Portland St and Eisener Blvd

MicroTraffic Video Diagnostic Findings and Recommendations

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Contents

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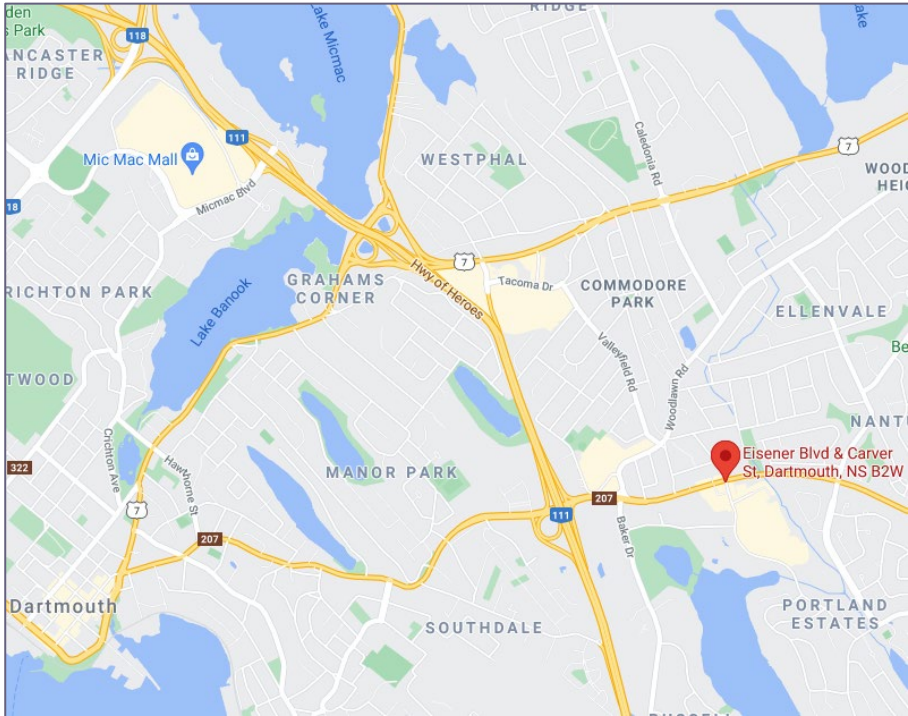
Intersection Overview

- Portland St and Eisener Blvd is located to the east of downtown Dartmouth, across the inlet from Halifax.
- Portland St (Highway 207) runs east from Highway 7 in downtown Dartmouth. Eisener Blvd extends north from the Portland Estates neighbourhood. Carver St. transitions to Eisener Blvd south of Portland.
- The land use surrounding the intersection is mixed, with commercial establishments in the southern quadrants and single-family residential areas in the northern quadrants.
- Video analytics indicates that the intersection is used by approximately 5 cyclists, 350 pedestrians and 44,700 vehicles per day (from 5:00-24:00). Note that the counts were completed in December when VRU volumes may be depressed.



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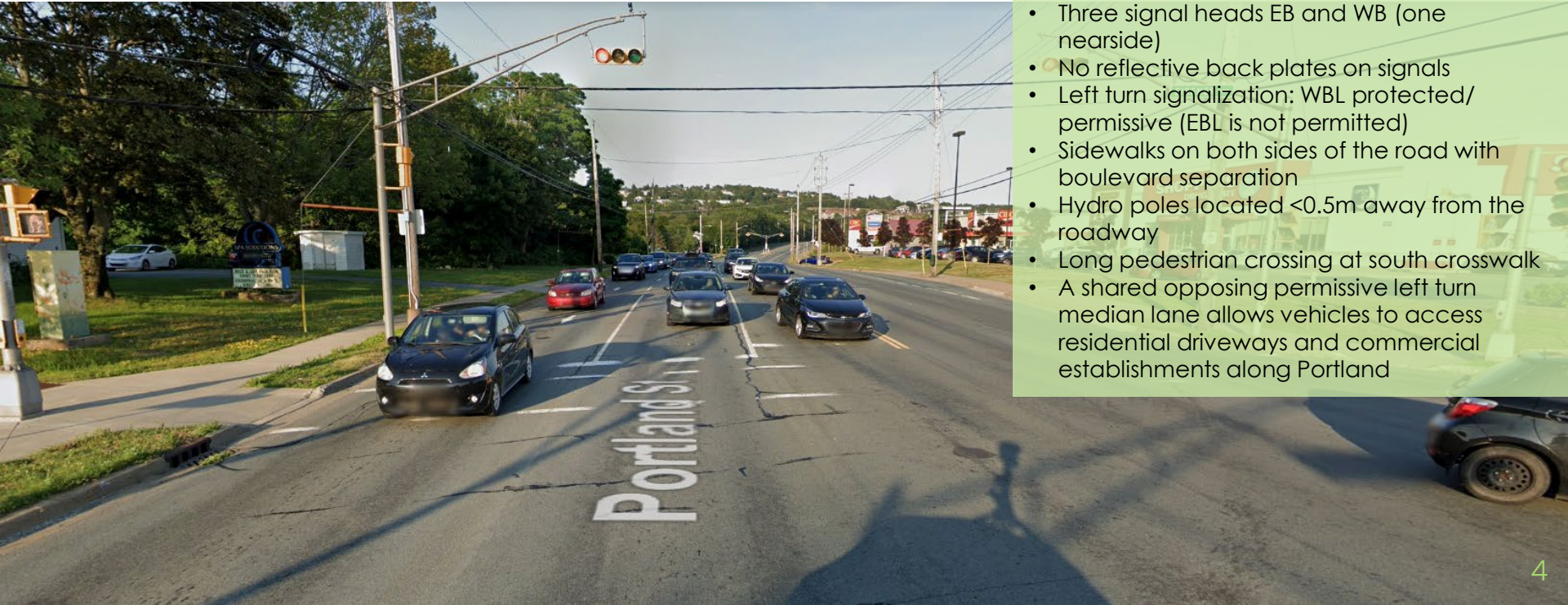
Portland St. Looking East



Portland St. Features:

- Two through lanes in each direction and a westbound left turn auxiliary lane
- Westbound lane designation is painted on the roadway, no advanced signage is provided
- Eastbound far-side and Westbound near-side transit stop/ pull outs
- 50 km/h posted speed limit
- Three signal heads EB and WB (one nearside)
- No reflective back plates on signals
- Left turn signalization: WBL protected/ permissive (EBL is not permitted)
- Sidewalks on both sides of the road with boulevard separation
- Hydro poles located <0.5m away from the roadway
- Long pedestrian crossing at south crosswalk
- A shared opposing permissive left turn median lane allows vehicles to access residential driveways and commercial establishments along Portland

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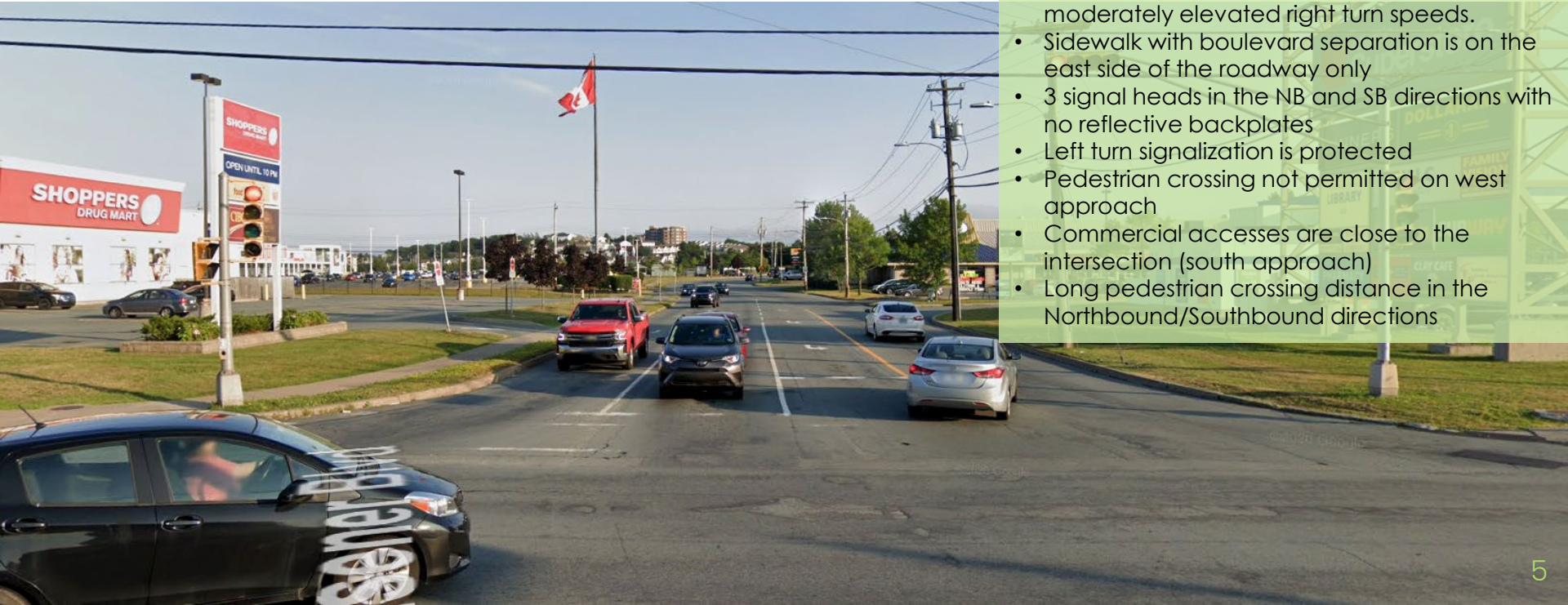
Eisener Blvd. Looking South



Eisener Blvd. Features:

- Northbound: through movements are not permitted (one way southbound). Two left turn lanes and one right turn lane
- Southbound: One left turn lane and one shared through and right turn lane
- 50 km/h posted speed limit
- Turn radii of approximately 9 m (estimated from Google Earth) for SBR and NBR allow for moderately elevated right turn speeds.
- Sidewalk with boulevard separation is on the east side of the roadway only
- 3 signal heads in the NB and SB directions with no reflective backplates
- Left turn signalization is protected
- Pedestrian crossing not permitted on west approach
- Commercial accesses are close to the intersection (south approach)
- Long pedestrian crossing distance in the Northbound/Southbound directions

Shared opposing travel permissive left turn lanes requires drivers to find appropriate gaps in high WB/EB traffic volumes

A 90 degree crossing angle could reduce pedestrian crossing length

Turn radius influences turning speeds and pedestrian crossing distance

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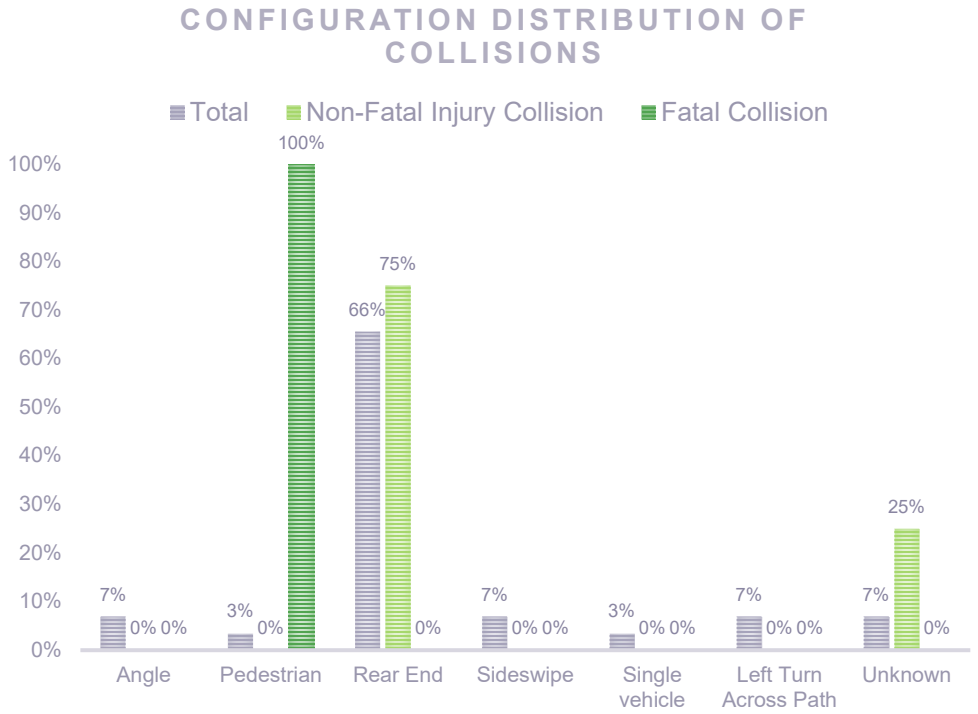
Collision Analysis

- The provided collision data included 29 collision records from January 1, 2018 to April 12, 2021. Of the 29 records, 14% (4) were classified as non-fatal injury collisions, 3% (1) as a fatal collision, and 83% (24) as property damage only collisions.
- The collisions were classified into the general descriptions shown in the adjacent figure based on the initial impact type and provided directional information.



The collision data revealed the following key points:

- The fatal collision involved a northbound-right vehicle and a pedestrian travelling from east to west on the south crossing (Eisener Blvd). The driver failed to yield to the pedestrian with the right-of-way.
- Rear End collisions represent 66% of total collisions and 75% of the non-fatal injury collisions. Of the known directions, the distribution was 60%, 13%, and 27% for Eastbound, Westbound and Northbound respectively.

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Video Conflict Analysis – VEH-VEH

- Left-turning vs through from left and through vs through conflicts were not detected during the 50-hour analysis period. Several of these conflict configurations are not applicable due to the southbound one way.
- These conflict types often occur at the end of a signal phase at relatively low through vehicle speeds.
- Signal violations are typically infrequent events, although when they do occur, they can have a high severity.

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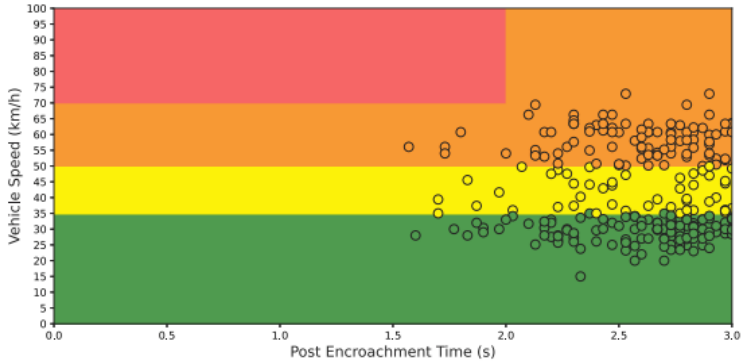
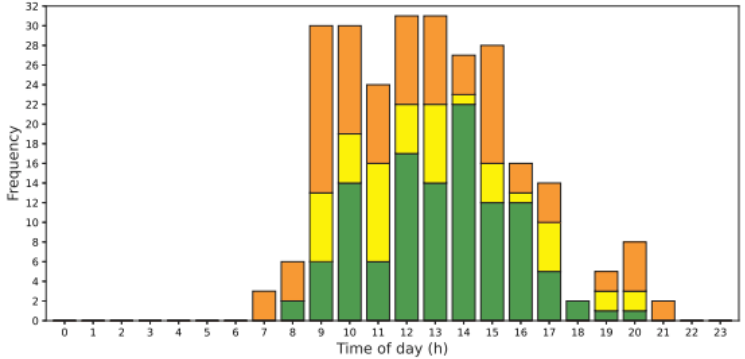
Video Conflict Analysis – VEH-VEH

- Several left turn across path conflicts were detected during the 50-hour analysis period, as follows:
  - 9 North-Left vs South-Through conflicts
  - **257 West-Left vs East-Through conflicts**
  - North-Through and East-Left movements are not permitted, therefore these LTAP configurations were not measured.
- The signalization is protected/permissive for WBL and protected-only for NBL.
- 93 high-risk West-Left vs East-Through conflicts were detected during the 50-hour analysis period. It is estimated that there will be approximately 15,570 high-risk events annually.
- The NBL vs SBT events occurred at the end of the protected left turn signal phase. These conflicts took place at low speeds and were low-risk interactions. Most of these conflicts occurred when there was WB traffic queues preventing NBL vehicles from clearing the intersection (refer to conflict clip on next slide).



West-left vs East-through data shows a high frequency of detected conflicts over a 50-hour period. Several conflicts occurred with through vehicle speeds exceeding the 50 km/h posted speed limit (up to 75 km/h).

At impact speeds of 50 km/h, opposing drivers have a 40% chance of a severe injury (MAIS 3+), which increases to >90% at 75 km/h.



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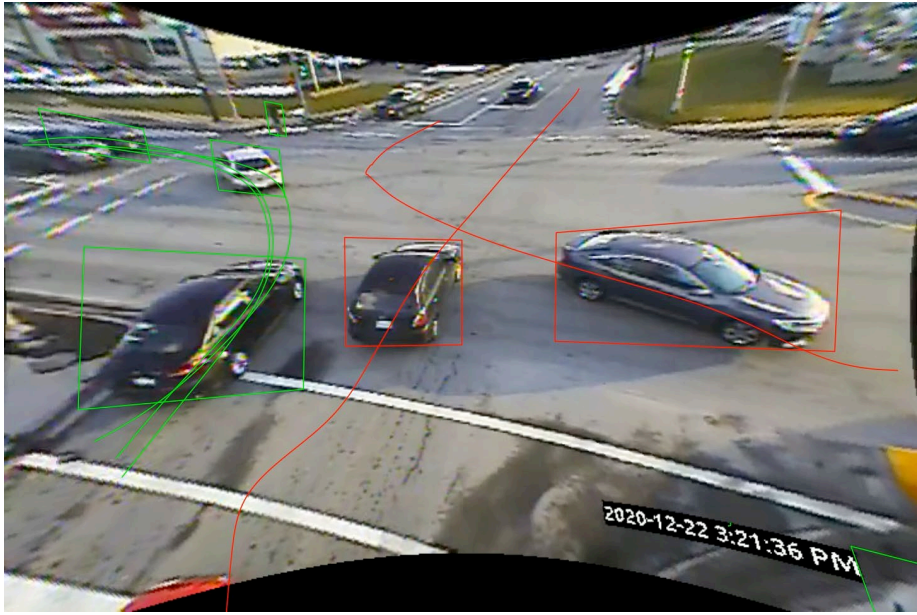
Video Conflict Analysis – VEH-VEH

West-Left vs East-Through: PET= 1.6s, vehicle speed 56 km/h



North-Left vs South-Through: PET= 2.8s, vehicle speed 20 km/h

Multiple NBL vs SBT conflict clips show a queue of WB vehicles that prevent the NBL vehicles from clearing the intersection during the protected left turn phase.

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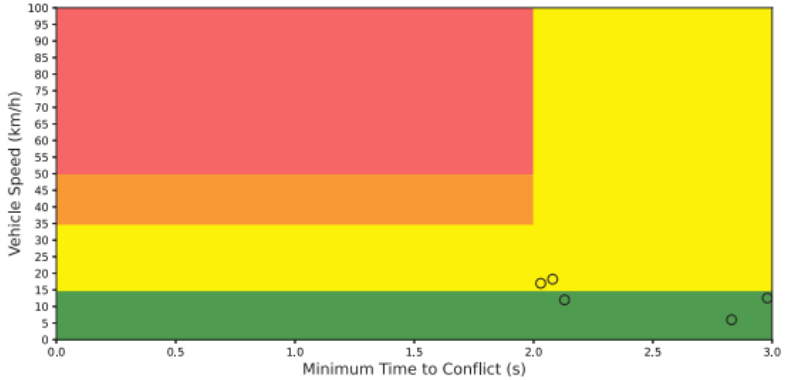
Video Conflict Analysis – VEH-VRU

- Near-side VRU conflicts were not measured due to camera placement and limited approach view.
- No cyclist conflicts were detected during the 50-hour analysis period. However, the video collection occurred in December and the 24-hour cyclist counts indicate a very low volume of cyclists crossing the intersection.
- 5 pedestrian east-right hook conflicts were detected during the 50-hour analysis period. No other pedestrian conflict configurations were detected.



Pedestrian East-Right Hook conflict data show conflicts occurring with through vehicle speeds of nearly 20km/h.

At impact speeds of 20 km/h, pedestrians have a ~10% chance of a severe injury (MAIS 3+).

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Video Conflict Analysis – VEH-VRU

- Due to high right turn radius, vehicles can complete turns at higher speeds, exposing crossing vulnerable road users to increased risk when crossing

Pedestrian East-Right Hook: T2 = 2.0s, vehicle speed: 18 km/h

Key Issues and Recommendations

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Key Issue	Recommendation
Pedestrian safety: • The fatal collision involved a northbound-right vehicle and a pedestrian. • 5 east-right hook conflicts were detected during the 50-hour analysis period. • Pedestrians are exposed to longer crossing distances due to skewed crossings. The right turn influence vehicle turning speed and risk level to pedestrian in a collision. • General improvements to pedestrian safety and visibility would be valuable at this location given its collision history and the desire lines from residential homes north of the intersection to access commercial establishments south of the intersection.	• Curb radius reductions • No right turn on red (to go with radius reduction especially if this pushes turn into 2nd receiving lane) • Zebra markings • Tactile surfaces on directional curb cuts • 90 degree crossing alignments • Leading pedestrian intervals
Speeds: • 93 high-risk conflicts (impact vehicle speed >50 km/h) were detected during the 50-hour analysis period. The open cross section and arterial environment along Portland may contribute to high-speed trends.	• Speed moderation techniques should be considered along this corridor (corridor-level speed management strategy), especially given the surrounding land use (residential driveway accesses, etc.).

Key Issues and Recommendations

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Key Issue	Recommendation
Left Turn Across Path: • A high volume of vehicles use Portland (>13,000 veh/day in each direction) • Frequent high-risk conflicts were detected for WBL vs EBT. These events show the high speed of oncoming EB drivers and the potential difficulty in finding appropriate gaps in traffic to complete permissive WBL turns. • This high level of driver workload and focus on gap acceptance may result in drivers neglecting to check for VRUs using the south crossing prior to initiating their left turn. • Frequent uncontrolled commercial accesses along Portland present the same exposure to LTAP collisions. • Several low-risk NBL vs SBT conflicts were observed at the end of the protected NB left turn phase. In most cases these were due to queues of WB vehicles preventing left-turning vehicles from clearing the intersection. It is unknown what the cause of congestion is and how far the WB congestion extends along Portland.	Convert WBL to protected only or extend protected portion of protected permissive phase. Consider corridor level strategies for access management that limit uncontrolled cross median movements Check and potentially extend all red clearance interval for NBL and SBT.
Rear ends: • The primary collision type was Rear End collisions (66% of total and 75% of non-fatal injury collisions). These were primarily in the Eastbound and Westbound directions. • High EB/WB speeds and traffic queues are likely contributors to these collision trends.	• Corridor level speed management strategy for Portland. • High friction surface treatments may be considered on a systemic basis for HRM where rear-end crashes are elevated.