

The Development of School Area Traffic Safety Guidelines for Manitoba

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ABSTRACT

The development of School Area Traffic Safety Guidelines for Manitoba was initiated in a joint effort by Manitoba Infrastructure and Transportation (MIT) and Manitoba Education in June 2011. MMM Group Inc. was tasked with authoring the report, which is expected to be complete in 2013.

The objective was to develop a procedural manual and safety assessment toolkit that can assist traffic authorities and school divisions in addressing traffic safety concerns associated with school areas in rural, suburban, and urban areas. The guidelines can be applied to both remediate issues at existing schools, and to address potential issues when planning new schools.

The guidelines examine issues such as:

- Active transportation on the school site and in the surrounding area;
- Vehicular safety on the school site and in the surrounding area; and
- Procedural changes that can be made by the school to improve traffic safety.

The project used a consultative approach in which a steering committee met regularly to guide the project. This committee included representatives from Manitoba Infrastructure and Transportation, Manitoba Education, Manitoba School Board Association, Manitoba Public Schools Finance Board, CAA, the RCMP, and Manitoba Public Insurance, as well as a number of other stakeholders. At these meetings the committee discussed issues and made recommendations pertinent to the project.

The project included a literature review of existing school area traffic safety guidelines and documentation, site visits to schools to observe typical conditions, pilot applications of the guidelines at a suburban and rural school, and several stakeholder consultation workshops.

Ultimately, it is hoped that these guidelines will be able to provide school staff, school divisions, and traffic authorities with a tool to assist them in identifying potential improvements in order to enhance traffic safety and promote consistency in application across Manitoba school areas.

INTRODUCTION

In 2011, Manitoba Infrastructure and Transportation (MIT), in conjunction with Manitoba Education, undertook the development of a procedural manual and safety assessment toolkit to be used by traffic authorities and school divisions in addressing school area traffic safety concerns in Manitoba. MIT retained MMM Group Ltd. to assist in this project. This paper summarizes the process used in the development of the guidelines and provides highlights of the resulting manual.

The manual provides guidance for addressing issues concerning:

- Roadways adjacent to school grounds and surrounding area;
- Facilities for drop-off and pick-up by both buses and private vehicles;
- Safe pedestrian and cyclist facilities on and off the school site;
- Traffic control devices near schools;
- Education of students, parents and motorists; and
- Enforcement of school area safety procedures.

MIT, in addition to municipal jurisdictions in Manitoba, receive many requests each year from school divisions, individual schools, and parent groups for infrastructure improvements in school areas. Requestors vary widely in their level of understanding of the process that must be undertaken to study the need for such improvements, as well as the requirements for implementation. The fundamental purpose for the guidelines has been, therefore, to assist school teams in their understanding of this process and to provide consistency in the improvement measures installed across Manitoba.

GUIDING PRINCIPLES

The safety of children during the school day is a concern to all. Parents depend on teachers and other school employees to keep their children safe while they are in the classroom, however, the school day does not start and end in the classroom. Trips to and from school are important components of every student's day, and their safety during those trips can be directly influenced by the decisions made by traffic authorities and school divisions, as well as parents.

For many reasons, more children are being driven to school in private vehicles today than in the past, resulting in increased traffic congestion and parking issues in school areas. While there are innumerable benefits to encouraging increased active transportation options for trips to and from school, the objective of the guidelines, while definitely supportive of active modes, is to provide guidance on resolving transportation issues for ALL modes of transportation used in school areas.

As such, the guidelines are steered by the underlying principles of:

- **Safety:** the safety of children travelling to and from school should be of the utmost importance to all members of the community.
- **Consistency:** a consistent approach for mitigating safety concerns will help to meet driver and pedestrian expectations regardless of municipal jurisdiction or school division.
- **Cost-Effectiveness:** cost-effective measures are important to traffic authorities and school divisions who must deal with competing priorities for funding
- **Effectiveness of Measures** – measures suggested in the guide have been proven through engineering studies in North American jurisdictions to be effective in mitigating safety concerns.

CONSULTATION PROCESS

The project was led by a Steering Committee comprising members of MIT, Manitoba Education (Pupil Transportation Unit), Manitoba Public Insurance Corporation, the City of Winnipeg, Green Action Centre, RCMP, Manitoba School Boards Association, and the Manitoba Public Schools Finance Board. The Steering Committee met regularly throughout the study process.

Several workshops were held throughout the study. Early on, a roundtable workshop with personnel from various divisions within the provincial transportation authority was held. Various topics were discussed including common transportation issues affecting schools in Manitoba, whether students at schools should be involved in the data collection process and the need for education on this topic within the guide, and the need for the guidelines to be useful for new and existing schools.

Following this, another workshop was held shortly after the first with stakeholders representing various school divisions, municipal traffic authorities, law enforcement agencies, and advocates for active transportation in Manitoba. Facilitators guided the participants through the workshop, encouraged the group to brainstorm ideas and recorded key discussion points. The main topics discussed included: existing issues and concerns related to school area traffic safety; functional issues related to implementing traffic improvements; and implementing school area traffic safety guidelines in Manitoba.

Finally, towards the end of the process, a third workshop was held with a similar audience mix as the second workshop. Participants were strategically placed at tables to reflect a mix of expertise and experience in each group. Each table was supplied with a number of typical

issues that might trigger the need for a school area transportation review and given a copy of the draft guidelines to work from. The workshop proved to be a useful exercise with several participants indicating that they were eager for the project to be finalized so that they could begin using the guidelines.

USER GUIDE

When there are traffic safety concerns at an existing school, the guidelines recommend that a team of individuals is assembled to follow a step-by-step process of investigation. The process is outlined in the flow chart shown in Figure 1. The end result of the process is the development of a School Transportation Issues Report (STIR) that can be used by school officials and the transportation authority to plan and implement the recommended solutions.

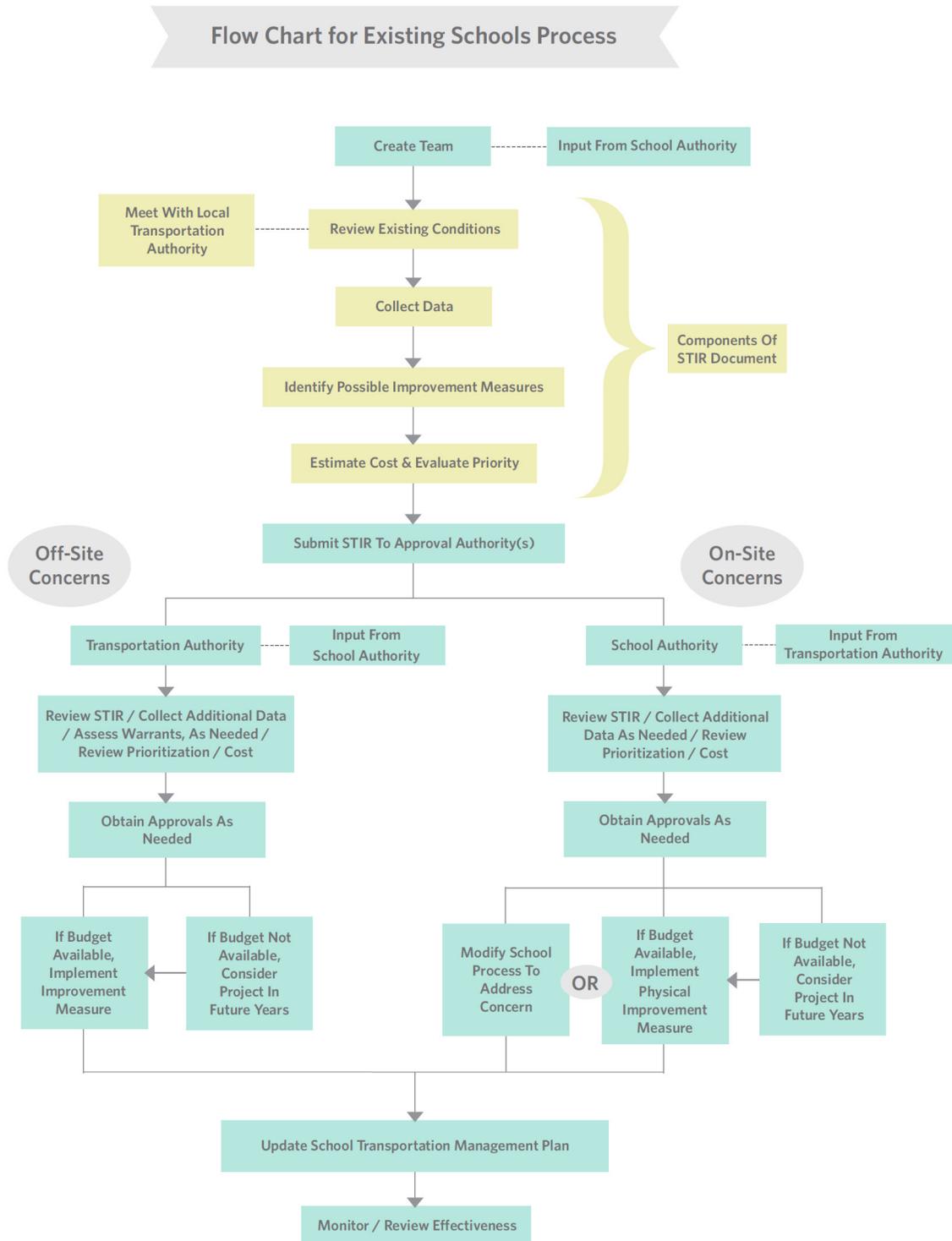
Step 1: Team Creation

A team approach is the most appropriate method for reviewing transportation issues at a school. A team allows expertise from various backgrounds and perspectives to come together to address issues, and allows the project's tasks to be divided. Parents, school staff or division representatives, police, local government representatives, traffic engineers, and neighbourhood representatives are all potential participants in a school team. A team of six to ten members is ideal.

Step 2: Review Existing Conditions

A review of existing conditions related to traffic safety at a particular school can be undertaken using a variety of methods. Surveys (both in-class and take-home), walkabouts by team members, and preparation of route maps can all be used to illustrate existing safety concerns both on and off the school site. The guidelines give sample surveys and example forms that can be filled in by a school team. In addition, the guidelines include detailed instructions to teams on the process required for conducting traffic, pedestrian and parking counts, as well as sample data collection forms. Once all necessary data is collected, and prior to selecting a preferred solution, it is recommended that the school team meets with the approval authority.

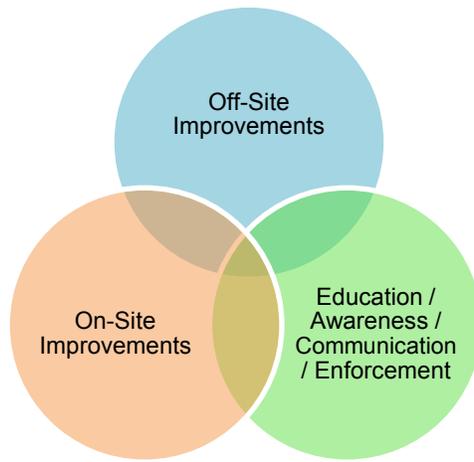
Figure 1:



Step 3: Identify Potential Improvement Measures (Toolkit)

This step of the process contains the “toolkit” component of the guidelines. The purpose of the toolkit is to assist school teams and approval authorities (either jurisdictional traffic personnel or school divisions) in selecting the most appropriate measure to address the problem. Improvement measures listed in the toolkit are divided into one of three categories, as illustrated in Figure 2:

Figure 2: Types of Improvement Measures



Not all measures in the toolkit are engineering solutions. In fact, if a problem can be solved using other means, such as making changes to school operating procedures or holding an education campaign for students and parents, this is often recommended above making physical changes to infrastructure. However, many of the existing traffic safety issues at a school will require engineering solutions and these are divided into categories for on-site and off-site improvements. Most physical improvements require involvement, in terms of more detailed warrant analyses or design, and approval by the local traffic authority.

Main highlights of the “toolkit” section of the guidelines are summarized in Table 1, below.

Table 1: Toolkit

Off-Site Improvements	
<i>Key Issues:</i>	<ul style="list-style-type: none"> • These measures will impact the transportation network of the surrounding neighbourhood, while benefiting travel to and from school. • Will nearly always require review, analysis and approval by local transportation authority.
<i>Examples:</i>	Crosswalks (signalized and unsignalized); traffic calming measures; bike lanes; multi-use pathways; signs.

On-Site Improvements	
<i>Key Issues:</i>	<ul style="list-style-type: none"> • These measures may involve modifying existing infrastructure on the school’s site, or construction of new infrastructure. • May be subject to review by both a school authority and the local transportation authority.
<i>Examples:</i>	Reconfiguring driveways, parking layouts, or pathways; construction of a bus-bay; updating signs in parking areas, improving bicycle parking.
Education/Awareness/Communication/Enforcement	
<i>Key Issues:</i>	<ul style="list-style-type: none"> • These measures do not require construction or modification to existing infrastructure. • In general, this type of measure may be the least expensive to implement, but would likely require staff, volunteers or even law enforcement officers to ensure policies are being followed.
<i>Examples:</i>	Enforcement of parking policies in surrounding neighbourhood; reminders of safe driving practices in school areas; speed enforcement (through hard or soft measures); school bus loading/unloading procedures.

Step 4: Cost Estimates and Prioritization

With the release of the guidelines to school divisions across Manitoba, it is expected that traffic authorities (municipal and provincial) will receive more requests for transportation improvements in school areas than in the past. For this reason, the guidelines provide direction to users on prioritization of measures and developing preliminary cost estimates. While it may not be appropriate for a school team consisting of parents and teachers to develop their own cost estimates, order-of-magnitude costs are listed in the guidelines for each improvement measure. An awareness of associated costs is essential knowledge for school teams when considering that approval authorities may have competing priorities from other schools.

That being said, cost is not the only consideration at play when prioritizing improvements. School teams interested in implementing more than one improvement measure are encouraged to rank each recommended improvement in terms of need, impact and resistance. This prioritization process can also be used by traffic authorities to rank improvement measures between one school and another. These terms and their ranking levels are explained in the tables below.

Need: A high score here indicates that a measure is potentially more important from a traffic safety point of view and so should be a higher priority. Rankings are explained in Table 2.

Table 2: Ranking Levels for “Need”

1	The measure is likely to have a limited impact on operational or safety issues. It will make things better, but is not “essential”. For example: upgrading existing signs to make it larger and clearer.
2	The measure will resolve a minor operational or safety issue at the school.
3	The measure will address an ongoing operational or safety issue at the school.
4	The measure will address an operational or safety issue that has resulted in numerous complaints.
5	The measure is considered essential to correct an operational or safety issue where incidents have occurred in the past.

Impact: Higher rankings here indicate that a greater number of people (generally students) will benefit from the measure. Table 3 explains ranking levels for “Impact”.

Table 3: Ranking Levels for “Impact”

1	The measure will be used on an infrequent basis with only a small number of students benefiting from it.
2	The measure is anticipated to resolve a minor operational or safety issue at the school, with a small number of students benefiting.
3	A moderate number of students at the school will benefit from this measure being implemented.
4	A majority of students at the school will benefit from this measure being implemented (i.e., greater than 50 percent of the student body).
5	All students of the school and potentially the general public in the surrounding area will benefit from this measure being implemented.

Resistance: Higher values in this category represent greater anticipated opposition, potentially by neighbouring residents or motorists traveling through the school area. Table 4 explains ranking levels for “Resistance”.

Table 4: Ranking Levels for “Resistance”

1	This measure will be seen as beneficial to basically all with few, if any, negative impacts. This measure is a common practice in the area, and has been implemented successfully elsewhere.
2	The majority of users will benefit from the measure, but a small number of residents in the area may be negatively impacted.
3	Some negative response is anticipated from the local community.
4	This measure will impact the local community significantly in such a way that large numbers of residents will raise complaints related to the measure. Current transportation operation will be significantly modified.

5	Significant opposition anticipated from the public, including political opposition to the concept. Measure is uncommon in the area, there is little experience with implementing this type of measure, or it has not worked elsewhere.
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Step 5: Submission of STIR and Review by Authorities

The guidelines encourage school teams to compile the information they have gathered to this point into a report for submission to the approving authority. At this point, the process separates into two streams pertaining to either off-site improvements or on-site improvements. Off-site improvements will involve approval, programming into capital budgets, and design by the local traffic authority.

While on-site improvements may also require review by the local traffic authority, depending on their nature, they might only require school division approval and may be able to be implemented much faster.

Step 6: Implementation and Follow-Up

The final step in the user-guide process cautions school teams to expect delays in the implementation of some of their recommended measures, particularly those that require approval by traffic authorities and programming into capital budgets. Once changes are implemented the guide recommends that clear communication to students, staff, parents/guardians, school bus operators and visitors is made to promote awareness of the changes. This could be done in a multitude of ways, such as school newsletters and websites and in-class discussions.

Another important component of finalizing the STIR is to update the school’s transportation management plan to reflect the new changes. A school transportation management plan is a permanent document prepared by school officials that explains how transportation operations are meant to occur at the school, including rules related to parking, loading, school bus pick-up and drop-off, walking and cycling, etc.

Post-implementation monitoring is an important component of any traffic review to determine the effectiveness of the resulting change(s). The guidelines encourage school teams to undertake a post-implementation study, gathering data as required and comparing it to information compiled during the initial data collection stage. This information can then be shared with traffic authorities or other schools.

Planning for New Schools

While much of the guidelines are focused on helping existing schools to make school area traffic safety improvements, a section of the guidelines also cover traffic safety considerations that should be made when planning new schools. The purpose of this section is to minimize issues arising after the opening of a school. A checklist (Table 5) is provided in the guidelines for use as a compilation of transportation-related considerations, recognizing that there are many other factors unrelated to transportation to consider when determining school sites and layout.

Table 5: Checklist for School Site Planning

Site Selection Considerations	Yes/No	Comment
Is the school site adjacent to built or natural barriers, such as railroad tracks, high speed roadways, or rivers/streams?		<i>The presence of these barriers will limit the ability of children to walk or bike to school.</i>
Is the school's catchment area predominantly on one side of an arterial (or higher classification) road?		<i>Such roads act as barriers to walking and biking.</i>
What is the adjacent land use expected to be in the future, or already approved in the area surrounding the school site?		
Commercial?		<i>Generally, commercial, industrial, or agricultural uses are undesirable near a school, in part due to the mix and volume of traffic they create. Lower volumes of traffic near a school are desirable.</i>
<ul style="list-style-type: none"> Are traffic volumes expected to grow significantly in the future? 		
Industrial?		
<ul style="list-style-type: none"> Are traffic volumes expected to grow significantly in the future? 		
<ul style="list-style-type: none"> Will the traffic mix consist of a high proportion of large vehicles? 		
<ul style="list-style-type: none"> Does the nature of any traffic to and from a nearby industrial development pose significant concerns (i.e., hazardous waste)? 		
Agricultural?		
<ul style="list-style-type: none"> Will adjacent farming operations create any traffic-related concerns (e.g., over-dimension vehicles periodically needing to occupy the entire road surface and obscuring pedestrian/cyclist lines of sight)? 		
Residential?		<i>Ideally, a school will be located in a residential area.</i>
<ul style="list-style-type: none"> Is the site situated in a convenient location to encourage a mix of travel modes to and from school? 		<i>A range of potential mode choices is better than limiting choice to a small number of</i>

		<i>options.</i>
<ul style="list-style-type: none"> Will headlight glare and other environmental factors (such as noise, vehicle emissions, dust, etc.) associated with drop-off/pick-up and parking operations post a concern to adjacent residents? 		<i>Ideally, no; ensure the design of such areas does not create a nuisance for members of the community.</i>

Road Network Considerations	Yes/No	Comment
<i>Access to and from collector streets in urban areas is generally appropriate for elementary and middle schools. Access solely from a local residential street or cul-de-sac can result in congestion and greater conflicts with pedestrians and cyclists, especially if there are no sidewalks. In rural areas, avoiding sites adjacent to high-speed, high-volume expressways is recommended.</i>		
What is the road classification of the adjacent street network? (Mark all that apply.)		
<ul style="list-style-type: none"> Expressway (high-speed/high-volume)? 		<i>If the answer is YES to either of these two road types, is an alternate site available?</i>
<ul style="list-style-type: none"> Arterial? 		
<ul style="list-style-type: none"> Collector? 		<i>Lower classification roads generally have slower speeds and lower volumes of traffic.</i>
<ul style="list-style-type: none"> Local? 		
Is visibility adequate on the road where school access is located (i.e., not on a curve or a hill)?		<i>A YES answer is desirable; a NO will mean a greater potential for traffic safety concerns.</i>
Can school driveways be aligned with existing streets to create four-way, right-angle intersections?		<i>A YES answer is preferable; it reduces the number of conflict points and non-standard vehicle movements.</i>
Is the school site close to existing controlled crossing points (crosswalks)?		<i>A YES answer will potentially reduce the need for construction of new controlled crossings (crosswalks).</i>
Can on-site pedestrian pathways align and connect with existing sidewalks on the street network?		<i>Connected networks are essential to their use.</i>
Can access be provided from more than one direction and at least two adjacent streets?		<i>More options mean that traffic volumes will be distributed rather than concentrated, which can result in congestion and unsafe operation.</i>
Is the school site accessible by public transit (if available)?		<i>A YES answer means that public transit can be an option for</i>

		<i>school users.</i>
Consider all modes of travel to and from school and their access points to the site:		
<ul style="list-style-type: none"> Is there adequate space on-site for bicycle storage? 		<i>Adequate storage is desirable if cycling is to be an option.</i>
<ul style="list-style-type: none"> Can the separation of travel modes (school buses, private vehicles, bicycles, and pedestrians) occur on the site? 		<i>Separating modes reduces the potential for conflicts.</i>
<ul style="list-style-type: none"> Can the transportation needs of disabled / physically challenged students be integrated into the site? 		<i>The needs of these users should be integrated into the design of the school.</i>

Parking/Loading Considerations	Yes/No	Comment
Is there adequate storage space either on the school site or off to park buses?		<i>It is very desirable to have adequate storage space on site, but not always possible. If it is not possible, find alternatives for bus loading/unloading such as on nearby streets, or through agreements with nearby property owners.</i>
If school bus pick-up/drop-off will occur not on the school site, but the adjacent street network, is it possible to install a pull-out lane to prevent buses from sitting in the travel lane of the road?		<i>If buses must block traffic, motorists may become frustrated and try to pass.</i>
Is there adequate storage space for queuing of private vehicles picking up and dropping off students?		<i>This should be carefully considered. Many existing schools have inadequate storage space for these activities. Space requirements may be difficult to estimate and provide. If it is not provided, where will this activity take place?</i>
Is there permanently reserved space for deliveries and/or emergency vehicles?		<i>A space for these activities is essential and may be a by-law requirement.</i>
Are staff parking requirements accommodated on site?		<i>Very desirable, and may be a by-law requirement.</i>
Are visitor parking requirements accommodated on site?		<i>Review similar schools to determine adequate visitor requirements. Likely a by-law requirement.</i>
Has the on site location for garbage collection and other similar activities been considered?		<i>Avoid conflict between garbage vehicle operation and other</i>

		<i>vehicle movements on site, particularly during peak traffic periods.</i>
Consider the age range of students/users of the school:		
<ul style="list-style-type: none"> • Will students be young enough that parents will park and accompany their child in and out of school? 		<i>If YES, then additional parking for this use may be required, where this can safely occur.</i>
<ul style="list-style-type: none"> • Will student parking be provided, in the case of a high school? 		<i>If NO, where will this occur off site? Will this be an issue for the surrounding community? If it will, how can this be resolved?</i>
<ul style="list-style-type: none"> • Will the school include an in-house child care facility that will require additional parking supply and a child pick-up/drop-off area? 		<i>If YES, then these features should be provided on site.</i>

DISCUSSION

Once the guidelines are finalized, Manitoba Infrastructures and Transportation believes that the document will provide a high level of value to those who may not necessarily have a technical background, but are interested in making changes to school area infrastructure and/or policies. In addition to the toolkit summarizing effective improvement measures, the document will provide a comprehensive, step-by-step process for school teams to follow in order to see the improvements through to implementation, and an understanding of the roadblocks that may occur along the way. All schools have differing surroundings and circumstances, and a one-size-fits-all strategy will not work. It is for this reason that the creation of a team representing an individual school is the foundation of this process.

With the release of the guidelines, it is anticipated that Manitoba municipalities will receive a higher than usual number of requests for school area traffic improvements. The prioritization method outlined in the guidelines will be a useful tool for road authorities and school officials alike.

The toolkit does not address school zone speed limits in any great detail. At the time of guidelines’ writing, regulations supporting speed zone legislation are being prepared to make school speed zones available in Manitoba. Previous to this, Manitoba has not had a policy in place for speed zone speed limits for approximately 50 years. Manitoba’s Bill 3 gives local municipal governments the authority to designate segments of highway (including provincial highways) as a school zone and implement modified speed limits in such zones. School zone speed limits will not be implemented in Manitoba until the Province completes regulations

governing their implementation. This process is underway and expected to be completed in 2013. The regulations are expected to set out distance requirements surrounding a school at which a speed zone is to be applied, signage requirements, time of day regulations for enforcement, and other possible criteria. It is expected that an addition to the guidelines pertaining to the new regulations can be inserted into the document at such time as it becomes applicable.

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