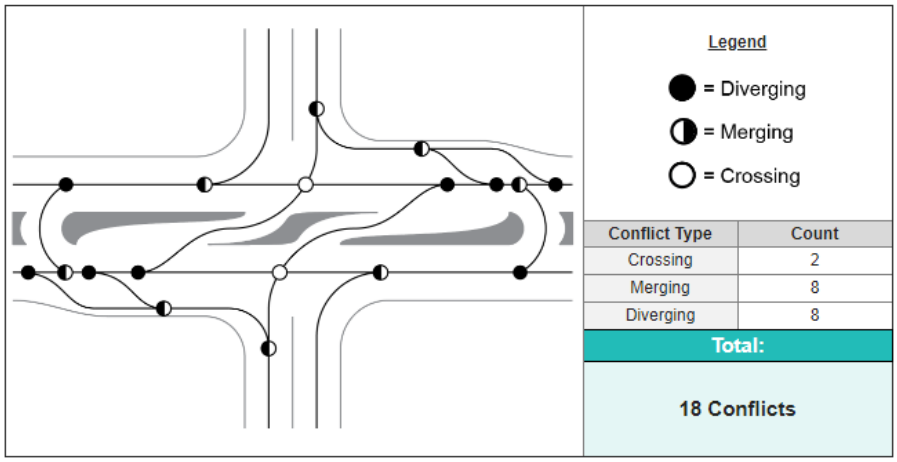
By restricting several movements at the main crossing intersection, RCUT intersections reduce vehicular intersection conflict points from 32 (stop-controlled intersection) to 18 (RCUT intersection). The majority of the reduced conflict points are crossing type conflicts occurring at the median crossovers that in general result in higher severity outcomes. Conflict points are also spread out which allows drivers to make decisions for each conflict individually, lowering driver workload and risk of error. The difference in number of conflicts is shown in **Figure 6.3**.

Conventional Intersection: Conflict Points



Conflict Type	Count
Crossing	16
Merging	8
Diverging	8
Total:	
32 Conflicts	

RCUT: Conflict Points



Conflict Type	Count
Crossing	2
Merging	8
Diverging	8
Total:	
18 Conflicts	

Source: Virginia Department of Transportation

Figure 6.3: Conventional intersection and RCUT intersection conflict points

A study of the safety performance of RCUT intersections conducted by Missouri Department of Transportation found the RCUT design resulted in a 34.8% reduction in total collisions and a 53.7% reduction in fatal and injury collisions. These expected reductions were used to help quantify the relative change in road safety performance associated with changing the existing stop-controlled intersection to a RCUT intersection. **Table 6.5** presents the findings from this review.

Table 6.5: Annual Expected Collision Frequency for the Installation of a RCUT Intersection

INTERSECTION CONFIGURATION	ANNUAL EXPECTED COLLISION FREQUENCY		
	PROPERTY DAMAGE ONLY COLLISIONS	FATAL AND INJURY COLLISIONS	TOTAL COLLISIONS
Existing Stop-Control	1.58	1.63	3.21
RCUT Intersection	1.35	0.75	2.10

The key findings from this analysis indicate that an RCUT intersection would result in lower total, PDO, and fatal and injury annual expected collision frequencies when compared to the existing stop-controlled intersection.

6.6 INTERCHANGE OPTION DISCUSSION

Grade separation can be achieved by either overpass or underpass and there are a variety of interchange types (i.e., Diamond, Parclo, etc.) to consider based on site conditions and operational requirements. Jurisdictions considering new interchanges generally must consider a variety of factors including highway classification, operational capacity, collision frequency and severity, site topography, road-user benefits, relative priority across the transportation network, funding, and other considerations. For these reasons, a functional design study is typically conducted to explore and evaluate options before selecting a preferred option to develop to a detailed design and eventual construction.

Research shows that converting an at-grade intersection to a grade-separated interchange may reduce all collisions by 42% and fatal/injury collisions by 57% (CMF Clearinghouse: Elvik, R. and Erke, A., 2007). These expected reductions were used to help quantify the relative change in road safety performance associated with changing the existing stop-controlled intersection to a grade-separated interchange. **Table 6.6** presents the findings from this review.

Table 6.6: Annual Expected Collision Frequency for the Installation of an Interchange

INTERSECTION CONFIGURATION	ANNUAL EXPECTED COLLISION FREQUENCY		
	PROPERTY DAMAGE ONLY COLLISIONS	FATAL AND INJURY COLLISIONS	TOTAL COLLISIONS
Existing Stop-Control	1.58	1.63	3.21
Grade-Separated Interchange	1.16	0.70	1.86

The key findings from this analysis indicate that a grade-separated interchange would result in lower total, PDO, and fatal and injury annual expected collision frequencies when compared to the existing stop-controlled intersection.

7 IMPLEMENTATION OPTIONS

7.1 OVERVIEW

An examination of the cost-effectiveness and ease of implementation associated with each of the road safety countermeasures selected in **Section 6** was used to develop the following implementation options.

7.2 DEVELOPMENT OF IMPLEMENTATION OPTIONS

Using the prioritized list of road safety issues identified as part of the ISRSR, and results from the cost-effectiveness assessment of potential countermeasures, implementation options were developed based on the time and level of development needed for countermeasure implementation. The following implementation criteria were applied:

- Short-term options: These items include low and moderate-cost countermeasures that can be implemented with little project development effort.
- Medium-term options: These items include countermeasures that will require project development effort but should be considered in the near future.
- Long-term options: These items include countermeasures that will require significant planning and analysis due to their cost and potential impacts on surrounding communities and developments. These items should be considered as alternatives for further review as part of future highway rehabilitation.
- Maintenance issues: These items include countermeasures that should be addressed as part of routine maintenance activities on the highway.
- Watch list items: Due to the low cost-effectiveness associated with the selected countermeasures, some road safety issues have been placed on a “watch list”. These issues should be monitored on an ongoing basis for changes in safety performance that might trigger reconsideration of the need to invest in mitigation.

Table 7.1 presents implementation options identified for each safety countermeasure.

Table 7.1: Selected Countermeasures and Implementation Options

Priority Level	Road Safety Issue	Selected Countermeasure	Implementation Options
High Priority	Median operations: - Narrow median width limiting the available storage and refuge area - Narrow median occupied by several vehicles at the same time - Different driving behaviors for left-turning vehicles observed within the median	Implementation of an alternative intersection configuration (Intersection Median Widening, Roundabout, RCUT)	Medium-term
		The provision of a grade-separation (interchange)	Long-term
	Left turns from PTH 1 - negative offset for left-turn lanes	Implementation of an alternative intersection configuration	Medium-term
	Intersection conspicuity	Install a Dynamic Advance Intersection Warning System	Short-term
		Install the Concealed or Unexpected Intersection (WA-11) – alternative countermeasure	
	PTH 5 stop sign compliance	Implementation of an alternative intersection configuration	Medium-term
	Limited positive guidance in the median	Implementation of an alternative intersection configuration	Medium-term
	PTH 5 rumble strips	The condition and design of the rumble strips should be reviewed and repaired/adjusted as necessary	Short-term
Medium Priority	Left turns from PTH 5 - absence of eastbound median left-turn acceleration lane	Provision of southbound to eastbound median acceleration lane	Short-term
		Implementation of an alternative intersection configuration	Medium-term
	Right turns from PTH 1 - length of the right-turn deceleration lanes	Extend speed-change lanes as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange.	Watch List
	Right turns from PTH 5 - Length of the right-turn acceleration lanes		
	PTH 1 speeds	Conduct a follow-up speed study on PTH 1	Short-term
	PTH 5 speed reduction zone	Consider for further review a speed reduction on PTH 5 as part of MTI's initiative to develop systemic response plans for intersections	Watch List
	PTH 1 pavement markings - short solid line pavement markings between the mainline travel lanes	Extend solid line pavement markings	Maintenance

Priority Level	Road Safety Issue	Selected Countermeasure	Implementation Options
	PTH 1 pavement markings - delineation of westbound median left-turn acceleration lane	Provision of a solid line pavement markings	
	Signage specific for median acceleration lanes	Provision of signage specific for median acceleration lanes, designed with input from a human factors expert	Short-term
	Median yield sign location	Review the locations of yield signs to reduce the sign offset	Short-term
		Implementation of an alternative intersection configuration	Medium-term
	Trucks stopping in prohibited locations	Engage with the Manitoba Trucking Association	Short-term
		Enforcement of the "no stopping" signage	
	Limited intersection illumination	Reevaluate existing illumination and enhance where necessary	Short-term
	Headlight glare		
	A-pillar obstruction	Implementation of an alternative intersection configuration	Medium-term
Low Priority	Left turns from PTH 1 - length of the left-turn deceleration lanes	Extend speed-change lanes as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange	Watch List
		Extend solid line pavement markings	Maintenance
	Proximity of service roads – potential for queues within the service road intersection	Realignment of the service roads to increase the separation between the intersections	Watch List
	Proximity of service roads – merge taper from PTH 1 within the service road intersection		
	PTH 5 shoulder width	Provision of paved shoulders on PTH 5 following MTI standards	Watch List
	Warning signage	Provide the necessary signage	Maintenance
	Guide signage		
	Right-turn from PTH 5 (yield sign)	Reviewed for compliance with the provincial standard requirements	Short-term
	Deteriorated pavement markings	Reapply line painting and pavement markings	Maintenance
	Signage condition	Review signage for deterioration and reflectivity	Maintenance
	Signage posts	Provide shear holes as necessary	Maintenance

Priority Level	Road Safety Issue	Selected Countermeasure	Implementation Options
	Pavement conditions	Assessed to determine if patch repairs, rehabilitation, or replacement is warranted	Maintenance
	PTH 5 shoulder conditions	Grading of existing shoulders to ensure smooth surface	Maintenance
	Illumination maintenance	Replace bulbs as necessary	Maintenance

Safety countermeasures grouped in the specific implementation options are listed below.

7.2.1 SHORT-TERM OPTIONS

Short-term option countermeasures include the following:

- Improve conspicuity of the intersection and vehicles entering from the side road by installing Dynamic Advance Intersection Warning Systems (**Figure 7.1**). This is an intersection recognition treatment that is meant to enhance an expressway driver's awareness of an approaching two-way stop-controlled intersection. The systems typically consist of static Vehicle Entering When Flashing (VEWF) warning signs with traffic-actuated flashers on the expressway approaches and in-pavement loop detectors on the minor roads. When traffic is detected on the minor road, the flashers on the VEWF signs are activated on the expressway approaches, warning expressway drivers that one or more vehicles are present at the intersection and may enter from the minor road. An alternative to the Dynamic Advance Intersection sign may be the Concealed or Unexpected Intersection Signs WA-11 sign that could be installed with continuous or active flashing beacons.

Figure 7.1: Example of a Dynamic Advance Intersection Warning System

- Review and reapply the PTH 5 rumble strips as necessary.
- Provide a southbound to eastbound median acceleration lane on PTH 1.
- Provide signage specific for median acceleration lanes ("Left-Turn Traffic Use Acceleration Lane on PTH 1") to inform drivers on the presence and the use of PTH 1 median acceleration lanes. It is suggested the signage design be developed with input from a human factors expert.
- Conduct a follow-up speed study on PTH 1 to confirm the 100 km/h speed zone effectiveness, and the need for an enhanced system of speed management measures.
- Reevaluate existing illumination and enhance where necessary.
- Address trucks stopping in prohibited locations by engaging with the Manitoba Trucking Association and / or local trucking operations and enhance the enforcement of the "no stopping signage".
- Review the location of the median yield signs to determine if the sign offsets can be reduced.
- Review the need and application of yield signs at the PTH 5 right-turn lanes to ensure compliance with Manitoba standards.

7.2.2 MEDIUM-TERM OPTIONS

Medium-term option countermeasures include the following:

- Implement an alternative intersection configuration (Intersection Median Widening, Roundabout, RCUT).

7.2.3 LONG-TERM OPTIONS

Long-term option countermeasures include the following:

— Provide grade-separation (interchange).

7.2.4 MAINTENANCE ISSUES

Maintenance issue countermeasures include the following:

— Provision of consistent warning, regulatory and guide signage including:

  - Provision of Divided Highway Ahead (WA-34) signs on the PTH 5 approaches.
  - Provision of consistent destination and guide signage on the PTH 1 approaches.

— Provision of pavement marking for:

  - Extending solid lines to delineate PTH 1 through lanes at intersection approaches, to discourage passing on the immediate approach and within the intersection.
  - Extending solid lines to delineate left-turn lanes on PTH 1 at least 100m further back to discourage the misuse of these lanes.
  - Providing pavement markings to identify left-turn lanes on PTH 1 to improve positive guidance to drivers.
  - Providing solid line pavement markings at the beginning of the northbound to westbound median acceleration lane to improve positive guidance and reduce the risk of driver error.

— Other general maintenance activities including:

  - Repaint deteriorated pavement markings to improve positive guidance.
  - Replace deteriorated and damaged signs.
  - Provide shear holes for wooden sign posts.
  - Repair pavement patches and other pavement deterioration.
  - Regrade and resurfacing PTH 5 shoulders.
  - Coordinate with Manitoba Hydro to replace non-operational light bulbs.

7.2.5 WATCH LIST

Items on the watch list include the following:

— Relocate service road intersections beyond the merge and diverge tapers.

- Provide partial width paved shoulders on PTH 5 to comply with MTI standards.
- The following countermeasures can be implemented as part of any future highway upgrades such as the implementation of an alternative intersection configuration or grade separation:
    - Extend the left-turn deceleration lanes on PTH 1.
    - Extend the right-turn deceleration lanes on PTH 1.
    - Extend the right-turn acceleration lanes on PTH.
- Consider for further review a speed reduction on PTH 5 as part of MTI's ongoing initiative to develop systemic response plans for intersections.

8 SUMMARY

This report summarises findings from the ISRSR conducted for the intersection of PTH 1 and PTH 5 in accordance with the TAC Canadian Guide to In-service Road Safety Reviews. In conducting this review, a “lines of evidence” approach and risk-based evaluation was applied to identify a prioritized list of road safety issues.

Using this prioritized list of road safety issues, and results from a cost-effectiveness assessment of potential countermeasures, short, medium, and long-term implementation options were developed based on the time and level of development needed for countermeasure implementation.

As noted earlier in this report, an ISRSR is separate from the design process and is not intended to identify one single safety solution for an intersection or roadway segment. Rather, an ISRSR typically identifies a number of potential countermeasures for further consideration by the road agency, ranging from shorter-term countermeasures (such as sign upgrades, reapplication of pavement markings, and enhanced illumination), to medium- and longer-term countermeasures (such as modifying traffic control or reconstructing and reconfiguring an intersection).

It is recommended that the short-term countermeasures and maintenance items, generally consisting of low and moderate cost countermeasures that can be implemented with little project development effort, be implemented right away.

It is recommended that the medium-term and long-term countermeasures identified in **Section 6** undergo further evaluation and development through a functional design study to address other considerations such as environmental constraints, drainage, land acquisition , and construction traffic management requirements. It is recognized that the ultimate solution will also need to consider department priorities and budget requirements.

9 AUDIT SIGNATURES

This review and commentary was prepared by WSP Canada Inc. (WSP) for Manitoba Transportation and Infrastructure (MTI). The material in it reflects WSP's best judgement in light of the information available to us at the time of the review. Any use which MTI or any third party makes of this review, or any reliance on it or decisions made based on it, are the responsibility of MTI or the third party. WSP accepts no responsibility for damages, if any, suffered by MTI or any third party as a result of decisions made or actions based on this review.

		December 22, 2023
Diana Emerson, P. Eng.	WSP	Date
		December 22, 2023
Geoff Millen, P. Eng.	WSP	Date
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Damir Bjelica, P. Eng.	WSP	Date
		December 22, 2023
Brant Magnusson, P. Eng.	WSP	Date
		December 22, 2023
Jaime Lacoste, P. Eng.	WSP	Date

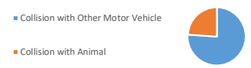
2023-12-22

A COLLISION DATA

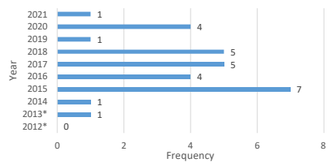
PTH 1 & PTH 5

2012-2021 DATA

#	%	Collision Type
22	76%	Collision with Other Motor Vehicle
7	24%	Collision with Animal
29	100%	



#	%	Year
0	0%	2012*
1	3%	2013*
1	3%	2014
7	24%	2015
4	14%	2016
5	17%	2017
5	17%	2018
1	3%	2019
4	14%	2020
1	3%	2021
29	100%	

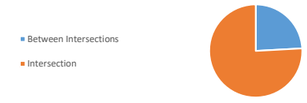


#	%	Severity
16	55%	Property Damage
12	41%	Injury
1	3%	Fatal
29	100%	

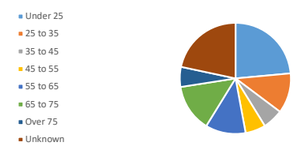
#	%	Configurations of Motor Vehicle Collisions
12	54.5%	Intersection 90 Degrees
2	9.1%	Other
2	9.1%	Side Swipe (Same Direction)
2	9.1%	Left Turn (Same Direction)
2	9.1%	Left Turn (Across)
1	4.5%	Rear End
1	4.5%	Side Swipe (Opposing)
22	100%	

#	%	Road Category
8	28%	Divided - With Median (No Barrier)
4	14%	Divided - Barrier Median
10	34%	Undivided - Two Way, Two Lane
4	14%	Undivided - Two Way, Multi Lane
1	3%	Other
2	7%	Unknown
29	100%	

#	%	Collision Site
7	24%	Between Intersections
22	76%	Intersection
29	100%	



#	%	Age of Driver
12	24%	Under 25
6	12%	25 to 35
3	6%	35 to 45
3	6%	45 to 55
6	12%	55 to 65
7	14%	65 to 75
3	6%	Over 75
11	22%	Unknown
51	100%	



PTH 1 & PTH 5

2012-2021 DATA

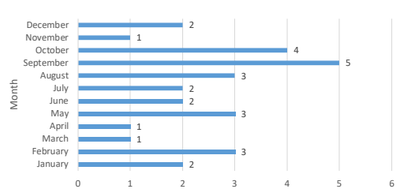
#	%	Road Surface Condition
21	72%	Dry
4	14%	Ice
1	3%	Snow
1	3%	Wet
2	7%	Unknown
29	100%	

#	%	Road Condition
25	86%	Good
1	3%	Under Construction
1	3%	Under Repair
2	7%	Unknown
29	100%	

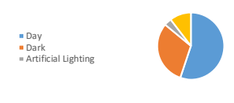
#	%	Road Surface
19	66%	Asphalt
6	21%	Concrete
4	14%	Unknown
29	100%	

#	%	Weather Condition
20	69%	Clear
4	14%	Cloudy
2	7%	Snowing
1	3%	Raining
2	7%	Unknown
29	100%	

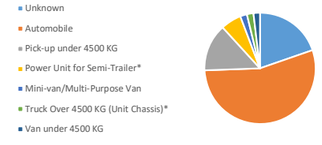
#	%	Month
2	7%	January
3	10%	February
1	3%	March
1	3%	April
3	10%	May
2	7%	June
2	7%	July
3	1%	August
5	17%	September
4	14%	October
1	3%	November
2	7%	December
29	91%	



#	%	Light Condition
16	55%	Day
9	31%	Dark
1	3%	Artificial Lighting
3	10%	Unknown
29	100%	



#	%	All Vehicles - Type
10	20%	Unknown
28	55%	Automobile
7	14%	Pick-up under 4500 KG
3	6%	Power Unit for Semi-Trailer*
1	2%	Mini-van/Multi-Purpose Van
1	2%	Truck Over 4500 KG (Unit Chassis)*
1	2%	Van under 4500 KG
51	100%	



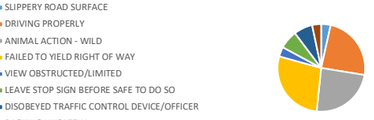
#	%	Number of Vehicles
7	24%	1
22	76%	2
0	0%	3
0	0%	4
0	0%	5
0	0%	6
29	100%	

PTH 1 & PTH 5

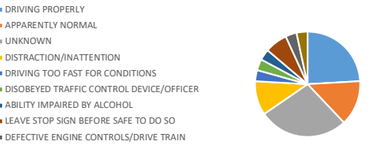
2012-2021 DATA

#	%	Vehicle 1 - Type
14	48%	Automobile
6	21%	Pick-up under 4500 KG
7	24%	Unknown
1	3%	Mini-van/Multi-Purpose Van
1	3%	Truck Over 4500 KG (Unit Chassis)*
29	100%	

#	%	Vehicle 1 - Contributing Factor 1
1	3%	SLIPPERY ROAD SURFACE
7	24%	DRIVING PROPERLY
7	24%	ANIMAL ACTION - WILD
8	28%	FAILED TO YIELD RIGHT OF WAY
1	3%	VIEW OBSTRUCTED/LIMITED
2	7%	LEAVE STOP SIGN BEFORE SAFE TO DO SO
2	7%	DISOBEYED TRAFFIC CONTROL DEVICE/OFFICER
1	3%	BACKING UNSAFELY
29	100%	

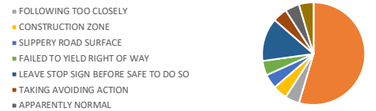


#	%	Vehicle 1 - Contributing Factor 2
7	24%	DRIVING PROPERLY
4	14%	APPARENTLY NORMAL
8	28%	UNKNOWN
3	10%	DISTRACTION/INATTENTION
1	3%	DRIVING TOO FAST FOR CONDITIONS
1	3%	DISOBEYED TRAFFIC CONTROL DEVICE/OFFICER
1	3%	ABILITY IMPAIRED BY ALCOHOL
2	7%	LEAVE STOP SIGN BEFORE SAFE TO DO SO
1	3%	DEFECTIVE ENGINE CONTROLS/DRIVE TRAIN
1	3%	HAD BEEN DRINKING/SUSPECTED ALCOHOL USE
29	100%	



#	%	Vehicle 2 - Type
14	48%	Automobile
3	10%	Unknown
1	3%	Pick-up under 4500 KG
3	10%	Power Unit for Semi-Trailer*
1	3%	Van under 4500 KG
22	76%	

#	%	Vehicle 2 - Contributing Factor 1
0	0%	UNKNOWN
12	41%	DRIVING PROPERLY
1	3%	FOLLOWING TOO CLOSELY
1	3%	CONSTRUCTION ZONE
1	3%	SLIPPERY ROAD SURFACE
1	3%	FAILED TO YIELD RIGHT OF WAY
3	10%	LEAVE STOP SIGN BEFORE SAFE TO DO SO
1	3%	TAKING AVOIDING ACTION
1	3%	APPARENTLY NORMAL
1	3%	ABILITY IMPAIRED BY ALCOHOL
22	76%	



#	%	Vehicle 2 - Contributing Factor 2
4	14%	UNKNOWN
11	38%	APPARENTLY NORMAL
3	10%	DISTRACTION/INATTENTION
2	7%	DRIVING PROPERLY
1	3%	TURNING IMPROPERLY
1	3%	FAILED TO YIELD RIGHT OF WAY
22	76%	

COLLISION DETAILS (BY SEVERITY)

FATAL COLLISIONS – 1 COLLISION

One fatal collision occurred during the study period and was recorded as an intersection 90 degrees collision. The collision occurred in August 2016 between 7:00 p.m. and 8:00 p.m. under clear weather condition and dry road surface condition. The collision involved a pick-up truck (under 4500 kg) that "disobeyed the traffic control device". The other vehicle was a power unit for semi-trailer that was going straight ahead and recorded as "taking avoiding action". The power unit for semi-trailer was travelling in the eastbound direction, and the travel direction for the pick-up truck was travelling in the northbound direction. The driver of the in the pick-up truck died as a result of the collision.

INJURY COLLISIONS – 12 COLLISIONS

Seven injury collisions that occurred during the study period were recorded as **intersection 90 degree collisions**.

- One collision occurred in July 2015 between 3:00 p.m. and 4:00 p.m. under clear weather condition and dry road surface condition. The collision involved an automobile that was travelling northbound on PTH 5 that left the stop sign before safe to do so and collided with another automobile travelling eastbound that was going straight ahead and driving properly. The passenger (front right) in the vehicle travelling eastbound on PTH 1W incurred a minor injury and was treated in hospital and released.
- One collision occurred in August 2016 between 4:00 p.m. and 5:00 p.m. under clear weather condition and dry road surface condition. The collision involved a vehicle (vehicle type unknown) that was travelling southbound on PTH 5 that failed to yield the right-of-way and collided with another automobile travelling eastbound that was going straight ahead and driving properly. The passenger (rear right) in the vehicle travelling southbound on PTH 5 incurred a minor injury and was treated in hospital and released.
- One collision occurred in July 2018 between 4:00 p.m. and 5:00 p.m. under clear weather condition and dry road surface condition. The collision involved an automobile that was travelling northbound on PTH 5 that left the stop sign before safe to do so and collided with another automobile travelling eastbound that was going straight ahead and driving properly. The passenger (front right) in the vehicle travelling eastbound on PTH 1W incurred a minimal injury and did not require hospital treatment.
- One collision occurred in February 2015 between 2:00 a.m. and 3:00 a.m. under dark lighting condition, snowing weather condition and icy road surface condition. The collision involved a pick-up truck (under 4500 kg) that was travelling northbound on PTH 5 that failed to yield the right-of-way and collided with another automobile travelling westbound that was driving properly. The driver in the vehicle travelling westbound on PTH 1W incurred a minimal injury and did not require hospital treatment.
- One collision occurred in October 2016 between 8:00 p.m. and 9:00 p.m. under dark lighting condition. The weather surface condition, road surface condition, vehicle types, and travel directions are unknown (based on the collision data provided); however, one vehicle failed to yield the right-of-way and their ability was impaired by alcohol. The other vehicle was driving properly. No injury details were recorded in the collision data.
- One collision occurred in October 2017 between 1:00 p.m. and 2:00 a.m. under clear weather condition and dry road surface condition. The collision involved an automobile that was travelling northbound on PTH 5 that failed to yield the right-of-way (although coded as "leave stop sign before safe to do so") and collided with another automobile travelling westbound that was driving properly. The passenger (front right) in the vehicle travelling westbound on PTH 1W incurred a minor injury and was treated in hospital and released.

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- One collision occurred in April 2017 between 7:00 a.m. and 8:00 a.m. under clear weather condition and dry road surface condition. The collision involved a pick-up truck (under 4500 kg) that was travelling northbound on PTH 5 that failed to yield the right-of-way and collided with an automobile travelling westbound that was driving properly. The driver (front right) in the vehicle travelling northbound on PTH 5 incurred a minor injury and was treated in hospital and released.

Three injury collisions that occurred during the study period were recorded as **left-turn (same direction) collisions** or **side swipe (same direction) collisions**.

- One left-turn (same direction) collision occurred in June 2019 between 1:00 a.m. and 2:00 a.m. under artificial lighting condition and dry road surface condition. The collision involved a pick-up truck (under 4500 kg) that was travelling southbound on PTH 5 that failed to yield the right-of-way when turning left and collided with a power unit for semi-trailer travelling eastbound on PTH 1W that was driving properly. The passenger (front right) in the vehicle making the left-turn incurred a minor injury and was treated in hospital and released.
- One left-turn (same direction) collision occurred in May 2015 between 6:00 p.m. and 7:00 p.m. under clear weather condition and dry road surface condition. The collision involved a vehicle that was travelling southbound on PTH 5 that failed to yield the right-of-way when turning left and collided with a vehicle travelling eastbound on PTH 1W that was driving properly. The passenger (front right) in the vehicle making the left-turn incurred a minimal injury and did not require hospital treatment.
- One sideswipe (same direction) collision occurred in September 2013 between 1:00 p.m. and 2:00 p.m. under clear weather condition and dry road surface condition; however, the road was identified to be under construction. The collision involved a pick-up truck (under 4500 kg) that was travelling northbound on PTH 5 that failed to yield the right-of-way when turning left and collided with an automobile travelling westbound on PTH 1W that was driving properly. The passenger (front right) in the vehicle making the left-turn incurred a minor injury and was treated in hospital and released.

Two injury collisions that occurred during the study period were recorded as **Other collisions**.

- One collision occurred in January 2015 between 1:00 p.m. and 2:00 p.m. under cloudy weather conditions and icy road surface conditions. The collision involved a vehicle travelling eastbound on PTH 1W that was travelling too fast for conditions (slippery road surface), turned improperly and lost control and collided with another automobile travelling eastbound on PTH 1W that was driving properly. The driver in the vehicle driving properly incurred a minimal injury and did not require hospital treatment. *This collision was categorized as a side-swipe same direction collision in the collision diagram.*
- One collision occurred in September 2015 between 10:00 p.m. and 11:00 p.m. under dark lighting conditions, clear weather conditions and dry road surface conditions. The collision involved an automobile travelling westbound on PTH 1W that collided with an animal. The passenger (rear left) in the vehicle was injured, but the extent was not specified. *This collision was categorized as a collision with an animal in the collision diagram.*

PROPERTY DAMAGE COLLISIONS – 16 COLLISIONS

Six (6) of the sixteen (16) property damage collisions involved animal and occurred under dark lighting conditions. Of the animal collisions, four occurred when the road surface was dry, one occurred when the road surface was wet (and it was raining), and one occurred when the road surface had snow coverage. Five of the six animal collisions involved automobiles and one involved a truck over 4500 kg. The collisions occurred on the west leg of the intersection (three collisions; two travelling eastbound, one travelling westbound), east leg of the intersection (one collision; travelling westbound), and south leg of the intersection (two collisions; one travelling southbound, one travel direction unknown).

Ten (10) of the sixteen (16) property damage collisions involved another motor vehicle. Four (4) were intersection 90 degree collisions, two were left-turn collisions, two were sideswipe collisions, one was a rear end collision, and one collision involved a vehicle reversing and backing unsafely.

90-degree collisions:

- Automobile travelling southbound disobeyed traffic control device (defective engine controls / drive train) and collided with an eastbound vehicle.
- Automobile travelling southbound left stop sign before safe to do so and collided with a westbound vehicle.
- Automobile travelling southbound left stop sign before safe to do so and collided with a westbound vehicle turning left.
- Automobile travelling southbound left stop sign before safe to do so and collided with a westbound vehicle.

Left-turn collisions:

- Automobile travelling southbound failed to yield right-of-way when turning left and collided with an eastbound vehicle.
- Automobile travelling southbound failed to yield right-of-way when turning left and collided with a northbound vehicle. Alcohol impairment was listed as a contributing factor.

Sideswipe collisions:

- Automobile travelling westbound was driving too fast for conditions, lost control and collided with another westbound vehicle.
- Automobile travelling southbound failed to yield right-of-way and collided with a northbound vehicle.

Rear end and other collisions:

- A vehicle travelling southbound was following too closely and collided with another southbound vehicle that was stopped at the stop sign.
- A vehicle travelling northbound reversed at the stop sign and collided with another vehicle.

B JULY 2023 TRAFFIC COUNT

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Motorcycles

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	1	0	0
2023-07-18	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	1:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	2:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0
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2023-07-18	3:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
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2023-07-18	6:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
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2023-07-18	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2023-07-19	9:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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2023-07-19	10:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-19	11:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
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2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Passenger Cars

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	4	4	3	0	0	6	2	0	3	4	9	0	8	18	1	0
2023-07-18	7:15 AM	1	3	4	0	1	22	2	0	3	6	12	0	16	21	1	0
2023-07-18	7:30 AM	0	6	3	0	1	16	3	0	2	12	12	0	20	24	3	0
2023-07-18	7:45 AM	0	13	1	0	2	30	2	0	1	9	14	0	21	30	6	0
2023-07-18	8:00 AM	3	9	0	0	1	23	5	0	4	3	8	0	6	23	4	0
2023-07-18	8:15 AM	4	2	2	0	1	28	1	0	4	8	19	0	9	24	2	0
2023-07-18	8:30 AM	4	6	0	0	1	34	2	0	3	8	10	0	6	30	3	0
2023-07-18	8:45 AM	3	14	2	0	1	46	6	0	3	6	9	0	8	36	3	0
2023-07-18	9:00 AM	2	1	1	0	1	37	4	0	4	2	9	0	7	40	3	0
2023-07-18	9:15 AM	4	8	1	0	2	42	2	0	4	6	5	0	9	30	3	0
2023-07-18	9:30 AM	4	10	3	0	2	36	0	0	1	6	2	0	5	44	1	0
2023-07-18	9:45 AM	1	6	2	0	4	38	5	0	0	6	9	0	8	32	1	0
2023-07-18	10:00 AM	1	7	3	0	2	35	3	0	0	5	11	0	5	28	1	0
2023-07-18	10:15 AM	4	10	5	0	3	61	4	0	4	5	8	0	4	29	0	0
2023-07-18	10:30 AM	2	5	1	0	2	51	2	0	5	8	9	0	3	48	0	0
2023-07-18	10:45 AM	2	4	5	0	4	52	4	0	2	4	8	0	2	28	1	0
2023-07-18	11:00 AM	2	10	4	0	3	39	4	0	2	3	7	0	9	35	0	0
2023-07-18	11:15 AM	2	3	2	0	1	49	2	0	1	7	14	0	4	31	1	0
2023-07-18	11:30 AM	4	5	1	0	4	43	5	0	1	3	5	0	8	33	0	0
2023-07-18	11:45 AM	1	7	2	0	1	54	5	0	3	5	4	0	6	28	4	0
2023-07-18	12:00 PM	2	7	4	0	4	36	5	0	3	6	10	0	4	32	1	0
2023-07-18	12:15 PM	1	4	3	0	1	57	2	0	4	4	6	0	6	37	4	0
2023-07-18	12:30 PM	1	2	3	0	2	37	2	0	7	5	5	0	5	39	0	0
2023-07-18	12:45 PM	4	11	0	0	4	41	2	0	2	4	8	0	7	60	0	0
2023-07-18	1:00 PM	0	2	4	0	2	38	4	0	2	4	8	0	12	37	0	0
2023-07-18	1:15 PM	1	4	1	0	2	39	5	0	2	4	8	0	6	42	0	0
2023-07-18	1:30 PM	1	4	4	0	1	43	3	0	6	8	13	0	9	48	4	0
2023-07-18	1:45 PM	1	6	2	0	3	45	4	0	5	10	6	0	13	50	2	0
2023-07-18	2:00 PM	3	4	2	0	1	54	2	0	6	8	13	0	12	33	1	0
2023-07-18	2:15 PM	2	6	2	0	5	44	4	0	3	10	5	0	13	43	2	0
2023-07-18	2:30 PM	4	9	3	0	8	29	2	0	6	7	17	0	11	43	1	0
2023-07-18	2:45 PM	4	5	5	0	2	41	7	0	3	9	8	0	16	47	1	0
2023-07-18	3:00 PM	4	2	1	0	2	50	4	0	4	10	22	0	10	54	4	0
2023-07-18	3:15 PM	0	9	5	0	1	46	1	0	6	4	12	0	11	41	4	0
2023-07-18	3:30 PM	2	11	5	0	5	28	1	0	2	8	12	0	11	48	4	0
2023-07-18	3:45 PM	3	8	2	0	3	31	6	0	5	9	6	0	13	59	0	0
2023-07-18	4:00 PM	4	15	4	0	3	31	0	0	2	5	15	0	18	45	1	0
2023-07-18	4:15 PM	4	13	5	0	4	36	4	0	6	12	12	0	20	52	2	0
2023-07-18	4:30 PM	2	20	2	0	4	42	5	0	10	12	22	0	18	54	6	0
2023-07-18	4:45 PM	0	13	2	0	2	39	8	0	6	10	14	0	12	40	2	0
2023-07-18	5:00 PM	2	14	5	0	3	35	4	0	3	4	11	0	21	39	3	0
2023-07-18	5:15 PM	3	13	4	0	1	43	3	0	4	9	14	0	19	27	4	0
2023-07-18	5:30 PM	5	10	0	0	5	42	6	0	5	2	8	0	14	36	1	0
2023-07-18	5:45 PM	3	12	4	0	2	36	1	0	4	9	10	0	10	34	3	0
2023-07-18	6:00 PM	2	8	1	0	1	24	1	0	3	6	12	0	10	37	0	0
2023-07-18	6:15 PM	1	3	3	0	1	26	3	0	4	5	7	0	11	27	1	0
2023-07-18	6:30 PM	1	7	0	0	2	31	1	0	5	3	7	0	16	33	1	0
2023-07-18	6:45 PM	1	4	1	0	5	37	0	0	5	5	6	0	4	32	1	0
2023-07-18	7:00 PM	1	1	4	0	3	26	7	0	2	4	4	0	9	29	2	0
2023-07-18	7:15 PM	1	4	0	0	0	31	3	0	0	2	4	0	8	21	1	0
2023-07-18	7:30 PM	0	3	1	0	1	23	3	0	1	2	6	0	8	28	1	0
2023-07-18	7:45 PM	0	1	0	0	2	25	1	0	1	4	6	0	5	33	0	0
2023-07-18	8:00 PM	2	3	2	0	1	20	0	0	3	3	12	0	8	27	1	0
2023-07-18	8:15 PM	1	1	0	0	1	19	0	0	2	6	5	0	7	31	1	0
2023-07-18	8:30 PM	0	5	0	0	1	16	1	0	1	1	3	0	7	14	1	0
2023-07-18	8:45 PM	1	3	0	0	0	18	1	0	2	1	6	0	3	20	0	0
2023-07-19	7:00 AM	5	5	0	0	0	15	3	0	1	5	16	0	8	15	0	0
2023-07-19	7:15 AM	1	6	3	0	4	24	4	0	1	4	8	0	17	25	0	0
2023-07-19	7:30 AM	2	6	1	0	1	25	3	0	1	16	23	0	19	17	2	0
2023-07-19	7:45 AM	2	11	2	0	3	21	1	0	1	14	10	0	18	28	3	0
2023-07-19	8:00 AM	2	7	3	0	0	33	2	0	6	8	8	0	11	23	4	0
2023-07-19	8:15 AM	2	3	2	0	0	40	4	0	3	8	22	0	10	33	1	0
2023-07-19	8:30 AM	4	7	2	0	1	36	3	0	3	15	6	0	6	39	2	0
2023-07-19	8:45 AM	4	5	1	0	1	33	3	0	2	5	9	0	11	39	1	0
2023-07-19	9:00 AM	5	5	1	0	1	35	4	0	8	5	6	0	10	34	0	0
2023-07-19	9:15 AM	9	4	2	0	1	47	4	0	3	4	10	0	7	34	4	0
2023-07-19	9:30 AM	1	4	1	0	1	59	3	0	5	3	7	0	12	27	0	0
2023-07-19	9:45 AM	0	8	1	0	4	31	2	0	4	5	7	0	3	44	2	0
2023-07-19	10:00 AM	3	6	1	0	1	52	3	0	4	6	7	0	4	29	1	0
2023-07-19	10:15 AM	0	4	1	0	0	50	3	0	2	5	8	0	2	32	3	0
2023-07-19	10:30 AM	3	8	2	0	0	39	6	0	1	5	8	0	11	35	1	0
2023-07-19	10:45 AM	1	5	0	0	3	41	3	0	2	9	7	0	5	42	1	0
2023-07-19	11:00 AM	0	15	4	0	0	44	3	0	7	6	5	0	2	31	4	0
2023-07-19	11:15 AM	4	8	3	0	2	42	2	0	2	6	6	0	11	32	0	0
2023-07-19	11:30 AM	1	9	3	0	3	39	3	0	4	4	6	0	6	24	3	0
2023-07-19	11:45 AM	3	5	4	0	0	39	0	0	1	11	12	0	4	38	1	0
2023-07-19	12:00 PM	2	11	1	0	2	43	4	0	2	3	12	0	10	48	2	0
2023-07-19	12:15 PM	1	5	4	0	3	39	4	0	2	5	8	0	6	32	2	0
2023-07-19	12:30 PM	2	3	2	0	1	44	0	0	3	6	8	0	4	28	2	0
2023-07-19	12:45 PM	3	6	5	0	1	25	4	0	4	5	7	0	7	40	1	0
2023-07-19	1:00 PM	1	3	2	0	2	29	5	0	3	3	15	0	7	34	0	0
2023-07-19	1:15 PM	2	8	2	0	4	36	4	0	4	3	4	0	10	50	0	0
2023-07-19	1:30 PM	1	5	1	0	0	50	5	0	5	6	7	0	6	49	0	0
2023-07-19	1:45 PM	1	6	2	0	2	35	3	0	7	11	7	0	6	35	2	0
2023-07-19	2:00 PM	1	3	0	0	7	48	2	0	4	4	3	0	11	61	2	0
2023-07-19	2:15 PM	2	7	2	0	2	38	2	0	11	2	8	0	19	43	3	0
2023-07-19	2:30 PM	0	6	2	0	0	42	2	0	7	3	8	0	12	44	2	0
2023-07-19	2:45 PM	4	4	5	0	5	38	3	0	4	11	6	0	15	49	1	0
2023-07-19	3:00 PM	0	7	4	0	2	42	5	0	7	11	14	0	14	36	3	0
2023-07-19	3:15 PM	5	11	4	0	2	45	6	0	5	5	11	0	13	45	2	0
2023-07-19	3:30 PM	0	13	2	0	0	35	6	0	5	16	6	0	10	47	3	0
2023-07-19	3:45 PM	1	16	3	0	3	31	3	0	6	11	8	0	8	32	2	0
2023-07-19	4:00 PM	3	13	2	0	1	38	6	0	1	10	17	0	12	47	2	0
2023-07-19	4:15 PM	0	13	3	0	4	35	2	0	3	8	17	0	17	51	4	0
2023-07-19	4:30 PM	2	19	2	0	3	35	6	0	5	12	14	0	19	50	4	0
2023-07-19	4:45 PM	0	15	3	0	3	35	1	0	6	15	19	0	20	51	3	0
2023-07-19	5:00 PM	4	13	3	0	1	34	2	0	5	12	5	0	22	52	4	0
2023-07-19	5:15 PM	3	25	4	0	5	42	0	0	5	8	16	0	16	50	1	0
2023-07-19	5:30 PM	5	16	2	0	2	34	6	0	4	6	11	0	9	55	0	0
2023-07-19	5:45 PM	2	9	4	0	6	28	4	0	2	8	8	0	17	25	1	0
2023-07-19	6:00 PM	2	6	1	0	3	31	3	0	4	2	6	0	12	40	1	0
2023-07-19	6:15 PM	0	2	1	0	0	34	5	0	3	3	10	0	10	40	0	0
2023-07-19	6:30 PM	1	3	1	0	0	30	4	0	2	2	14	0	8	32	0	0
2023-07-19	6:45 PM	0	7	3	0	3	29	1	0	3	4	2	0	11	37	1	0
2023-07-19	7:00 PM	1	5	0	0	4	24	3	0	2	6	10	0	14	34	1	0
2023-07-19	7:15 PM	1	5	0	0	2	36	7	0	2	4	5	0	12	26	5	0
2023-07-19	7:30 PM	3	5	3	0	0	26	4	0	0	2	11	0	15	23	1	0
2023-07-19	7:45 PM	0	3	3	0	1	26	1	0	2	2	6	0	5	22	0	0
2023-07-19	8:00 PM	2	3	0	0	0	19	1	0	4	6	8	0	5	40	0	0
2023-07-19	8:15 PM	0	7	0	0	1	24	1	0	0	7	7	0	5	25	0	0
2023-07-19	8:30 PM	0	4	0	0	1	22	1	0	3	6	5	0	5	20	0	0
2023-07-19	8:45 PM	0	4	0	0	2	20	0	0	0	5	8	0	6	26	1	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Pickups, Panels, Vans

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0	0
2023-07-18	7:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	1	1	0	0
2023-07-18	7:45 AM	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	1	4	0	0	0	0	0	0	0	0	1	0
2023-07-18	8:15 AM	0	0	0	0	0	4	0	0	0	0	0	0	3	0	1	0
2023-07-18	8:30 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	0
2023-07-18	9:00 AM	0	1	0	0	0	1	0	0	1	0	1	0	0	2	0	0
2023-07-18	9:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1	0
2023-07-18	9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0
2023-07-18	10:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
2023-07-18	10:30 AM	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	1	0	0	0	0	2	0	0	1	0	0	0	1	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	11:30 AM	0	0	0	0	0	2	0	0	0	0	1	0	1	0	0	0
2023-07-18	11:45 AM	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	3	0	0
2023-07-18	12:30 PM	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
2023-07-18	1:00 PM	0	1	0	0	0	1	2	0	0	0	0	0	1	2	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0	0
2023-07-18	1:45 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
2023-07-18	2:00 PM	0	0	0	0	0	3	1	0	0	0	0	0	4	1	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0
2023-07-18	2:30 PM	0	0	0	0	0	5	0	0	0	0	0	0	1	3	0	0
2023-07-18	2:45 PM	1	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
2023-07-18	3:00 PM	0	0	0	0	0	5	0	0	0	0	1	0	0	2	0	0
2023-07-18	3:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
2023-07-18	3:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	1	1	0	0	0	0	0	0	0	1	0	0	2	0	0
2023-07-18	4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	5	1	0
2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	2	0	0
2023-07-18	5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-18	6:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
2023-07-18	6:30 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
2023-07-18	6:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
2023-07-18	7:30 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	8:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	7:15 AM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0
2023-07-19	8:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0
2023-07-19	9:00 AM	1	0	0	0	0	4	0	0	0	0	0	0	2	2	0	0
2023-07-19	9:15 AM	0	0	0	0	0	2	2	0	0	0	1	0	1	2	0	0
2023-07-19	9:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	3	1	0	0	0	0	0	1	0	0	0
2023-07-19	10:15 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	2	0	0	0	0	1	0	2	1	1	0
2023-07-19	10:45 AM	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0
2023-07-19	11:15 AM	0	1	0	0	0	5	1	0	0	1	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	12:15 PM	0	0	0	0	1	2	0	0	0	0	0	0	0	2	1	0
2023-07-19	12:30 PM	0	0	0	0	1	2	0	0	0	0	1	0	0	2	0	0
2023-07-19	12:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2023-07-19	1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	3	0	0
2023-07-19	3:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
2023-07-19	3:30 PM	1	0	0	0	0	0	1	0	0	1	2	0	0	2	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0
2023-07-19	4:45 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0
2023-07-19	6:45 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
2023-07-19	7:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Buses

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
2023-07-19	12:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	2:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Unit 2-Axle Trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0
2023-07-18	7:15 AM	0	0	0	0	0	2	0	0	0	1	1	0	1	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	1	0	0	0	0	2	0	1	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0
2023-07-18	8:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0
2023-07-18	8:15 AM	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
2023-07-18	8:45 AM	0	1	0	0	0	2	0	0	0	1	1	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	3	0	0	0	0	1	0	1	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	1	5	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0
2023-07-18	10:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	1	2	0	2	2	0	0
2023-07-18	10:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0
2023-07-18	11:00 AM	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	11:30 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
2023-07-18	11:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0
2023-07-18	12:15 PM	0	1	0	0	0	5	0	0	0	0	0	0	0	1	0	0
2023-07-18	12:30 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0
2023-07-18	12:45 PM	0	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
2023-07-18	1:15 PM	0	0	0	0	1	1	1	0	0	0	0	0	1	1	0	0
2023-07-18	1:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	1	0	0	0	5	1	0	1	0	1	0	1	0	1	0
2023-07-18	2:00 PM	1	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0
2023-07-18	2:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2023-07-18	2:30 PM	0	0	0	0	0	4	0	0	0	0	2	0	0	1	0	0
2023-07-18	2:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0
2023-07-18	3:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0
2023-07-18	3:15 PM	0	0	0	0	0	1	0	0	1	0	1	0	1	1	0	0
2023-07-18	3:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0
2023-07-18	3:45 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0
2023-07-18	4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
2023-07-18	4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2023-07-18	4:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-18	5:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	5:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	1	0	0	1	0	0	0	1	4	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0
2023-07-18	7:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
2023-07-19	7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
2023-07-19	7:45 AM	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	0
2023-07-19	8:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0
2023-07-19	8:30 AM	0	1	0	0	0	2	0	0	0	1	0	0	1	2	0	0
2023-07-19	8:45 AM	0	1	0	0	1	4	0	0	0	1	0	0	0	0	0	0
2023-07-19	9:00 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	0
2023-07-19	9:15 AM	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0	0
2023-07-19	9:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	2	1	0	0
2023-07-19	9:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	1	1	0	0
2023-07-19	10:00 AM	0	2	0	0	0	2	0	0	0	1	0	0	1	3	0	0
2023-07-19	10:15 AM	0	0	0	0	0	2	1	0	0	1	0	0	0	1	0	0
2023-07-19	10:30 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
2023-07-19	10:45 AM	0	1	0	0	0	4	1	0	0	0	0	0	0	1	0	0
2023-07-19	11:00 AM	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0
2023-07-19	11:15 AM	0	2	0	0	0	4	0	0	0	2	0	0	0	1	0	0
2023-07-19	11:30 AM	0	0	0	0	0	2	1	0	0	1	0	0	0	2	0	0
2023-07-19	11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0	0
2023-07-19	12:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0
2023-07-19	12:45 PM	0	2	0	0	0	3	0	0	0	1	2	0	0	0	0	0
2023-07-19	1:00 PM	2	2	0	0	0	1	1	0	0	2	2	0	1	1	0	0
2023-07-19	1:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
2023-07-19	1:30 PM	0	0	0	0	0	2	0	0	1	0	0	0	0	2	0	0
2023-07-19	1:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	2	0	0	0	1	1	0	0	1	0	0
2023-07-19	2:15 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	2	0	0
2023-07-19	2:30 PM	0	2	0	0	0	6	0	0	0	2	1	0	0	0	0	0
2023-07-19	2:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	1	0	0	0	0	2	0	0	0	0	1	0	0	2	0	0
2023-07-19	3:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	1	4	0	0
2023-07-19	3:30 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	3	0	0
2023-07-19	4:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	1	1	1	0	2	1	0	0
2023-07-19	4:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0
2023-07-19	5:00 PM	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
2023-07-19	5:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	2	0	0
2023-07-19	6:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0
2023-07-19	6:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
2023-07-19	6:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2023-07-19	7:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Unit 3-Axle Trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-18	7:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0
2023-07-18	8:30 AM	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-18	9:15 AM	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-18	9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	2	0	0	1	0	0	0	1	1	0	1	2	0	0
2023-07-18	10:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	1	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
2023-07-18	11:45 AM	0	0	1	0	0	1	2	0	0	1	1	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0	0
2023-07-18	12:15 PM	0	0	1	0	2	1	0	0	1	0	0	0	0	2	0	0
2023-07-18	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0
2023-07-18	1:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0
2023-07-18	1:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2023-07-18	1:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0
2023-07-18	2:15 PM	0	0	2	0	3	0	0	0	0	2	0	0	0	4	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	2:45 PM	0	2	0	0	0	2	0	0	0	0	1	0	0	4	0	0
2023-07-18	3:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	3:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	4:30 PM	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-19	7:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0
2023-07-19	8:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	8:45 AM	0	0	0	0	1	1	0	0	0	0	1	0	0	3	1	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:15 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	2	1	0
2023-07-19	9:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	4	0	0
2023-07-19	9:45 AM	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	10:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
2023-07-19	10:30 AM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
2023-07-19	11:15 AM	0	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0
2023-07-19	11:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0
2023-07-19	11:45 AM	0	0	0	0	0	1	0	0	1	1	0	0	0	2	0	0
2023-07-19	12:00 PM	1	1	0	0	1	0	0	0	0	0	0	0	0	5	0	0
2023-07-19	12:15 PM	0	0	1	0	0	2	0	0	0	0	1	0	0	2	0	0
2023-07-19	12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-19	12:45 PM	1	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0
2023-07-19	1:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
2023-07-19	1:30 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0
2023-07-19	2:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:00 PM	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Unit 4-Axle Trucks (or more)

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Trailer 3 or 4-axle trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-18	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Trailer 5-Axle Trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	4	0	0	1	0	0	0	0	2	0	0
2023-07-18	7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:30 AM	0	0	0	0	0	6	0	0	1	0	0	0	1	5	0	0
2023-07-18	7:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0
2023-07-18	8:00 AM	0	0	0	0	0	5	1	0	1	0	0	0	0	2	0	0
2023-07-18	8:15 AM	0	0	0	0	1	4	0	0	0	1	0	0	0	5	0	0
2023-07-18	8:30 AM	0	0	0	0	0	7	1	0	0	0	0	0	1	4	0	0
2023-07-18	8:45 AM	0	0	0	0	0	4	0	0	2	1	0	0	1	4	0	0
2023-07-18	9:00 AM	0	0	0	0	1	5	0	0	3	0	0	0	1	3	0	0
2023-07-18	9:15 AM	0	0	1	0	1	9	0	0	1	0	0	0	0	4	0	0
2023-07-18	9:30 AM	0	0	0	0	0	7	0	0	1	0	0	0	0	4	0	0
2023-07-18	9:45 AM	0	0	0	0	0	8	1	0	1	0	0	0	0	3	0	0
2023-07-18	10:00 AM	1	0	0	0	0	8	1	0	0	0	0	0	2	8	0	0
2023-07-18	10:15 AM	1	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0
2023-07-18	10:30 AM	0	1	0	0	0	6	0	0	0	0	0	0	0	10	0	0
2023-07-18	10:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	7	0	0
2023-07-18	11:00 AM	1	0	0	0	0	10	0	0	0	1	1	0	0	9	0	0
2023-07-18	11:15 AM	0	0	0	0	0	6	0	0	1	0	0	0	1	9	0	0
2023-07-18	11:30 AM	0	0	0	0	0	8	0	0	0	0	0	0	1	6	0	0
2023-07-18	11:45 AM	0	0	0	0	0	7	0	0	0	0	0	0	1	5	0	0
2023-07-18	12:00 PM	0	0	0	0	0	5	0	0	2	0	0	0	0	6	0	0
2023-07-18	12:15 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	11	0	0
2023-07-18	12:30 PM	0	0	0	0	0	6	0	0	1	0	0	0	0	9	1	0
2023-07-18	12:45 PM	0	0	0	0	0	3	1	0	1	0	0	0	2	4	0	0
2023-07-18	1:00 PM	0	0	0	0	0	10	0	0	1	0	0	0	6	1	0	0
2023-07-18	1:15 PM	0	0	0	0	0	8	0	0	1	1	1	0	0	5	0	0
2023-07-18	1:30 PM	0	0	0	0	1	7	0	0	0	0	1	0	0	12	0	0
2023-07-18	1:45 PM	0	0	0	0	0	15	1	0	0	0	0	0	0	8	1	0
2023-07-18	2:00 PM	0	0	0	0	0	11	0	0	0	0	0	0	1	6	1	0
2023-07-18	2:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	9	0	0
2023-07-18	2:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	6	1	0
2023-07-18	2:45 PM	0	1	1	0	0	12	0	0	1	0	0	0	0	9	0	0
2023-07-18	3:00 PM	0	0	0	0	0	9	0	0	1	0	0	0	0	5	0	0
2023-07-18	3:15 PM	0	0	0	0	0	9	0	0	2	0	0	0	0	9	2	0
2023-07-18	3:30 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	5	0	0
2023-07-18	3:45 PM	0	0	0	0	0	10	0	0	0	0	0	0	0	6	0	0
2023-07-18	4:00 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	9	1	0
2023-07-18	4:15 PM	0	0	0	0	0	15	0	0	0	0	0	0	0	8	0	0
2023-07-18	4:30 PM	0	0	0	0	0	7	1	0	0	1	0	0	0	9	0	0
2023-07-18	4:45 PM	0	0	0	0	0	6	1	0	0	0	0	0	0	8	1	0
2023-07-18	5:00 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	6	0	0
2023-07-18	5:15 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	8	0	0
2023-07-18	5:30 PM	0	0	0	0	0	9	1	0	1	0	0	0	0	9	0	0
2023-07-18	5:45 PM	0	0	0	0	0	8	0	0	1	0	0	0	0	7	0	0
2023-07-18	6:00 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	7	0	0
2023-07-18	6:15 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	6	0	0
2023-07-18	6:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	9	0	0
2023-07-18	6:45 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	7	0	0
2023-07-18	7:00 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	11	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
2023-07-18	7:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	7	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
2023-07-18	8:00 PM	0	0	0	0	0	10	0	0	0	0	0	0	0	8	0	0
2023-07-18	8:15 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	5	0	0
2023-07-18	8:30 PM	0	0	0	0	0	13	0	0	0	0	1	0	0	3	0	0
2023-07-18	8:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	1	9	0	0
2023-07-19	7:00 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	4	0	0
2023-07-19	7:15 AM	0	0	0	0	0	5	0	0	1	0	0	0	0	11	0	0
2023-07-19	7:30 AM	0	0	1	0	0	5	0	0	0	0	0	0	1	4	0	0
2023-07-19	7:45 AM	0	0	0	0	0	5	1	0	0	0	0	0	0	10	0	0
2023-07-19	8:00 AM	0	0	1	0	0	2	1	0	0	0	0	0	0	10	0	0
2023-07-19	8:15 AM	0	0	0	0	0	4	1	0	2	0	0	0	0	4	0	0
2023-07-19	8:30 AM	1	0	0	0	0	9	1	0	0	0	0	0	0	6	0	0
2023-07-19	8:45 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	5	0	0
2023-07-19	9:00 AM	0	0	0	0	0	9	1	0	1	0	0	0	0	7	0	0
2023-07-19	9:15 AM	0	0	0	0	0	12	0	0	1	0	0	0	0	11	0	0
2023-07-19	9:30 AM	0	0	0	0	0	9	0	0	2	0	0	0	0	6	0	0
2023-07-19	9:45 AM	0	0	0	0	0	8	1	0	0	0	0	0	1	12	0	0
2023-07-19	10:00 AM	0	1	0	0	0	6	3	0	0	0	0	0	0	10	0	0
2023-07-19	10:15 AM	0	0	0	0	0	7	1	0	1	0	0	0	0	12	0	0
2023-07-19	10:30 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	17	0	0
2023-07-19	10:45 AM	0	0	0	0	0	8	2	0	1	0	0	0	1	11	0	0
2023-07-19	11:00 AM	0	0	0	0	0	7	1	0	0	0	0	0	0	9	0	0
2023-07-19	11:15 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	12	0	0
2023-07-19	11:30 AM	0	0	0	0	0	11	0	0	1	0	0	0	0	17	1	0
2023-07-19	11:45 AM	0	0	0	0	0	12	0	0	0	0	0	0	0	11	0	0
2023-07-19	12:00 PM	0	0	0	0	0	9	0	0	0	1	0	0	0	17	0	0
2023-07-19	12:15 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	18	0	0
2023-07-19	12:30 PM	0	0	0	0	0	8	0	0	1	0	0	0	0	7	0	0
2023-07-19	12:45 PM	0	0	0	0	0	14	0	0	1	0	0	0	0	16	0	0
2023-07-19	1:00 PM	0	0	0	0	0	9	0	0	1	0	0	0	1	9	0	0
2023-07-19	1:15 PM	1	0	0	0	0	9	0	0	1	0	0	0	0	8	0	0
2023-07-19	1:30 PM	0	0	0	0	0	15	1	0	0	0	0	0	0	11	0	0
2023-07-19	1:45 PM	0	0	0	0	0	10	0	0	1	1	0	0	0	10	0	0
2023-07-19	2:00 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	10	0	0
2023-07-19	2:15 PM	0	1	0	0	0	12	0	0	0	0	0	0	0	12	0	0
2023-07-19	2:30 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	15	0	0
2023-07-19	2:45 PM	0	0	0	0	0	19	0	0	0	0	0	0	0	10	0	0
2023-07-19	3:00 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	15	0	0
2023-07-19	3:15 PM	0	0	0	0	1	9	0	0	0	0	0	0	0	12	0	0
2023-07-19	3:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	9	0	0
2023-07-19	3:45 PM	0	0	0	0	0	10	0	0	1	0	0	0	0	12	0	0
2023-07-19	4:00 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	12	0	0
2023-07-19	4:15 PM	1	0	0	0	0	8	0	0	0	0	0	0	1	11	0	0
2023-07-19	4:30 PM	0	0	0	0	1	8	0	0	0	0	0	0	0	10	0	0
2023-07-19	4:45 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	15	0	0
2023-07-19	5:00 PM	0	0	0	0	1	9	0	0	0	0	0	0	0	17	0	0
2023-07-19	5:15 PM	0	0	0	0	1	9	0	0	0	0	0	0	0	14	0	0
2023-07-19	5:30 PM	0	0	0	0	0	5	0	0	1	0	0	0	0	9	0	0
2023-07-19	5:45 PM	0	0	0	0	0	11	1	0	0	0	0	0	0	15	0	0
2023-07-19	6:00 PM	0	0	0	0	0	3	0	0	2	0	0	0	0	10	0	0
2023-07-19	6:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	14	0	0
2023-07-19	6:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	10	0	0
2023-07-19	6:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	12	0	0
2023-07-19	7:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	7	0	0
2023-07-19	7:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0
2023-07-19	7:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	12	0	0
2023-07-19	7:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	11	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	11	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0
2023-07-19	8:30 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	8	0	0
2023-07-19	8:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Single Trailer 6-Axle Trucks (or more)

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	6	0	0
2023-07-18	7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	8	0	0
2023-07-18	7:30 AM	0	1	0	0	0	7	1	0	0	0	0	0	0	4	0	0
2023-07-18	7:45 AM	0	0	0	0	1	6	1	0	0	0	0	0	1	11	0	0
2023-07-18	8:00 AM	0	0	0	0	0	2	0	0	1	0	0	0	0	8	0	0
2023-07-18	8:15 AM	1	0	0	0	0	1	2	0	0	0	1	0	1	7	0	0
2023-07-18	8:30 AM	0	0	0	0	0	4	0	0	1	1	0	0	0	9	0	0
2023-07-18	8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2023-07-18	9:00 AM	0	0	0	0	0	11	0	0	0	0	0	0	1	5	0	0
2023-07-18	9:15 AM	0	1	0	0	0	4	0	0	0	1	0	0	0	6	0	0
2023-07-18	9:30 AM	0	0	0	0	1	6	0	0	0	1	1	0	0	6	0	0
2023-07-18	9:45 AM	0	0	0	0	0	4	1	0	0	1	0	0	2	2	0	0
2023-07-18	10:00 AM	0	0	0	0	0	8	0	0	0	0	1	0	0	3	0	0
2023-07-18	10:15 AM	0	0	0	0	0	5	1	0	0	1	3	0	0	7	0	0
2023-07-18	10:30 AM	1	0	0	0	2	4	1	0	0	0	0	0	0	3	0	0
2023-07-18	10:45 AM	0	0	1	0	0	7	0	0	0	0	0	0	0	5	0	0
2023-07-18	11:00 AM	0	0	0	0	1	4	1	0	0	0	0	0	0	5	0	0
2023-07-18	11:15 AM	1	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	11	1	0	0	0	0	0	0	3	0	0
2023-07-18	11:45 AM	0	0	0	0	0	5	2	0	1	0	0	0	0	3	0	0
2023-07-18	12:00 PM	0	0	1	0	0	11	1	0	0	1	1	0	0	5	0	0
2023-07-18	12:15 PM	0	0	1	0	0	10	0	0	0	0	0	0	1	6	0	0
2023-07-18	12:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	1	12	0	0
2023-07-18	12:45 PM	0	2	0	0	0	4	2	0	0	0	0	0	0	5	0	0
2023-07-18	1:00 PM	1	0	0	0	0	14	0	0	1	0	1	0	0	4	0	0
2023-07-18	1:15 PM	0	0	0	0	1	8	0	0	0	1	1	0	1	6	0	0
2023-07-18	1:30 PM	0	1	0	0	0	4	0	0	0	0	0	0	1	5	0	0
2023-07-18	1:45 PM	0	0	1	0	0	9	1	0	1	0	2	0	0	2	0	0
2023-07-18	2:00 PM	0	0	0	0	0	8	0	0	0	1	2	0	0	6	0	0
2023-07-18	2:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	2	5	0	0
2023-07-18	2:30 PM	1	1	1	0	0	6	0	0	0	0	2	0	1	7	0	0
2023-07-18	2:45 PM	0	0	1	0	0	4	2	0	0	1	0	0	0	5	0	0
2023-07-18	3:00 PM	1	1	0	0	0	7	0	0	0	1	1	0	0	10	0	0
2023-07-18	3:15 PM	0	1	0	0	0	2	0	0	1	0	0	0	1	6	0	0
2023-07-18	3:30 PM	0	0	0	0	0	5	0	0	1	1	0	0	1	10	0	0
2023-07-18	3:45 PM	1	1	0	0	0	6	1	0	0	1	0	0	0	6	0	0
2023-07-18	4:00 PM	0	0	0	0	0	4	0	0	0	0	2	0	0	4	0	0
2023-07-18	4:15 PM	0	0	0	0	0	9	0	0	0	1	0	0	0	5	0	0
2023-07-18	4:30 PM	0	0	0	0	0	9	0	0	1	0	1	0	1	4	0	0
2023-07-18	4:45 PM	0	0	0	0	0	9	0	0	1	0	0	0	1	3	0	0
2023-07-18	5:00 PM	0	0	0	0	0	3	0	0	0	0	1	0	1	5	0	0
2023-07-18	5:15 PM	0	0	0	0	0	4	1	0	0	0	1	0	2	3	0	0
2023-07-18	5:30 PM	0	0	0	0	1	2	0	0	0	0	1	0	1	4	0	0
2023-07-18	5:45 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	6	0	0
2023-07-18	6:00 PM	0	0	0	0	0	2	0	0	0	0	1	0	2	3	0	0
2023-07-18	6:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	4	0	0
2023-07-18	6:30 PM	0	0	1	0	0	1	1	0	0	0	1	0	1	3	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	7	0	0
2023-07-18	7:00 PM	0	0	0	0	0	11	1	0	0	0	0	0	1	8	0	0
2023-07-18	7:15 PM	0	0	0	0	0	10	0	0	0	0	0	0	0	7	0	0
2023-07-18	7:30 PM	0	0	0	0	0	5	0	0	0	1	0	0	0	2	0	0
2023-07-18	7:45 PM	0	0	0	0	0	11	1	0	0	0	0	0	0	2	0	0
2023-07-18	8:00 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	5	0	0
2023-07-18	8:15 PM	0	0	0	0	0	5	1	0	0	0	0	0	0	3	0	0
2023-07-18	8:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
2023-07-18	8:45 PM	1	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0
2023-07-19	7:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	2	0	0
2023-07-19	7:15 AM	1	0	0	0	0	3	0	0	0	0	1	0	0	2	0	0
2023-07-19	7:30 AM	0	0	0	0	0	1	1	0	1	0	0	0	1	1	0	0
2023-07-19	7:45 AM	0	0	0	0	0	4	3	0	0	0	0	0	1	6	0	0
2023-07-19	8:00 AM	0	0	0	0	0	3	1	0	0	0	0	0	1	4	0	0
2023-07-19	8:15 AM	0	1	0	0	0	9	0	0	2	0	0	0	1	2	1	0
2023-07-19	8:30 AM	0	1	0	0	0	6	2	0	0	0	1	0	0	4	0	0
2023-07-19	8:45 AM	2	0	0	0	0	4	0	0	1	0	2	0	1	2	0	0
2023-07-19	9:00 AM	0	0	0	0	0	3	0	0	1	0	1	0	2	4	0	0
2023-07-19	9:15 AM	0	0	0	0	0	8	0	0	1	2	1	0	1	3	0	0
2023-07-19	9:30 AM	0	0	0	0	0	10	1	0	1	0	2	0	1	2	0	0
2023-07-19	9:45 AM	0	0	0	0	0	5	0	0	0	0	1	0	1	3	0	0
2023-07-19	10:00 AM	0	1	0	0	0	1	1	0	0	0	1	0	0	2	0	0
2023-07-19	10:15 AM	0	0	0	0	1	5	0	0	0	1	1	0	1	5	1	0
2023-07-19	10:30 AM	1	1	0	0	0	6	0	0	0	1	0	0	2	9	0	0
2023-07-19	10:45 AM	0	0	0	0	1	8	1	0	0	0	0	0	1	4	0	0
2023-07-19	11:00 AM	0	0	0	0	0	2	0	0	0	1	1	0	1	1	0	0
2023-07-19	11:15 AM	1	0	0	0	0	11	2	0	1	0	1	0	0	8	0	0
2023-07-19	11:30 AM	0	0	0	0	0	8	0	0	0	0	3	0	0	3	0	0
2023-07-19	11:45 AM	0	0	0	0	0	4	0	0	0	0	1	0	2	4	0	0
2023-07-19	12:00 PM	1	1	0	0	0	4	0	0	0	0	1	0	0	7	0	0
2023-07-19	12:15 PM	1	0	0	0	0	1	1	0	1	0	0	0	1	3	0	0
2023-07-19	12:30 PM	0	1	0	0	0	7	0	0	0	1	0	0	0	6	0	0
2023-07-19	12:45 PM	0	0	0	0	0	12	1	0	0	1	1	0	3	7	0	0
2023-07-19	1:00 PM	0	0	0	0	0	7	0	0	0	0	0	0	1	9	0	0
2023-07-19	1:15 PM	0	0	0	0	0	6	0	0	0	2	1	0	1	7	1	0
2023-07-19	1:30 PM	0	0	0	0	0	6	0	0	1	0	2	0	0	5	0	0
2023-07-19	1:45 PM	0	0	0	0	0	10	1	0	1	0	1	0	0	6	0	0
2023-07-19	2:00 PM	0	0	0	0	0	8	1	0	0	1	0	0	1	6	0	0
2023-07-19	2:15 PM	0	1	0	0	0	7	1	0	0	1	0	0	0	6	0	0
2023-07-19	2:30 PM	0	0	0	0	0	8	0	0	1	0	1	0	0	3	0	0
2023-07-19	2:45 PM	0	0	0	0	0	8	1	0	0	0	0	0	1	3	0	0
2023-07-19	3:00 PM	0	0	0	0	0	6	0	0	0	1	0	0	1	4	0	0
2023-07-19	3:15 PM	0	0	0	0	0	5	1	0	0	0	0	0	1	3	0	0
2023-07-19	3:30 PM	0	0	0	0	0	5	0	0	0	0	1	0	0	3	0	0
2023-07-19	3:45 PM	0	1	0	0	0	9	0	0	1	0	1	0	0	5	0	0
2023-07-19	4:00 PM	0	0	0	0	0	7	1	0	0	1	1	0	0	2	0	0
2023-07-19	4:15 PM	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	0
2023-07-19	4:30 PM	0	1	0	0	0	7	0	0	0	1	0	0	0	3	0	0
2023-07-19	4:45 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	7	0	0	0	0	0	0	1	2	0	0
2023-07-19	5:15 PM	0	0	1	0	0	6	0	0	0	1	1	0	2	2	0	0
2023-07-19	5:30 PM	1	0	0	0	1	6	0	0	0	0	1	0	1	1	0	0
2023-07-19	5:45 PM	0	0	0	0	0	3	0	0	1	1	0	0	0	1	0	0
2023-07-19	6:00 PM	0	0	0	0	0	5	0	0	0	0	1	0	0	5	0	0
2023-07-19	6:15 PM	0	0	0	0	0	14	0	0	1	1	0	0	0	1	0	0
2023-07-19	6:30 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	2	0	0
2023-07-19	6:45 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:00 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	1	1	0
2023-07-19	7:15 PM	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	1	0	0	0	7	0	0	0	0	1	0	0	3	0	0
2023-07-19	7:45 PM	0	1	0	0	0	9	0	0	0	0	1	0	0	4	1	0
2023-07-19	8:00 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	4	0	0
2023-07-19	8:15 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	2	0	0
2023-07-19	8:30 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	2	0	0
2023-07-19	8:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	5	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Multi-Trailer 5 or less-axle trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-18	12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	10:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Multi Trailer 6-Axle Trucks

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-18	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-18	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2023-07-19	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2023-07-19	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023-07-19	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road
Classification Multi Trailer 7-Axle Trucks (or more)

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:15 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	2	0	0
2023-07-18	7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
2023-07-18	7:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	1	4	0	0
2023-07-18	8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	1	0
2023-07-18	8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2023-07-18	8:30 AM	0	0	1	0	0	4	0	0	0	0	0	0	0	9	0	0
2023-07-18	8:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0
2023-07-18	9:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	7	0	0
2023-07-18	9:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2023-07-18	9:30 AM	0	0	0	0	0	3	1	0	0	0	0	0	0	2	0	0
2023-07-18	9:45 AM	0	0	0	0	0	7	1	0	0	0	0	0	0	1	0	0
2023-07-18	10:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	1	0
2023-07-18	10:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	7	0	0
2023-07-18	10:30 AM	0	0	1	0	0	3	0	0	0	0	0	0	0	9	0	0
2023-07-18	10:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	7	0	0
2023-07-18	11:00 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	5	0	0
2023-07-18	11:15 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	6	0	0
2023-07-18	11:30 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	5	0	0
2023-07-18	11:45 AM	1	0	0	0	0	7	0	0	0	0	0	0	0	6	0	0
2023-07-18	12:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	7	0	0
2023-07-18	12:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	6	0	0
2023-07-18	12:30 PM	0	0	0	0	1	3	0	0	0	1	0	0	0	6	0	0
2023-07-18	12:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	6	0	0
2023-07-18	1:00 PM	0	0	0	0	0	7	0	0	1	0	1	0	0	9	0	0
2023-07-18	1:15 PM	0	0	0	0	0	10	2	0	0	0	1	0	1	1	0	0
2023-07-18	1:30 PM	0	0	0	0	0	7	0	0	0	1	0	0	0	4	0	0
2023-07-18	1:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0
2023-07-18	2:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0
2023-07-18	2:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0
2023-07-18	2:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2023-07-18	2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	0
2023-07-18	3:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0
2023-07-18	3:15 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	4	0	0
2023-07-18	3:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0
2023-07-18	3:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	6	0	0
2023-07-18	4:00 PM	1	0	0	0	0	6	0	0	1	0	1	0	0	3	0	0
2023-07-18	4:15 PM	0	1	0	0	0	4	0	0	0	0	1	0	0	6	0	0
2023-07-18	4:30 PM	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0
2023-07-18	4:45 PM	1	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
2023-07-18	5:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2023-07-18	5:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
2023-07-18	5:30 PM	0	0	0	0	0	9	0	0	0	1	0	0	0	8	0	0
2023-07-18	5:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2023-07-18	6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0
2023-07-18	6:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	6	0	0
2023-07-18	6:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1	0
2023-07-18	6:45 PM	0	0	0	0	0	4	1	0	0	0	0	0	0	4	2	0
2023-07-18	7:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	7	0	0
2023-07-18	7:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	7	0	0
2023-07-18	7:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
2023-07-18	7:45 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	5	0	0
2023-07-18	8:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0
2023-07-18	8:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0
2023-07-18	8:30 PM	1	0	0	0	0	3	0	0	0	0	0	0	0	5	0	0
2023-07-18	8:45 PM	1	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
2023-07-19	7:00 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0
2023-07-19	7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	6	0	0
2023-07-19	7:30 AM	0	0	0	0	0	6	0	0	0	0	0	0	0	3	0	0
2023-07-19	7:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0
2023-07-19	8:15 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	4	0	0
2023-07-19	8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2023-07-19	8:45 AM	0	0	0	0	0	7	0	0	0	0	0	0	1	6	0	0
2023-07-19	9:00 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	4	0	0
2023-07-19	9:15 AM	0	0	0	0	0	6	1	0	0	0	0	0	0	1	0	0
2023-07-19	9:30 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
2023-07-19	9:45 AM	0	0	0	0	0	1	0	0	0	1	1	0	0	3	0	0
2023-07-19	10:00 AM	2	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0
2023-07-19	10:15 AM	0	0	0	0	1	2	0	0	0	0	0	0	0	9	0	0
2023-07-19	10:30 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0
2023-07-19	10:45 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	8	0	0
2023-07-19	11:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	1	6	0	0
2023-07-19	11:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	6	0	0
2023-07-19	11:30 AM	0	0	0	0	0	5	2	0	0	0	0	0	0	6	0	0
2023-07-19	11:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	6	0	0
2023-07-19	12:00 PM	0	0	0	0	1	5	0	0	1	0	0	0	0	4	0	0
2023-07-19	12:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	4	0	0
2023-07-19	12:30 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	9	0	0
2023-07-19	12:45 PM	1	0	0	0	0	6	1	0	0	0	0	0	1	6	0	0
2023-07-19	1:00 PM	0	0	0	0	1	5	0	0	0	0	0	0	1	4	0	0
2023-07-19	1:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	1	0
2023-07-19	1:30 PM	0	0	0	0	0	7	0	0	0	0	1	0	0	1	1	0
2023-07-19	1:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0
2023-07-19	2:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0
2023-07-19	2:15 PM	0	0	0	0	0	7	1	0	0	0	0	0	0	7	0	0
2023-07-19	2:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0
2023-07-19	2:45 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	6	0	0
2023-07-19	3:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	6	1	0
2023-07-19	3:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	4	0	0
2023-07-19	3:30 PM	1	0	0	0	0	7	0	0	0	0	0	0	0	3	0	0
2023-07-19	3:45 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	4	0	0
2023-07-19	4:00 PM	0	0	0	0	0	6	0	0	2	0	0	0	0	2	0	0
2023-07-19	4:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	5	0	0
2023-07-19	4:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
2023-07-19	4:45 PM	0	0	0	0	0	4	0	0	1	0	0	0	1	2	0	0
2023-07-19	5:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0
2023-07-19	5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0
2023-07-19	5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	6	0	0
2023-07-19	5:45 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	5	0	0
2023-07-19	6:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0
2023-07-19	6:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0
2023-07-19	6:30 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	6	1	0
2023-07-19	6:45 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0
2023-07-19	7:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	6	0	0
2023-07-19	7:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0
2023-07-19	7:30 PM	0	0	0	0	0	3	1	0	1	0	0	0	0	4	0	0
2023-07-19	7:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
2023-07-19	8:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0
2023-07-19	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
2023-07-19	8:30 PM	1	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0
2023-07-19	8:45 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	5	0	0

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Crosswalk
Classification Peds

		PTH 5 Southbound			PTH 1 Westbound			PTH 5 Northbound			PTH 1 Eastbound		
Date	Start Time	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined
2023-07-18	7:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	12:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	12:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:45 PM	0	0		0	0		0	0		0	0	

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Crosswalk
Classification Bicycles

		PTH 5 Southbound			PTH 1 Westbound			PTH 5 Northbound			PTH 1 Eastbound		
Date	Start Time	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined	Peds CW	Peds CCW	Peds Combined
2023-07-18	7:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	7:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	8:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	9:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	10:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:00 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:15 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:30 AM	0	0		0	0		0	0		0	0	
2023-07-18	11:45 AM	0	0		0	0		0	0		0	0	
2023-07-18	12:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	12:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	1:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	2:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	3:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	4:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	5:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:00 PM	0	0		0	0		0	3		0	0	
2023-07-18	6:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	6:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	7:45 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:00 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:15 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:30 PM	0	0		0	0		0	0		0	0	
2023-07-18	8:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	7:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	8:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	9:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	10:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:00 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:15 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:30 AM	0	0		0	0		0	0		0	0	
2023-07-19	11:45 AM	0	0		0	0		0	0		0	0	
2023-07-19	12:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	12:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	1:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	2:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	3:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	4:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	5:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	6:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	7:45 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:00 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:15 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:30 PM	0	0		0	0		0	0		0	0	
2023-07-19	8:45 PM	0	0		0	0		0	0		0	0	

Study Name PTH 1 & 5 - In-Service Road Safety Review
Start Date 2023-07-18
Start Time 7:00 AM
Site Code PTH 1 & 5
Project 211-12345-00

Type Road Classification Totals

		PTH 5 Southbound				PTH 1 Westbound				PTH 5 Northbound				PTH 1 Eastbound			
Date	Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
2023-07-18	7:00 AM	4	5	3	0	0	19	2	0	4	4	9	0	11	28	1	0
2023-07-18	7:15 AM	1	3	5	0	1	33	2	0	3	7	14	0	18	32	1	0
2023-07-18	7:30 AM	0	8	3	0	1	36	4	0	3	12	14	0	23	37	3	0
2023-07-18	7:45 AM	0	14	2	0	4	48	4	0	2	9	15	0	24	49	6	0
2023-07-18	8:00 AM	4	9	0	0	2	36	7	0	6	4	8	0	7	37	6	0
2023-07-18	8:15 AM	5	3	3	0	2	40	3	0	4	9	21	0	15	41	4	0
2023-07-18	8:30 AM	5	7	1	0	2	50	3	0	6	10	10	0	8	53	3	0
2023-07-18	8:45 AM	3	16	2	0	1	60	8	0	5	9	10	0	11	49	3	0
2023-07-18	9:00 AM	2	2	1	0	2	59	4	0	8	2	12	0	10	57	3	0
2023-07-18	9:15 AM	7	9	2	0	3	64	3	0	5	7	6	0	10	41	4	0
2023-07-18	9:30 AM	4	10	3	0	3	67	1	0	2	8	4	0	7	61	1	0
2023-07-18	9:45 AM	1	8	2	0	4	59	8	0	1	7	10	0	12	41	1	0
2023-07-18	10:00 AM	2	9	3	0	3	68	4	0	0	5	12	0	8	46	3	0
2023-07-18	10:15 AM	5	10	5	0	3	74	5	0	5	7	13	0	6	53	0	0
2023-07-18	10:30 AM	3	8	4	0	4	72	4	0	5	9	10	0	4	72	0	0
2023-07-18	10:45 AM	2	5	6	0	5	71	5	0	2	4	10	0	3	48	1	0
2023-07-18	11:00 AM	4	10	4	0	5	61	7	0	3	5	8	0	11	54	0	0
2023-07-18	11:15 AM	3	5	2	0	1	75	2	0	2	7	15	0	5	51	1	0
2023-07-18	11:30 AM	4	5	1	0	4	74	6	0	2	4	7	0	10	51	0	0
2023-07-18	11:45 AM	2	8	4	0	1	79	10	0	4	7	5	0	7	43	4	0
2023-07-18	12:00 PM	2	7	5	0	4	59	6	0	5	7	12	0	5	52	2	0
2023-07-18	12:15 PM	1	5	5	0	3	95	2	0	6	5	6	0	7	67	4	0
2023-07-18	12:30 PM	1	3	4	0	3	56	3	0	9	6	5	0	6	67	1	0
2023-07-18	12:45 PM	4	13	1	0	5	52	6	0	4	5	10	0	9	77	0	0
2023-07-18	1:00 PM	1	3	6	0	2	72	6	0	5	4	10	0	13	61	1	0
2023-07-18	1:15 PM	1	7	1	0	5	68	8	0	3	7	11	0	10	55	0	0
2023-07-18	1:30 PM	1	7	4	0	2	63	3	0	6	11	15	0	10	74	4	0
2023-07-18	1:45 PM	3	7	3	0	5	75	7	0	8	10	10	0	14	67	4	0
2023-07-18	2:00 PM	4	4	2	0	1	82	3	0	6	11	15	0	19	52	2	0
2023-07-18	2:15 PM	2	6	4	0	8	63	4	0	3	12	6	0	16	75	2	0
2023-07-18	2:30 PM	5	10	4	0	8	53	2	0	6	7	21	0	14	65	2	0
2023-07-18	2:45 PM	5	9	7	0	2	63	10	0	4	10	10	0	17	70	2	0
2023-07-18	3:00 PM	5	3	2	0	2	78	4	0	5	14	25	0	10	82	4	0
2023-07-18	3:15 PM	0	10	6	0	1	67	1	0	10	6	14	0	13	62	6	0
2023-07-18	3:30 PM	2	11	5	0	5	52	2	0	3	11	13	0	12	77	5	0
2023-07-18	3:45 PM	4	9	2	0	3	57	7	0	5	10	6	0	14	82	0	0
2023-07-18	4:00 PM	5	18	5	0	3	45	0	0	4	6	19	0	18	68	2	0
2023-07-18	4:15 PM	4	14	6	0	4	64	5	0	6	13	13	0	22	80	3	0
2023-07-18	4:30 PM	2	21	2	0	5	70	6	0	11	14	24	0	19	71	6	0
2023-07-18	4:45 PM	1	13	2	0	3	60	9	0	7	10	14	0	13	55	3	0
2023-07-18	5:00 PM	2	15	5	0	3	55	4	0	3	5	13	0	22	57	3	0
2023-07-18	5:15 PM	3	13	4	0	1	65	4	0	4	9	16	0	21	41	4	0
2023-07-18	5:30 PM	5	11	0	0	7	65	7	0	6	3	10	0	16	59	1	0
2023-07-18	5:45 PM	3	12	4	0	2	53	2	0	6	9	11	0	10	52	3	0
2023-07-18	6:00 PM	2	8	1	0	1	36	1	0	4	6	15	0	13	59	0	0
2023-07-18	6:15 PM	1	3	3	0	1	44	3	0	5	6	7	0	12	46	1	0
2023-07-18	6:30 PM	1	7	2	0	2	36	2	0	5	3	9	0	17	50	2	0
2023-07-18	6:45 PM	1	4	1	0	5	51	1	0	5	5	9	0	5	54	3	0
2023-07-18	7:00 PM	1	1	4	0	3	42	8	0	5	4	5	0	10	55	3	0
2023-07-18	7:15 PM	1	4	0	0	0	48	3	0	1	2	4	0	8	48	1	0
2023-07-18	7:30 PM	0	4	1	0	1	40	3	0	1	3	6	0	8	38	1	0
2023-07-18	7:45 PM	0	1	0	0	2	48	2	0	1	4	6	0	5	46	0	0
2023-07-18	8:00 PM	2	3	2	0	1	41	0	0	3	3	12	0	8	46	1	0
2023-07-18	8:15 PM	1	1	0	0	1	37	1	0	2	6	5	0	7	44	1	0
2023-07-18	8:30 PM	1	5	0	0	1	37	1	0	1	1	4	0	7	28	1	0
2023-07-18	8:45 PM	3	3	0	0	0	28	1	0	2	4	7	0	4	34	0	0
2023-07-19	7:00 AM	5	5	0	0	0	31	4	0	1	5	16	0	9	29	0	0
2023-07-19	7:15 AM	2	8	4	0	4	36	4	0	2	4	9	0	17	46	0	0
2023-07-19	7:30 AM	2	6	3	0	1	38	4	0	3	16	25	0	21	28	2	0
2023-07-19	7:45 AM	2	13	2	0	3	38	5	0	2	15	12	0	20	46	3	0
2023-07-19	8:00 AM	2	7	5	0	0	45	4	0	6	9	8	0	12	42	5	0
2023-07-19	8:15 AM	2	4	2	0	0	61	5	0	7	9	23	0	12	49	2	0
2023-07-19	8:30 AM	5	9	2	0	1	56	6	0	3	17	7	0	7	58	2	0
2023-07-19	8:45 AM	6	6	1	0	3	60	3	0	3	6	12	0	13	56	4	0
2023-07-19	9:00 AM	6	5	1	0	1	61	5	0	10	5	8	0	14	54	0	0
2023-07-19	9:15 AM	9	6	2	0	1	78	7	0	5	8	12	0	9	54	5	0
2023-07-19	9:30 AM	1	4	2	0	2	85	4	0	8	3	10	0	16	50	0	0
2023-07-19	9:45 AM	0	9	3	0	4	52	3	0	4	8	9	0	7	64	2	0
2023-07-19	10:00 AM	5	10	2	0	1	70	8	0	4	7	8	0	6	51	3	0
2023-07-19	10:15 AM	0	4	1	0	2	88	5	0	3	7	10	0	4	60	4	0
2023-07-19	10:30 AM	5	10	3	0	0	69	6	0	1	6	9	0	15	64	2	0
2023-07-19	10:45 AM	1	7	1	0	4	72	7	0	4	9	7	0	9	69	1	0
2023-07-19	11:00 AM	0	15	4	0	0	59	5	0	7	8	8	0	5	49	5	0
2023-07-19	11:15 AM	5	11	3	0	4	72	8	0	3	10	8	0	11	59	0	0
2023-07-19	11:30 AM	2	9	4	0	3	65	6	0	5	5	12	0	7	55	4	0
2023-07-19	11:45 AM	3	5	4	0	0	62	0	0	2	12	13	0	10	62	1	0
2023-07-19	12:00 PM	4	13	1	0	4	63	4	0	3	4	14	0	10	84	2	0
2023-07-19	12:15 PM	2	5	5	0	4	59	5	0	3	5	10	0	7	62	3	0
2023-07-19	12:30 PM	2	4	2	0	2	65	0	0	5	8	10	0	4	59	2	0
2023-07-19	12:45 PM	5	9	5	0	1	63	6	0	6	7	10	0	11	72	1	0
2023-07-19	1:00 PM	3	6	2	0	4	53	6	0	4	5	17	0	11	57	0	0
2023-07-19	1:15 PM	4	8	2	0	4	57	4	0	5	5	6	0	11	74	2	0
2023-07-19	1:30 PM	1	5	1	0	1	81	7	0	7	6	10	0	6	68	1	0
2023-07-19	1:45 PM	3	7	3	0	2	58	5	0	9	13	8	0	6	56	2	0
2023-07-19	2:00 PM	1	3	0	0	8	74	3	0	4	6	5	0	12	88	2	0
2023-07-19	2:15 PM	2	9	3	0	2	66	6	0	11	3	8	0	22	71	4	0
2023-07-19	2:30 PM	0	9	2	0	0	75	3	0	8	5	11	0	14	72	2	0
2023-07-19	2:45 PM	4	5	5	0	6	74	4	0	4	11	6	0	16	71	1	0
2023-07-19	3:00 PM	2	7	4	0	2	65	5	0	7	12	16	0	17	66	4	0
2023-07-19	3:15 PM	5	11	4	0	3	73	8	0	5	7	12	0	15	70	2	0
2023-07-19	3:30 PM	2	13	3	0	0	55	7	0	5	17	10	0	10	66	3	0
2023-07-19	3:45 PM	1	17	3	0	3	60	3	0	8	11	9	0	9	59	2	0
2023-07-19	4:00 PM	4	13	2	0	1	64	7	0	4	13	18	0	14	68	2	0
2023-07-19	4:15 PM	1	14	3	0	4	53	3	0	5	9	20	0	18	71	4	0
2023-07-19	4:30 PM	2	20	2	0	4	57	6	0	6	14	15	0	21	72	4	0
2023-07-19	4:45 PM	2	15	3	0	3	52	2	0	7	15	21	0	22	72	4	0
2023-07-19	5:00 PM	4	14	3	0	2	57	2	0	5	13	6	0	26	79	4	0
2023-07-19	5:15 PM	3	25	5	0	6	60	1	0	6	10	17	0	18	74	1	0
2023-07-19	5:30 PM	7	16	2	0	4	46	6	0	5	6	12	0	10	78	1	0
2023-07-19	5:45 PM	2	9	4	0	6	54	5	0	3	9	9	0	17	50	1	0
2023-07-19	6:00 PM	2	6	1	0	3	44	3	0	7	2	8	0	12	64	1	0
2023-07-19	6:15 PM	0	2	1	0	0	57	5	0	4	4	10	0	12	62	0	0
2023-07-19	6:30 PM	1	3	1	0	0	55	4	0	3	2	14	0	8	56	1	0
2023-07-19	6:45 PM	0	7	3	0	3	47	1	0	3	4	3	0	11	55	1	0
2023-07-19	7:00 PM	1	5	0	0	4	40	3	0	2	6	10	0	14	52	2	0
2023-07-19	7:15 PM	1	5	0	0	2	60	7	0	2	4	5	0	13	36	5	0
2023-07-19	7:30 PM	3	6	3	0	0	38	5	0	2	2	12	0	15	45	1	0
2023-07-19	7:45 PM	0	4	3	0	1	40	1	0	2	2	9	0	5	41	1	0
2023-07-19	8:00 PM	2	3	0	0	0	34	1	0	6	8	9	0	5	62	0	0
2023-07-19	8:15 PM	0	7	0	0	1	34	1	0	0	7	7	0	5	46	0	0
2023-07-19	8:30 PM	1	4	0	0	2	45	1	0	3	6	5	0	5	31	0	0
2023-07-19	8:45 PM	0	4	0	0	2	38	0	0	0	5	8	0	6	42	1	0

C OPERATIONAL ANALYSIS REPORTS

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	202	44	18	225	4	50	41	19	10	26	15
Future Vol, veh/h	14	202	44	18	225	4	50	41	19	10	26	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	Yield	-	-	Yield	-	-	Yield
Storage Length	2150	-	1050	2200	-	1050	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	86	85	75	89	33	57	60	68	50	72	63
Heavy Vehicles, %	29	35	14	33	32	50	10	7	26	20	12	20
Mvmt Flow	20	235	52	24	253	12	88	68	28	20	36	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	253	0	0	235	0	0	468	576	118	493	576	127
Stage 1	-	-	-	-	-	-	275	275	-	301	301	-
Stage 2	-	-	-	-	-	-	193	301	-	192	275	-
Critical Hdwy	4.68	-	-	4.76	-	-	7.7	6.64	7.42	7.9	6.74	7.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.64	-	6.9	5.74	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.64	-	6.9	5.74	-
Follow-up Hdwy	2.49	-	-	2.53	-	-	3.6	4.07	3.56	3.7	4.12	3.5
Pot Cap-1 Maneuver	1134	-	-	1131	-	-	460	416	840	420	406	845
Stage 1	-	-	-	-	-	-	686	669	-	635	639	-
Stage 2	-	-	-	-	-	-	768	651	-	742	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1134	-	-	1131	-	-	403	400	840	343	390	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	403	400	-	343	390	-
Stage 1	-	-	-	-	-	-	674	657	-	624	626	-
Stage 2	-	-	-	-	-	-	688	637	-	631	645	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.7	17.3	13
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	474	1134	-	-	1131	-	-	530
HCM Lane V/C Ratio	0.388	0.018	-	-	0.021	-	-	0.151
HCM Control Delay (s)	17.3	8.2	-	-	8.3	-	-	13
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	263	72	25	252	15	70	43	28	18	66	12
Future Vol, veh/h	15	263	72	25	252	15	70	43	28	18	66	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	Yield	-	-	Yield	-	-	Yield
Storage Length	2150	-	1050	2200	-	1050	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	54	89	82	63	91	75	73	77	64	75	83	60
Heavy Vehicles, %	13	29	4	16	39	13	9	9	14	6	6	17
Mvmt Flow	28	296	88	40	277	20	96	56	44	24	80	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	277	0	0	296	0	0	611	709	148	589	709	139
Stage 1	-	-	-	-	-	-	352	352	-	357	357	-
Stage 2	-	-	-	-	-	-	259	357	-	232	352	-
Critical Hdwy	4.36	-	-	4.42	-	-	7.68	6.68	7.18	7.62	6.62	7.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.68	5.68	-	6.62	5.62	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.68	5.68	-	6.62	5.62	-
Follow-up Hdwy	2.33	-	-	2.36	-	-	3.59	4.09	3.44	3.56	4.06	3.47
Pot Cap-1 Maneuver	1207	-	-	1167	-	-	364	344	835	384	350	838
Stage 1	-	-	-	-	-	-	619	613	-	623	617	-
Stage 2	-	-	-	-	-	-	704	610	-	739	620	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1207	-	-	1167	-	-	290	325	835	312	330	838
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	412	-	413	415	-
Stage 1	-	-	-	-	-	-	605	599	-	609	596	-
Stage 2	-	-	-	-	-	-	575	589	-	620	606	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1	16.2	14.7
HCM LOS			C	B

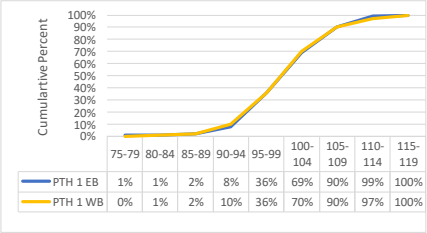
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	516	1207	-	-	1167	-	-	495
HCM Lane V/C Ratio	0.379	0.023	-	-	0.034	-	-	0.25
HCM Control Delay (s)	16.2	8.1	-	-	8.2	-	-	14.7
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	1

D SPEED SURVEY DATA

Location: PTH 1 @ PTH 5

Study Characteristics:
Date: 19-Jul-23
Observer: JL/DE/DB
Start Time: 9:00 a.m.
End Time: 11:00 a.m.
Purpose: The data was recorded at the PTH 5 intersection.

Roadway Characteristics:
Number of Lanes: 4-lanes (2 EB lanes and 2 WB lanes)
Posted Speed Limit: 100 km/h



PTH 1 EB	Observations									Observations in 15 km/h Pace (All Vehicles)	Percent in Pace (All Vehicles)
Speed Range	Passenger Vehicle	Cumulative Frequency	Cumulative Percent	Heavy Vehicle	Cumulative Frequency	Cumulative Percent	All Vehicles	Cumulative Frequency	Cumulative Percent		
75-79	0	0	0%	1	1	2%	1	1	1%	-	
80-84	0	0	0%	0	1	2%	0	1	1%	-	
85-89	0	0	0%	1	2	5%	1	2	2%	2	2%
90-94	2	2	4%	4	6	14%	6	8	8%	7	7%
95-99	13	15	26%	15	21	49%	28	36	36%	35	35%
100-104	22	37	65%	11	32	74%	33	69	69%	67	67%
105-109	13	50	88%	8	40	93%	21	90	90%	82	82%
110-114	6	56	98%	3	43	100%	9	99	99%	63	63%
115-119	1	57	100%	0	43	100%	1	100	100%	31	31%
Data Points	57			43			100				
Max	115-119			110-114			115-119				
Min	90-94			75-79			75-79				
85th Percentile	108.5			107.3			108.0				
15 km/hr Pace	-			-			95-109				
% in Pace	-			-			82%				

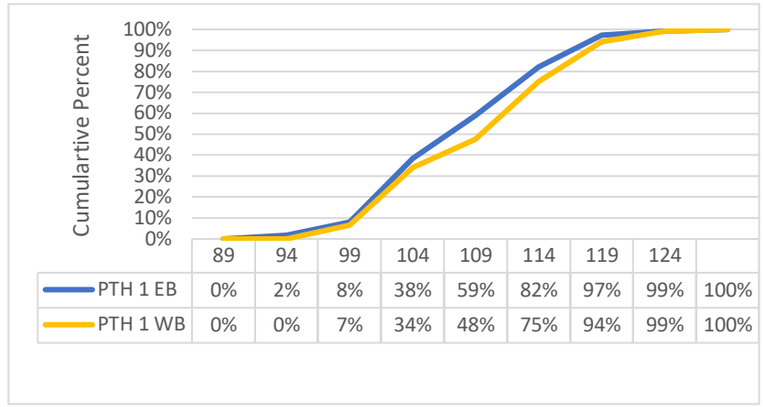
PTH 1 WB	Observations									Observations in 15 km/h Pace (All Vehicles)	Percent in Pace (All Vehicles)
Speed Range	Passenger Vehicle	Cumulative Frequency	Cumulative Percent	Heavy Vehicle	Cumulative Frequency	Cumulative Percent	All Vehicles	Cumulative Frequency	Cumulative Percent		
75-79	0	0	0%	0	0	0%	0	0	0%	-	
80-84	0	0	0%	1	1	3%	1	1	1%	-	
85-89	0	0	0%	1	2	6%	1	2	2%	2	2%
90-94	6	6	9%	2	4	11%	8	10	10%	10	10%
95-99	16	22	34%	10	14	40%	26	36	36%	35	35%
100-104	17	39	60%	17	31	89%	34	70	70%	68	68%
105-109	17	56	86%	3	34	97%	20	90	90%	80	80%
110-114	6	62	95%	1	35	100%	7	97	97%	61	61%
115-119	3	65	100%	0	35	100%	3	100	100%	30	30%
Data Points	65			35			100				
Max	115-119			110-114			115-119				
Min	90-94			80-84			80-84				
85th Percentile	108.8			103.7			108.0				
15 km/hr Pace	-			-			95-109				
% in Pace	-			-			80%				

Location: PTH 1 @ PTH 5

Study Characteristics:

		EB data collection		*WB data collection*	
Date:	08-Aug-23	Start Time:	10:35 a.m.	Start Time:	12:10 p.m.
Observer:	JJ	End Time:	11:25 a.m.	End Time:	12:57 p.m.

Purpose: EB data was collected 200m west of Road 87W (west of PTH 5). WB data was collected 100m west of Road 81 W.



Roadway Characteristics:

Number of Lanes: 4-lanes (2 EB lanes and 2 WB lanes)

Posted Speed Limit: 110 km/h

PTH 1 EB		Observations									Observations in 15 km/h Pace (All Vehicles)	Percent in Pace (All Vehicles)
Speed Range		Passenger Vehicle	Cumulative Frequency	Cumulative Percent	Heavy Vehicle	Cumulative Frequency	Cumulative Percent	All Vehicles	Cumulative Frequency	Cumulative Percent		
85	89	0	0	0%	0	0	0%	0	0	0%	-	
90	94	2	2	3%	0	0	0%	2	2	2%	-	
95	99	2	4	7%	5	5	10%	7	9	8%	-	
100	104	11	15	25%	23	28	54%	34	43	38%	43	38%
105	109	6	21	35%	17	45	87%	23	66	59%	64	57%
110	114	21	42	70%	5	50	96%	26	92	82%	83	74%
115	119	15	57	95%	2	52	100%	17	109	97%	66	59%
120	124	2	59	98%	0	52	100%	2	111	99%	45	40%
>125		1	60	100%	0	52	100%	1	112	100%	20	18%
Data Points		60			52			112				
Max		>125			115-119			>125				
Min		90-94			95-99			90-94				
85th Percentile		117.4			108.8			115.8				
15 km/hr Pace		-			-			100-114				
% in Pace		-			-			74%				

PTH 1 WB		Observations									Observations in 15 km/h Pace (All Vehicles)	Percent in Pace (All Vehicles)
Speed Range		Passenger Vehicle	Cumulative Frequency	Cumulative Percent	Heavy Vehicle	Cumulative Frequency	Cumulative Percent	All Vehicles	Cumulative Frequency	Cumulative Percent		
85	89	0	0	0%	0	0	0%	0	0	0%	-	
90	94	0	0	0%	0	0	0%	0	0	0%	-	
95	99	1	1	2%	7	7	12%	8	8	7%	-	
100	104	2	3	5%	31	38	63%	33	41	34%	-	
105	109	6	9	15%	10	48	80%	16	57	48%	57	48%
110	114	22	31	52%	11	59	98%	33	90	75%	82	68%
115	119	22	53	88%	1	60	100%	23	113	94%	72	60%
120	124	6	59	98%	0	60	100%	6	119	99%	62	52%
>125		1	60	100%	0	60	100%	1	120	100%	30	25%
Data Points		60			60			120				
Max		>125			115-119			>125				
Min		95-99			95-99			95-99				
85th Percentile		118.6			111.1			117.1				
15 km/hr Pace		-			-			100-114				
% in Pace		-			-			68%				

$$85^{th}\ \text{percentile} = \frac{85 - P_{min}}{P_{max} - P_{min}} * (S_{max} - S_{min}) + S_{min}$$

Where:

P_{max} = the high end of the cumulative per cent just greater than 85 per cent

P_{min} = the high end of the cumulative per cent just less than 85 per cent

S_{max} = the high end of the speed range containing the 85th percentile

S_{min} = the low end of the speed range containing the 85th percentile

Location: PTH 5 @ PTH 1

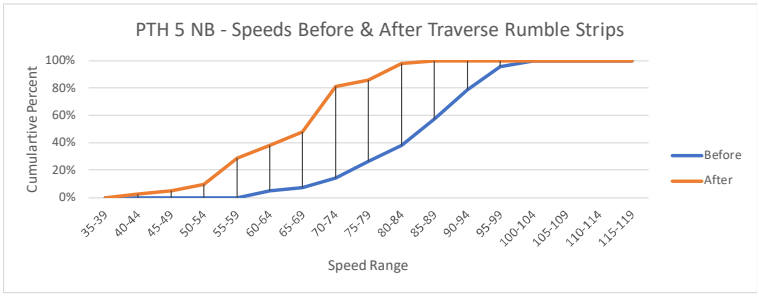
Study Characteristics:

Date: 19-Jul-23
Observer: JL/DE/DB
Start Time: 11:00 a.m.
End Time: 1:00 p.m.
Purpose: To assess speeds before and after rumble strips.

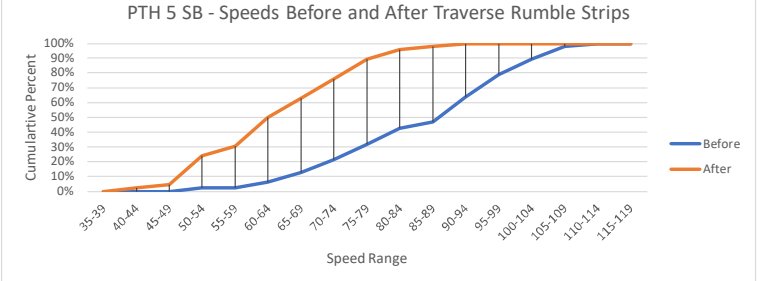
Roadway Characteristics:

Number of Lanes: 2-lanes (1 NB lane and 1 SB lane)
Posted Speed Limit: 100 km/h

PTH 5 NB	Observations		Cumulative Frequency		Cumulative Percent		Observations in 15 km/h		Percent in Pace	
Speed Range	Before	After	Before	After	Before	After	Before	After	Before	After
35-39	0	0	0	0	0%	0%	-	-	-	-
40-44	0	1	0	1	0%	2%	-	-	-	-
45-49	0	1	0	2	0%	5%	0	2	0%	5%
50-54	0	2	0	4	0%	10%	0	4	0%	10%
55-59	0	8	0	12	0%	29%	0	11	0%	26%
60-64	2	4	2	16	5%	38%	2	14	5%	33%
65-69	1	4	3	20	7%	48%	3	16	7%	38%
70-74	3	14	6	34	14%	81%	6	22	14%	52%
75-79	5	2	11	36	26%	86%	9	20	21%	48%
80-84	5	5	16	41	38%	98%	13	21	31%	50%
85-89	8	1	24	42	57%	100%	18	8	43%	19%
90-94	9	0	33	42	79%	100%	22	6	52%	14%
95-99	7	0	40	42	95%	100%	24	1	57%	2%
100-104	2	0	42	42	100%	100%	18	0	43%	0%
105-109	0	0	42	42	100%	100%	9	0	21%	0%
110-114	0	0	42	42	100%	100%	2	0	5%	0%
115-119	0	0	42	42	100%	100%	0	0	0%	0%
Data Points	42	42								
Max	101	85								
Min	63	40								
Average	85.5	66.1								
85th Percentile	97.0	77.8								
15 km/hr Pace	85-99	60-74								
% in Pace	57%	52%								



PTH 5 SB	Observations		Cumulative Frequency		Cumulative Percent		Observations in 15 km/h		Percent in Pace	
Speed Range	Before	After	Before	After	Before	After	Before	After	Before	After
35-39	0	0	0	0	0%	0%	-	-	-	-
40-44	0	1	0	1	0%	2%	-	-	-	-
45-49	0	1	0	2	0%	4%	0	2	0%	4%
50-54	1	9	1	11	2%	24%	1	11	2%	24%
55-59	0	3	1	14	2%	30%	1	13	2%	28%
60-64	2	9	3	23	6%	50%	3	21	6%	46%
65-69	3	6	6	29	13%	63%	5	18	11%	39%
70-74	4	6	10	35	21%	76%	9	21	19%	46%
75-79	5	6	15	41	32%	89%	12	18	26%	39%
80-84	5	3	20	44	43%	96%	14	15	30%	33%
85-89	2	1	22	45	47%	98%	12	10	26%	22%
90-94	8	1	30	46	64%	100%	15	5	32%	11%
95-99	7	0	37	46	79%	100%	17	2	36%	4%
100-104	5	0	42	46	89%	100%	20	1	43%	2%
105-109	4	0	46	46	98%	100%	16	0	34%	0%
110-114	1	0	47	46	100%	100%	10	0	21%	0%
115-119	0	0	47	46	100%	100%	5	0	11%	0%
Data Points	47	46								
Max	110	90								
Min	51	30								
Average	80.6	63.6								
85th Percentile	101.8	75.8								
15 km/hr Pace	90-105	60-75								
% in Pace	43%	46%								



E VIDEO CONFLICT ANALYSIS

E-1 RISK DIAGNOSTIC REPORT

PTH-1 and PTH-5

Carberry, MB

Risk Diagnostic Report

Contents

General Information

Report Details

Site	PTH-1 and PTH-5, Carberry, MB
Video Period	2023-Jul-17 to 2023-Jul-21
Video Length	60 hours
Report Notes	Conflict data is provided for Jul. 17 @ 13:30-21:00, Jul. 18-20 @ 6:00-21:00 and Jul. 21 @ 6:00-13:30. Please note that the North, South, East and West in vehicle movements is referring to the direction of travel. For example North-through is referring to the Northbound vehicle travelling from South to North and is going through. For all the conflict configurations, VEH-1 is mentioned first followed by VEH-2. For example, East-left vs West-through refers to a conflict configuration where Eastbound-left vehicle reaches the point of conflict first, hence considered as VEH-1, followed by Westbound-through vehicle that is VEH-2. Vehicle conflict configurations where VEH 2 is coming from a stop are marked as NM (not measured) in this risk diagnostic report as those are controlled movements where the vehicle from PTH 5 has carefully passed after a through vehicle. These events do have relevance for safety in that they generally have required a gap rejection and they bring some risk of stop sign violation. We have provided those interactions separately in non-conflicting vehicle interactions report.

Report Organization

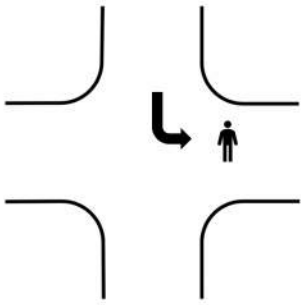
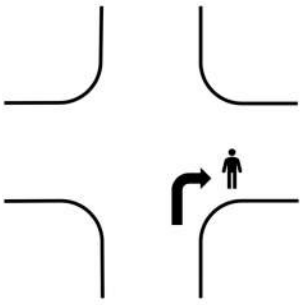
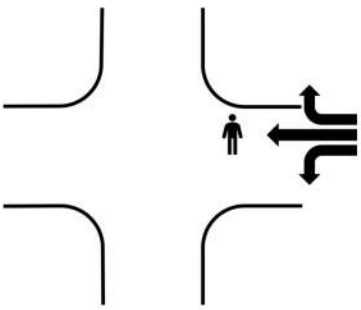
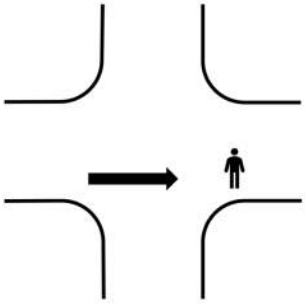
General Information	Provides key details about the report
Results Summary	Provides data at the intersection level
Results Detail Pages	Provides data for individual configurations

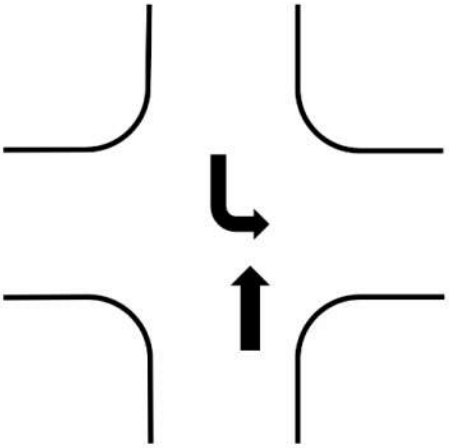
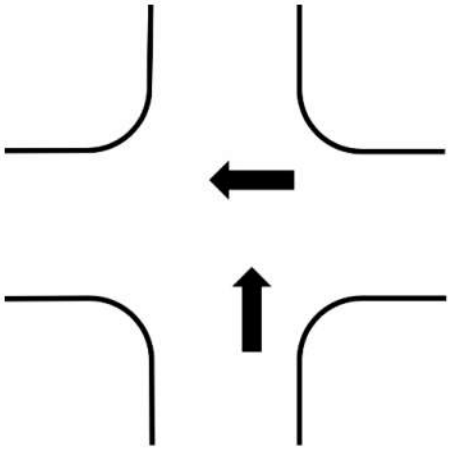
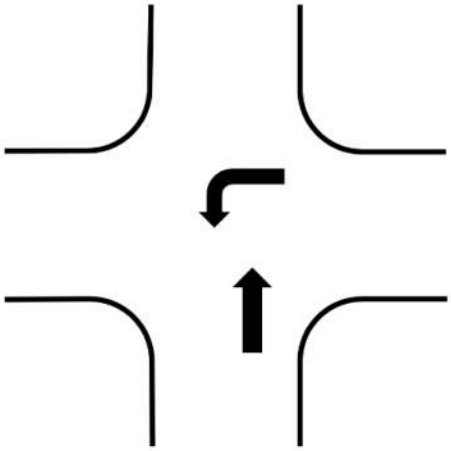
Indicator Definitions

Safe Systems Post Encroachment Time (PETss)	PET is the time elapsed between one vehicle leaving a conflict area and a conflicting vehicle arriving at it. Risk level is based on PET together with the bullet vehicle impact speed. Risk thresholds reference the probability of severe injury (MAIS 3+) for left-turning vehicle vs oncoming vehicle collisions [1]. This indicator is used to measure risk to vehicle occupants.

[1] Jurewicz, C., Sobhani, A., Woolley, J., Dutschke, J., Corben, B., 2016. Exploration of Vehicle Impact Speed – Injury Severity Relationships for Application in Safer Road Design. Transportation Research Procedia 14, 4247–4256. https://doi.org/10.1016/j.trpro.2016.05.396

Overview of Conflict Types

Vehicle vs Pedestrian/Cyclist			
Indicator Used	VRUss		
Left-hook	Right-hook	Through/Right/Left (near-side)	Through (far-side)
pedestrian/cyclist vs left turning vehicle exiting intersection	pedestrian/cyclist vs right turning vehicle exiting intersection	pedestrian/cyclist vs vehicle entering intersection	pedestrian/cyclist vs through vehicle exiting intersection
			

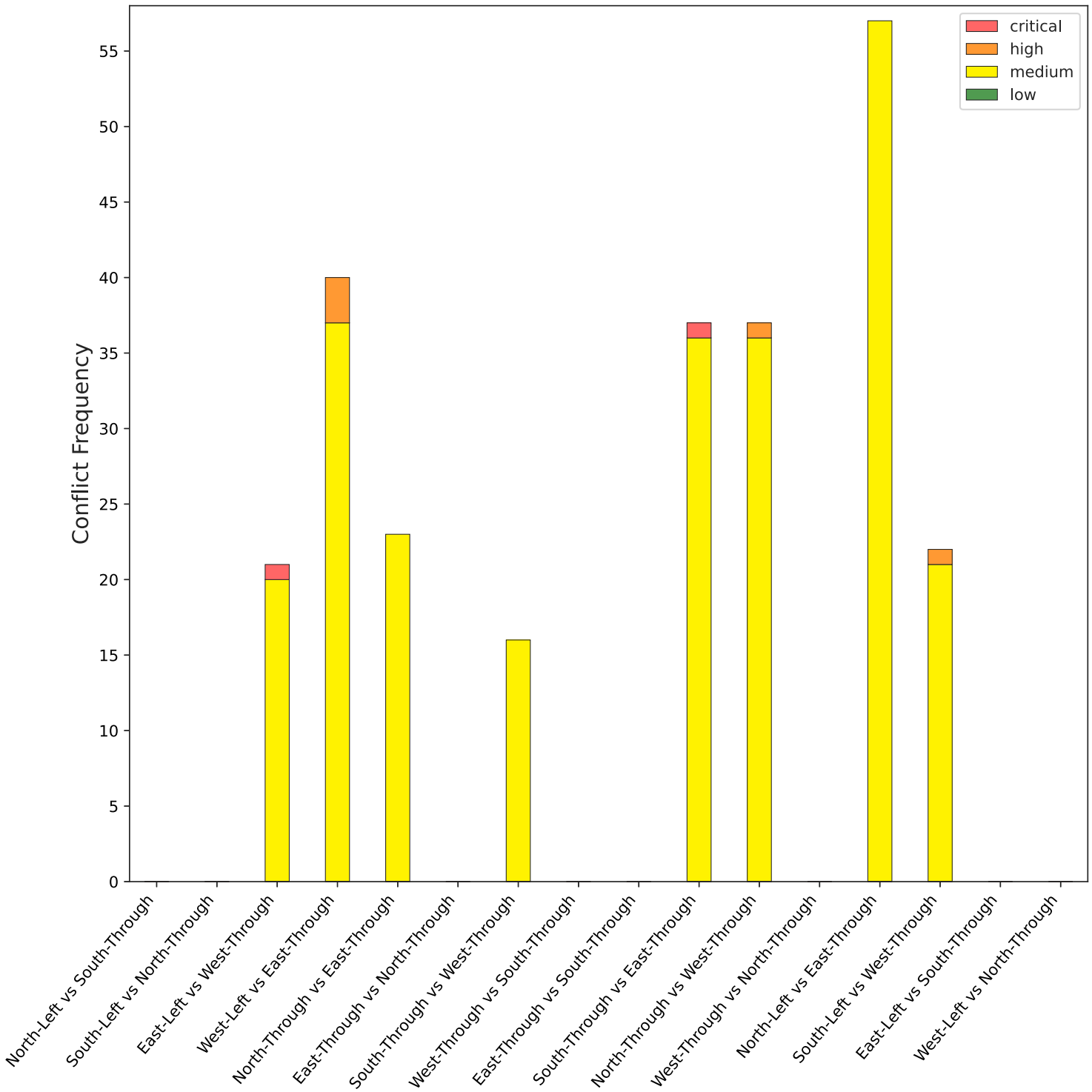
Vehicle vs Vehicle		
Indicator Used	PETss	
Left Turning vs Oncoming	Through vs Through	Left Turning vs Through from Left
		

These are generic conflict type diagrams and do not depict the specific site

Definition of Metrics Used in Detail Pages

Metric	Definition of Metric
Measured Frequency	Number of conflicts measured in the respective risk category.
Annual Estimate	Simple extrapolation of measured frequency to an annual basis. The purpose of this metric is to provide an annualized context.
Conflict Rate	Calculated as: $\frac{\text{number of conflicts in a respective risk level}}{\text{frequency of estimated limiting movement}}$ eg. if there is one North-left vs South-through high risk event and there are 1000 North-left vehicles, the high risk conflict rate for this configuration is 0.1%.
Relative Risk	Calculated as: $\frac{\text{conflict rate at or above a specific risk level}}{\text{benchmark average conflict rate at or above that risk level}}$ A Relative Risk of 1 means the conflict rate of road users at or above that risk level is the same as the benchmark average whereas a Relative Risk of 0.75 means the conflict rate is 0.75x the benchmark etc. Benchmark thresholds are developed locally for network screening applications and based on relevant sites from other jurisdictions otherwise. The purpose of this metric is to demonstrate which interactions have elevated risk and which do not.

Results Summary – Safe Systems Post Encroachment Time



Results Summary – Safe Systems Post Encroachment Time

Right-Angle (Left-Turning Vehicle vs Oncoming Vehicle)

Configuration	Low Risk	Medium Risk	High Risk	Critical Risk
North-Left vs South-Through	NM	NM	NM	NM
South-Left vs North-Through	NM	NM	NM	NM
East-Left vs West-Through	0	20	0	1
West-Left vs East-Through	0	37	3	0

Right-Angle (Through Vehicle vs Through Vehicle)

Configuration	Low Risk	Medium Risk	High Risk	Critical Risk
North-Through vs East-Through	0	23	0	0
East-Through vs North-Through	NM	NM	NM	NM
South-Through vs West-Through	0	16	0	0
West-Through vs South-Through	NM	NM	NM	NM
East-Through vs South-Through	NM	NM	NM	NM
South-Through vs East-Through	0	36	0	1
North-Through vs West-Through	0	36	1	0
West-Through vs North-Through	NM	NM	NM	NM

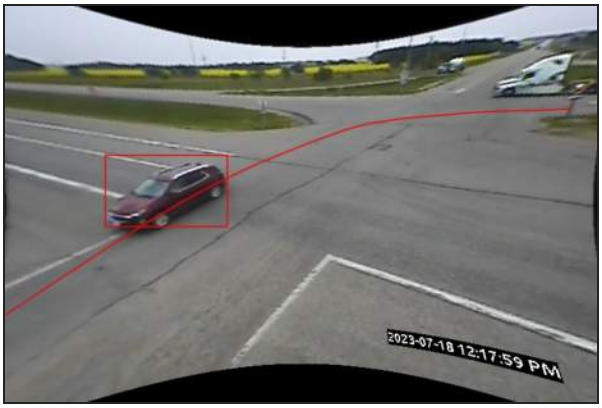
Right-Angle (Left-Turning Vehicle vs Through Vehicle from Left)

Configuration	Low Risk	Medium Risk	High Risk	Critical Risk
North-Left vs East-Through	0	57	0	0
South-Left vs West-Through	0	21	1	0
East-Left vs South-Through	NM	NM	NM	NM
West-Left vs North-Through	NM	NM	NM	NM

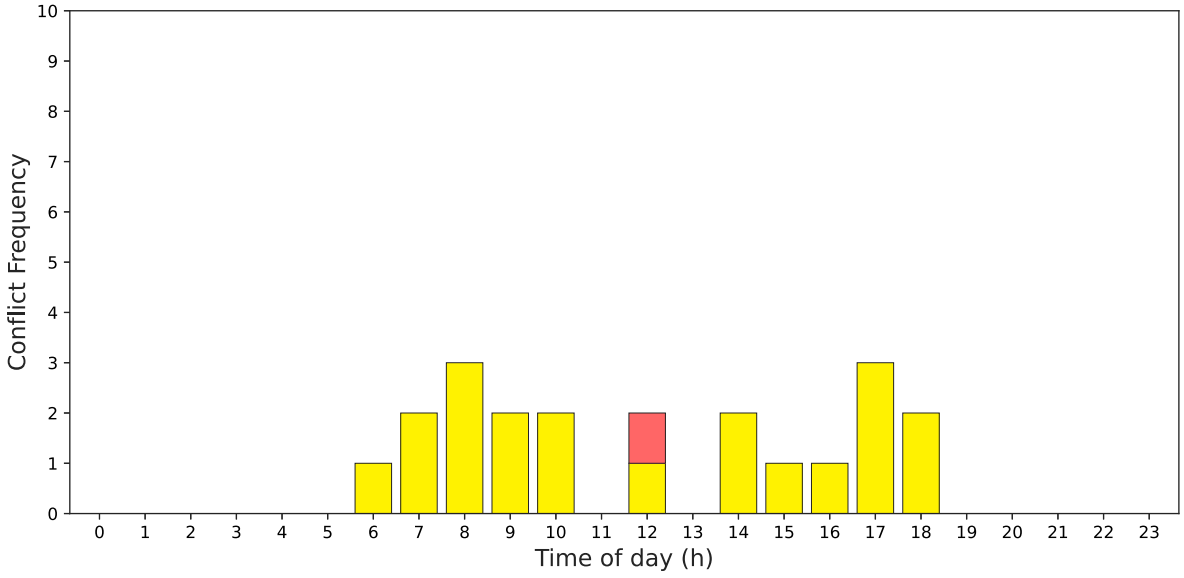
NM = Not Measured

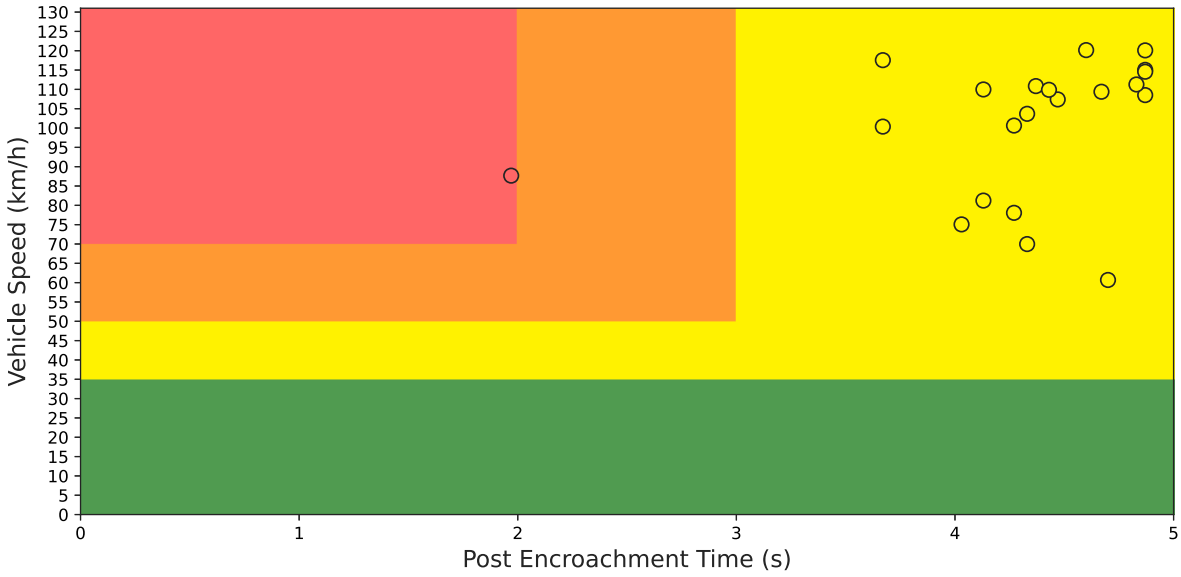
East-Left Vehicle vs West-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



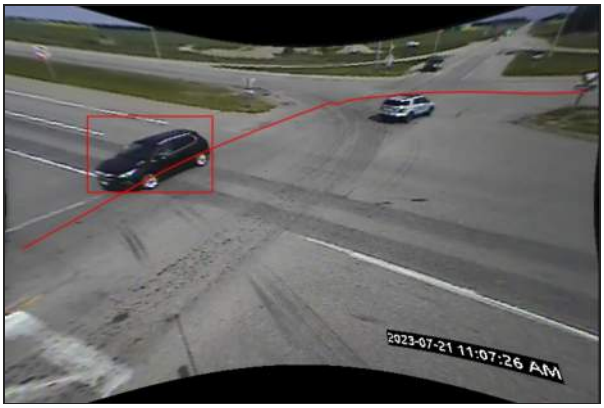
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	1	0	20	0
Annual Estimate	91	0	1825	0
Conflict Rate (%)	0.22	0.0	4.46	0.0
Relative Risk	NA	0.72	1.8	1.8



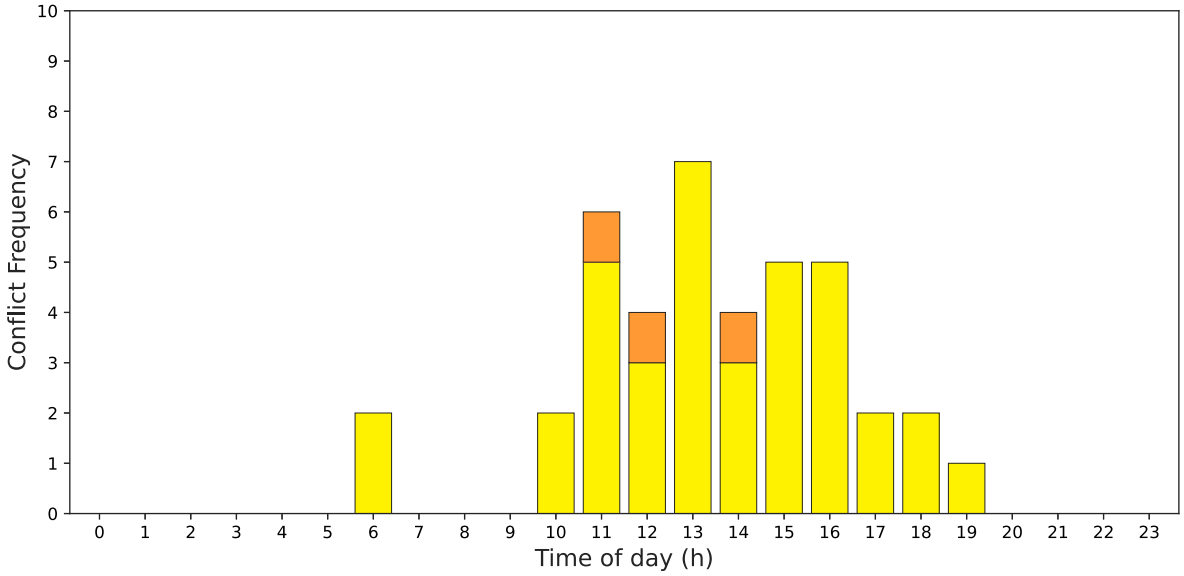


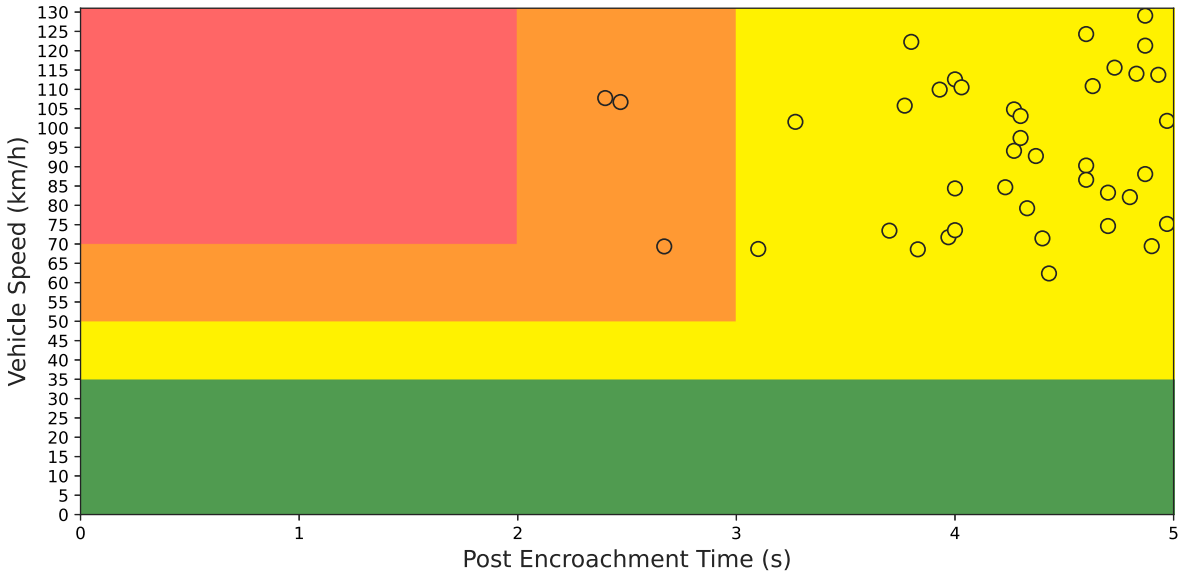
West-Left Vehicle vs East-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



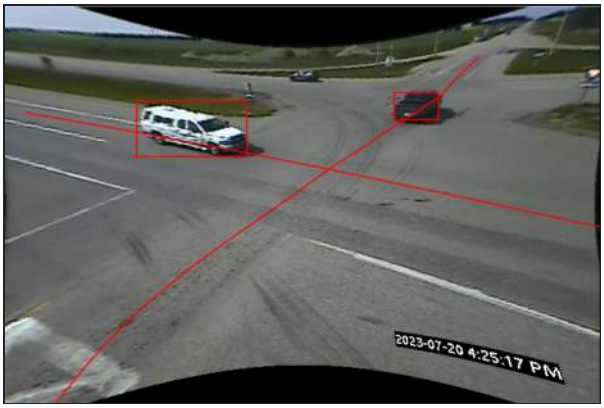
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	3	37	0
Annual Estimate	0	274	3376	0
Conflict Rate (%)	0.0	0.27	3.28	0.0
Relative Risk	NA	0.86	1.36	1.36



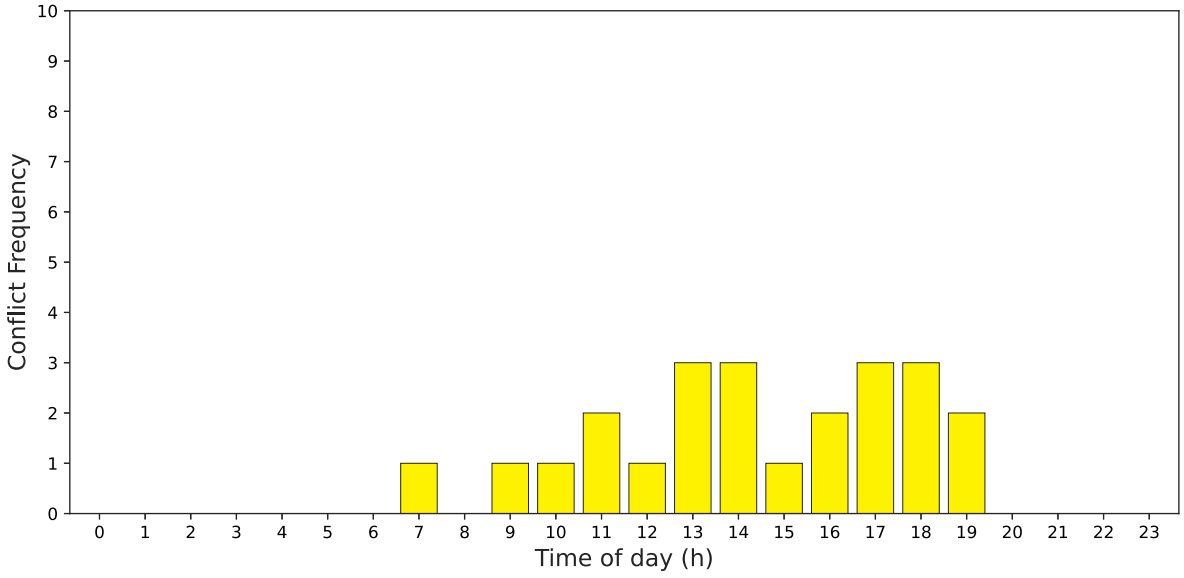


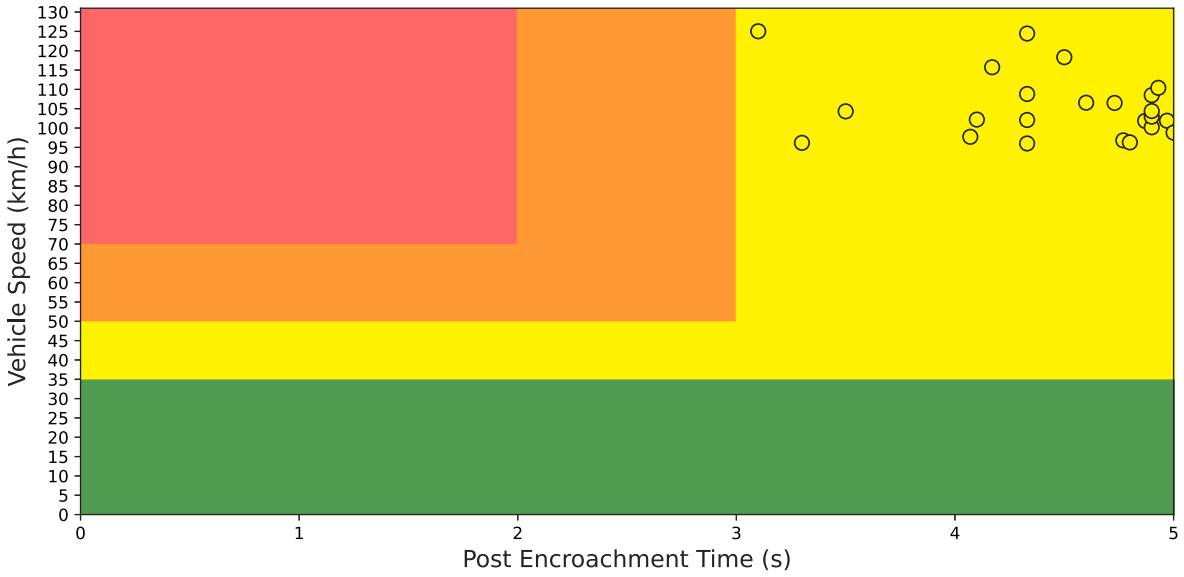
North-Through Vehicle vs East-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



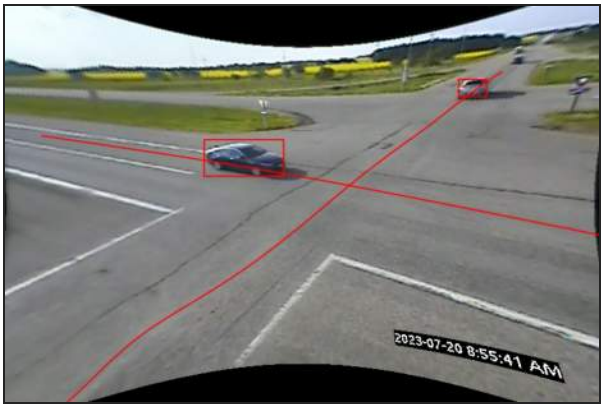
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	0	23	0
Annual Estimate	0	0	2099	0
Conflict Rate (%)	0.0	0.0	1.39	0.0
Relative Risk	NA	0.0	0.8	0.8



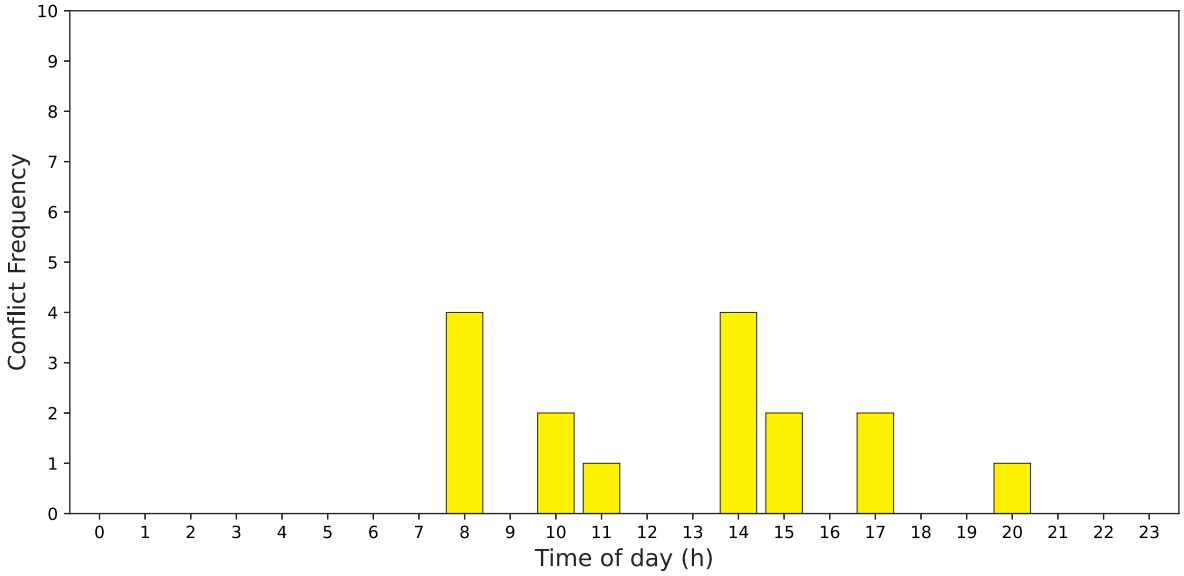


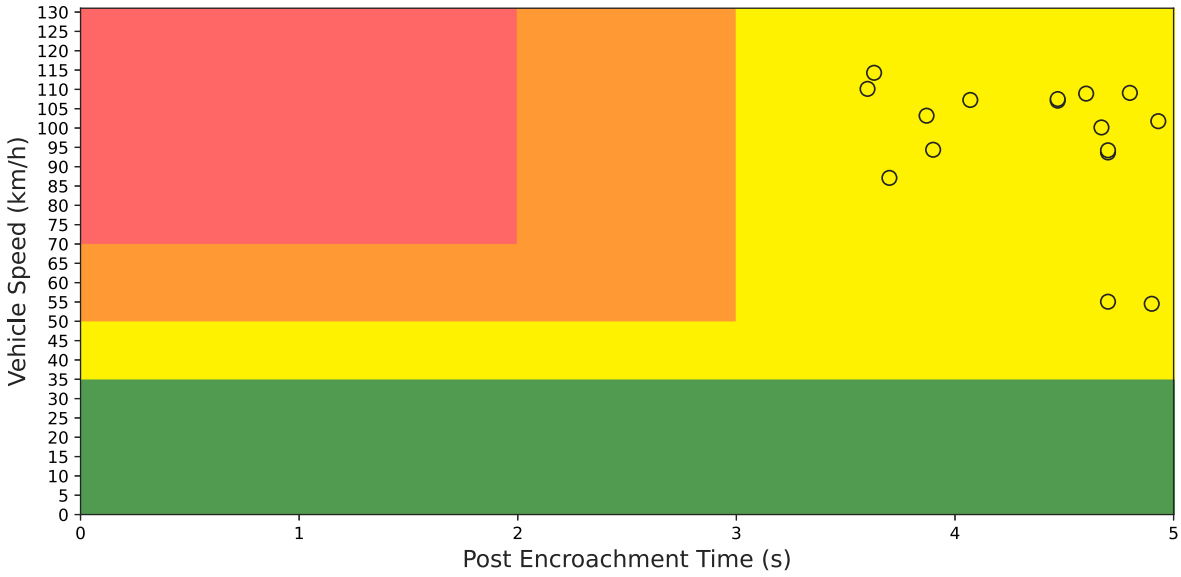
South-Through Vehicle vs West-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



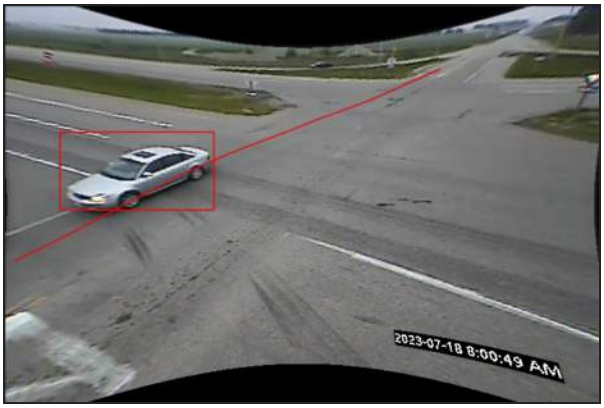
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	0	16	0
Annual Estimate	0	0	1460	0
Conflict Rate (%)	0.0	0.0	0.92	0.0
Relative Risk	NA	0.0	0.53	0.53



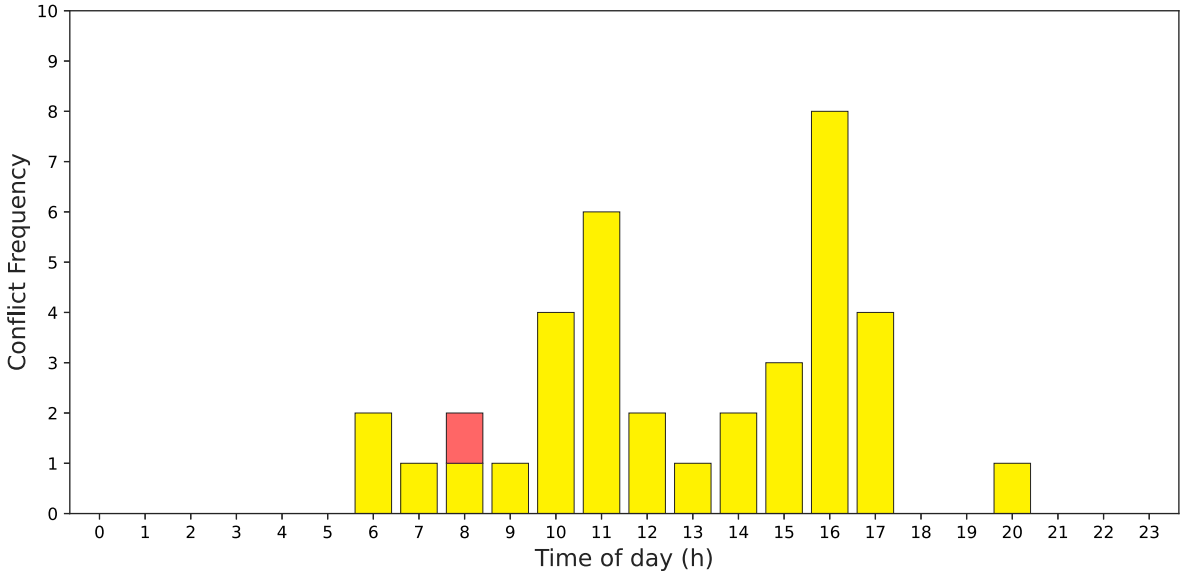


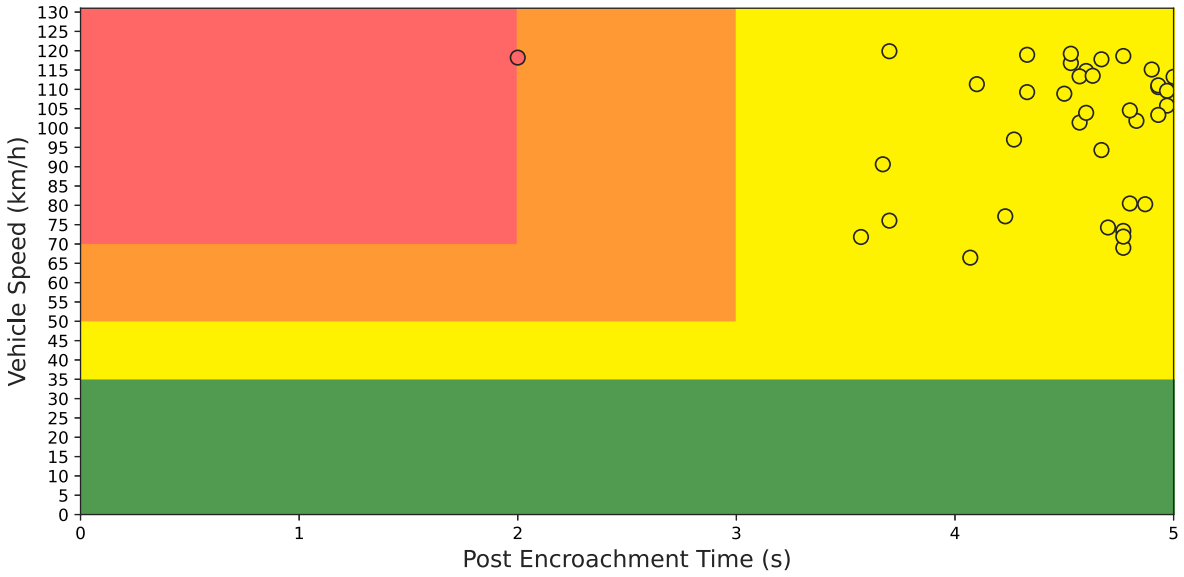
South-Through Vehicle vs East-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



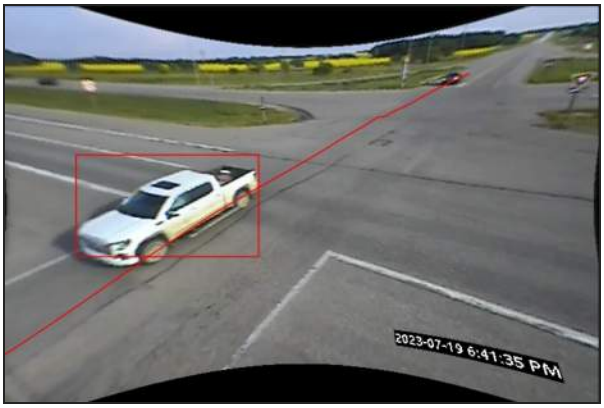
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	1	0	36	0
Annual Estimate	91	0	3285	0
Conflict Rate (%)	0.06	0.0	2.06	0.0
Relative Risk	NA	0.34	1.22	1.22



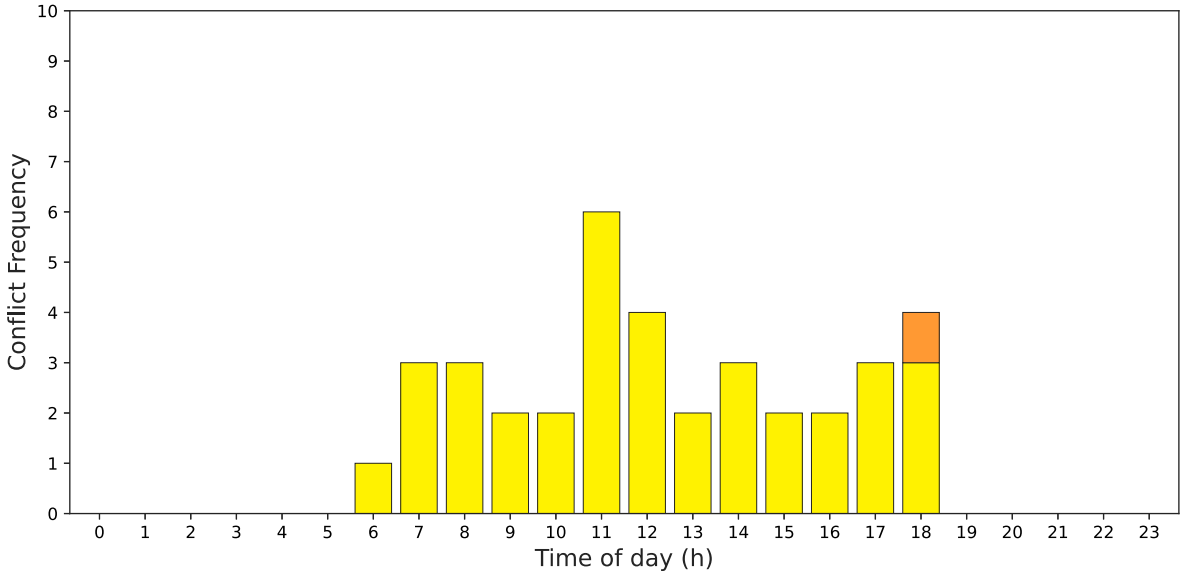


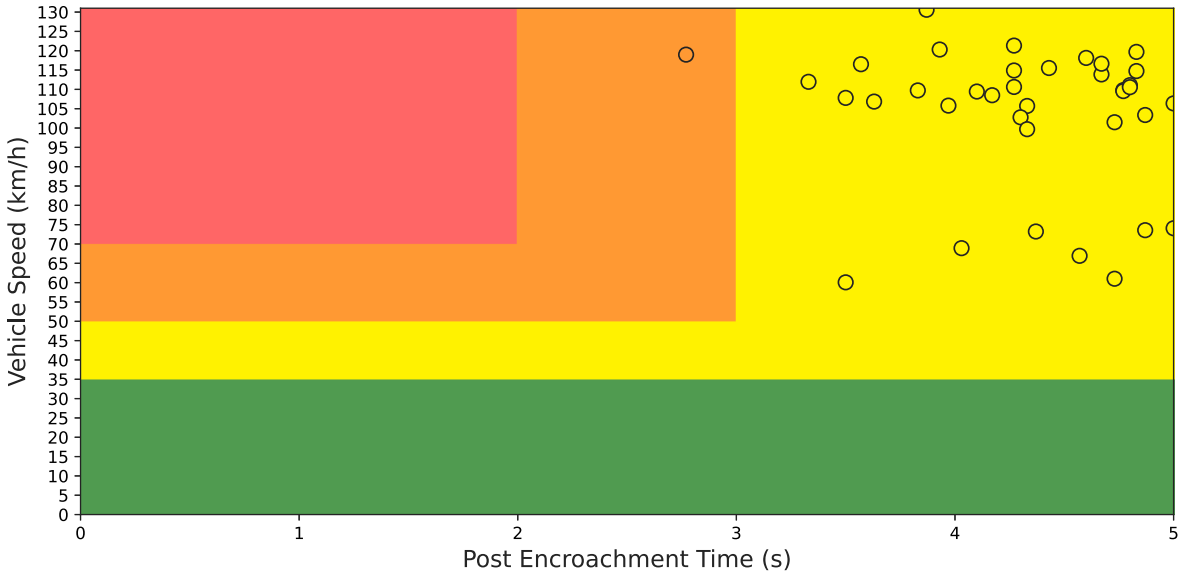
North-Through Vehicle vs West-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



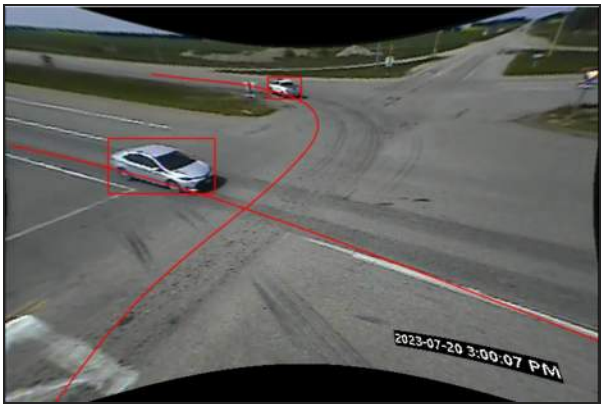
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	1	36	0
Annual Estimate	0	91	3285	0
Conflict Rate (%)	0.0	0.06	2.17	0.0
Relative Risk	NA	0.36	1.29	1.29



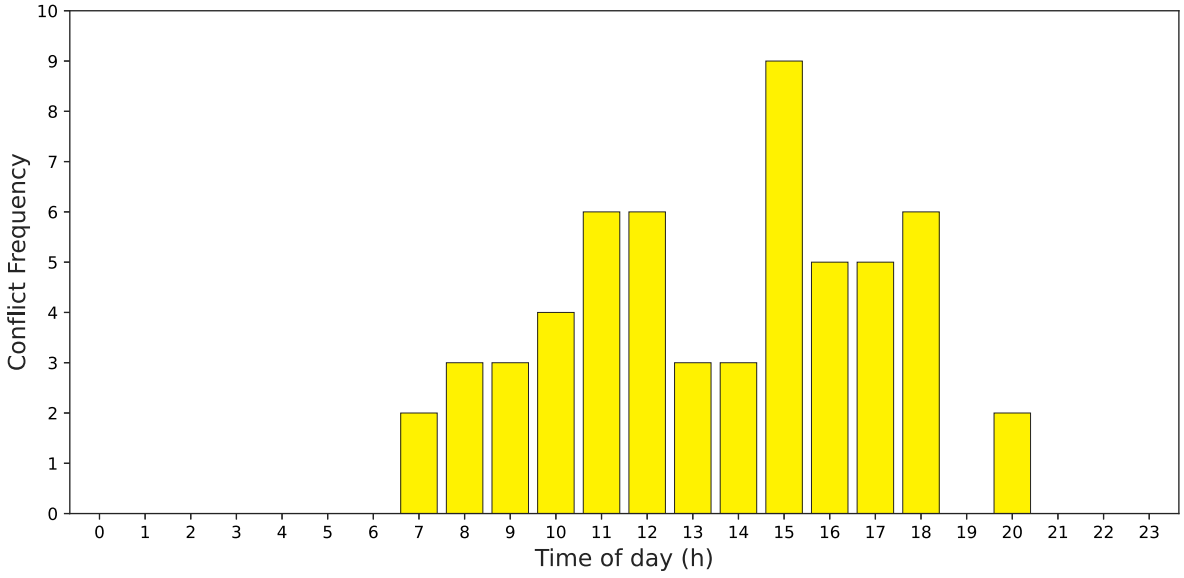


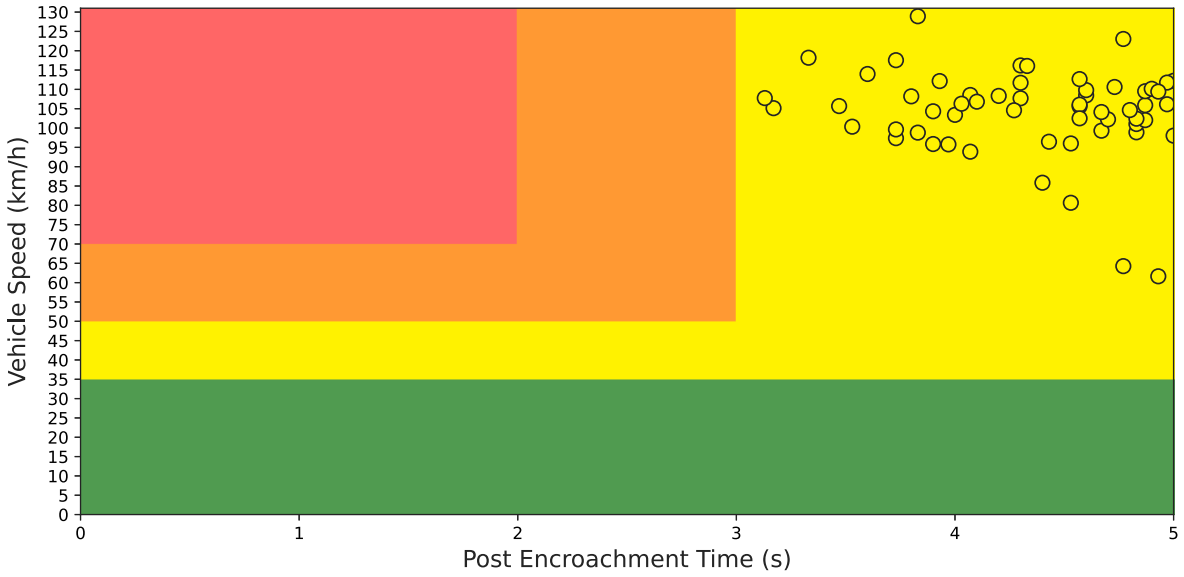
North-Left Vehicle vs East-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



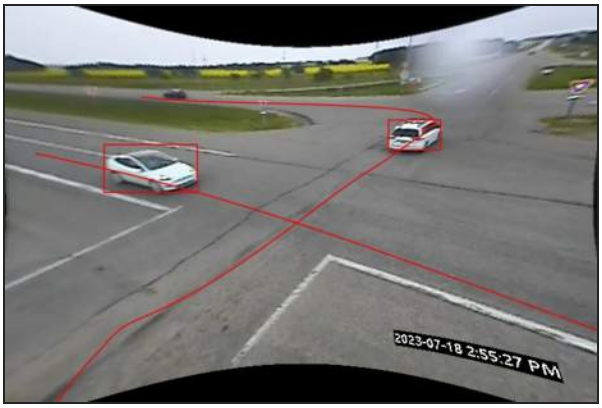
Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	0	57	0
Annual Estimate	0	0	5201	0
Conflict Rate (%)	0.0	0.0	2.09	0.0
Relative Risk	NA	0.0	1.21	1.21



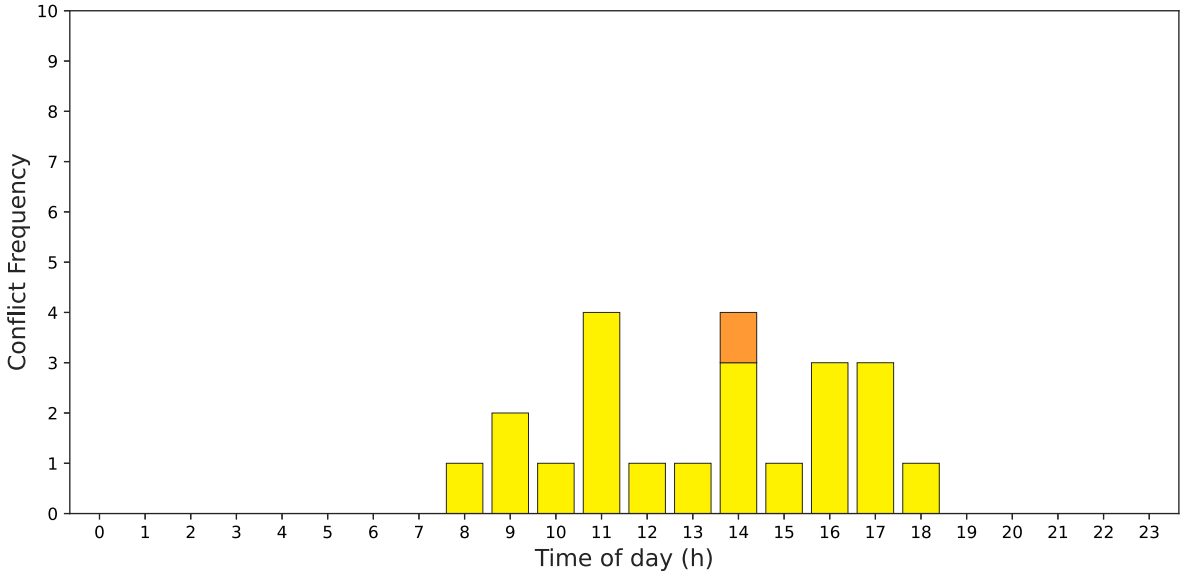


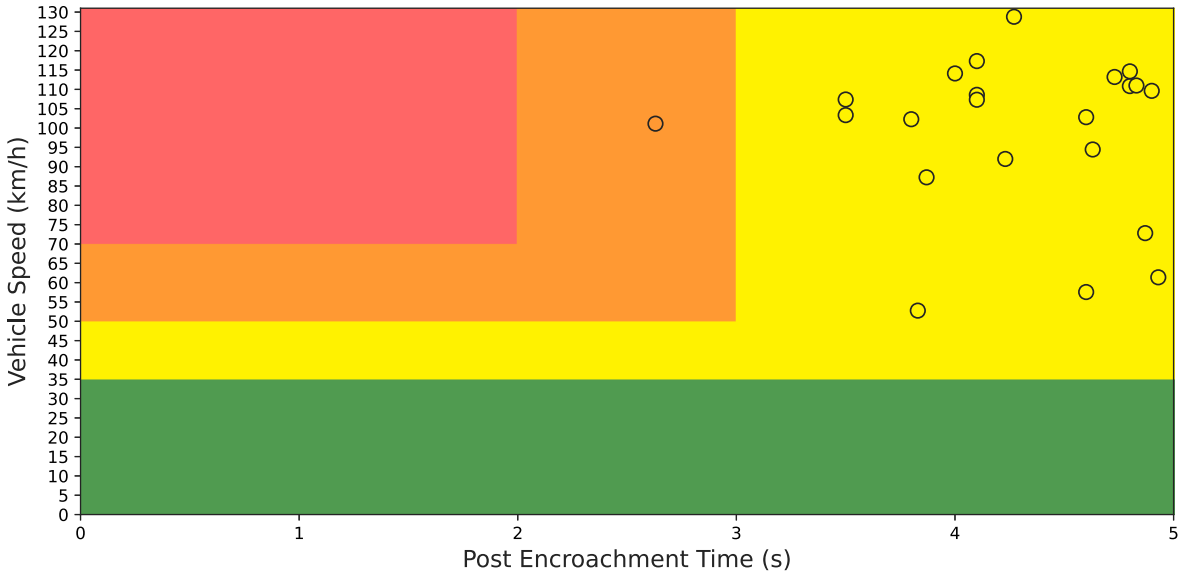
South-Left Vehicle vs West-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



Risk Level	Critical Risk	High Risk	Medium Risk	Low Risk
Measured Frequency	0	1	21	0
Annual Estimate	0	91	1916	0
Conflict Rate (%)	0.0	0.17	3.52	0.0
Relative Risk	NA	0.99	2.13	2.13





E-2 NON-CONFLICTING VEHICLE INTERACTIONS REPORT

PTH-1 and PTH-5
Carberry, MB
Non-Conflicting Vehicle Interactions Report

Contents

General Information

Report Details

Site	PTH-1 and PTH-5, Carberry, MB
Video Period	2023-Jul-17 to 2023-Jul-21
Video Length	60 hours
Report Notes	Many of the cases where VEH 2 is from stop control on PTH 5 are controlled movements where the vehicle from PTH 5 has carefully passed after a through vehicle. These events do have relevance for safety in that they generally have required a gap rejection and they bring some risk of stop sign violation. However, they do have a completely different and lower risk profile than cases where VEH-1 is from PTH 5 and is attempting to pass in front of a through vehicle on PTH 1. This report includes only those vehicle interactions where VEH-2 is coming from stop control on PTH 5. Please note that VEH-1 is the vehicle that reaches the point of conflict first. For example, East-through vs South-through refers to a conflict configuration where the Eastbound-through vehicle reaches the point of conflict first, hence considered as VEH-1, followed by the Southbound-through vehicle that is VEH-2.

Report Organization

General Information	Provides key details about the report
Results Summary	Provides data at the intersection level
Results Detail Pages	Provides data for individual configurations

Indicator Definitions

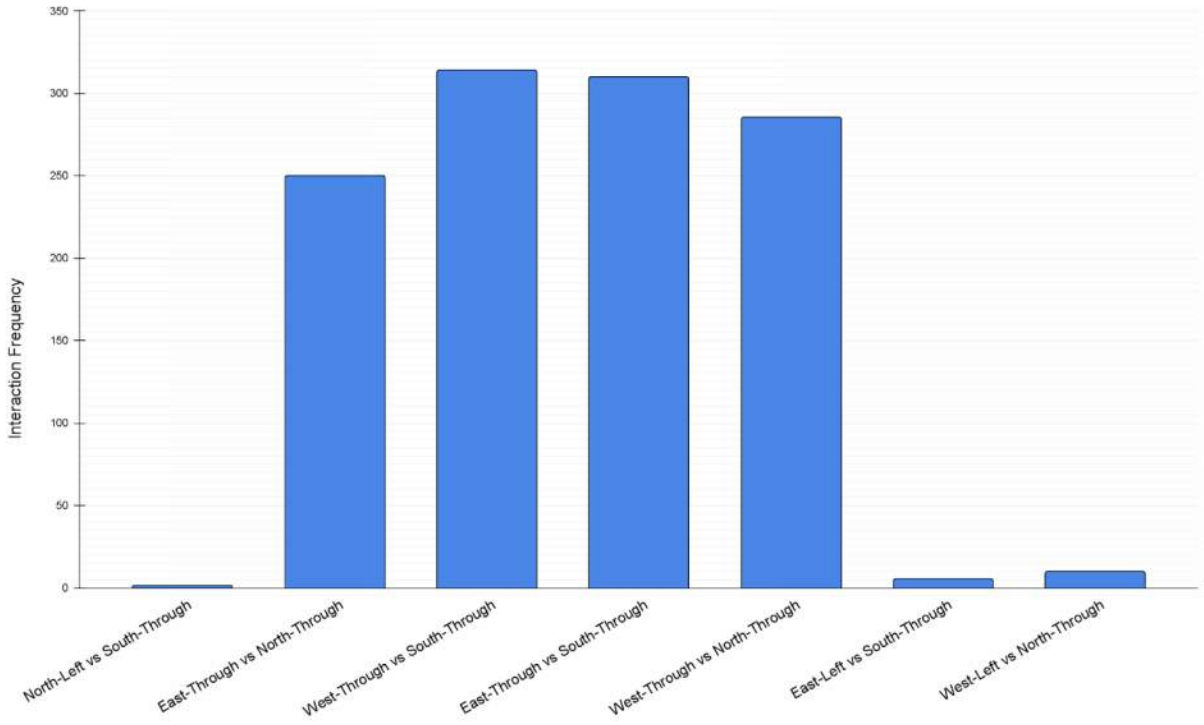
Safe Systems Post Encroachment TIme (PETss)	PET is the time elapsed between one vehicle leaving a conflict area and a conflicting vehicle arriving at it. Risk level is based on PET together with the bullet vehicle impact speed. Risk thresholds reference the probability of severe injury (MAIS 3+) for left-turning vehicle vs oncoming vehicle collisions [1]. This indicator is used to measure risk to vehicle occupants.

[1] Jurewicz, C., Sobhani, A., Woolley, J., Dutschke, J., Corben, B., 2016. Exploration of Vehicle Impact Speed – Injury Severity Relationships for Application in Safer Road Design. Transportation Research Procedia 14, 4247-4256. https://doi.org/10.1016/j.trpro.2016.05.396

Definition of Metrics Used in Detail Pages

Metric	Definition of Metric
Measured Frequency	Number of interactions measured in the respective risk category.
Annual Estimate	Simple extrapolation of measured frequency to an annual basis. The purpose of this metric is to provide an annualized context.
Interaction Rate	Calculated as: $\frac{number\ of\ interactions}{frequency\ of\ estimated\ limiting\ movement}$ eg. if there is one North-left vs South-through event and there are 1000 North-left vehicles, the interaction rate for this configuration is 0.1%.
Relative Risk	Calculated as: $\frac{conflict\ rate\ at\ or\ above\ a\ specific\ risk\ level}{benchmark\ average\ conflict\ rate\ at\ or\ above\ that\ risk\ level}$ A Relative Risk of 1 means the conflict rate of road users at or above that risk level is the same as the benchmark average whereas a Relative Risk of 0.75 means the conflict rate is 0.75x the benchmark etc. Benchmark thresholds are developed locally for network screening applications and based on relevant sites from other jurisdictions otherwise. The purpose of this metric is to demonstrate which interactions have elevated risk and which do not.

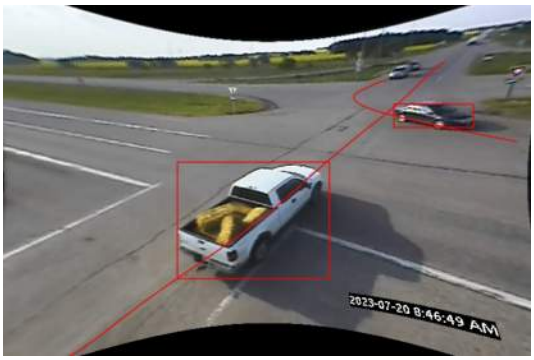
Results Summary – Vehicle Interactions



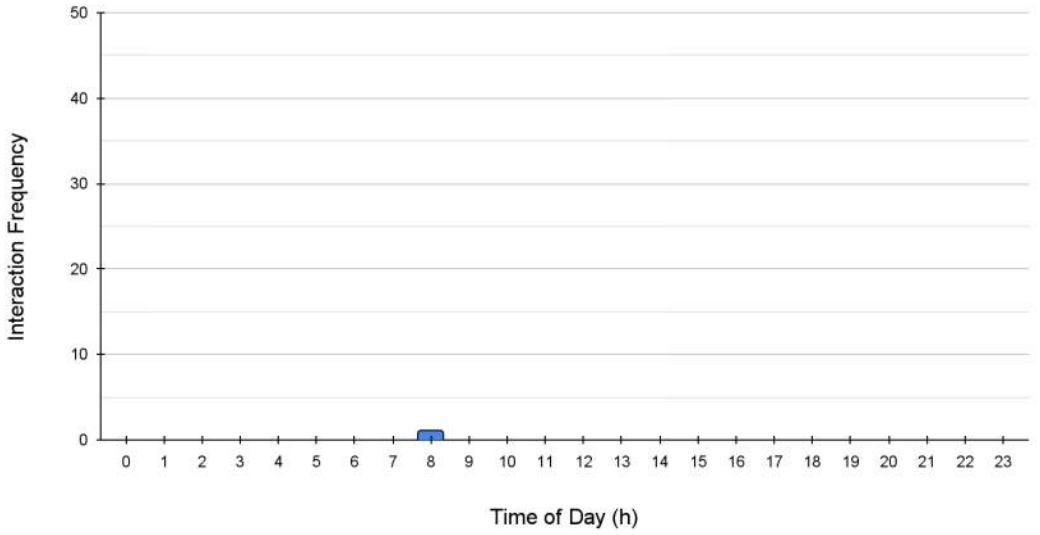
Configuration	Measured Frequency
North-Left vs South-Through	1
East-Through vs North-Through	250
West-Through vs South-Through	314
East-Through vs South-Through	310
West-Through vs North-Through	285
East-Left vs South-Through	5
West-Left vs North-Through	10

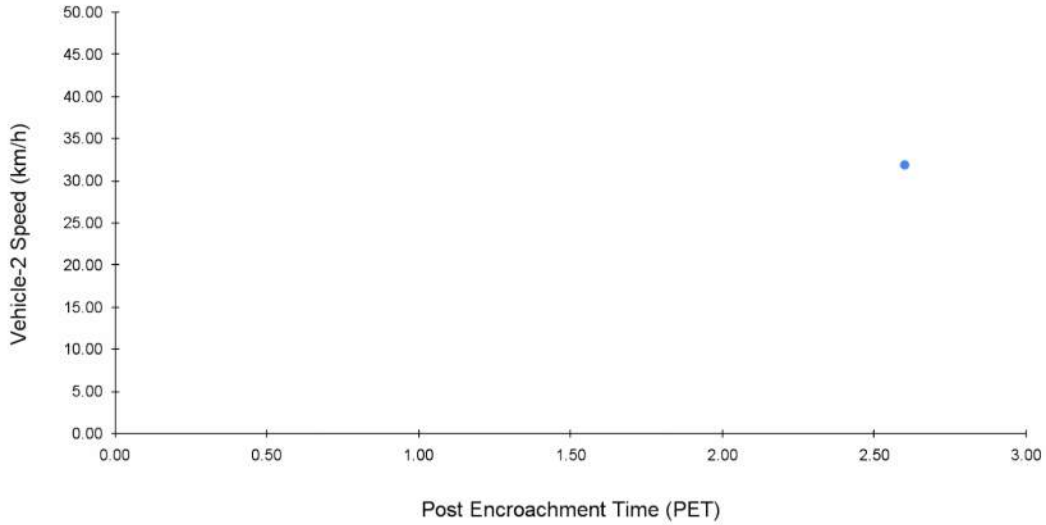
North-Left vs South-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



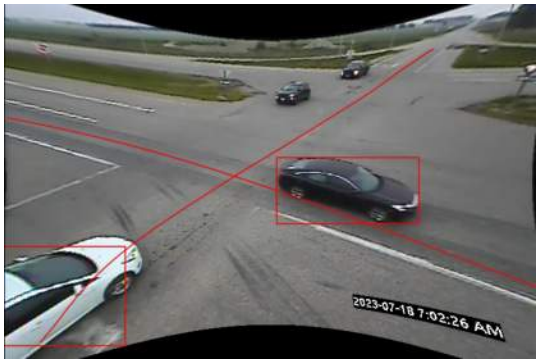
Measured Frequency	1
Annual Estimate	91
Interaction Rate (%)	0.04
Relative Risk	N/A



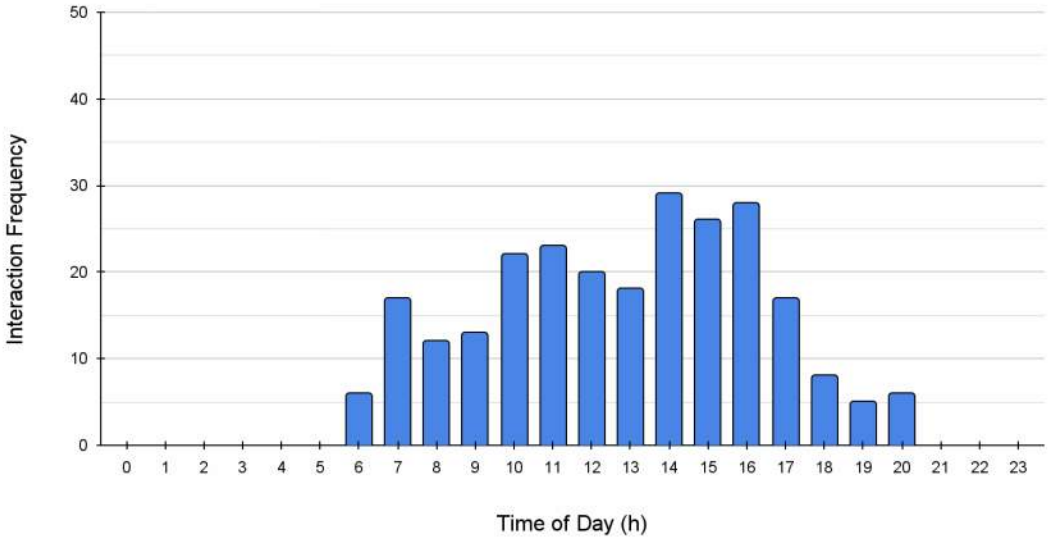


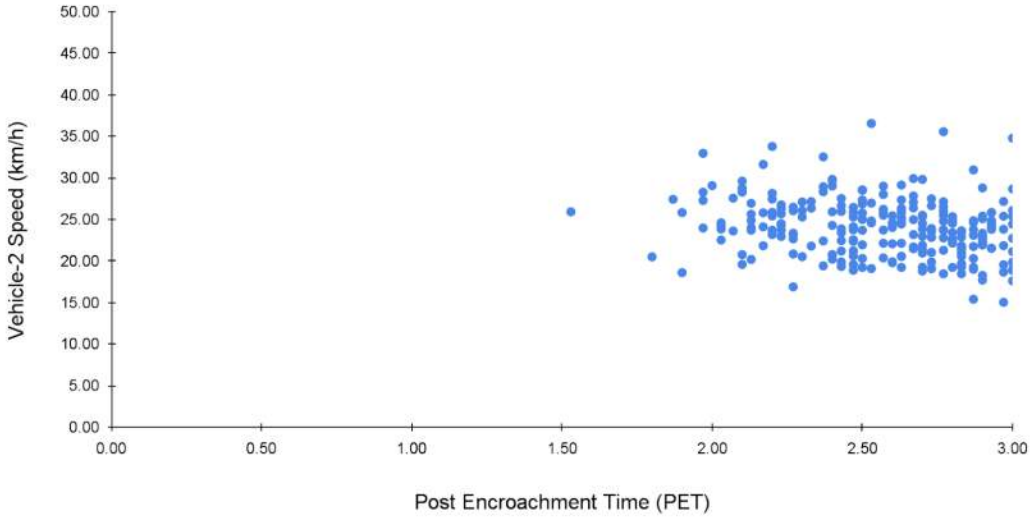
East-Through vs North-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



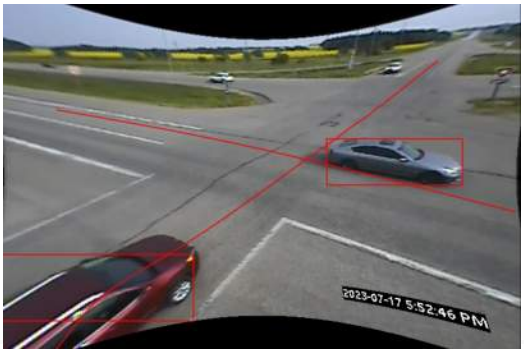
Measured Frequency	250
Annual Estimate	22813
Interaction Rate (%)	1.65
Relative Risk	N/A



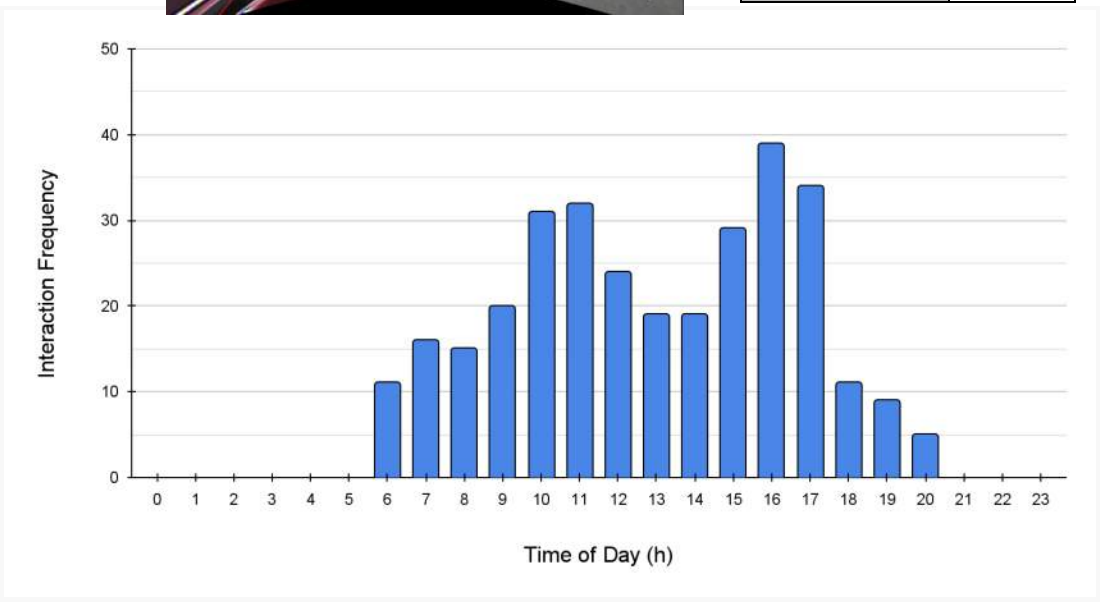


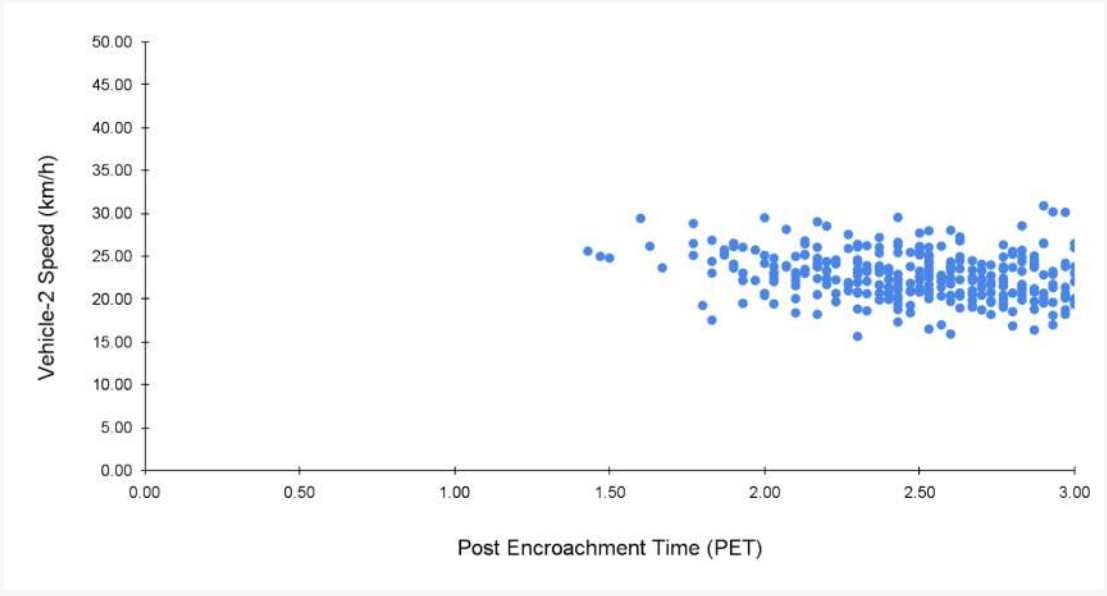
West-Through vs South-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



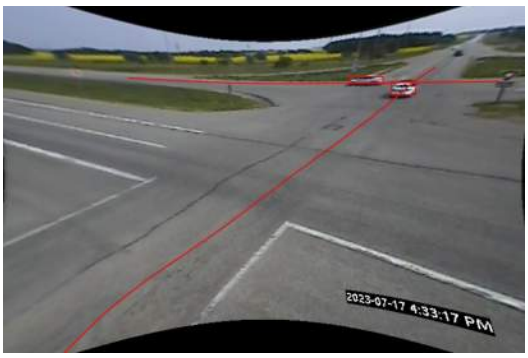
Measured Frequency	314
Annual Estimate	28653
Interaction Rate (%)	2.15
Relative Risk	N/A



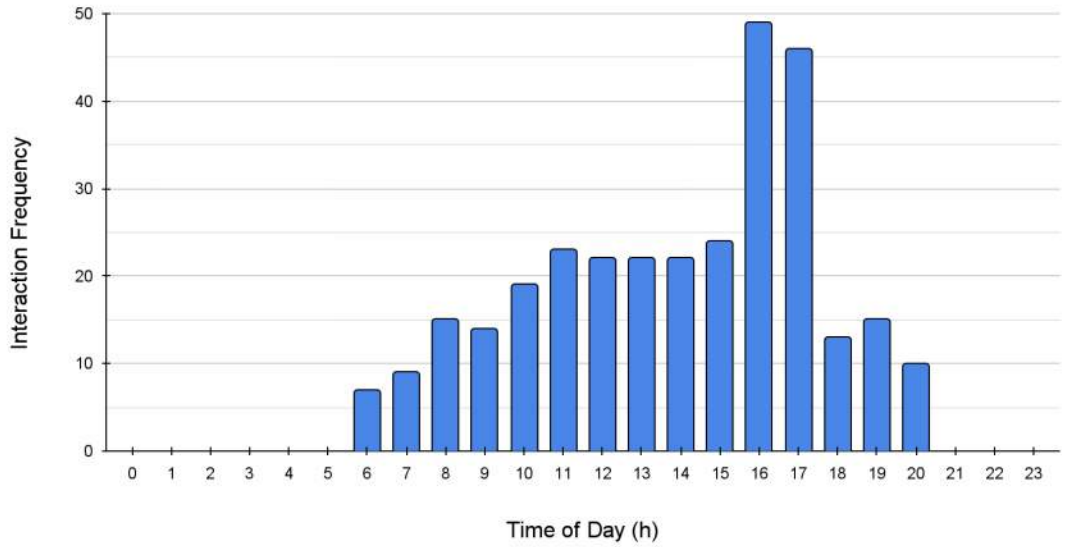


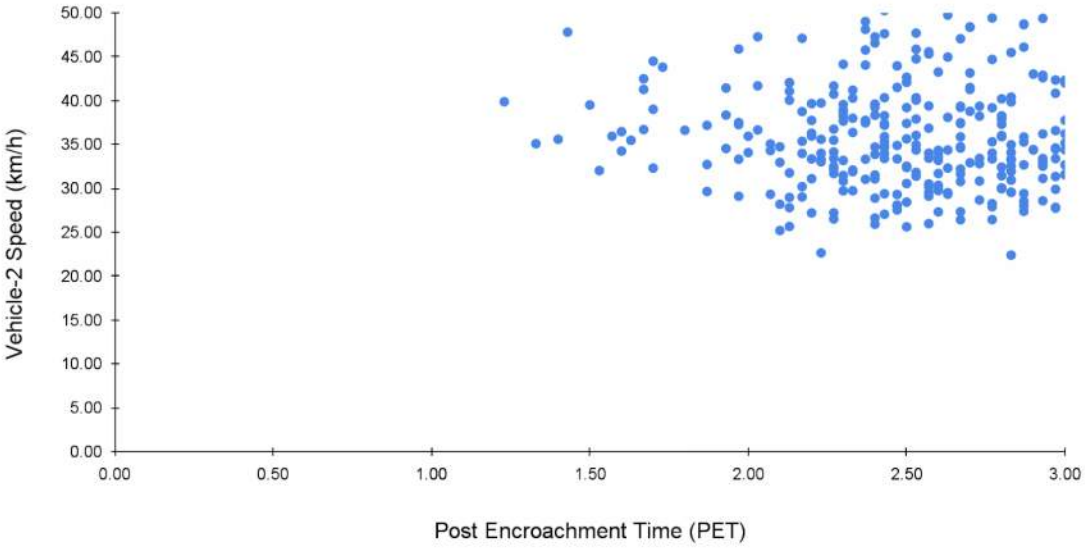
East-Through vs South-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



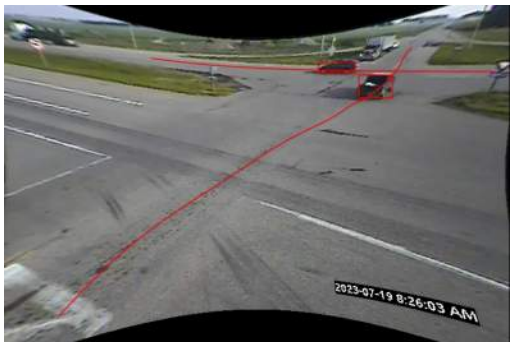
Measured Frequency	310
Annual Estimate	28288
Interaction Rate (%)	2.04
Relative Risk	N/A



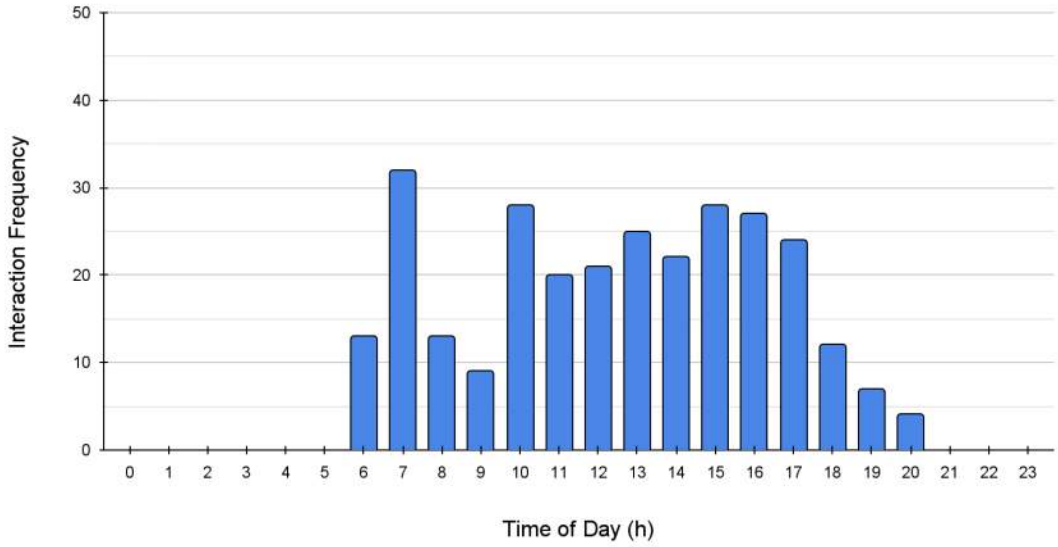


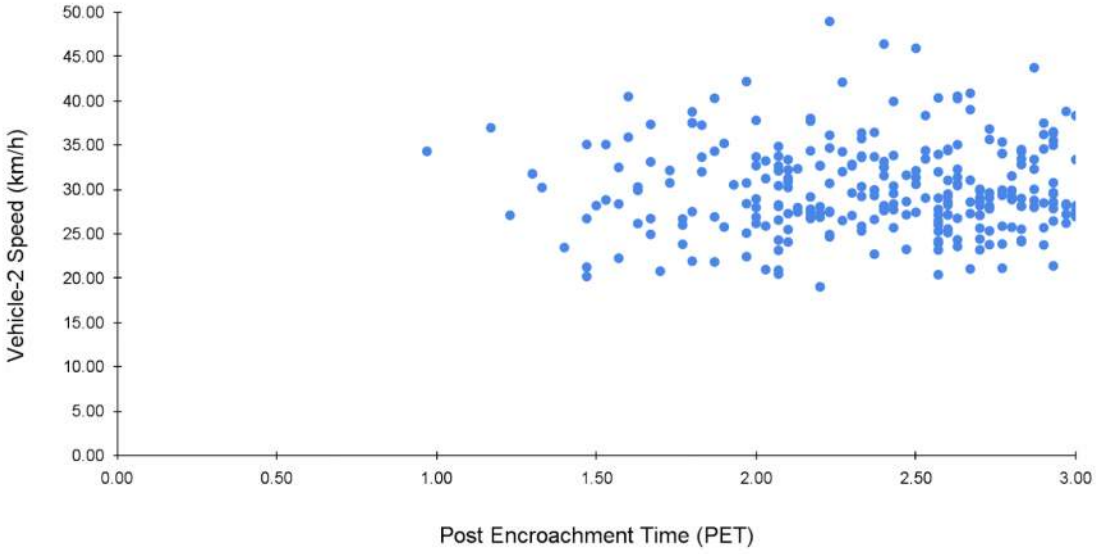
West-Through vs North-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



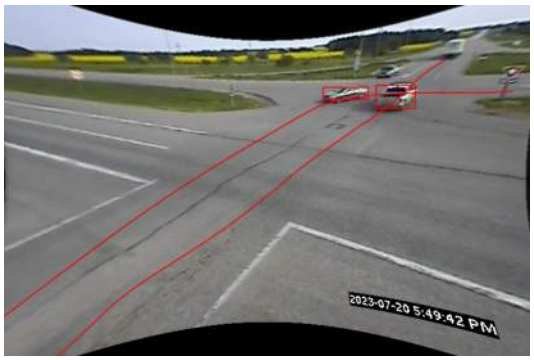
Measured Frequency	285
Annual Estimate	26006
Interaction Rate (%)	1.95
Relative Risk	N/A



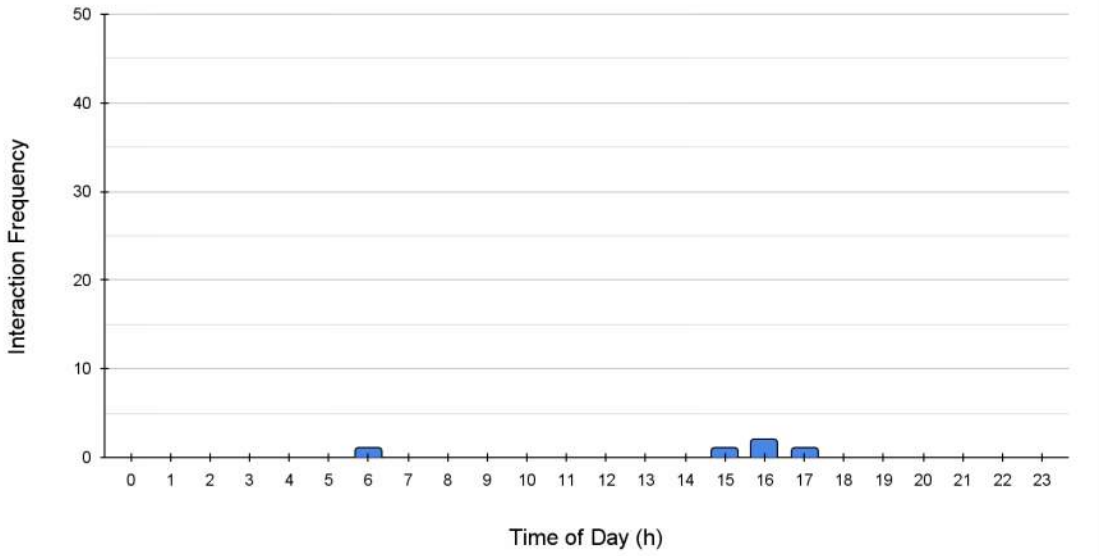


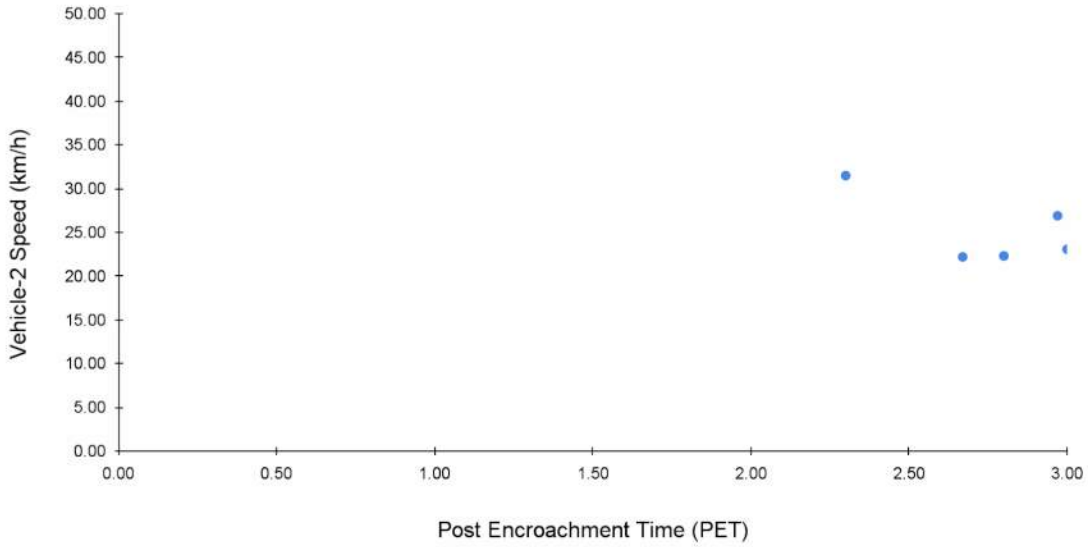
East-Left vs South-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



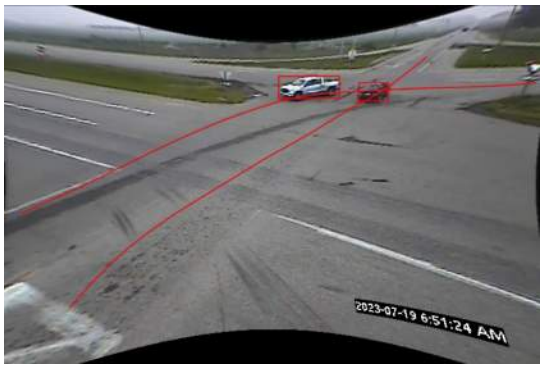
Measured Frequency	5
Annual Estimate	456
Interaction Rate (%)	1.12
Relative Risk	N/A



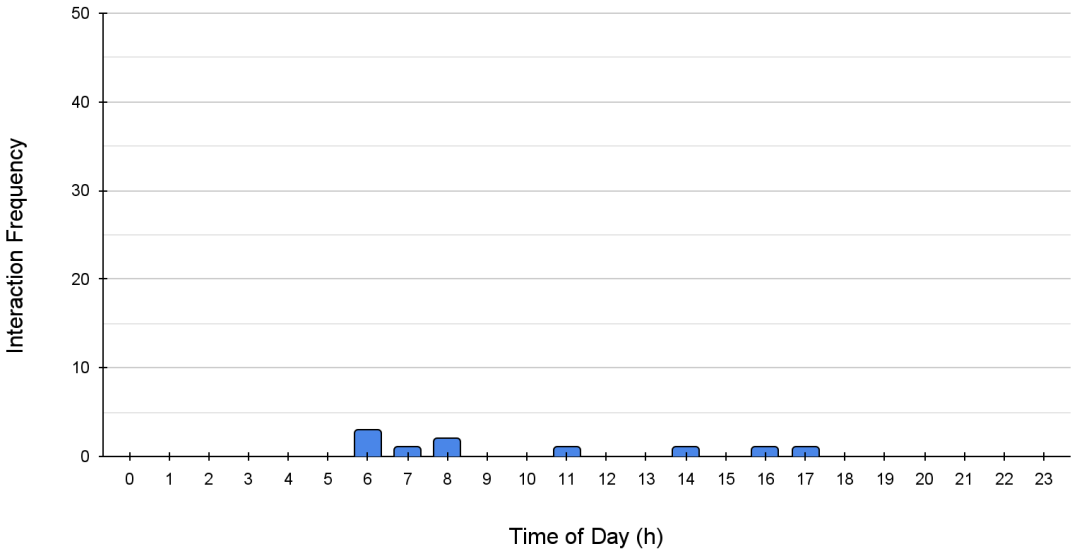


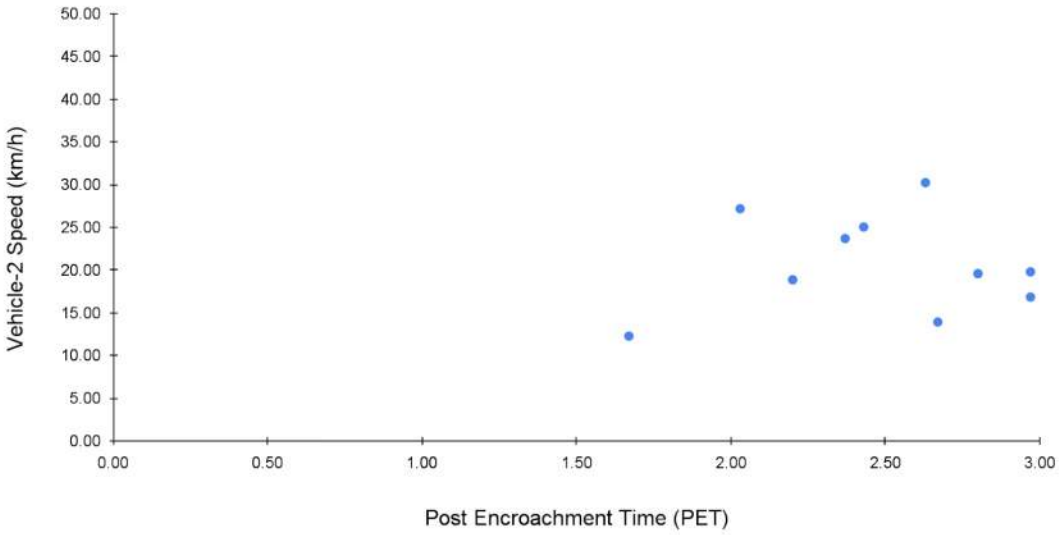
West-Left vs North-Through Vehicle

@ PTH-1 and PTH-5, 2023-Jul-17 to 2023-Jul-21



Measured Frequency	10
Annual Estimate	913
Interaction Rate (%)	0.89
Relative Risk	N/A





E-3 STOP SIGN COMPLIANCE REPORT

Report Details

Site	PTH-1 and PTH-5, Carberry, MB
Video Period	Jul. 17 @ 13:30-21:00, Jul. 18-20 @ 6:00-21:00 and Jul. 21 @ 6:00-13:30.
Video Length	60 hours
Report Type	Stop Sign Compliance

Summary of Results

Sr #	Date	Camera Angle	Vehicle Movement	Est. Vehicle Volume	Vehicles Violating Stop Sign	% of Vehicles Violating Stop sign
1	Jul. 17, 2023 to Jul. 21, 2023	SE2	North-Thru	1656	10	0.60%
2	Jul. 17, 2023 to Jul. 21, 2023	SE2	North-Left	2728	16	0.58%
3	Jul. 17, 2023 to Jul. 21, 2023	NW2	South-Thru	1748	30	1.71%
4	Jul. 17, 2023 to Jul. 21, 2023	NW2	South-Left	596	24	4.02%

Data provided by Miovision

F COUNTERMEASURE EVALUATION

<table>
<tr><th>Intersection Element</th><th>Road Safety Issue</th><th>Potential Countermeasure</th><th>Analysis Type</th><th>Potential Effectiveness</th><th>Source</th><th>Priority Level</th><th>Implementation Cost</th><th>Cost- Effectiveness</th><th>Discussion and Conclusions</th><th>Implementation Options</th></tr>
<tr><td colspan="11">Intersection Configuration</td></tr>
<tr><td rowspan="6">Median Operations</td><td rowspan="6">The narrow median width limiting the available storage and refuge area.
The narrow median width at this intersection limits the available storage and refuge area for vehicles using the median as a two-stage crossing. Of particular concern is the accommodation of long vehicles (heavy trucks, trailers, etc.) going straight through across PTH 1 or turning left from PTH 5 onto PTH 1. Crossing the median consists of visually and mentally demanding maneuvers which results in high workload activity. In addition, vehicles crossing the median may experience view obstructions from the vehicle A-pillars.

The narrow median is often occupied by several vehicles at the same time.
Several vehicles were observed occupying the narrow median at the same time. This provides significant opportunities for conflict, including conflicting vehicle orientations while waiting in the median, the potential for queuing traffic to extend into the high speed through lanes, and vehicle conflicts creating sightline obstructions.

Different driving behaviors for left-turning vehicles observed within the median.
Different driving behaviors were observed at the median for vehicles making left-turns from both PTH 1 and PTH 5. Some drivers make “simultaneous left-turns”, while others make “interlocking left-turns”. The different types of turning behavior observed at this intersection may contribute to an increased risk of driver error and collision. Another concern occurs when a vehicle turns left from the mainline and at the same time a vehicle turns left from the minor highway.</td><td>Convert stop controlled intersection to signal controlled intersection with protected left-turn phases.</td><td>SPF</td><td>Using the methodologies outlined in the AASHTO Highway Safety Manual (HSM), SPFs from the HSM were applied to estimate the relative change in annual collision frequency associated with changing the existing stop-controlled (Baseline) intersection to a traffic signal. Baseline calculations are smoothed with the collisions observed at the existing intersection during the 2012-2021 study period).

<table><tr><th>PTH 1 & PTH 5 - expected collisions predictions</th><th>Type</th><th colspan="3">Annually Expected Collision Frequency (collision/year)</th></tr><tr><th>Configuration Alternative</th><th></th><th>PDO</th><th>FI</th><th>Total</th></tr><tr><td>Baseline: Existing configuration *</td><td>4-leg Stop Rural</td><td>1.58</td><td>1.63</td><td>3.21</td></tr><tr><td>Alternative 1: Signalized intersection</td><td>4-leg Signal Rural</td><td>4.66</td><td>3.70</td><td>8.36</td></tr></table>* Predictions are smoothed with observed collisions</td><td>AASHTO HSM</td><td rowspan="6">High Priority</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>The results of this analysis indicate that installing a traffic signal at this location would result in a significant increase in total and fatal and injury annual expected collision frequencies.

Based on discussions with MTI representatives, this finding is consistent with MTI experience with traffic signals installed at similar isolated intersections on the PTH corridor. As a result, the provision of a traffic signal has not been included in the short list of countermeasures considered for implementation at this location.</td><td>Not recommended</td></tr>
<tr><td>Convert stop controlled intersection to a roundabout intersection configuration.</td><td>CMF</td><td>To help quantify the relative change in road safety performance associated with changing the existing stop-controlled (Baseline) intersection to a multi-lane roundabout, an analysis was conducted using SPFs from the HSM and CMFs from both the HSM and the TAC Roundabout Design Guide (0.56 for total and 0.18 for FI collisions). Baseline calculations are smoothed with the collisions observed at the existing intersection during the 2012-2021 study period.

<table><tr><th>PTH 1 & PTH 5 - expected collisions predictions</th><th>Type</th><th colspan="3">Annually Expected Collision Frequency (collision/year)</th></tr><tr><th>Configuration Alternative</th><th></th><th>PDO</th><th>FI</th><th>Total</th></tr><tr><td>Baseline: Existing configuration *</td><td>4-leg Stop Rural</td><td>1.58</td><td>1.63</td><td>3.21</td></tr><tr><td>Alternative 2: Roundabout intersection - HSM CMFs **</td><td>4-leg Roundabout</td><td>1.51</td><td>0.29</td><td>1.80</td></tr></table>* Predictions are smoothed with observed collisions
** HSM CMFs (total=0.56 and FI=0.18) applied for conversion from Baseline
Safety performance functions (SPFs) specific to estimating roundabout related collisions were reviewed from the National Cooperative Highway Research Program (NCHRP) Report No. 888. These SPFs suggest that a similar trend in reducing fatal and injury collisions is expected when converting the existing stop-controlled intersection to a multilane roundabout.</td><td>AASHTO HSM, TAC Roundabout Design Guide CMFs, and NCHRP 888</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>The results of the SPF analysis suggest the following:
—A roundabout analysed using SPFs from NCHRP 888 results in higher total and PDO annual expected collision frequencies. However, a significant reduction in fatal and injury annual expected collision frequency is predicted.
—A roundabout analysed using CMFs from the HSM and TAC results in lower total, PDO, and fatal and injury annual expected collision frequencies.

Although there are some differences in the results, both analytical techniques indicate a significant reduction in fatal and injury collision frequency associated with converting the existing stop-controlled intersection to a roundabout. However, the application of a roundabout in a high-speed rural environment and the isolated nature of this intersection raise concern regarding driver expectation. Careful consideration of a system of speed management measures focused on reducing vehicle approach speeds would be required.</td><td>Medium-term</td></tr>
<tr><td>Convert stop controlled intersection to an RCUT alternative intersection configuration.</td><td>CMF</td><td>Research shows that a high percentage of crashes that take place on high-speed rural expressways occur at intersections with minor roads. One lower-cost alternative design for improving the safety of at-grade intersections on such expressways is the RCUT. In the last few years, the Missouri Department of Transportation has converted some two-way stop controlled (TWSC) intersections into RCUT. This study evaluated the effectiveness of the RCUT intersection design in Missouri utilizing field studies, a public survey, crash analysis, and traffic conflict analysis. The field studies collected detailed video data at an RCUT site and a control site. The crash analysis included a statistically rigorous empirical Bayes before-after safety evaluation of five RCUT sites in Missouri. The RCUT design resulted in a 34.8% reduction in crash frequency for all crashes and a 53.7% reduction in crash frequency for all injury and fatal crashes. Both reductions were significant at the 95% confidence level. Annual disabling injury crashes and minor injury crashes decreased by 86% and 50%, respectively. None of the five sites exhibited a fatal crash following RCUT implementation. This five-site analysis showed that annual right angle crashes decreased for 80%. One of the most severe crash types, the left turn, right angle crash, was completely eliminated by the RCUT.</td><td>CMF Clearinghouse: Edara, P., C. Sun, and S. Breslow. "Evaluation of J-turn Intersection Design Performance in Missouri". Missouri Department of Transportation, December 2013.</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>Based on the research, the implementation of this treatment may provide 34.8% reduction in crash frequency for all crashes and 53.7% reduction for injury and fatal crashes. In addition, annual right angle crashes are expected to decrease by 80% and left turn, right angle crashes may be completely eliminated. The implementation of this treatment will require significant planning and analysis due to their cost and potential impacts on surrounding communities and developments. However, considering the potential safety benefits outlined above, this treatment should be considered as part of any future highway rehabilitation.</td><td>Medium-term</td></tr>
<tr><td>Convert stop controlled intersection to a MUT alternative intersection configuration</td><td>CMF</td><td>Research shows that MUTs can reduce crash severity by 30% to 60% (Michigan DOT n.d.). A safety evaluation by Rista et al. (2018) found that crash reductions were achieved with the MUT. Another safety evaluation of MUTs in Michigan found significant crash reductions for fatal/injury crashes at unsignalized MUTs, although there were more PDO crashes at higher volumes (Kay et al. 2019).

When the available CMF's are used, the MUT design resulted in a 36.7% reduction in crash frequency for all crashes and a 22.7% reduction in crash frequency for all injury and fatal crashes.</td><td>CMF Clearinghouse: Al-Omari, M.M.A., M. Abdel-Aty, J. Lee, L. Yue, and A. Abdelrahman. "Safety Evaluation of Median U-Turn Crossover-Based Intersections". Transportation Research Record, Vol. 2674 (7), (2020) pp. 206-218..</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>Based on the relatively small reduction in collision frequency and severity, when compared to the RCUT configuration discussed above, the implementation of this treatment option is considered to be less cost-effective. In addition, this configuration may not be the most effective in reducing or removing the most problematic conflicts at this intersection including through and left-turn movements from PTH 5.</td><td>Not recommended</td></tr>
<tr><td>Convert stop controlled intersection to a Jug-handle alternative intersection configuration</td><td>Literature Search</td><td>Research indicates that a jug-handle intersection exhibits lower collision rates (PDO, fatal, injury and head-on) than a conventional signalized intersection. It also exhibits a higher proportion of rear-end and PDO collisions and lower proportion of left-turn collisions when compared to a conventional intersection. Although there are several types of jug-handle configurations, the reverse jug-handle exhibits the lowest collision rate of angle and left-turn collisions, and the lowest number of total conflict points.</td><td>R. Jagannathan, MaryAnn Gimbel, Joe G. Bared, Warren E. Hughes, Bhagwant Persaud, and Craig Lyon, "Safety Comparison of New Jersey Jug Handle Intersections and Conventional Intersections," Transportation Research Record, No. 1953, pp. 187-200, 2006.</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>The implementation of this treatment option is considered to be less cost-effective. In addition, this configuration may not be the most effective in reducing or removing the most problematic conflicts at this intersection including through and left-turn movements from PTH 5.</td><td>Not recommended</td></tr>
<tr><td>Convert stop controlled intersection to an interchange.</td><td>CMF</td><td>Research shows that converting an at-grade intersection into a grade-separated interchange may reduce all collisions by 42% (CMF = 0.58) and fatal/injury collisions by 57% (CMF = 0.43).</td><td>CMF Clearinghouse: Elvik, R. and Erke, A., "Revision of the Hand Book of Road Safety Measures: Grade-separated junctions." (3-27-2007)</td><td>High</td><td>Should be corrected or the risk significantly reduced, even if the treatment cost is high.</td><td>While implementing an interchange at this intersection may decrease overall collisions, there are other factors to consider, including:
-The geometry of an interchange at this location would need to be further explored to determine viability.
- Currently, a signal is not warranted, which suggests that the volumes are too low to warrant an interchange as well.
- The high costs associated with an interchange may not justify the increased safety benefits, as there are alternative countermeasures with similar safety benefits that may be considered.

The implementation of this treatment will require significant planning and analysis due to their cost and potential impacts on surrounding communities and developments. However, considering the potential safety benefits outlined above, this treatment shouls be considered as part of any future highway rehabilitation.</td><td>Long-term</td></tr>
</table>

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
		Modify the highway alignment to provide an increased median width sufficient to accommodate storage of a B-Train. With the wide median, the intersection would operate as a two-stage crossing.	Literature Search	Findings from NCHRP 375 suggest that, at rural, unsignalized intersections, the frequency of collisions and undesirable driving behavior decreases as the median width increases. The NCHRP 650 also indicates that in general, four-legged, two-way-stop-controlled intersections on rural expressways are safer if the median is wider. It is indicated that this is most likely due to the fact that wider medians allow for two-stage gap selection (i.e., minor road left-turning or crossing vehicles can safely stop in the median area to evaluate the adequacy of the gap in expressway traffic coming from the right, thereby reducing the relative crash risk associated with these maneuvers). Median widening beyond the standard (up to 45m) is considered by some US states as a treatment when the projected minor road volumes are in the 800 vpd to 1,000 vpd range with a higher percentage of trucks.	Harwood, D., Pietrucha, M., Wooldridge, M., Brydia, R., Fitzpatrick, K. "NCHRP Report 375 Median Intersection Design" Transportation Research Board, Washington DC. (1995) NCHRP 650 - Median Intersection Design for Rural High-Speed Divided Highways, TRB 2010		High	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	Although relatively small reduction in collision frequency and severity is expected with this treatment, the provision of extra median storage will be beneficial to acomodate vehicles using the median as well to provide the follwing benefits: - emphasize the presence of the intersection - encourage interlocking left-turns in the median - provide opportunity for enhanced delineation and better positive guidance within the median Implementation of this treatment option would require careful consideration of the accommodation of heavy trucks turning left onto the through lanes from a stop.	Medium-term
Left Turns from PTH 1	**The negative offset of the PTH 1 left-turn lanes can create sightline obstructions.** The PTH 1 left-turn lanes have a negative offset which can limit sightlines for opposing left-turning vehicles. Large trucks occupying these left-turn lanes as they wait for the median to clear can also obstruct sightlines for other traffic crossing or waiting in the median.	Provision of slotted left-turn lanes with positive off-set.	CMF	This strategy is intended to improve safety by providing better visibility to drivers that are turning left. An FHWA study indicated a 33.8% reduction in all collisions and 35.6% reduction in fatal and injury collisions when the left-turn lane off-set was improved to a positive off-set at signalized intersections. No CMFs are available for unsignalized intersections.	CMF Clearinghouse: Persaud, B., C. Lyon, K. Eccles, N. Lefler, and F. Gross. "Safety Evaluation of Offset Improvements for Left-Turn Lanes." Report No. FHWA-HRT-09-035. Federal Highway Administration. Washington, DC. (June 2009)	High Priority	Moderate	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	Research suggests that this strategy is most effective when protected phasing for left-turn movements are in effect. Implementation of this countermeasure would be considered together with the option to signalize the intersection to achieve the greatest safety benefits.	Not recommended
		Implementation of an alternative intersection configuration	Subjective	Improve negative offset or remove the issue completely.			High	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	Consider as part of the installation of alternative intersection design.	Medium-term
	The length of the left turn deceleration lanes from PTH 1 is short. The distance provided may not be sufficient for drivers of heavy trucks to decelerate from 100 km/h to a stop. In addition, the westbound to southbound left turn lane taper is slightly sub-standard at 94.3m as opposed to the 100m taper length currently recommended.	Extend the left-turn deceleration lane and the taper.	Literature Search	The provision of a deceleration lane at this location would allow vehicles to exit the through travel lanes before applying their brakes. This may contribute to reduced speed differentials and risk of rear-end and sideswipe collisions at this location.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions	Low Priority	Moderate	Should be corrected or the risk reduced, if the treatment cost is low.	Considering the low risk associated with this treatment, this can be considered as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange.	Watch List
		Extend solid line and provide pavement markings.	Subjective	Provides improved positive guidance and discourages the misuse of these lanes.			Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
Left Turns from PTH 5	**There is no eastbound median left-turn acceleration lane.** No median left-turn acceleration lane is provided in the eastbound direction on PTH 1. As a result, southbound to eastbound left-turning vehicles merge directly into the high-speed mainline lane or use the shoulder to accelerate. This introduces a speed differential on the mainline lanes and an increased risk of collision. This is a particular concern for large trucks that generally take longer to accelerate and often merge at lower speed.	Provision of southbound to eastbound median acceleration lane.	Literature Search	Providing median acceleration lanes for left-turning traffic is a strategy that can be used to improve safety at two-way stop-controlled intersections by making it easier for left-turning minor road drivers to find acceptable gaps in traffic, providing additional median storage for left-turning minor road vehicles, allowing drivers to cross the near lanes without having to simultaneously assess gaps in the far lanes, and allowing traffic to merge at higher speeds and reducing speed differentials to allow mainline drivers to better anticipate the presence of a vehicle entering the roadway. In general, median left-turn lanes are expected to reduce right-angle, rear end and sideswipe collisions, but only if they are used properly (driver education and additional signage/markings may be necessary). NCHRP Report 650 noted a study conducted in Minnesota that examined the safety benefits of median left turn lanes at two-way stop controlled intersections on expressways. The study compared nine intersections with median acceleration lanes and eight intersections without acceleration lanes and found that median left-turn lane intersections had a 50% lower preventable collision rate, 77% lower same-direction sideswipe collision rate and 15% lower right angle collision rate. It also noted that 75% of the preventable collisions that occurred at the median left-turn lane intersections were caused by drivers that did not use the median left-turn lanes, suggesting that collisions could be further reduced if the median left-turn acceleration lane was used properly. Six of the median left-turn lane intersections had before-and-after collision data and found that the preventable collision rate reduced by 15%. The rear-end collisions were reduced by 40%, but the right-angle crashes increased by 57%.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions NCHRP Report 650, Median Intersection Design for Rural High-Speed Divided Highways	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	The review of collision history indicated that the majority of right-angle collisions occurred on the far side of the intersection, and that vehicles turning left from the median into the through lanes on PTH 1 is a concern. These collisions indicate that drivers may have difficulty assessing the speed of approaching vehicles and gaps in traffic in order to make the turning maneuver. Absence of a median left-turn lane in the eastbound direction of PTH 1 may be contributing to these collisions and the provision of this treatment should be considered as a short-term solution. The provision of this lane should be supported with proper signage and educational campaigns to educate drivers on how to properly use a median left-turn lane. Research has indicated that median left-turn lanes are expected to reduce right-angle, rear end and sideswipe collisions, but only if they are used properly (driver education and additional signage/markings may be necessary). MnDOT has developed an educational brochure to show drivers how to use median left-turn lanes.	Short-term
Right Turns from PTH 1	**The length of the right-turn deceleration lanes is short.** The right-turn deceleration lanes provided at this intersection feature a taper-type lane with a 40 km/h exit advisory speed. Vehicles were observed slowing down on the mainline lanes prior to entering the deceleration lane during the site investigation. This may result in speed differentials in advance of the intersection and an increased risk of rear-end collision. The review of current MTI standard TAC 2.3.8.5M suggest a 150m parallel lane with a 100m taper should be used at this location.	Provision of longer right-turn deceleration lanes (WB-NB and EB-SB) with taper aligning with MTI Standards.	Literature Search	The provision of a deceleration lane at this location would allow vehicles to exit the through travel lanes before applying their brakes. This may contribute to reduced speed differentials and risk of rear-end and sideswipe collisions at this location.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	Considering the low risk associated with this treatment, this can be considered as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange.	Watch List

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
Right Turns from PTH 5	**The length of the right-turn acceleration lanes is short.** Observations from the site investigation suggest that vehicles merge onto the mainline lanes at speeds much lower than the approaching mainline traffic. This can result in significant speed differential and an increased risk of collision.	Provision of longer right-turn acceleration lanes (NB-EB and SB-WB) with taper aligning with MTI Standards.	Literature Search	The provision of an acceleration lane at this location would provide trucks with more opportunity to accelerate and merge into the through lane at an appropriate speed. This may contribute to reduced speed differentials and risk of rear-end and sideswipe collisions at this location.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	Considering the low risk associated with this treatment, this can be considered as part of any future highway rehabilitation such as installation of alternative intersection design or an interchange.	Watch List
Proximity of Service Roads	**There is a potential for vehicle queues on PTH 5 to extend into the service road intersections.** Adjacent service roads, north and south of PTH 1, are located in close proximity to the main intersection (PTH 1 / PTH 5). The close proximity of these intersections (located within the right turn merge and diverge points and the main intersection area of influence) may cause conflicts between through traffic and vehicles turning to/from the service road, especially if there are northbound or southbound queues at the intersection. During the site visit, queues were occasionally observed to extend to the service roads when there were limited gaps available in traffic on PTH 1. The proximity of these intersections may also distract PTH 5 drivers' attention from the PTH 1 intersection.. **The right-turn merge tapers from PTH 1 extends through the service road intersections.** The merge tapers from PTH 1 right-turn lanes onto PTH 5 extend through the service road intersections north and south of the main intersection. As a result, vehicles slowing or stopping to turn left or right from PTH 5 onto the service road at these locations may not be anticipated by drivers approaching from behind. This may contribute to an increased risk of rear end and sideswipe collisions at these locations.	Realignment of the service roads to increase the separation between the intersections.	CMF	The quality of the available CMFs is poor. The CMFs suggest that the closure or complete relocation of all driveways from the functional area of an intersection may reduce all collisions by 7% in urban areas; A CMF for rural areas is not available. Generally, realigning the service road to provide additional separation from the intersection should improve operations and may reduce conflicts between traffic queuing on the side road. However, traffic volume on the service road is anticipated to be very low and no collision history was recorded to be related with this access.	CMF Clearinghouse: Lall et all., "Analysis of Traffic Accidents within the Functional Area of Intersections and Driveways." TRANS-1-95, Portland, Ore., Portland State University, Department of Civil Engineering, (1995)	Low Priority	Moderate	Should be corrected or the risk reduced, if the treatment cost is low.		Watch List
PTH 5 Shoulder	**Portions of the PTH 5 shoulder are narrow and a 0.8m partially paved shoulder is not provided.** The shoulders on PTH 5 are constructed with a 2.0m to 3.0m wide fully gravel surface. The current MTI standards would recommend a 2.5m wide shoulder with a 0.8m partially paved strip for these shoulders. This would improve vehicle stability if a vehicle left the travel lanes.	Provision of paved shoulders on PTH 5 following MTI standards.	Literature Search	Research suggests that there is a small safety benefit to paving existing unpaved shoulders. The magnitude of the benefit increases with increasing shoulder width.	Harwood, D.W., F.M. Council, E.Houer, W. E. Hughes, and A. Vogt, Prediction of the Expected Safety Performance of Rural Two-Lane Highways, Report No. FHWA-RD-99-207, Federal Highway Administration, 2000.	Low Priority	Moderate	Should be corrected or the risk reduced, if the treatment cost is low.		Watch List

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
Positive Guidance and Signage										
Intersection Conspicuity	**On PTH 1, there is little contrast between the mainline lanes and the intersection.** . **Advanced warning of the approaching intersection is limited.** **Sunlight glare may contribute to impaired driver vision at certain times of the day.** Given the east-west orientation of PTH 1, sunlight glare during the 30-minute period before sunset and after sunrise may contribute to impaired driver vision to the road ahead, making it more challenging to respond to potential hazards, such as slower moving vehicles that are either accelerating or decelerating at the PTH 5 intersection.	Improve conspicuity of the intersection and vehicles entering from the sideroad by installing a Dynamic Advance Intersection Warning Systems - VEHICLES ENTERING WHEN FLASHING (VEWF) warning signs with traffic-actuated flashers on the expressway approaches and in-pavement loop detectors on the minor roads.	CMF	The safety effectiveness of this strategy was examined at two locations in North Carolina and the results are summarized in the following table. Both sites experienced statistically significant reductions in overall annual crash frequency and, although the distribution of right-angle collisions remained high after the dynamic advance intersection warning systems were installed, the right-angle crash frequency was reduced at both locations. Furthermore, crash severity was reduced at both locations, demonstrating that this strategy can be an effective crash countermeasure, but given the limited number of sites and the shortcomings of the naïve before-after crash analysis methodology, definitive conclusions regarding the safety effectiveness of this strategy cannot be exclusively drawn from this study. Additional research suggests that with installation of a VEWF sign, a CMF=0.68 (reduction of 32%) can be expected for all collisions and a CMF=0.73 (reduction of 27%) can be expected for fatal and injury collisions. Based on the 29 collisions reported during the 2012-2021 study period, the implementation of VEWF sign would reduce the frequency of collisions from approximately 2.9 collisions/year to 1.9 collisions/year. Injury and fatal collisions would drop from 1.3 collisions/year to 0.9 collisions/year. **Overall Crash Frequency/Year**: –60* / –42* **Overall Crash Rate/mev**: –70 / –54 **Right-Angle Crash Frequency/Year**: –57* / –31 **Right-Angle Crash Rate/mev**: –67 / –45 **Fatal Crash Frequency/Year**: –50 / –100* **Fatal Crash Rate/mev**: –62 / –100 **Injury Crash Frequency/Year**: –60* / +11 **Injury Crash Rate/mev**: –70 / –11 *Statistically significant change at 90% confidence level (changes in crash rates were not tested).	CMF Clearinghouse: Maze, T., Hochstein, J., Souleyrette, R., Preston, H., Storm, R., "NCHRP Report 650: Median Intersection Design for Rural High-Speed Divided Highways." Transportation Research Board, Washington D.C., (2010). Evaluation of the Safety Effectiveness of "VEHICLE ENTERING WHEN FLASHING" Signs and Actuated Flashers at 74 Stop-Controlled Intersections in North Carolina, Simpson and Troy, 2013	High Priority	Moderate	Should be corrected or the risk significantly reduced, even if the treatment cost is high.		Short-term
		Install the Concealed or Unexpected Intersection (WA-11) sign that could be installed with continuous or active flashing beacons.	CMF	Research indicates that installing an advance intersection warning sign may result in a 35% reduction in right-angle collisions. Based on the 12 right-angle collisions reported during the 2012-2021 study period, the implementation of this countermeasure would reduce the frequency of right-angle collisions from approximately 1.2 collision/year to 0.78 collisions/year. Research also suggests that adding a flashing beacon to an advance warning sign generally results in a 62% reduction in right-angle related collisions. This countermeasure also reduces the number of all collisions by 20% during night or poor weather conditions.	Polanis, S. F., "Low-Cost Safety Improvements." Chapter 27, The Traffic Safety Toolbox: a primer on traffic safety, Washington, D.C., Institution of Transportation Engineers, (1999) pp. 265-272. BC CMF Guide 2008		Low	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	The provision of active flashing beacons is recommended. This treatment should be considered as an alternative to the countermeasure above	Short-term
Warning Signage	**No Divided Highway Ahead Warning Sign (WA-34) is provided on the PTH 5 northbound approach.** This sign is not provided on the PTH 5 northbound approach. This is a consistency issue.	Provide a Divided Highway Ahead Warning Sign (WA-34) on the northbound approach to the intersection.	Subjective	Provides improved positive guidance. Potential reduction in the risk of driver error.	N/A	Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
Guide Signage	**Guide signage on the eastbound and westbound approaches to the intersection are not consistent.** On the eastbound approach, both advance destination distance sign and destination direction signs are provided. On the westbound approach, only destination direction sign is provided. There are also numerous recreational and cultural interest type signage that create sign clutter that may reduce the effectiveness of key regulatory, warning and guide signs.	Guide signage on the approaches to the intersection should be reviewed to ensure navigational consistency is provided to drivers. Opportunities to reduce sign clutter should also be examined.	CMF	The quality of the available CMFs is poor. Although these CMFs suggest that there is little change in the level of road safety performance associated with improved signage, it is our opinion that providing clear and concise advanced warning of an uncommon intersection configuration is required from both a liability and driver expectation standpoint. **Category:Signs** **Countermeasure:** Install improved advance freeway guidance signage CMF: 1.07, CRF(%): -7, Quality: ★★☆☆☆, Crash Type: All, Crash Severity: All, Roadway Type: Principal Arterial Other Freeways and Expressways, Area Type: Rural CMF: 0.69, CRF(%): 31, Quality: ★☆☆☆☆, Crash Type: Angle, Crash Severity: All, Roadway Type: Principal Arterial Other Freeways and Expressways, Area Type: Rural CMF: 2, CRF(%): -100, Quality: ☆☆☆☆☆, Crash Type: Rear end, Crash Severity: All, Roadway Type: Principal Arterial Other Freeways and Expressways, Area Type: Rural	Maze, T., Hochstein, J., Souleyrette, R., Preston, H., Storm, R., "NCHRP Report 650: Median Intersection Design for Rural High-Speed Divided Highways." Transportation Research Board, Washington D.C., (2010).	Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
PTH 1 Speeds	**The 100 km/h speed reduction zones are long with no additional enforcement.** A speed limit reduction zone (reduction from 110 km/h to 100 km/h) is introduced on PTH 1 in both the eastbound and westbound directions due to the presence of a rail crossing west of the PTH 1 and PTH 5 intersection. These speed reduction zones are long (approximately 5.5-5.6 km in length), and no speed management is provided to promote and reinforce the reduced speed within these zones. As a result, the effectiveness of the speed reduction zones may be limited.	A follow-up speed survey be conducted to confirm the speed zone effectiveness and driver compliance. If observed speeds are significantly greater than the posted 100 km/h limit, the provision of a system of speed management measures such as speed feedback signs or cross-sectional measures on the approach to the speed reduction zones should be considered.	Subjective	Reducing speed on the approach to the intersection. Improving compliance with posted speed limit. In general, with lack of changes to the cross-section elements or the “road message”, drivers are unlikely to reduce their speed substantially in response to a lower speed limit sign only. One low-cost measure that has been demonstrated to help reduce speeds is the use of optical speed bars at progressively reduced spacing to give drivers the impression of increased speed which encourages them to reduce their speed. These are typically applied over a distance of 200m to 400 m in the area between the advance and reduced speed limit sign. This treatment increases the rate of compliance by 20% . The treatment has been shown to be most effective in locations with unfamiliar drivers. In conjunction with the optical speed bars, speed feedback signs placed above speed limit signs can be effective at reducing driver speeds. Research shows that, on average, a decrease in mean speeds of up to 17 km/h can be expected with application of this treatment. It also indicates that the treatment is most effective in reducing the high-end speeds, i.e., the speeds for vehicles traveling over the posted or advisory speed limit.	NCHRP Report 737, 2012. CMF Clearinghouse: Hallmark et al., 2015.	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	A follow-up speed survey be conducted to confirm operating speeds at the intersection and to confirm the need for enhanced system of speed management measures Human factors guidance should be sought when selecting the most appropriate system of speed reduction measures.	Short-term

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
PTH 5 Speed reduction zone	**Posted speed on PTH 5 is 100 km/h and no speed reduction zone is provided on the approaches to the stop-controlled intersection.**	Consider for further review a speed reduction on PTH 5 as part of MTI's ongoing initiative to develop systemic response plans for intersections.	Subjective	Reducing speed on the approach to the intersection. Improving compliance with posted speed limit. In general, lack of changes to the cross-section elements or the "road message", drivers are unlikely to reduce their speed substantially in response to a lower speed limit sign only. One low-cost measure that has been demonstrated to help reduce speeds is the use of optical speed bars at progressively reduced spacing to give drivers the impression of increased speed which encourages them to reduce their speed. These are typically applied over a distance of 200m to 400m in the area between the advance and reduced speed limit sign. This treatment increases the rate of compliance by 20%. The treatment has been shown to be most effective in locations with unfamiliar drivers. In conjunction with the optical speed bars, speed feedback signs placed above speed limit signs can be effective at reducing driver speeds. Research shows that, on average, a decrease in mean speeds of up to 17 km/h can be expected with application of this treatment. It also indicates that the treatment is most effective in reducing the high-end speeds, i.e., the speeds for vehicles traveling over the posted or advisory speed limit.	NCHRP Report 737, 2012. CMF Clearinghouse: Hallmark et al., 2015.	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	The risk associated with this issue is low. MTI may want to consider addressing this issue as part of the ongoing systematic response plan that would be consistent with other similar locations. Human factors guidance should be sought when selecting the most appropriate system of speed reduction measures.	Watch List
PTH 5 Stop Sign Compliance	**The results of the video analysis suggest a reduced level of compliance with the Stop signs on PTH 5, particularly for the southbound left turn movement.**	The implementation of an alternative intersection configuration.	Subjective	Improved compliance		High Priority	High	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	This can be considered as part of any future highway rehabilitation such as installation of alternative intersection design or a interchange.	Medium-term
PTH 1 Pavement Markings	**The solid line pavement markings on PTH 1 between the mainline travel lanes and the left-turn lanes in advance of the intersection are short.** The solid line pavement markings provided between the mainline travel lanes (including the left-turn lanes) immediately in advance of the intersection (on both eastbound and westbound approaches) are short. This may encourage drivers to perform a passing manoeuvre in advance of the intersection.	Extend solid line pavement markings to discourage passing on the immediate approach and within the intersection.	Subjective	Provides improved positive guidance and discourages passing maneuvers on the immediate approach and within the intersection.		Medium Priority	Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	Address as part of routine maintenance.	Maintenance
	Limited positive guidance (signs or pavement markings) is provided for the left-turn lanes on PTH 1. The median left-turn acceleration lane provided in the westbound direction is currently delineated with dashed lines, which may encourage drivers to merge into the high-speed mainline lane directly or shortly after entering the acceleration lane. This results in significant speed differentials and potential for high-severity conflicts at this location. One sideswipe collision between a northbound left-turning vehicle and westbound through lane was identified in the collision analysis.	Provision of a solid line pavement markings at the beginning of the acceleration lane.	Subjective	Provides improved positive guidance. Potential reduction in the risk of driver error.		Medium Priority	Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	Address as part of routine maintenance.	Maintenance
Signage Specific for Median Acceleration Lane	**The effectiveness of the advanced signage for the northbound to westbound median left-turn acceleration lane is limited.**	Review signage content (including text size) and location and improve as necessary to ensure drivers are able to easily read and understand the sign.	CMF	The quality of the available CMFs is poor. The CMFs suggest that there is little change in the level of road safety performance associated with improved signage, however, it is our opinion that providing clear and concise advanced warning of an uncommon intersection configuration is required from both a liability and driver expectation standpoint. This type of signage has also been used at other locations in Manitoba with left-turn acceleration lanes.	Maze, T., Hochstein, J., Souleyrette, R., Preston, H., Storm, R., "NCHRP Report 650: Median Intersection Design for Rural High-Speed Divided Highways." Transportation Research Board, Washington D.C., (2010).	Medium Priority	Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.	The provision of this lane should be supported with proper signage and educational campaigns to educate drivers on how to properly use a median left-turn lane. Research has indicated that median left-turn lanes are expected to reduce right-angle, rear end and sideswipe collisions, but only if they are used properly (driver education and additional signage/markings may be necessary). MnDOT has developed an educational brochure to show drivers how to use median left-turn lanes.	Short-term
Median Yield Sign Location	**The yield signs in the median are located at an increased offset from the travel path. This may reduce their effectiveness.**	Review the locations of yield signs to reduce the sign offset	Literature Search	Provides improved positive guidance. Potential reduction in the risk of driver error.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions	Medium Priority	Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Short-term
		Implementation of an alternative intersection configuration.	Subjective			Medium Priority	High	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Medium-term
Limited positive guidance in the Median	**No positive guidance is provided in the median to help drivers position their and navigate through the median.** Due to the narrow median, no positive guidance is provided to help drivers navigate and position themselves in the median. This absence of positive guidance contributes to an increased risk of collision. The review of video footage as part of the video conflict analysis indicated that some drivers may be confused regarding who has the right-of-way between vehicles using the median and vehicles proceeding through the median from PTH 5.	Provision of median delineation and pavement markings.	Subjective	Provision of median delineation and pavement markings to help improve positive guidance through and within the median to reduce the risk of driver error. However, such application may not be appropriate for narrow medians.		High Priority	Moderate	Should be corrected or the risk significantly reduced, even if the treatment cost is high.	Adding lane markings in the median may be challenging considering the narrow median width and should be explored further as part of alternative intersection configurations.	Not recommended
		Implementation of an alternative intersection configuration.	Subjective			High Priority	High	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Medium-term

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
Right-Turn from PTH 5 (yield sign)	**The right-turn acceleration lane geometry (in both eastbound and westbound direction) suggests to drivers that they should merge into traffic, while the yield signs suggests that drivers should yield to traffic.** This sends a mixed message to drivers and may contribute to speed differentials at this location. The provincial standard for signing this type of ramp should be confirmed to ensure appropriate signage has been provided.	The appropriateness of the yield sign at this location should be reviewed for compliance with the provincial standard requirements, and provision of merging roadways ahead sign (if the right-turn acceleration lanes are of sufficient length) should be considered to allow right-turning vehicles to safely merge into traffic.	No analysis was conducted as this item should be addressed as part of routine maintenance	Provides consistency and reduces the potential for speed differentials.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance. Sufficient right-turn acceleration lanes length should be ensured.	Maintenance
Truck Parking in Prohibited Locations	**Trucks are violating the existing "No stopping" signs at the intersection.** During the field review, trucks were observed parking on all corners of the intersection at the end of the channelized right-turn lanes, even though there is "no stopping" signage installed on all four corners. Trucks parked on the shoulder limit opportunities for evasive maneuvers at the end of the ramp merge.	Engage with the Manitoba Trucking Association and/or local trucking operations to determine why trucks are stopping in these locations and identify alternatives to prevent trucks from parking on the shoulders.	Subjective	Identify the need for truck stops or lay-bys, and potential alternatives to prevent trucks from parking on the shoulder at the end of ramps.		Medium Priority	Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Short-term
		Enforcement of the "no stopping" signage.	No analysis was conducted as this item should be addressed as part of routine maintenance	Improves driver compliance.			Low	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Short-term
Limited Intersection Illumination	**Conspicuity of the intersection and the PTH 1 left-turn lanes is limited at night.** The illumination at the intersection is limited and creates areas with shadows, which limits conspicuity when approaching the intersection on PTH 1 in both the eastbound and westbound directions. More specifically, direct illumination for the PTH 1 left-turn lanes and the median cross-over is not provided. The review of historical collision data indicated that 34% of collisions occurred during periods of reduced lighting levels.	Reevaluate existing illumination and enhance where necessary to improve the intersection conspicuity and reduce headlight glare from vehicles in the median.	Literature Search	Poorly illuminated intersections may result in increased levels of night-time collisions. The collision data for the study period (2010-2019) indicated that 39% of collisions occurred during reduced lighting levels.	NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions	Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Short-term
Headlight Glare	**Some headlight glare was observed from opposing traffic on both PTH 1 and PTH 5 approaches to the intersection. Of particular concern is glare from opposing PTH 5 traffic for the PTH 5 traffic that is using the median cross-over as it may impact driver perception of traffic conditions.**	Reevaluate existing illumination and enhance where necessary.	Subjective	Potential for reduced headlight glare.		Medium Priority	Moderate	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Short-term
A-pillar obstruction	**The vehicle A-pillars can obstruct the sightlines to approaching vehicles on PTH 1. This is a particular a problem when looking to the right when making a left turn.**	Implementation of an alternative intersection configuration.	Subjective			Medium Priority	High	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.		Medium-term
General Maintenance										
Deteriorated Pavement Markings	In general, line painting is deteriorated. As a result, delineation within the intersection is poor. This contributes to increased driver workload and risk of driver error.	Reapply line painting and pavement markings to improve positive guidance within the intersection.	No analysis was conducted as this item should be addressed as part of routine maintenance	Maintain positive guidance within the intersection.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
Signage Condition	Some signs on the approaches to the intersection were deteriorated, damaged, or exhibited poor reflectivity at night. This contributes to increased driver workload and risk of driver error.	Review signage for deterioration and reflectivity at the intersection. Replace signage that is in poor-fair condition or exhibits low reflectivity.	No analysis was conducted as this item should be addressed as part of routine maintenance	Ensure appropriate levels of sign reflection and conspicuity.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
Signage Posts	Several signs located within the intersection clear zone are mounted on a single 6x4 in (15x10cm) wooden post and are not equipped with shear holes. As such, these objects present a roadside hazard for errant vehicles.	All wooden posts with a dimension of 100 x 150 mm or larger should be drilled with shear holes.	No analysis was conducted as this item should be addressed as part of routine maintenance	Provides crashworthiness for roadside element.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance

Intersection Element	Road Safety Issue	Potential Countermeasure	Analysis Type	Potential Effectiveness	Source	Priority Level	Implementation Cost	Cost- Effectiveness	Discussion and Conclusions	Implementation Options
PTH 5 Rumble Strips	The transverse rumble strips on both PTH 5 approaches to the intersection are worn in the wheel paths and this impacts their effectiveness. MTI advised that the rumble strips were refurbished on August 10, 2023 (following the WSP site investigation).	The condition and design of the rumble strips should be reviewed and repaired/adjusted as necessary.	No analysis was conducted as this item should be addressed as part of routine maintenance	Improves treatment effectiveness.		High Priority	Low	Should be corrected or the risk significantly reduced, even if the treatment cost is high.		Short-term
Pavement Conditions	Pavement cracking and discontinuities within the intersection may impact drainage and lead to further deterioration.	The pavement condition of the approaches and intersection should be assessed to determine if patch repairs, rehabilitation, or replacement is warranted.	No analysis was conducted as this item should be addressed as part of routine maintenance	Consistent pavement condition.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
PTH 5 Shoulder Conditions	The shoulders on PTH 5 are deteriorated w and may drainage and vehicle stability.	Grading of existing shoulders to ensure smooth surface and to minimize pavement edge drop-offs.	No analysis was conducted as this item should be addressed as part of routine maintenance	Consistent shoulder condition.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance
Illumination Maintenance	Field observations during the nighttime review identified that one bulb on the double davit in the northwest corner of the intersection is no longer working.	Coordinate with Manitoba Hydro to replace the bulb that is no longer working on double davit in the northwest corner.	No analysis was conducted as this item should be addressed as part of routine maintenance	Consistent levels of illumination.		Low Priority	Low	Should be corrected or the risk reduced, if the treatment cost is low.	Address as part of routine maintenance.	Maintenance