

CBRM Crosswalk Strategy: Draft (March 6, 2017)

Background

In June 2008 CBRM Council approved an Active Transportation Plan for the Municipality. The Plan included a number of recommendations for the CBRM to pursue to improve conditions for walking and cycling. Many of these recommendations related to the construction of new infrastructure such as bike lanes, paved shoulders, sidewalks and multi- use paths, and since 2008 considerable progress has been made in the implementation of these recommendations.

The plan also made recommendations with respect to policy, public awareness and education. Steps have been taken to implement the recommendations with respect to public awareness and education through a social marketing campaign (walking trails brochure, cycling map, cycling handbook, active transportation videos, Facebook campaign) and our educational efforts (walking and cycling safety videos, cycling safety courses for adults and youth). There remains, however, many recommendations in the Plan with respect to policy that have not yet been implemented. These include:

- Sidewalk prioritization policy
- Crosswalk Safety
- Interventions to improve accessibility at intersections for persons with disabilities

Although specific policies do not exist with respect to pedestrian infrastructure, (with the exception of sidewalk snow removal, which is covered by the CBRM Winter Operations Strategy), it must be noted that CBRM has built and is maintaining a great deal of pedestrian infrastructure. Within the boundaries of this Municipality can be found 365 km. of sidewalks and 1,438 crosswalks, including 109 signalized (push button) crosswalks (RA-5 and signalized intersections combined) and 22 crosswalks with audible pedestrian signals for the hearing impaired.

CBRM staff are of the opinion if we as a community are serious about encouraging more people of all ages and abilities to walk that it is important to develop of policies intended to improve the level of safety and comfort for pedestrians in the CBRM. Although staff feel that a sidewalk prioritization policy and an accessibility policy are very important, it is felt that the first step should be the adoption of a crosswalk strategy.

The reasons for adopting a crosswalk strategy are several:

1. **Although pedestrian collision rates in the CBRM are, on a per capita basis, lower than larger Canadian cities, 334 pedestrians and 112 cyclists were struck by motor vehicles on streets patrolled by the Cape Breton Regional Police Service between the years 2002 and 2015, an average of approximately 30 collisions each year. Eleven of those struck died from their injuries. These numbers do not include collisions in privately owned parking lots (18) over the period, or collisions that occurred on streets and**

- roads patrolled by the RCMP (Trunk # 4 west of Sydney, Highway #125, Highway #105, and all streets and roads in Eskasoni).
2. Federal environmental requirements restricting the use of solvent based paint for pavement markings, due to high VOC content, combined with severe weather conditions over the past four years, has resulted in situations where crosswalk markings wear off quickly, so crosswalks are virtually invisible for much of the year.
 3. Other jurisdictions are adopting new and improved standards for crosswalks, including the Halifax Regional Municipality and the Nova Scotia Department of Transportation and Infrastructure Renewal (Prior to 2015 there was much confusion with respect to crosswalks on provincial roads, and in 2014 many crosswalks on provincial roads in the CBRM were not painted at all)

In October 2015 CBRM Police, Planning, Engineering and Public Works staff participated in a two day course on designing for pedestrian safety and accessibility. The course, coordinated by transportation engineers from the consulting firm IBI, provided staff with information on best practices in the field of pedestrian design and the results of the most recent research into the effectiveness of various interventions intended to improve pedestrian safety.

Following the course Active Transportation Committee staff reviewed the course materials and in particular a list of collision modification factors where extensive research by transportation professionals has shown a clear correlation between a specific intervention and a reduction in pedestrian collisions. This list is shown on the chart below. This policy was developed primarily by identifying those factors that staff felt were appropriate to conditions in the CBRM and which could be implemented without incurring excessive additional costs.

As an example, the chart shows that high visibility crosswalks have a significant positive impact on collision reduction, based on the latest research. As a result, this strategy recommends that CBRM implement high visibility crosswalks. However, to keep costs in check, the strategy recommends that high visibility crosswalks be used only where data provided by the Cape Breton Regional Police Service suggest that the risk to pedestrians is particularly high. It also, for reasons of cost, permits continued use of the affordable low-VOC latex paint although it is anticipated that CBRM will experiment with expensive but more durable products such as the imbedded cold plastic crosswalk markings used in cities such as Toronto.

PEDESTRIAN SAFETY WORKSHOP

Collision Modification Factors (CMF) for Veh-Ped Collisions

Countermeasure	
Install pedestrian countdown timers	0.30 (****)
Implement leading pedestrian interval	0.67 (***)
Implement pedestrian scramble phase	0.49 (**)
Implement safe routes to school program	0.86 (**)
Increase cycle length for pedestrian crossings	0.46 (**)
Install high-visibility crossing	0.60 (**)
Install HAWK pedestrian activated beacon	0.31 (***)
Install raised median with marked crosswalk (uncontrolled)	0.54 (****)
Provide intersection illumination (varies by severity)	0.19-0.69 (****)
Permit right turn on red	1.57 (****)

CMF Clearinghouse <http://www.cmfclearinghouse.org/index.cfm>

SPECIFIC PROVISIONS

Section A: Installation and Removal of Crosswalks

The installation of new crosswalks, and the removal of existing crosswalks, on any public street owned by CBRM shall be governed by the decision support tool found in the most recent edition of the Pedestrian Crossing Control Guide produced by the Transportation Association of Canada (TAC). Interpretation of the guide shall be the responsibility of the Traffic Authority, who will make decisions in consultation with the Manager of CBRM Public Works for the area where the crosswalk is located. As required, CBRM may retain the services of an outside consultant who shall be a transportation engineer with expertise in crosswalk design to provide advice on these decisions.

All crosswalks in the Municipality, including the associated signage, shall be installed in accordance with the minimum standards recommended in most recent edition of the Pedestrian Crossing Control Guide produced by the Transportation Association of Canada (TAC).

More specifically, the policy includes the following provisions (Sections B to G) which are consistent with the TAC guidelines but in some cases may exceed the minimums recommended by TAC:

Section B: High Visibility Crosswalks

1. **High Visibility (ladder bar or zebra) crosswalks shall be used on:**
 - All 4 lane streets (almost 25% of all pedestrian collisions in CBRM occur on these streets, all of which are in the Sydney area)
 - All mid-block crosswalks
 - All intersections where a significant number of collisions involving AT users have occurred, based on CBRPS records.
 - All crosswalks in school zones (see Appendix A).
 - Any other crosswalk where, in the opinion of the Traffic Authority, high visibility markings are warranted due to high pedestrian volumes or hazardous conditions identified as part of a safety audit of the crosswalk. (Pedestrian volumes at selected intersections are found in Appendix B)
2. To the greatest extent possible, crosswalk bars shall be painted so as to avoid the tire tracks, to minimize wear.
3. Stop lines shall be installed parallel to crosswalks at signalized intersections and at all intersections on arterial routes. Stop lines shall be installed in accordance with the Manual of Uniform Traffic Control devices.
4. All crosswalks shall be painted twice a year, unless more durable markings are used.
5. Paints and other materials used for crosswalks will be installed as per Section F.

Section C: Signals

6. **Rectangular Rapid Flashing Beacons (RRFB's)** are more economical than the RA-5 crosswalk signals and some studies have shown them to be more effective than RA-5's or even the HAWK signals commonly used in the United States. TAC has recently endorsed the use of RRFB's in Canada. As a result, CBRM policy will be to consider RRFB's wherever extra traffic control is warranted.
7. **Pedestrian Countdown Timer Crosswalk Signals:** At intersections where at least one of the intersecting streets has four lanes, countdown crosswalk signals shall be installed whenever new traffic signals are installed or where an upgrade to existing signals is taking place. Consideration will be given to installing countdown crosswalk signals at all other intersections, based on a review of conditions at that intersection by the Traffic Authority.

Section D: Curb Extensions and Pedestrian Refuges

8. Curb extensions and pedestrian refuges create challenges for snow plough drivers but they have been proven to improve pedestrian safety and therefore should be considered in exceptional circumstances. One example is the crosswalk at the corner of Reeves and Welton Street in Sydney, where there has been discussion regarding the possible installation of a pedestrian refuge.

Section E: Crosswalk Flags

9. Crosswalk flags have shown to have a modest impact on pedestrian safety in some research studies. CBRM will not install crosswalk flags, but, subject to approval by the traffic authority, crosswalk flags may be installed by community organizations at crosswalks, providing that all expenses associated with installation and maintenance of the flags are covered by the community organizations.

Section F: Compliance with Standards

10. Crosswalk installation, whether carried out by CBRM staff or by contractors, shall be monitored so as to ensure that all work complies with MUTCD standards and that paint and glass beads used comply with Canadian General Standards Board (CGSB) standards and manufacturers' specifications.

Section G: Upgrading of Crosswalk Signage and Lighting

11. CBRM will monitor changes in standards and technological advancements related to crosswalk design and pedestrian safety, and will endeavour to upgrade pedestrian infrastructure in CBRM as resources permit. The CBRM will ensure that its staff have access to adequate training and, as resources permit, will encourage staff to attend conferences and training workshops sponsored by organizations such as the Transportation Association of Canada (TAC) and the Canadian Institute of Transportation Engineers (CITE).

APPENDIX A- Nova Scotia Department of Transportation and infrastructure Renewal Policy on School Zones

Establishment of School Areas on Provincial Highways

Policy Statement

School Areas are established on provincial highways where school buildings or grounds are directly adjacent to the highway or where a school crosswalk exists or needs to be installed on a highway where the maximum posted speed is 50 km/h or greater.

School areas may be established on highways provided the school offers instruction to any grade between primary and Grade 12 and meets the definition of a public or private school as defined by the *Education Act*.

A crosswalk is considered to be a school crosswalk if it is primarily for the use of a student population walking to and from an elementary or junior high school and is supervised.

Rationale

Motorists driving within school areas or near school crosswalks need to be particularly aware of the presence of children who may not have the capacity to understand the rules of traffic.

The *Motor Vehicle Act* permits the traffic authority to establish school areas to increase driver awareness with respect to the presence of children in these areas and to establish lower maximum speed limits when children are present.

Policy Objectives

To provide for the consistent establishment and signing of school areas on provincial highways.

Application

This policy applies to all departmental staff involved in the establishment of school areas and the erection of school area signage.

Accountability

Area Managers

Operations Supervisors
District Traffic Supervisors

Monitoring

District Directors
Manager of Traffic Engineering Services

Directives

1. When made aware of a scheduled school opening or closure, the Area Manager must make arrangements for the establishment or removal of a school area in coordination with the District Traffic Supervisor (DTS).
2. Prior to the establishment of a school area, the DTS must confirm that the identified school is listed in the Directory of Public Schools published by the Department of Education or that the school crosswalk is approved.
3. The length of the required school area is dependent upon the reasonable approach speed as determined by the DTS and is highlighted in a table in the standard sketches, as well as shown below.

SPEED (km/h)	MAXIMUM DISTANCE "X" (metres)
50	100
60	150
70	200
80	250
90+	300

4. Locations for school area signage must be approved by the Traffic Authority.

Guidelines

1. School areas for private schools on provincial highways may be established at the discretion of the Traffic Authority. Prior to erecting school area signage for a private school, it shall be the responsibility of the private school to supply documentation to the Traffic Authority indicating that it satisfies all requirements

for a private school as stated in the *Education Act* (and any corresponding regulations), and that it is recognized by the Minister of Education as meeting these requirements.

2. School area signs are typically to be erected in accordance with the Standard Sketches for School Area Signing. All WC-1 advance school area signs are to be supplemented by the information tab "MAXIMUM 50 km/h WHEN CHILDREN PRESENT" (R-104T) when the speed zone immediately prior to entering the school area is greater than 50 km/h. If the speed zone immediately prior to entering the school area is 50 km/h, all WC-1 advance school area signs are to be supplemented by the information tab "MAXIMUM 30 km/h WHEN CHILDREN PRESENT" (R-103T).

3. Signage to indicate to motorists that speed fines are doubled in school areas may be erected at all school areas in accordance with the Standard Sketches for School Area Signing.

4. The school area signs may be oversized or double posted whenever this action is deemed necessary eg. On a high speed approach to a school, an oversize sign may be erected.

References

Manual of Uniform Traffic Control Devices for Canada, TAC
School and Playground Areas and Zones, TAC
Motor Vehicle Act
School Area Regulations

Enquiries

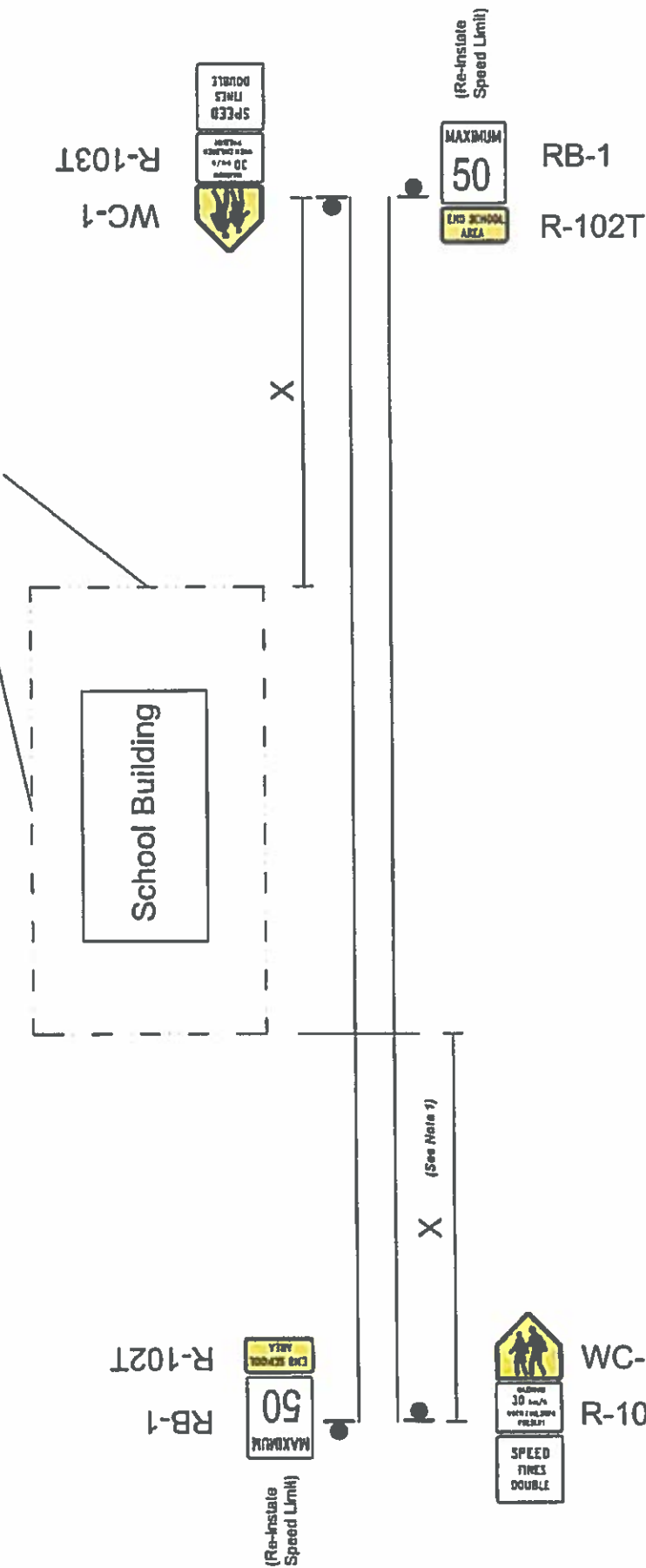
Traffic Engineering Services
District Traffic Supervisors

Appendices

Standard Sketches- School Area Signing (Pages 4 to 9)

<i>Approved by:</i>	<i>Charles MacDonald, EDMO</i>	<i>Transportation & Infrastructure Renewal</i>
<i>Approval date:</i>	<i>19-JUL-2012</i>	<i>Policies and Procedures Manual</i>
<i>Effective date:</i>	<i>01-SEP-2012</i>	<i>Revision date: NEW</i>

School Property Boundary



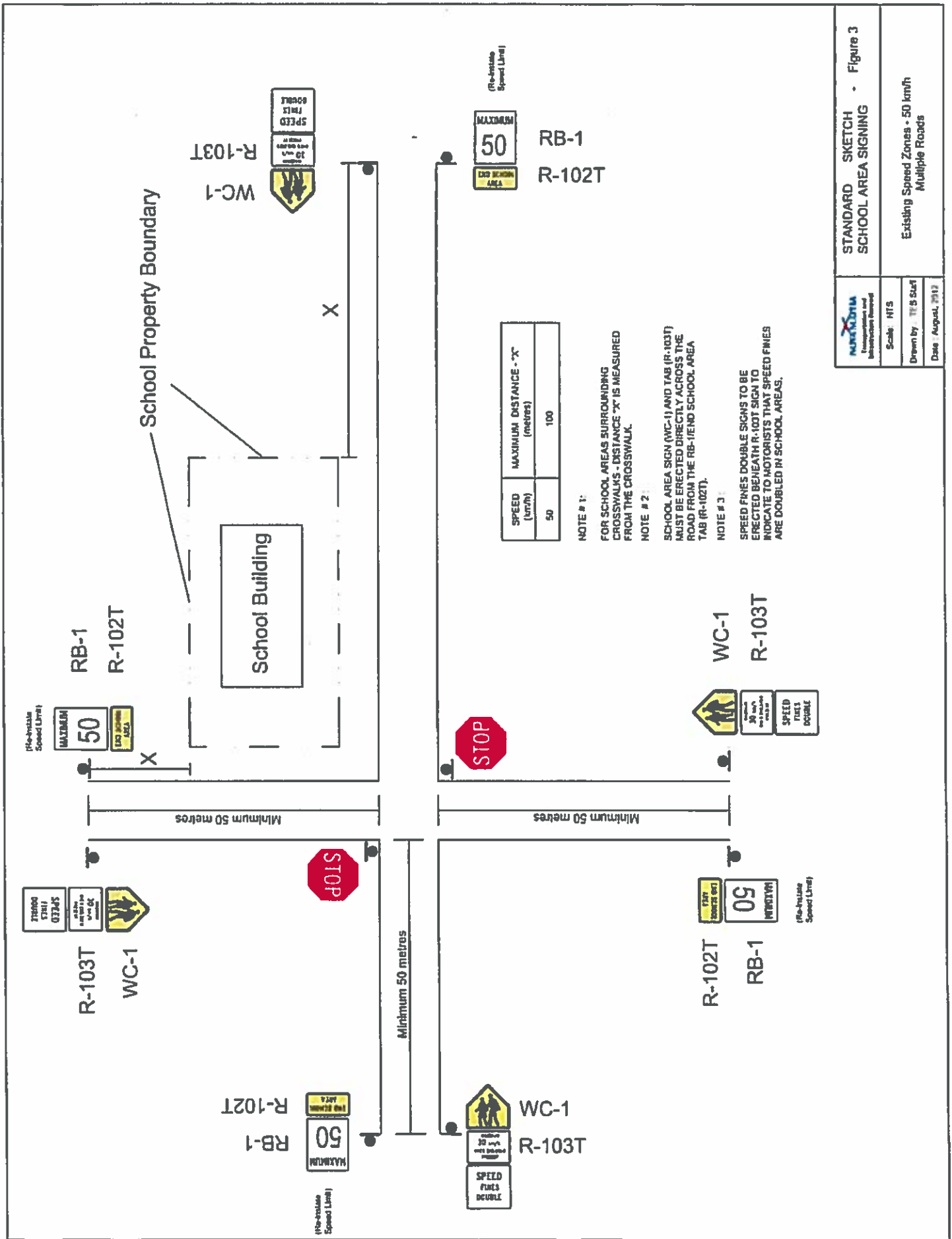
NOTE # 1
SPEED LIMITS DOUBLE SIGN TO BE ERRECTED DIRECTLY BENEATH R-103T TO INDICATE TO MOTORISTS THAT SPEED LIMITS ARE DOUBLED IN SCHOOL AREAS.

NOTE # 1
FOR SCHOOL AREAS SURROUNDING CROSSWALKS - DISTANCE "X" IS MEASURED FROM THE CROSSWALK.

NOTE # 2
SCHOOL AREA SIGN (WC-1) AND TAB (R-103T) MUST BE ERRECTED DIRECTLY ACROSS THE ROAD FROM THE RB-VIEW SCHOOL AREA TAB (R-102T).

SPEED (km/h)	MAXIMUM DISTANCE - "X" (metres)
50	100

	STANDARD SKETCH - Figure 1	
	SCHOOL AREA SIGNING	
Scale: NTS	Existing Speed Zones - 50 km/h	
Drawn by: TES Sud	Single Road	
Date: August, 2012		



STANDARD SKETCH - Figure 3

SCHOOL AREA SIGNING

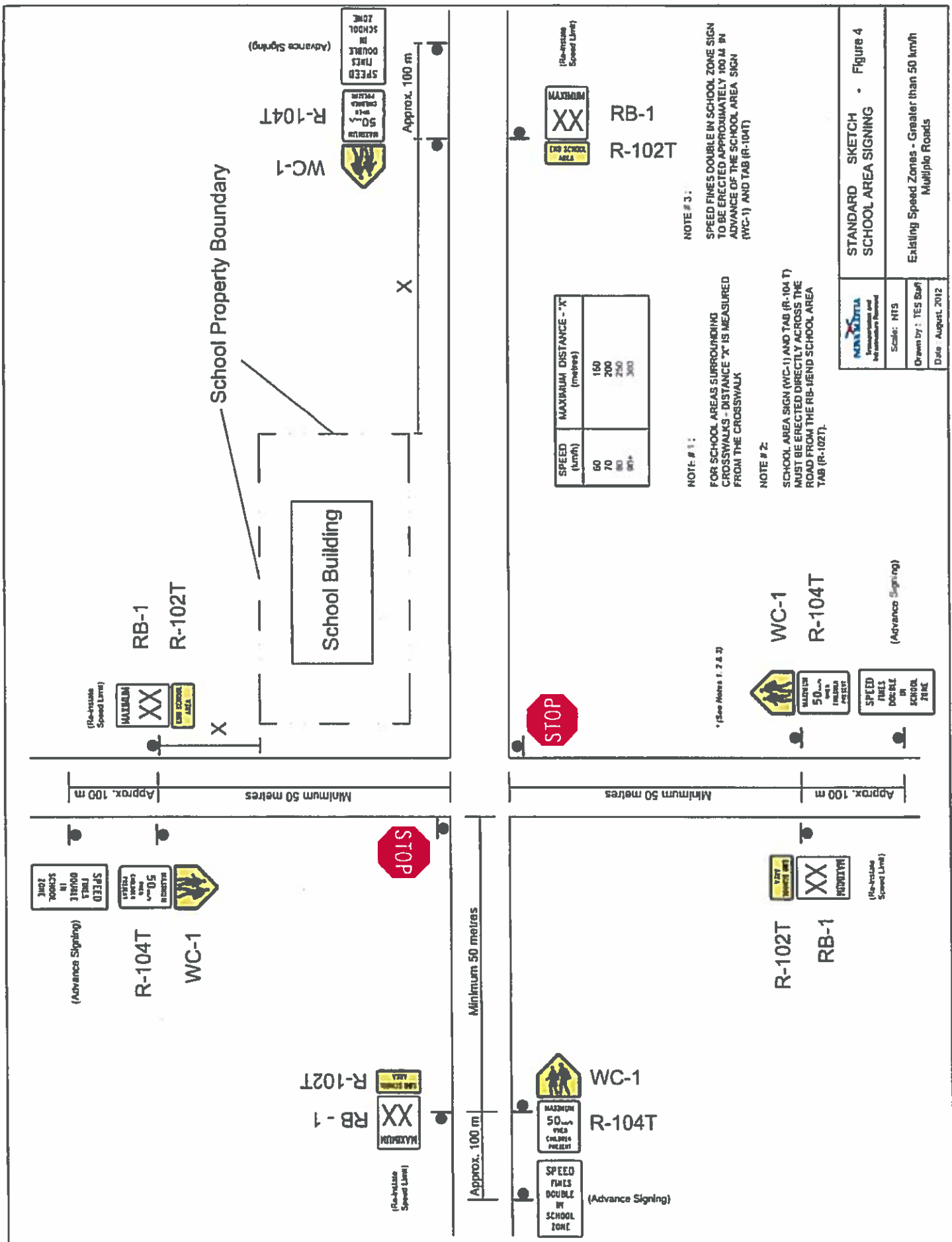
Scale: HTS

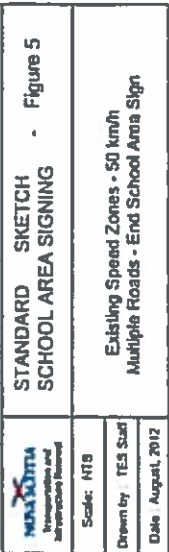
Drawn by: TFS

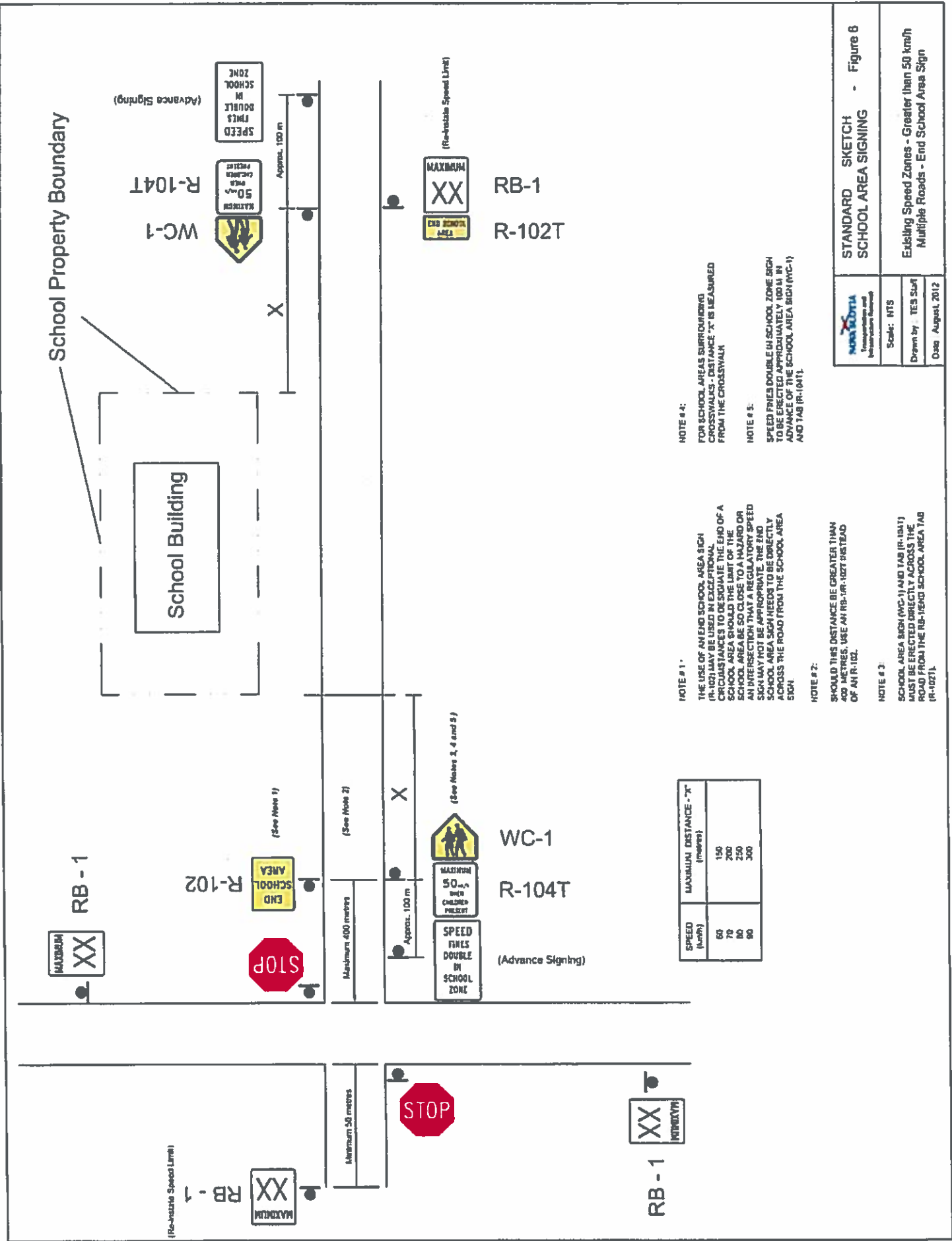
Date: August, 2012

Existing Speed Zones - 50 km/h

Multiple Roads







STANDARD SKETCH - Figure 6
SCHOOL AREA SIGNING

Scale: NTS
 Drawn by: TES Staff
 Date: August, 2012

Existing Speed Zones - Greater than 50 km/h
 Multiple Roads - End School Area Sign

Appendix B: Pedestrian and Cyclist Volumes for various intersections in CBRM

Pedestrian/Cyclist Counts		2009-2013		Ped Vol.		Cyclist Volume		Cyclists per hr		%		%		%		%	
Location	Date	Weather	Time	Peds per hr													
Prince St/Syd Shopping Centre	Aug 18/2009	Sunny 30C	7 am to 7 pm	288	24	23	1										
Prince St/Syd Shopping Centre	June 25/2009	Sunny 27C	7 am to 7 pm	329	27	18	1										
Old Railbed behind Sterling Mall	29-Jul-09	Sunny 29C	9 am to 5 pm	36	5	1	0										
NW Highway (South Bar Sch)	17-Aug-09	PtCloudy 25C	9 am to 5 pm	22	3	5	1										
Prince and George	09-Jul-09	Sunny 22 C	7 am to 7 pm	813	68	63	6										
Prince (Sobseys walkway)	21-Jul-09	PtCloudy 24C	9 am to 5 pm	470	59	33	4										
SPAR/N125/GrandLakeRd	10-Jul-09	Sunny26C	7 am to 7 pm	40	3	7	1										
Charlotte/Pitt	17-Aug-10		7 am to 7 pm	2475	206	25	2			40%	4%					48%	
George/Townsend	summer 2010		7 am to 7 pm	977	81	77	6			58%	10%					38%	
Welton/Reeves	summer 2010	Sunny 28 C	7 am to 7 pm	168	14	6	0			100%	0%					0%	
Argyle/George	summer 2010	Sunny 26C	7 am to 7 pm	802	67	56	5			59%	13%					55%	
Main/McKeen	18-Jul-10		7 am to 7 pm	479	40	19	2			58%	26%					53%	
George/Cottage	summer 2010	Sunny 27C	7 am to 7 pm	766	64	35	3			29%	17%					57%	
NW Highway (South Bar Sch)	08-Jul-10		1 pm to 8 pm	2	0	5	1									60%	
Plummer/Smith	20-Jul-11		7 am to 7 pm	1151	96	26	2			81%	4%					31%	
Commercial/King (N.Sydney)	20-Aug-11	Cloudy	7 am to 7 pm	469	39	27	2			63%	11%					59%	
Main/Shore Rd.	02-Aug-11	Sunny	7 am to 7 pm	80	7	11	1			55%	9%					91%	
Fraser/Shore Rd.	11-Aug-11		7 am to 7 pm	62	5	7	0			57%	14%					71%	
Coatheath Rd./Hanart	06-Jul-11	Sunny 30C	8 am to 8 pm	24	2	13	1										
Commercial/Marconi, Glace Bay	summer 2011		7 am to 7 pm	2141	178	54	5			37%	2%					13%	
Commercial/Marconi, Glace Bay	summer 2012		7 am to 7 pm	3062	255	126	11			87%	11%					15%	
George/Prince	July 31 2013	Sunny 28C	7 am to 7 pm	842	70	81	7			42%	19%					53%	
Alexandra/Churchill	Sept 9 2013	Pt Cloudy 15C	7 am to 7 pm	154	13	21	2			48%	0%					29%	
SPAR/N125/GrandLakeRd	Sept 19 2013	Sunny 22C	7 am to 7 pm	70	6	10	1			60%	50%					90%	