The Corporation of the Town of Milton

Report To:	Council
From:	M. Paul Cripps, P. Eng., Commissioner, Engineering Services
Date:	August 12, 2019
Report No:	ENG-023-19
Subject:	Placement of School Crossing Guards Policy
Recommendation:	**THAT Council endorse the Placement School Crossing Guards Policy;** **AND THAT the Commissioner, Engineering Services be given delegated authority to update and implement the Placement of School Crossing Guards Policy, including establishing new crossing guard locations and the removal of crossing guard locations.**

EXECUTIVE SUMMARY

As a result of continued growth in the Town of Milton and the opening of a number of new elementary schools, the Placement of School Crossing Guards Policy is required to ensure requested locations are reviewed using the same warrant process. The attached policy (see Appendix A) sets out minimum vehicular and pedestrian volumes for all types of adult school crossing guard locations. This policy enables the Town of Milton to have a transparent process that shows consistency of application to all sites.

REPORT

Background

School crossing guards are used to assign right-of-way for pedestrians, primarily children, at locations with conflicting vehicular traffic. Currently, the Town of Milton does not have a formal policy for the placement of school crossing guards. In 1986, Council approved a warrant system that was obtained from a neighbouring municipality.

The current Town of Milton warrant works well for midblock locations but it does not work well for intersections that have all-way stops or traffic control signals. The existing warrant is based on a vehicle gap study and it is difficult to count accurate gaps in traffic flow when the stop sign/traffic control signal creates them. The difference between

perceived danger and actual danger is difficult to explain to the public and is therefore considered subjective.

In order to ensure that school crossing guards are placed at appropriate locations in the community a crossing guard policy, which includes a warrant system, is required.

The proposed policy and its warrant system for school crossing guards provides staff with a more sophisticated approach for analyzing these types of school crossings, which makes it easier for the public to understand.

Discussion

The role of a school crossing guard is to stop traffic for school aged children (JK-6) walking to and from school where sufficient naturally occurring gaps do not exist. Presently, there are 42 school crossing guards at 39 locations in the Town of Milton and five standbys.

In 2017, the Ontario Traffic Council (OTC) retained the services of a consulting firm to update the 2004 School Crossing Guard Guide. The Town of Milton, along with representatives from a number of municipalities throughout Ontario, sat on the committee to assist with the update. The updated OTC School Crossing Guard Guide recommends best practices and warrants for municipalities to use when determining location placements for school crossing guards.

The warrant combines engineering principles, observation and judgement as a basis for data collection. The warrant also takes into consideration vehicle and pedestrian volumes during the key times around school entrance and dismissal. The 2017 OTC School Crossing Guard Guide recommends a gap survey for mid block/minor stop controlled locations and an Exposure Index for all-way stops and traffic control signal locations.

As a result of the updated School Crossing Guard Guide developed by the OTC, the attached Placement of School Crossing Guards Policy (Appendix A) has been developed based on best practices across Ontario. The policy will provide a consistent method of evaluating existing and newly requested locations to determine if a school crossing guard is warranted.

Included within the policy are specific minimum values for pedestrians and vehicular traffic volumes for a variety of crossing location types. These values were developed using the OTC Crossing Guard Guide.

The policy also contains information with respect to the process of requesting a school crossing guard, procedure for new school openings and steps for removal of a school crossing guard.

New crossing guard locations will be installed based on warrants being fulfilled, budget, staffing availability and seasonal restrictions.

The warrants contained in the policy have been applied to all existing school crossing guard locations as well as three new locations where requests were received during 2019.

If ENG-23-19 is passed by Council, the following changes will be made to our school crossing guard program:

1. New school crossing guards will be implemented at the following locations for school opening in September 2019:
    - Costigan Road and Miller Way – all-way stop
    - Costigan Road and Denyes Way – all-way stop
2. The existing school crossing guard at the intersection of Laurier Avenue and Commercial Street will be relocated as new traffic control signals have been installed at this location.
3. The existing school crossing guard at the intersection of Ontario Street and Laurier Avenue will be relocated as only four children are crossing at this intersection and there are low conflicting movements.
4. The existing school crossing guard at the intersection of Derry Road and Sauve Street will be relocated south on Sauve Street as there are now sidewalks existing on the east side of the road, and a number of school aged children that either reside in the new condo buildings across from the school or are dropped off by parents are crossing midblock with insufficient gaps in traffic.

The Town is currently in the process of recruiting for crossing guard positions to fill a number of vacancies.

The intersection of Louis St. Laurent Avenue and Farmstead Drive has been reviewed on a number of occasions for the implementation of a school crossing guard. This intersection doesn't warrant a crossing guard, although there are a high number of school aged children crossing (many accompanied by an adult) and a low number of conflicting movements. Due to the high pedestrian volume, Engineering Services will be installing a Leading Pedestrian Interval (LPI) prior to school commencing. The LPI provides an advanced walk signal so that pedestrians begin to cross the road before vehicles get a green and it provides pedestrians an advantage over turning vehicles.

In August 2019, signal monitoring equipment will be installed at this intersection, which will allow traffic engineering staff to monitor the intersection from Town Hall and make adjustments to signal timings if required. Once the LPI has been installed and operational for a few weeks, staff will determine if southbound right turns should be prohibited during the LPI phase from 8:30 am – 9:00 am and from 3:15 pm – 3:45 pm on school days.

In Spring 2019, the following locations were reviewed and fall short of meeting the proposed warrants. In accordance to the policy, locations should be studied on three separate occasions to determine if they continue to meet warrants. Therefore, these locations will be further studied in Fall 2019 and Winter 2020:

Mid Block Locations

Location	**Exceeds Minimum Safe Gap Requirements**	**Meets Minimum Pedestrian Requirements** (40)	**Percentage of Warrant Met**
Bennett Boulevard and Hutchison Avenue	Yes	No	33%
Bennett Boulevard and Wickson Way	Yes	Yes	16%
Bolingbrook Drive W/of Vickerman Way	Yes	Yes	16%
Childs Drive and Clements Drive	Yes	No	16%
Coxe Boulevard and Pearen Drive	Yes	Yes	33%
Tupper Drive and Bussell Crescent	Yes	Yes	33%

Wilson Avenue S/of Woodward Avenue	Yes	No	0%
Woodward Avenue and Joyce Boulevard	Yes	No	0%

All-Way Stop Locations

Intersection	**Total Pedestrians** (Minimum 40 Pedestrians)	**Total Conflicting Movements**	**Threshold** (Minimum Threshold 8102)
Clark Boulevard and Bennett Boulevard	**33**	244	8052
Laurier Avenue and Coxe Boulevard	**34**	366	12,444
Thomas Street and Heslop Road	42	55	**2310**
Yates Drive and Holly Avenue	**39**	182	**7098**

Once all of the above locations have been reviewed, should the warrants still not be fulfilled, these crossing guards will be removed effective June 30, 2020.

Financial Impact

There is no financial impact associated with the 2019 crossing guard budget as all warranted locations will be staffed through a combination of relocation of existing crossing guards and recruiting to fill a number of vacant positions. The locations that do not meet the proposed warrants at this time will require further study in Fall 2019 and Winter 2020. Any savings identified as a result of these studies will be reported through the 2020 Quarterly Variance process.

The Corporation of the Town of Milton

Respectfully submitted,

M. Paul Cripps, P. Eng.
Commissioner, Engineering Services

For questions, please contact:	Heide Schlegl, Manager, Traffic or Valerie Lister, Coordinator Crossing Guards	905-878-7252 x2506/2130

Attachments
Appendix A – Placement of School Crossing Guards Policy

CAO Approval
Andrew M. Siltala
Acting Chief Administrative Officer

Purpose & Scope

This policy, in conjunction with the Ontario Traffic Council (OTC) Crossing Guard Guide, will be used to assist staff with the placement of school crossing guards. School crossing guards can be placed on all roadways within the urban boundary of Milton, with a posted speed limit of 60km/h or less as per the Ontario Highway Traffic Act Section 176.

A school crossing guard is a person 18 years of age or older who is directing the movement of persons across a highway by creating necessary gaps in vehicular traffic to provide a safe passage at a designated school crossing location and is employed and trained by the Town of Milton.

School crossing guards will only be provided to assist students when all of the following criteria are met:

- attend schools operating under the Halton District School Board, Halton District Catholic School Board and the French Language School Board;
- live within the school's walking boundaries;
- are in Grades Junior Kindergarten to Six

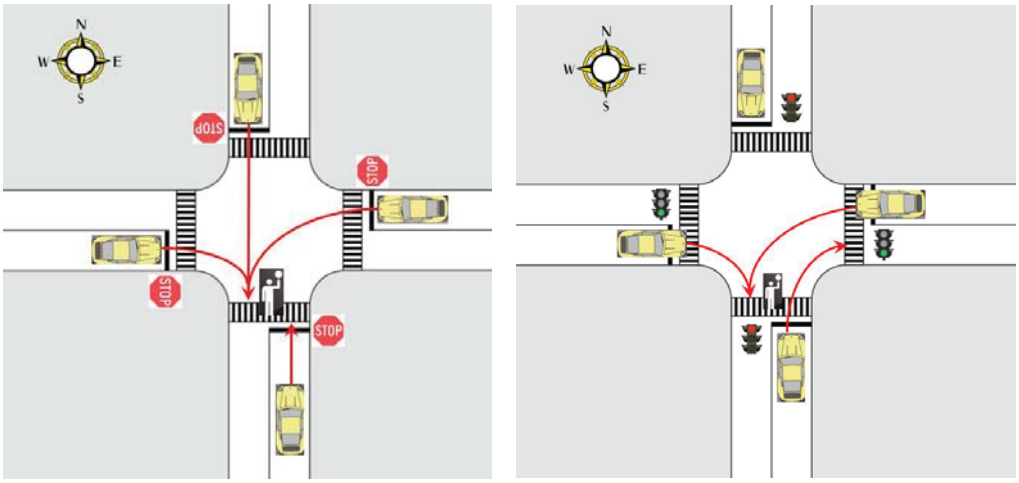
School crossing guards will be placed at warranted locations a minimum of 30 minutes before the morning bell time and 30 minutes after school dismissal. At school crossing locations directly in front of a school, these guards will remain in place an additional 5 minutes should there be late students. The bell times are provided by the appropriate school board.

School crossing guards can be placed at signalized intersections, all-way stops, minor street stop controlled or at mid-block locations where warrants have been fulfilled.

Definitions

85th Percentile: Calculated by plotting the product (conflicting vehicles multiplied by pedestrians) for all existing crossing guard locations. Based on the plotted locations, the 85th percentile is calculated and this is the exposure threshold value.

Conflicting Vehicles: A conflicting vehicular movement is one that interferes with or compromises the safety of the crossing students. The conflicting vehicular movements vary depending on the type of intersection, crossing or control where students are crossing.



All Way Stop and Signalized Examples - Conflicting Movements

Exposure Index: The Exposure Index method examines the level of interaction and conflict between vehicular and student pedestrian volumes. The Exposure Index method generates a graph based on historical trends at existing crossing guard locations. The graph is then used as a threshold for future crossing locations where a school crossing guard may be required. (See Appendix I)

Gap Study: Measures the elapsed time naturally occurring between vehicles, measured in seconds, as vehicles cross the intended study location. The gaps are recorded in five-minute intervals.

Safe Gap Time: A Safe Gap Time is the time required in a break within the traffic that permits students to cross the road safely. (See Appendix II)

Warrant: The criteria used to determine if a school crossing guard is warranted.

Requests for a School Crossing Guard

Requests from parents and schools must be submitted in writing addressed to the Engineering Services Department, Traffic Engineering. The request should indicate the applicable school, daily walking route, preferred intersection (including leg of intersection)/location where they are requesting that a school crossing guard be placed. Upon Traffic Engineering staff's review of the student scatter map provided by the appropriate school board, a more suitable location may be considered and studied.

Types of Studies Used to Determine Locations for School Crossing Guards

Appropriate studies to place a school crossing guard will be conducted at requested locations. All applicable studies will be conducted 30 minutes prior to school entrance times and 30 minutes following school dismissal.

If a school crossing guard is being considered, a site study will be conducted on a typical school day, Tuesday to Thursday with fair weather, to determine if the location is appropriate and if it meets the minimums for the applicable warrant.

The site study would include the following:

- The location's proximity to another traffic control device or existing school crossing guard;
- Number of students utilizing the crossing location;
- Existing sidewalks i.e. is construction complete or nearly complete in the area;
- Driver and pedestrian behaviour - is education or police enforcement required;
- Site lines - would the school crossing guard and children be clearly visible by traffic at this location;
- Parked vehicles - staff may be required to review area for parking/stopping prohibitions

In order for a school crossing guard to be warranted, all parts of the applicable warrants must be met. A three-year collision review will also be completed at all studied locations to determine if there is a collision pattern during school entrance and dismissal times.

Gap Study - Minor Street Stop-Controlled Intersections/Mid-Block Locations

A Gap Study measures the elapsed time naturally occurring between vehicles, measured in seconds, as vehicles cross the intended study location. The gaps are recorded in five-minute intervals.

At all locations where a Gap Study is performed, a Site Inspection Report will be completed (See Appendix III). All components of the warrant must be met.

Minimum Warrant Requirements – Gap Study

- Less than four safe gaps present in 50% of the five minute intervals in either the morning or afternoon study period
- Minimum of 40 students during a study period
- Average daily traffic volumes less than 12,000 vehicles/day on leg of intersection where highest number of students cross

Exposure Index Study – All-Way Stops

An Exposure Index Study quantifies the level of interaction and potential conflict between vehicular and child pedestrian movements at a given crossing. For a crosswalk at an all-way stop, the conflicting movements considered as part of the Exposure Index would be those vehicles turning left, right or going straight through that crosswalk. The Exposure Index is determined by multiplying the number of conflicting vehicular movements by the number of school aged pedestrians at a crossing. It provides an empirically based value, which can be used objectively to determine if a school crossing guard is warranted at a location. When completing a count, a vehicle drives through a crossing or it does not. The subjectivity is removed from the review.

A Site Inspection Report will be completed. All components of the warrant must be met.

Minimum Warrant Requirements – Exposure Index Study

- Minimum number of students during the school peak period either am or pm must be 40
- Minimum Exposure Threshold must be 8102
- Average daily traffic volumes less than 12,000 vehicles/day on leg of intersection where highest number of students cross

Signalized Intersections

Very few municipalities are using the Exposure Index at signalized intersections and many municipalities do not place crossing guards at signalized intersections. The municipalities that do use the Exposure Index all have different thresholds based on their existing locations. The Town of Milton only has crossing guards at three signalized intersections, which is not a large enough sample to create an Exposure Index. Therefore, at this time the Exposure Index will not be used at signalized intersections and the existing procedure will continue, which was outlined in the previous OTC Crossing Guard Guide from 2004.

Logic would dictate that school crossing guards should not be necessary at signalized intersections since traffic control signals are in place and provide for the orderly flow of traffic and pedestrians. Pedestrians have right of way when crossing on a green signal, which should minimize vehicle/pedestrian conflict. The use of a school crossing guard at a signalized intersection could adversely affect traffic flow, causing undue delay for motorists and should therefore be considered only as a last resort if several of the following are observed:

- A large number of conflicting movements through the intersection both right and left on the green signal and right turning traffic on the red signal.
- A large number of students, particularly young students crossing.
- The intersection leads to a main arterial or collector road and therefore there is a significant volume of trucks or other large vehicles using the intersection, potentially affecting visibility for both pedestrians and drivers.
- Poor driver behaviour, not yielding right of way to pedestrians, not coming to a complete stop prior to turning on a red signal, drivers inching forward, thus intimidating pedestrians in or about to cross the roadway and/or drivers weaving through pedestrians as they cross the roadway.
- The students appear timid in crossing the road or do not seem to be properly trained on how to cross the road safely, e.g. forgetting to push the pedestrian button or entering the roadway after the red flashing hand is showing.

When a school is located adjacent to a signalized intersection, additional measures may be taken. These measures will include but are not limited to:

- Implementing Leading Pedestrian Intervals (LPI) - The LPI provides an advanced walk signal so that pedestrians begin to cross the road before vehicles get a green light and it provides pedestrians an advantage over turning vehicles.
- Prohibiting right turns on red during the LPI time
- Extending the pedestrian walk time
- Ensuring pedestrian countdown and information signs are installed at the intersection

- Provide training to students on how to properly use pedestrian signals

Signal monitoring equipment at these intersections will allow traffic engineering staff to monitor the intersections more frequently and make signal timing adjustments if necessary.

Pedestrian Crossovers (PXOs)/Roundabouts

The OTC Guide also includes a section on determining warrants at PXOs and roundabouts. As these two types of traffic control devices are relatively new in Ontario, further research is required in this area to determine the best methodology to be used in determining if a crossing guard is warranted. Within Milton all of the roundabouts will have PXOs installed immediately, which provides a protected crossing for students.

Many municipalities throughout Ontario have indicated that motorists need to be better educated on the driver's responsibilities at these traffic control devices. The Town of Milton continues to work with internal staff and Halton Regional Police Services on educational programs.

New School Opening

School Boards must notify the Engineering Services Department three months in advance of the opening dates of all new schools in Milton. They are to provide the catchment area of the registered children for the subject school and a scatter map showing the potential walking students. A site visit will occur before school opens and potential sites will be evaluated based on estimated student volumes at all significant crossings. School crossing guards will not be placed before school opens, as traffic/pedestrian patterns have not been established. Construction surrounding schools should be nearing completion, which would include sidewalks and curbs. The safety of pedestrians and the school crossing guard must be taken into consideration. Approximately three weeks after the school opens applicable studies would be conducted and guards will be placed as required.

Removal of a School Crossing Guard

The Commissioner, Engineering Services, is authorized to remove school crossing guard locations without further study due to school closure, a school boundary change or if the students are now eligible for bussing. Additionally, locations can be removed following the completion of three gap/exposure studies where all three studies fall short of meeting warrants within a school year. Staff will advise Council as well as affected schools of the locations where school crossing guards are being removed. The affected school(s) will be responsible

for advising parents/caregivers of the removal of the school crossing guard. Removals should be effective after the end of school year.

Updating of Policy

As many municipalities are in the process of updating their crossing guard policies based on the OTC School Crossing Guard Guide- 2017 an update to the guide may be required as it is a living document. The OTC continues to work with local municipalities in updating manuals/guides to ensure they stay current.

The Placement of School Crossing Guards Policy will be updated each term of Council, which will include updating the Exposure Threshold to ensure existing conditions are being captured and reflected. Also Pedestrian Crossovers (PXOs) and roundabouts will be included in the next update.

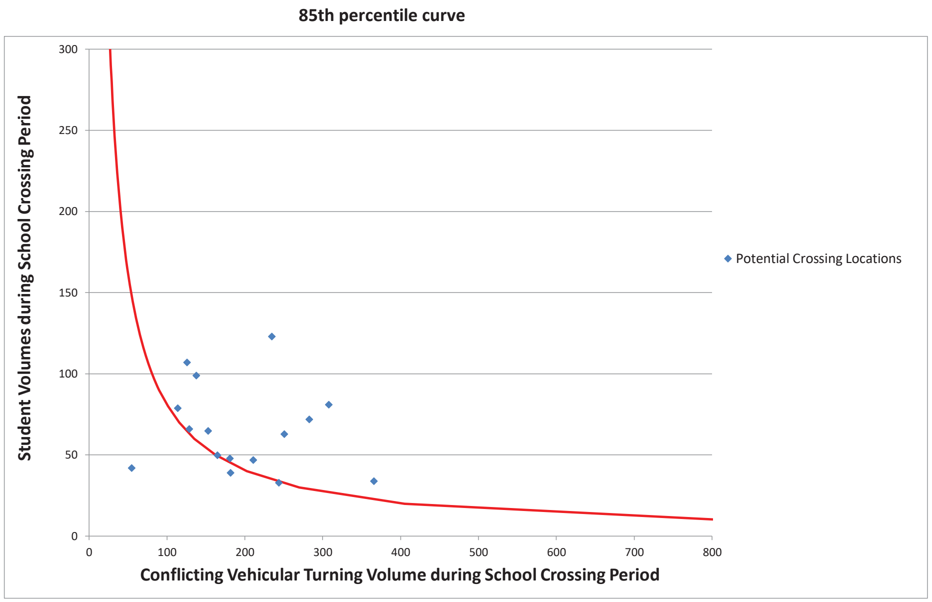
Appendix I – Exposure Index Graph - All-Way Stop Locations
Appendix II – Safe Gap Time definition from OTC Crossing Guard Guide May 2017
Appendix III – Site Survey Form and Gap Study

Exposure Index Graph for All-way Stop-controlled Intersections

85 percentile threshold | **8,102**

Existing Crossing Guard Locations			
ID	Conflicting movements	Students (JK-6)	Product
1	153	65	9,945
2	244	33	8,052
3	114	79	9,006
4	138	99	13,662
5	308	81	24,948
6	211	47	9,917
7	366	34	12,444
8	235	123	28,905
9	283	72	20,376
10	129	66	8,514
11	251	63	15,813
12	55	42	2,310
13	126	107	13,482
14	181	48	8,688
15	165	50	8,250
16	182	39	7,098
			8,102

Potential Crossing Locations			
ID	Conflicting movements	Students (JK-6)	Product
BENNETT / ARMSTRONG G	153	65	9,945
BENNETT / CLARK	244	33	8,052
Costigan / Denyes (new?)	114	79	9,006
Costigan / Miller (new?)	138	99	13,662
FARMSTEAD / MCLAUGHL	308	81	24,948
LAURIER / COSTIGAN	211	47	9,917
LAURIER / COXE	366	34	12,444
LAURIER / DENYES	235	123	28,905
LAURIER / HOLLY	283	72	20,376
PHILBROOK / CLARK	129	66	8,514
SAVOLINE / PRINGLE	251	63	15,813
THOMAS / HESLOP	55	42	2,310
WOODWARD / DIXON	126	107	13,482
WOODWARD / WILSON	181	48	8,688
YATES / BOLINGBROKE	165	50	8,250
YATES / HOLLY	182	39	7,098



11.2.1 Phase 1: Safe Gap Time

A Safe Gap Time is the time required in a break within the traffic flow that permits students to cross the road safely. Because this parameter will be used as the benchmark for the mid-block school crossing guard warrant, it is important that the Approval Authority understand the Safe Gap Time calculation methodology. Safe Gap Time can be calculated as:

Safe Gap Time (G) = Perception & Reaction Time (P) + Crossing Time + Group Factor Time

which is the equivalent to:

$$G = P + (W / S) + T (N – 1)$$

The parameters in the Safe Gap Time calculation need to be collected as part of the site inspection process outlined in **Chapter 4,** and are detailed as follows:

P = Average perception and reaction time of students (measured in seconds) – This is the time it takes for a student to perceive whether there are any vehicles approaching and to decide whether to cross or wait. If this is not available, assume 4.0 seconds;

W = width of the roadway (measured in m) – typically measured as the pavement width of the road. However, to err on the conservative side, the width of the roadway could also be considered the crossing distance from where students typically queue while waiting for a safe gap in the traffic stream to the opposite side of the roadway. This is more conservative because students do not always wait to cross at the edge of pavement or on the curb. This parameter is used to calculate the crossing time;

S = Average walking speed of students (measured in metres per second) – This can be calculated by measuring the amount of time it takes for students to cross the roadway. The width of the roadway can then be related to the time required to calculate the walking speed. This parameter is used to calculate the crossing time. If this is not available, assume 1.0 m/s;

T = Group factor (measured in seconds) – This factor is used to account for the fact that when more students cross at the same time, it takes longer to cross. This is because a large group of students will have to cross in multiple rows instead one. This parameter is used to calculate the group factor time. If this is not available, assume 2.0 seconds; and

N = Predominant group size – Observe the average number of students crossing together in increments of five (for example if 3 students cross together: N = 1, if 8 students cross together: N = 2). This parameter is used to calculate the group factor time.

MILTON

Site Inspection Report

Observers	**Observed By**	and
	Date of Inspection	
	Times:	AM: PM:
	Requested by	
	Weather Conditions	☐ Dry ☐ Sunny ☐ Rain ☐ Snow ☐ Other:_____
Site	**Location**	Please include map of intersection showing portion studied
	Leg	☐ North ☐ East ☐ South ☐ West
	Name of School(s)	
	Type of Crossing/ Intersection	☐ 4 Way ☐ 3 Way ☐ Mid-block
	Type of Control	☐ No Control ☐ Traffic signals ☐ PXO ☐ Stop Signs (Traffic Stopped on one Street only) ☐ All Way Stop (Traffic Stopped in all directions)
Observations	**School Signs**	☐ School Crossing ☐ School Warning ☐ None
	Posted Speed	☐ 40 km/hr-when flashing ☐ 50 km/hr-when flashing ☐ 40 km/hr no flash ☐ 50 km/hr no flash ☐ 60 km/hr no flash
	Pedestrian Site Distance	☐ Poor ☐ Fair ☐ Good
	Sight Obstructions	☐ Trees ☐ Hedges ☐ Fences ☐ Bus Shelter ☐ News Paper Boxes ☐ None ☐ Other:
	Road Grade	☐ Flat ☐ Incline ☐ Decline
	Road Geometrics	☐ Straight ☐ Curved
	Road Width (m)	Curb to Curb: Curb to Median:
	Road Conditions	☐ Dry ☐ Wet ☐ Ice ☐ Snow covered
	Sidewalks	☐ North ☐ East ☐ South ☐ West ☐ Not Present
	Proximity to School(s)	School:_____ ☐ In front of ☐ Within _____ (m) School:_____ ☐ In front of ☐ Within _____ (m)
	Route Survey	☐ Shopping Area ☐ Construction ☐ Driveway ☐ Bus Stop ☐ Parked Vehicle(s) ☐ Other:
	Comments	

Pre-Calculated Safe Gap Times

Intersection Width		Safe Gap
Feet	Metres	(seconds)
24	7.30	11
25	7.60	11
26	7.90	11
27	8.25	12
28	8.50	12
29	9.00	12
30	9.10	13
31	9.50	13
32	9.75	13
33	10.00	13
34	10.35	14
35	10.67	14
36	11.00	14
37	11.25	15
38	11.60	15
39	11.90	15
40	12.20	15
41	12.50	16
42	12.80	16
43	13.10	16
44	13.40	17
45	13.70	17
46	14.00	17
47	14.30	17
48	14.60	18
49	15.00	18
50	15.25	18

Intersection Width		Safe Gap
Feet	Metres	(seconds)
51	15.50	19
52	15.90	19
53	16.20	19
54	16.50	19
55	16.75	20
56	17.00	20
57	17.40	20
58	17.70	21
59	18.00	21
60	18.30	21
61	18.60	21
62	18.90	22
63	19.20	22
64	19.50	22
65	19.80	23
66	20.10	23
67	20.40	23
68	20.70	23
69	21.00	24
70	21.30	24
71	21.60	24
72	22.00	25
73	22.25	25
74	22.50	25
75	22.90	25
76	23.20	26
77	23.50	26
78	23.80	26
79	24.00	27
80	24.40	27

Appendix III

* Note: school aged children only, no adults or bussed students. Circle = conflict, / = vehicle, numbers = seconds elapsed

No. of children	#	Time in 5 minute increments	Gap = _____	Seconds Totalled	Total ÷ Gap	Total # Cars
e.g. 1,5,3,1	9	8:05-8:10	Gap = 15 // 23 ~~////~~ ~~////~~ //(19) 23 18 //	83	5.53	20

Notes: