



SCHOOL CROSSING GUARD WARRANT EXPOSURE INDEX

FINAL REPORT

December 2022



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Annex I: Spring Vaughan SCG Report

Annex II: Fall Vaughan SCG Report

EXECUTIVE SUMMARY

True North Safety Group (TNS) was retained by the City of Vaughan ('the City') for the development of an Exposure Index (EI) for the City's School Crossing Guard Program. The EI thresholds are used in part to check whether an intersection approach is warranted for the presence of a school crossing guard (SCG). The EI method is a warrant application process requiring traffic data collection and threshold development for each type of crossing facility. A total of 115 locations, including 79 all-way stop-controlled intersections, 11 signalized intersections, 12 minor-street stop-controlled intersections, 5 intersection pedestrian signals, 3 midblock pedestrian signals, 4 uncontrolled midblocks, and 1 roundabout with existing SCGs were identified for the development of EI thresholds.

As part of this project, there were two traffic data collection periods. These periods were the Spring of 2022 (before school closure for the summer) and the Fall of 2022 (after the reopening of school in the new academic year).

The detail findings related to the traffic data collected during the Spring of 2022 and Fall of 2022 are annexed as two separate technical reports to this final report. This report summarizes the overall findings based on the results obtained from the two data collection efforts in the Spring and Fall. Also, this report provides an action/ monitoring plan for each SCG location.

Data Collection

Turning movement counts were collected by video and counted manually at each existing SCG location. Ontario Traffic Incorporated (OTI) was responsible for the traffic data collection. The turning movement counts were provided in 5-minute intervals. For each count, the traffic volumes were classified based on the following categories: cars, trucks, assisted children, unassisted children, and children cycling/on scooters (micro mobility users).

Exposure Index, Priority Levels, Risk Levels, and Actions

The application of the EI method consists of two phases. The initial phase is to develop the thresholds for each crossing facility. The second phase is to use the EI method to evaluate locations for potential SCGs. The thresholds were developed for the controlled crossings (i.e., all-way stop controlled, traffic control signals, minor-street stop controlled, intersection pedestrian signals, and midblock pedestrian signals) and for uncontrolled midblock crossings.

The developed thresholds were used to evaluate if an SCG is warranted for the following two categories of locations:

- ▶ The crossings with existing SCGs; and
- ▶ The other approaches (legs) of existing crossings—the non-SCG approaches of an existing SCG location.

Further, different priority levels were defined to identify where each crossing is placed in comparison to the EI threshold (i.e. far above, moderately above, slightly above, slightly below, moderately below, or far below the EI threshold).

Within each priority level, higher risk level is assigned to sites where one of the following criteria is met:

- ▶ Posted speed of more than 50 kilometres/h (km/h) on the subject approach of the intersection.
- ▶ 85th percentile speed over the posted speed of the subject approach of the intersection.
- ▶ Collisions between 2016 and 2021 were recorded at the site.
- ▶ Students crossing more than 4 travel lanes.
- ▶ Sites with restricted visibility due to obstructions that cannot be addressed with minor upgrades (i.e., trimming of vegetation, installation of signs, etc.).

Additionally, at the City's request, a threshold of 40 assisted/ unassisted students was implemented to identify the SCG as warranted, regardless of the number of vehicles.

Ultimately, based on the identified priority levels and the risk levels, different actions were defined and assigned to each crossing considering both the Spring and Fall data collection periods:

- ▶ For the existing crossings, the recommended actions are:
 - **No change:** the City should keep SCGs at all sites with an EI above the threshold, and higher risk sites with an EI that is below the threshold.
 - **Monitor:** for sites that are below the threshold, the City should keep the SCG but monitor the traffic volumes at the intersection. If the EI continues to be below the EI threshold, the City should consider removing the SCG.
- ▶ For the non-SCG locations (legs without SCG), the recommended actions are:
 - **Candidate approaches for SCG:** approaches where SCGs should be considered by the City. The candidate sites for SCGs are all approaches with an EI above the threshold, and approaches with an EI slightly/moderately below the threshold but with a high risk level.
 - **Not a candidate approach for an SCG:** approaches that should not be considered by the City for SCGs. The locations where SCGs should not be considered by the City include sites that are lower risk with an EI that is below the EI thresholds or sites with an EI far below the threshold.

An action plan was developed for the existing SCG sites, based on the results obtained from the analysis of the existing SCGs in Spring and Fall of 2022. For this purpose, the recommended actions from Spring and Fall 2022 and the risk level of each existing SCG site were considered, and an overall action (i.e. No Change vs. Monitor) for monitoring was developed. The table below provides the monitoring plan as well as the number of

sites that fall within each category of the plan. Based on this table, the decision for 120 locations is to continue with the status quo (No Change). The rationale behind this decision is that the locations have been consistently warranted based on the EI methodology for both data collections or the locations were warranted based on the Fall data collection and they were higher risk locations. 10 locations are recommended for monitoring in Spring and Fall of 2023, 4 locations are recommended to be counted only in the Spring of 2023. 120 locations out of 134 existing SCG sites are recommended to remain unchanged.

Spring Action	Fall Action	Location Risk Level	Overall Action	Timeline	No. of SCG Locations
Monitor	No change	Lower risk	Monitor	Spring count (2023)	4
		Higher risk	No change	No change	4
No change	Monitor	Lower risk	Monitor	Spring & Fall counts (2023)	1
		Higher risk	No change	No change	1
Monitor	Monitor	Lower risk	Monitor	Spring & Fall counts (2023)	9
		Higher risk	No change	No change	5
No change	No change	Lower risk/ Higher risk	No change	No change	110
Total					134

Site Inspections

In the Spring of 2022, on-site field investigations of each SCG location were conducted. In the Fall of 2022, field investigation of each SCG location was conducted during the SCG shift time. For selected locations, the review was conducted through on-site field investigation at SCG shift time, and for the remaining sites the investigation was conducted by reviewing the videos during the SCG shift times. The selected sites were existing crossings that were identified as part of the Spring 2022 study to be higher risk locations but below the EI thresholds.

The key field observations identified at the existing crossing included the following:

- ▶ **Vehicles parked within less than 15 metres (m) of the crossing:** at some locations motorists were observed parked near the crossing. Stopping prohibition signs at the intersection should be installed. Note that this

remedial measure was identified as part of the field investigations conducted during the Spring of 2022.

- ▶ **Illegal stopping/parking:** although stopping prohibition signs are currently installed at the intersection, motorists are stopping near the crossing and obstructing the visibility of pedestrians. Enforcement of the parking regulations should be increased and dashed pavement markings on the intersection northwest corner should be painted. Also, implementing physical changes such as curb extensions may be considered when a major road rehabilitation is planned to restrict parking at the crossing and improve visibility of pedestrians.