REPORT

Town of Morinville
FINAL TRANSPORTATION STUDY

URBAN systems

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EXECUTIVE SUMMARY

Background

The Town of Morinville have identified challenges during the implementation of traffic control devices and pavement markings along the Town's roadways and intersections. Town Staff have noted that signage and crosswalk locations have been (in the past) implemented upon the request of resident without exploring a consistent application method.

Signage and Pavement Marking

Existing traffic control devices (stop and yield signs) at intersection have been implemented by using varying standards and guidelines. Corridors and intersections where school children and increased pedestrian activity are expected have been observed to prioritize the automobile by treating the intersection with a yield sign.

Playground and school sites have also been noted to include a speed reduction signs; however, drivers were not made aware of when the speed restriction ended. This has been noted to cause enforcement issues for local Peace Officers and RCMP.

Pedestrian crossings have been reviewed to understand the process in which they were applied. Historically, it has been understood that crossing locations were implemented upon the request from local residents. While crossing locations benefit pedestrians, closely spaced crosswalks may also impact the effectiveness at crossing points. **Appendix A** provides a summary on where crossing locations are applicable.

Operational Assessment

Speed data was provided for two locations in Town:

- 100th Avenue (just east of Grandin Drive)
- Grandin Drive (just south of 97th Avenue)

While the posted operating speed is 50kph in the Town limits, the results from the speed data illustrate up to 30% of drivers operating between 60kph to 69kph. The design speed specific for these corridor may have contributed to the observed operating speeds. Field observations have noted these specific corridors contain wide pavement areas that can accommodate on-street parking. Additional considerations for cycling were limited to existing trail systems.

Emergency vehicle signals feasibility assessment was conducted to understand the volume threshold for the unique application. The fire station in the past has been noted to experience delays during an event. The current daily volume along 100th Street is approximately 5,000 vehicles per day (vpd). Observations in cities across Alberta, United States and Canada implement emergency vehicle signals along corridors with volumes between 9,000 to 15,000 vpd. As development occurs in the Champagne District and surrounding areas, improvements to emergency vehicle access can be included as parts of the development's transportation impact assessment.

Priority Projects

The results from the study divided the improvements into three priority project areas. A summary of the priority projects can be found in **Appendix D**.

Existing traffic controls in the Town that affect safety and application consistency in school and playground sites are categorized as "Priority 1". Areas where the majority of the population is expected to be school-age users ranked the highest for this review.

Projects specified under the "Priority 2" are located in commercial zones, park spaces, and close proximity to school site. These "areas" may have an increase safety risk due to improper signage or pavement markings.

Other contributing factors for "Priority 2" projects include pedestrian across locations that violate guidelines or crossings that are located in close proximity to an established control.

"Priority 3" projects specifically identify intersection and pedestrian controls in residential areas. The projects listed in this category recommend upgrading the existing yield control signage, revising the sign placement and improving pavement markings.

Conclusion

It is important to understand the projects identified in this study can be completed in isolation or as part of a larger capital project. By identifying opportunities to include the signage and pavement marking changes into a larger project, it can minimize the perception of increased change along the corridor.

As the Town moves forward with development and growth, facility design and implementation must ensure safety for all users. It is expected that trips around the community can be completed by walking, cycling and driving; the Town must ensure that the pedestrian and cyclists facilities are design to a similar standard for drivers. This represents improved safety and maintenance on active mode facilities to encourage alternative trips.

To resolve the consistency concerns related to the transportation control devices, it is encouraged that industry and provincial guidelines form the first step in decision making process. Signage layouts specific to the Town of Morinville will need to be documented identifying the unique nature of the application and applied in similar situations.

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APPENDICES

ABBREVIATION

NHS – National Household Survey

TAC – Transportation Association of Canada

MUTCD – Manual of Uniform Traffic Control Devices

LOS – Level of Service

FHWA – Federal Highway Administration (US)

1 INTRODUCTION/BACKGROUND

Context

The Town of Morinville retained Urban Systems to perform an assessment on the current transportation related signage and pavement markings implemented on local road networks. This study includes the following priorities:

- Intersection Controls
- Pedestrian Crossing Controls
- School and Playground Controls
- Emergency Vehicle Signal

The Town Staff have documented the consistency in which traffic control signage and pavement markings have been implemented throughout the Town. It has been noted that signage and pavement markings have typically been implemented as a reaction to a certain issues. It has since been identified that a systematic and a logical application of traffic control signs and pavement markings are needed. A uniform practice following national and industry guidelines have not always been part of the decision making process when considering specific traffic control devices.

As part of this study, the document will begin to form and develop consistent application standards for Town Staff and provide insight for concerned residents.

2 EXISTING CONDITIONS

Traffic Control Implementation

The Town of Morinville currently contain one traffic signals at the centre of the community (100th Street and 100th Avenue), with the remaining intersections controlled by stop and yield traffic control signs.

The installation of traffic control signs have not been implemented in accordance with industry or national standards. Local and collector corridors with similar volumes have been found to contain yield and stop control sign at intersection as a means to regulate the flow of traffic. The mix between regulatory signs can violate driver expectations especially where streets contain a similar form and function.

An understanding on traffic control devices must be developed to allow the Town Staff to address the consistent application of proper traffic control signs for a variety of roads and zoning classifications.

Table 1 includes examples of different regulatory signs and layout applied in similar street environments. A list of opportunities can be found in **Section 7**.

Table 1 – Existing Traffic Controls

LOCATION: 105 Street and 101 Avenue **CHALLENGE:** Yield control **OPPORTUNITY:** Develop consistent intersection control for minor street approaching 101 Avenue	 Source: Google Streetview
LOCATION: 103 Street and 101 Avenue **CHALLENGE:** Stop control **OPPORTUNITY:** Develop consistent intersection control for minor street approaching 101 Avenue	 Source: Google Streetview

LOCATION:
102 Avenue and 101A Street

CHALLENGE:
Yield control

OPPORTUNITY:
Traffic controls to increase safety for the most vulnerable users. Apply a consistent standard across all school, playground and crosswalk sites.

Source: Urban Systems

LOCATION:
104 Street and 97 Avenue

CHALLENGE:
Right turn only movement

OPPORTUNITY:
Proper warning sign should be install to highlight the curve or "Stop Ahead" warning sign.

Source: Urban Systems

LOCATION:
104 Avenue and 98 Street

CHALLENGE:
Signage placement

OPPORTUNITY:
Relocate sign post and install traffic control signs nearest to driver side.

Source: Urban Systems

School and Playground Control

Data collected by the Town of Morinville have illustrated the application of essential signage in school and playground area and zones have not been consistent with provincial practice. The primary concern for Staff and Peace Officers is clear signage indicating the start and end limits for the school and playground area. This by clearing marking the limits, it can improve driver compliance with the decrease in speed, and provide a tool for effective enforcement.

Playgrounds that are hidden behind single family homes (ie: Grandin Heights Park) will not require warning signs. However, if the purpose of the existing warning signs is being used to alert users on the roadway that there is a playground in the vicinity, a placemaking or information sign would be more appropriate.

Provincial guidelines establishing areas and zone for schools and playgrounds recommend treatments based on layouts and users. Field observations have shown inconsistent or improper applications of zone and area treatments for the specific facility as recommended by the provincial guidelines.

Table 2 includes examples of the existing playground and school signage treatments applied in the Town of Morinville.

Table 2 – Existing Playground and School Signage Treatments

LOCATION: Notre Dame Elementary School on Morinville Drive **CHALLENGE:** School zone limits not defined. **OPPORTUNITY:** Apply signage as recommended by Alberta Transportation Guidelines	 Source: Urban Systems

LOCATION:
Grandin Heights Park on 97th Street.

CHALLENGE:
Playground warning sign at the pathway entrance. Warning sign not required.

OPPORTUNITY:
Replace with placemaking sign

Source: Google Streetview

LOCATION:
Grandin Heights Park on 95 Avenue.

CHALLENGES:
Pedestrian crosswalk signs at the entrance of park. Midblock crosswalk not required. Park not clearly visible from road

OPPORTUNITY:
Install placemaking sign. Remove crosswalk.

Source: Google Streetview

Table 2A summarizes the signage warrants for schools and playgrounds. The study reviewed the Town's results to understand the site location and the applications standards as recommended by the Alberta Transportation.

Table 2A – School and Playground Analysis

Names	Type	USL Score	Town Score	Existing Treatment	Propose Treatment	Consistent with AT	Proposed Layout*
SCHOOLS							
G. P. Vanier Elementary School - 101 a St	School	82	78	Zone	Zone	No	TCS-D-305
G. P. Vanier Elementary School - 101 Ave	School	88	N/A	Zone	Zone	No	TCS-D-301
Notre Dame Elementary School - Morinville Dr.	School	72	75	Zone	Zone	No	TCS-D-301
George H. Primeau Jr. High School - Grandin Dr.	School	66	66	Zone	Zone	Yes	-
Morinville Community High School - 100 Ave	School	38	N/A	N/A	Nothing	Yes	-
Morinville Community High School - 101 Ave	School	64	N/A	N/A	Area/Nothing	No	TCS-D-302
PLAYGROUNDS							
Sunshine Lake Park - Sunnydale Road	Park	90	90	Zone	Zone	No	TCS-D-310
Sunshine Lake Park - 86 St	Park	90	N/A	Zone	Zone	No	TCS-D-306
Sunnydale Park - Sunnydale Road	Park	85	N/A	Zone	Zone	No	TCS-D-310
Sunnydale Park - 102 Ave	Park	95	85	Zone	Zone	No	TCS-D-310
Morinville Rotary Park - 99 St	Park	70	75	Zone	Area	No	TCS-D-306
Morinville Rotary Park - 99a Ave	Park	100	90	N/A	Zone	No	TCS-D-310
Morinville Rotary Park - 99 Ave	Park	83	N/A	N/A	Zone	No	TCS-D-310
Belle Park - All surrounding roads	Park	35	62	Area	Nothing	No	-
Grandin Height Park - All surrounding roads	Park	40	65	Area	Nothing	No	-
Splash Park	Park	17	65	Area	Nothing	No	-
Lake Park	Park	48	68	N/A	Area	No	TCS-D-307
St. Jean Baptiste park - 100 Ave	Park	38	48	N/A	Nothing	-	-
Skyline Ball Diamond Park	Park	37	65	N/A	Nothing	-	-
Lions Park - 104 St	Park	63	58	N/A	Area	No	TCS-D-307
Champlain Park - 104 St	Park	53	43	N/A	Area	No	TCS-D-307
East South Glens Park	Park	68	63	Zone	Area	No	TCS-D-307
West South Glens Park	Park	85	90	Zone	Zone	No	TCS-D-307

* See Appendix B - Alberta Transportation Guidelines for School and Playground Zones and Areas for design layouts

Pedestrian Crossing Control

Crossing locations and treatments vary on the road network. The Town employ a combination of zebra markings, parallel white lines and warning flashers to indicate to road users the potential pedestrian crossing location. Site observation have shown a transition from parallel white lines at school zones to zebra marking to increase the conspicuity of the crossing location. Yellow directional arrows have also been assigned to the crossing signs to increase the visual cues at the school crossing.

The local system that has been implemented by the Town for school site and crossing areas should be applied at similar locations. This will shape the expectations for drivers and users crossing at specified location.

An establish practice to guide the Town during the decision making process for pedestrian crossing will improve the consistency and effectiveness of application and locations for pedestrian crossings.

Table 3 includes examples of existing pedestrian crossing treatments in Morinville.

Table 3 – Existing Pedestrian Crossing Treatments

LOCATION: 100 Avenue and 107 Street **CHALLENGES:** Pedestrian crosswalk sign with no pavement marking. Improper sign if warning drivers on crosswalk ahead. **OPPORTUNITY:** Determine why the sign is required and use MUTCD to install properly	 Source: Urban Systems
LOCATION: 100 Street and 99 Avenue **CHALLENGES:** Pavement markings "ghosting" along crossing location **OPPORTUNITY:** Standardize pavement marking application	 Source: Urban Systems

LOCATION:
100 Street and 101 Avenue

CHALLENGES:
Redundant crossing location connecting to pharmacy

OPPORTUNITY:
Remove mid-block crossing and use more advance crossing systems 70m north

Source: Urban Systems

Annual Traffic and Pedestrian Safety Review Report (2013)

The Committee has identified five key areas to target for improvements as a result of the study. These include:

- Speeding
- Signage
- Crosswalks
- Parking
- Safety and Awareness

Speeding concerns have been identified for the following corridors:

- 100th Avenue (Highway 642)
- 100th Street
- Cardiff Road
- Collector roadways (Grandin Drive, Sunnydale, 95th Avenue)

The Town has deployed photo radar as a method to reduce speed related violations and also increased the frequency of patrol by RCMP and local peace officers. While the methods employed to decrease vehicle violations, the Town view speeding as an ongoing issue.

The report included a summary of the existing conditions where the uniformity of pedestrian crossing, playground and school site treatments within the Town limits.

Table 4 highlights the corridors that have a history of speeding violations

Table 4 – Grandin Drive/100th Avenue/100th Street

LOCATION: Grandin Drive North **CHALLENGES:** Wide corridors with limited visual cues to force drivers to slow down. Road geometry does not force driver to control speed. **OPPORTUNITY:** Implementing traffic calming measures. See **Appendix E**	 Source: Urban Systems
LOCATION: 100th Avenue **CHALLENGES:** Limit visual cues and transitions to force drivers to control speed and be "aware" of the surround environment **OPPORTUNITY:** Improve sidewalk space to increase visual cues to drivers	 Source: Urban Systems
LOCATIONS: 100th Street (**South** of 100th Avenue) **CHALLENGE:** Roadway prioritize vehicle only **OPPORTUNITY:** Provide accommodation for cyclist and alternative modes	 Source: Urban Systems

LOCATION:
100th Street (**North** of 100th Avenue)

CHALLENGE:
Large pavement surface which contribute to increase operating speed due to low visual cues and geometric constraints

OPPORTUNITY:
Implement traffic calming measures. Include right of way for cycling and alternative modes. See **Appendix E.**

Source: Urban Systems

Speed Radar Data

Photo radar to monitor excessive speed has been implemented since 2009. Two corridors were selected to monitor operating speeds which included 100th Avenue and 87 Street, eastside of town and Grandin Drive and 95th Avenue.

The data recorded on 100th Avenue entering the Town site resulted with:

- Over 50% of the vehicles recorded, travel between 50 to 59 kph
- Over 95% of the vehicles, travel between 40 to 60 kph

On Grandin Drive:

- Over 40% of the vehicles recorded at this location travel between 50 to 60kph
- Over 30% of vehicles captured were recorded traveling between 60 to 69 kph

The higher operating speeds recorded on Grandin Drive is a concern especially with residential homes, schools, and parks as the primary land uses adjacent to the corridor.

Table 5A/5B summarizes field observations from the speed radar corridors.

Table 5A – Grandin Drive

Grandin Drive South	Grandin Drive North
 Source: Google Streetview	 Source: Google Streetview
▸ Residential frontage with large pavement surface ▸ Road design does not cue drivers to operate slow through the area	▸ Mix of residential frontage and backing with a junior high school in the vicinity. ▸ Limited permeability from residential backing reduce driver attentiveness to environment

Table 5B – 100th Avenue

100th Avenue East of 100th Street	100th Avenue West of 100th Street
 Source: Google Streetview	 Source: Google Streetview
▸ Four lane cross section with passing opportunities and centre raised median ▸ Street design and visual cues create a corridor that challenges drivers to control operating speeds	▸ Four lane cross section with passing opportunity and on-street parking ▸ Existing cross section creates excess capacity

Alberta Transportation Collision Data

A ten year collision history (2003 to 2012) was reviewed as part of this study to develop an understanding into the types of collisions that have been occurring in the Town.

A significant numbers of vehicle collisions have been concentrated on the Town two main arterials 100th Street and 100th Avenue. The top ten corridors with the most collisions are illustrate in **Table 6**.

Table 6 – High Collision Corridors Based on 10 Year History

Corridor	Total Collisions
100 Avenue	197
100 Street	191
Grandin Drive	35
99 Avenue	23
95 Avenue	21
97 Street	21
101 Avenue	21
98 Avenue	20
102 Street	20
107 Street	20

The top five collision occurrences during the ten year review include:

- Backing – 24%
- Struck Object – 17%
- Rear Ends – 16%
- Right Angles – 12%
- Sideswipe – 8%

57% of the collisions occurred when the road was dry, followed by 37% of collision occurring in winter conditions. With the increase number of the collisions occurring in dry road conditions, likely contributing factors include human error that may be associated with aggressive driving, impaired driving, or driver distraction.

3 PROBLEM DEFINITION

The problem definition was developed by reviewing the existing data, site observations, and discussions with the Town. The review identified the following opportunities for improvements and gaps between the industry guidelines and local application methods:

- Wide street cross section contributing to increased operating speeds
- Limited geometric constraints to control driving behaviour
- Traffic signage on residential road prioritize vehicular traffic
- Traffic control device application consistency
- Warning signs used as information signs
- Traffic regulation signs used as warning signs, or turn control signs
- Pavement marking consistency and application methods
- Existing municipal engineering standards includes higher design speeds given context
- Existing transportation master plan only consider vehicle improvements

4 TRAFFIC ENGINEERING GUIDELINES

As the Town or approving authority begin the process of improving the road network and intersection. Reference to specific guidelines and decision supporting tools should be used to effectively implement standard and non-standard roadway elements. The following section briefly describes the industry standard documents used in this study.

TAC – Pedestrian Crossing Control Guide[1]

The TAC - Pedestrian Crossing Control Guide is primarily intended to augment the information about pedestrian crossing control devices and their applications contained in the MUTCD (Manual of Uniform Traffic Control Devices for Canada). The manual is used to determine a specific crosswalk application for the local area based on unique environmental parameters.

A brief outline for the TAC's pedestrian crossing assessment can be found in **Appendix A**.

Alberta Transportation Guidelines for School and Playground Zones and Areas[2]

The purpose of this document is to promote the uniformity in the signing and marking of school and playground zone and areas in the province of Alberta. The document was created referencing the Alberta Traffic Safety Act, Rules of the Road Regulations and the MUTCD. It includes typical layouts based on speed, intersection and the location of school and playgrounds.

AT – Guidelines for School and Playground Zones and Area application can be found in **Appendix B**.

TAC – MUTCD (Manual on Uniform Traffic Control Devices)[1]

The MUTCD serves as a guide to promote uniformity for the use of devices for the control of traffic and information to driver and other road users. The manual is used as the standard in Canada providing input on traffic sign, pavement marking, sign layout and other regulatory signs used on Canadian roadways.

The Town is recommended to consult this manual when establishing signage on any roadways within their jurisdiction.

Canadian Guide to Neighbourhood Traffic Calming[1]

This document provides guidance for physical design elements, such as speed bumps and narrowed roads, or other measures intended to reduce speed and motor-vehicle volumes. Traffic calming measures may be desirable in order to improve safety for pedestrians and cyclists.

The geometric improvements along the corridor can typically generate favourable operating speeds. A variety of traffic calming measures is illustrated on 10th Street and 101 Avenue in **Appendix E**.

[1] TAC Bookstore (http://tac-atc.ca/en/bookstore-and-resources/bookstore)
[2] Alberta Transportation (http://www.transportation.alberta.ca/content/doctype233/production/schlpgnd.pdf)

5 WARRANTS

Warrants are used as part of the decision making process to promote uniformity across the province, county, municipality and country with respect to industry standard traffic control devices and information signage for road users. The established warrants provide a support tool to assist in the decision-making process when require to:

- Establish the need for a traffic control device
- Identify the type of traffic control device that would be most suitable for the location's geometry and cross section, vehicular exposure, user demands, etc.

To prepare a warrant, data will be required for various inputs into the calculation to determine an appropriate solution. Traffic volume, speed, and other influencing factors will need to be established prior to commencing a warrant analysis. For this study, two guidelines were reviewed to establish an improve practice when applying new/proposed roadway treatments, they include:

- Alberta Transportation - Guidelines for School and Playground Zones and Areas – 2007
- TAC - Pedestrian Crossing Control Guide – 2012

The value and the accuracy of the result from the warrant process will mirror the amount and quality of data available during the process.

School and Playground Zone and Areas

Alberta Transportation created a province specific guideline with recommendations for school and playground zones and areas. The document provides an understanding into the applications of signage and the classification of the school and playground spaces. The warrant separates the results into two categories:

1. Zones – Signage and a reduction in speed to 30kph
2. Area - Signage warning users on the road that a school or playground is in the vicinity

A detail account of the evaluation can be found in **Appendix B.**

Pedestrian Crossing Control (Crosswalks)

There are three pedestrian crossing treatment systems (with sub-components) that can result from the TAC - Pedestrian Crossing Control Guide warrant analysis:

1. Ground Mounted System
    a. Side mounted signs
    b. Overhead mounted signs
2. Overhead Flashing Beacon System
3. Traffic Signal System
    a. Half signal
    b. Full signal

The outcome for the specific system is a result from traffic volume, pedestrian volume, vehicle speed, number of lanes, and the presences of pedestrian median. Once a pedestrian crossing system is specified from the warrant, the components as part of the crossing system are classified into the following categories:

- Recommended
- Desirable
- Optional

Recommended improvements are essential to the safe and effective operation of the pedestrian crossing system. Desirable components are elements that have the potential to increase the overall safety of the system and the optional elements are implemented if resources are available to improve the conspicuity of the selected crossing control.

The approving authority should remain consistent with their application of desired crossing elements in similar zones and areas to ensure user compliance. Once a system is establish based on national or local standards, the approved treatment should be documented an applied to the local context.

The complete pedestrian crossing evaluation can be found in the industry TAC guidelines for crosswalks. A summary is provided in **Appendix A**.

Stop or Yield Intersection Control Signs

The application of yield and stop signs at intersection was reviewed to determine a uniform approach when selecting the appropriate control intersections. Warrants for traffic signals and all-way stop intersections are readily available from TAC which can help with the decision making process. However, the tool available to determine if an intersection should be a yield or stop controlled are less sophisticated as the tools are emerging.

The MUTCD lay out three guidelines for the applications of yield signs on MINOR approaches:

- Sightlines must be greater than 15kph
- Undeveloped acceleration lane at entrance ramp to expressway or intersection
- Entrance to a divided highway when making a left-hand turn from the median

A study from 1981 by FHWA (Federal Highway Administration) "Stop, Yield, and No Control at Intersection" concluded with the following results:

- Control type has no effect on accidents rate at low volume roadways
- Travel time is affected by signing
- Minor operational difference

Guidance for yield signs from the FHWA study recommends the following for MINOR approaches:

- Sightlines must be greater than 16kph
- Less than 2 collisions within last 3 years
- Less than 3 collisions where volumes are greater than 300vph within the last 3 years

It is clear that drivers will experience less delay with yield signs as the primary intersection treatment, however, as yield sign are implemented trade-off with respect to other users must be considered.

Pedestrian and cyclist using the same space will experience vehicle travelling at a higher rate of speed approaching the intersection. When a yield sign is used at a given location, the perception for other users on the road is the automobile have the priority. In a residential or school context, the approving authority must determine if that is an appropriate message for the public.

As mode (bikes, walking, transit, etc) choice increase for the community, balanced design and road treatments should be a focused to insure equality and safety for all users.

While the recommendations from the FHWA are qualitative, it provides guidance based on empirical data. Ultimately the approving authority will be required to determine the treatment based on Town policies and goals. Once decided, the treatment should be documented and consistently applied based on context.

Emergency Vehicle Access Signals

The requirements for the installation for an emergency vehicle signal has not been formally documented in establish industry guidelines. Jurisdiction and municipalities have been implementing specialized signals based on professional judgement and approval precedence.

The MUTCD recommends the following qualitative decision factors:

- Collision History
- High Speed
- Restricted Visibility
- High Volumes
- Excessive delays

Additional traffic volume data and analysis will be required to determine if an emergency access signal is required at 100th Street/101st Avenue. Based on the existing precedent established by jurisdictions in Canada and United States, the range for installing an emergency signal is between 9,000 to 15,000 vehicles per day. **Table 7** describes the benchmarks used in Oregon, Winnipeg and Calgary.

Table 7 – Volume Thresholds

Jurisdiction	VPD*
State of Oregon	9,000
City of Calgary	12,000
City of Winnipeg	15,000

**vehicles per day*

Appendix C documents the existing sites with emergency access signals and associated volumes.

6 RECOMMENDATIONS

This section outlines a series of methods to improve the operations and consistency for users on the road network.

School and Playground Zone and Areas (Appendix B)

- Apply the establish Alberta Transportation Guidelines for School and Playground Zones and Area
- Review existing layouts for areas of improvements based on the guidelines.
- Local standard should be documented and adopted as part of the Town's standards
- Identify appropriate signage for information, warning, and regulatory purposes
- Conduct study to identify safe routes to school

Pedestrian Crosswalks (Appendix A)

- Apply standards established by TAC – Pedestrian Control Guide
- Requests for crossing location should be decided using the decision making tool outlined by TAC
- Develop a consistent system during crosswalk application for desirable elements on similar corridors
- Pavement markings for crossing location should have a consistent design, pattern, and colour
- Establish a protocol or policy when applying optional elements (ie: warning flashers) that are not essential
- Local applications not included in the industry guidelines should be documented and applied as part of the Town's standards

Stop or Yield Control

- Apply TAC – Traffic Signal Warrant Handbook for potential upgrade to signals
- Apply TAC – MUTCD Warrant to determine the trigger for all-way stop
- Traffic control device must consider vulnerable users along the facility
- Existing yield signage should be reviewed to ensure safety for school-aged and vulnerable users
- Existing yield signage will require a sightline review to ensure safe operations
- Future yield control intersections should be minimized or eliminated to improve safety
- Data collection program should be established to document intersections and corridors of concern

Emergency Vehicle Access Signals

- Traffic study should be conducted to determine the application of emergency vehicle signal
- Triggers for an emergency vehicle access signal is between 9,000 to 15,000 vpd
- Signal and signage application should aligned with the recommended practice established by the MUTCD
- Requests for signals should be formally documented and tracked based on reoccurring site issues

Speed Reduction Toolbox

- Updated municipal engineering standards to reflect urban design criteria
- Deploy traffic calming measures as recommended in the Neighbourhood Traffic Calming Guide
- Implement a system of traffic calming elements to improve compliance
- Improve pedestrian crossing locations with curb extensions/blub outs
- Strategically plan the future use of yield control intersections
- Review the feasibility of neighbourhood traffic circles

Additional Considerations

- Review Municipal Engineering Standards to shape operating speed through geometry and physical design
- Update 2004 Transportation Master Plan to provide alternative transportation mode for all users
- Conduct Parking Study to understand occupancy rates along commercial corridors

7 PRIORITY PROJECTS

The preliminary list of projects have been separate into three priority sections based on safety for school-aged users and potential for vehicle conflicts associated with non-standard signage applications and layout. It should be noted; the projects listed in the separate priorities can be changed based on the goals of the Town. Opportunities to combine the projects listed in this study with planned capital works can minimized the start-up costs and reduce the perception of change for the corridor.

Priority 1

Existing traffic controls in the Town that affect safety and application consistency in school and playground sites are categorized as "Priority 1". Areas where the majority of the population is expected to be school-age users ranked the highest for this review.

Other items that ranked in this category include incorrect traffic control signage for minor roads fronting onto Highway 642 and incorrect warning signage on collector streets.

Table 8 summarizes the recommended improvements for immediate action.

Table 8 – Priority 1 Improvements

Item	Location	Cross Street	Challenges	Opportunity	Place Name
1	104 Street	98 Avenue	Midblock	Traffic Calming, Zebra Crossing, Sidewalk	Morinville Tiny Tots Trail
2	104 Street	Lots 9817	RB - 14R	Remove RB-14R	
3	104 Street	99 Avenue	Signage Standards	TCS-D-307 (Area)	Lions Park
4	104 Street	99 Avenue	Signage Standards	TCS-D-307 (Area)	Champlain Park
5	99 Street	99 Avenue	Signage Standards	WC-3	Rotary Park
6	97 Street	95 Avenue	Signage Standards	Remove playground signs/ Create placemaking signs	Grandin Heights Park
7	96 Avenue	96 Street	Signage Standards	Remove playground signs/ Create placemaking signs	Grandin Heights Park
8	Morinville Drive	98 Avenue	Signage Standards	TCS-D-301 (Zone)	Notre Dame Elementary School
9	98 Avenue	95 Street	Signage Standards	Remove playground signs/ Create placemaking signs	Belle Park
10	99 Avenue	95 Street	Signage Standards	Remove playground signs/ Create placemaking signs	Belle Park
11	100 Avenue	Alley Access	Yield (RA-2)	Convert to RA-1 (Stop)	St. Jean Baptiste Church
12	101 Avenue	97 Street N	Signage Standards	TCS-D-302 (Area)	Morinville Community High School
13	102 Avenue	103 St and	Signage Standards	TCS-D-305 (Zone)	G.P. Vanier Elementary

Item	Location	Cross Street	Challenges	Opportunity	Place Name
		101A St			School
14	102 Avenue	103 St and 101A St	Signage Standards	TCS-D-301 (Zone)	G.P. Vanier Elementary School
15	102 Avenue	103 St and 101A St	Yield (RA-2)	Convert to RA-1 (Stop)	G.P. Vanier Elementary School
16	103 Avenue	103 St and 101A St	Yield (RA-2)	Convert to RA-1 (Stop)	G.P. Vanier Elementary School
17	104 Avenue	103 St and 101A St	Yield (RA-2)	Convert to RA-1 (Stop)	G.P. Vanier Elementary School
18	101A Street	104 Avenue	Signage Standards	Combine treatment with GPV Elementary	Meadow Diamonds
19	107 Street	106 Avenue	Signage Standards	TCS-D-307 (Area)	Bob Foster Park
20	102 Avenue	Sunnydale Road	Signage	Convert to RA-1 (Stop)	Sunnydale Park
21	Sunnydale Road	102 Avenue	Signage Standards	TCS-D-310 (Zone)	Sunnydale Park
22	87 Street	86 Street	Signage Standards	Remove Signage	Sunnydale Park
23	Sunnydale Road	86 Street	Signage Standards	TCS-D-306 (Zone)	Sunshine Lake Park
24	83 Avenue	95A St	Signage Standards	TCS-D-307 (Area)	East South Glens Park
25	81 Avenue	95A St	Signage Standards	TCS-D-307 (Area)	East South Glens Park
26	82 Avenue	97 Street	Signage Standards	TCS-D-307 (Area)	West South Glens Park

Priority 2

Projects specified under the "Priority 2" are located in commercial zones, park space, and close proximity to school site. These "areas" may have an increase safety risk due to improper signage or pavement markings. Other contributing factors for "Priority 2" projects include pedestrian across locations that violate guidelines or crossings that are located in close proximity to an established control. **Table 9** summarizes the potential projects.

Table 9 – Priority 2 Improvements

Item	Location	Cross Street	Challenges	Opportunity
1	97 Avenue	107 St and 104 St	Yield (RA-2)	Convert to stop or traffic circle
2	99 Avenue	99 Street	Yield (RA-2)	Convert to RA-1 (Stop)
3	95 Avenue	97 Street	All-way stop	Paint or traffic circle
4	95 Avenue	97 Street	Midblock	Align with intersection
5	97 Street	96 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
6	Morinville Drive	FRONTING STREETS	Yield (RA-2)	Use RA - 1 (Stop)
7	100 Avenue	107 ST	Placement	Relocate RA-4L and RA-4R
8	100 Avenue	99A Avenue	Crossing Location	Remove
9	100 Street	101 Avenue	Crossing Location	Relocate crossing to 101 Ave
10	104 Street	101 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
11	105 Street	101 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
12	106 Street	101 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
13	94 Street	106 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
14	Sunnydale Road	FRONTING STREETS	Yield (RA-2)	Convert to RA-1 (Stop)

Item	Location	Cross Street	Challenges	Opportunity
15	Sunnydale Road	104 Avenue	Crossing Location	Consistent Application
16	100th Street Svc Rd	90 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)
17	100th Street Svc Rd	87 Avenue	Yield (RA-2)	Convert to RA-1 (Stop)

Priority 3

"Priority 3" projects specifically identify intersection and pedestrian controls in residential areas. The projects listed in this category recommend upgrading the existing yield control signage, revising the sign placement and improving pavement markings. Understanding the projects are located in a residential context, it is assumed the traffic volumes and operating speeds are slightly lowers. **Table 10** highlights the potential projects.

Table 10 – Priority 3 Improvements

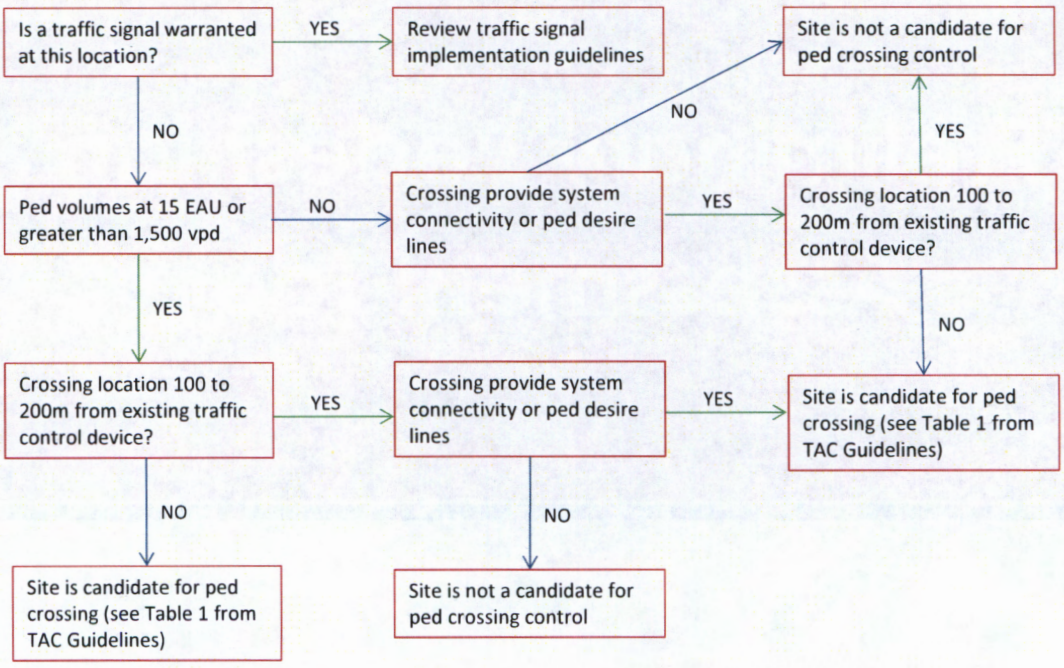
Item	Location	Cross Street	Challenges	Opportunity
1	102 Street	99 Avenue	Yield (RA-2)	Convert to stop or traffic circle
2	102 Street	98 Avenue	Yield (RA-2)	Convert to stop or traffic circle
3	101 Street	99 Avenue	Yield (RA-2)	Convert to stop or traffic circle
4	101 Street	98 Avenue	Yield (RA-2)	Convert to stop or traffic circle
5	101 Street	97 Avenue	Yield (RA-2)	Convert to stop or traffic circle
6	97A Avenue/ 97 Street	FRONTING STREETS	Yield (RA-2)	Convert to RA-1 (Stop)
7	100 Avenue	101 Street	Signage	Information Sign
8	105 Ave	97 Street	Yield (RA-2)	Convert to stop or traffic circle
9	104 Ave/95 St	FRONTING STREETS	Yield (RA-2)	Convert to RA-1 (Stop)
10	104 Avenue	97 Street	Yield (RA-2)	Convert to stop or traffic circle
11	104 Avenue	98 Street	Signage	Relocate sign post

APPENDIX A

Preliminary Pedestrian Assessment Tool

APPENDIX A

Preliminary Pedestrian Assessment Tool



PRELIMINARY PEDESTRIAN CROSSING ASSESSMENT TOOL*

*EXTRACTED FROM TAC PEDESTRIAN CROSSING CONTROL GUIDE

APPENDIX B

Alberta Transportation Guidelines for School and Playground Zones and Areas

Alberta
Infrastructure and
Transportation

GUIDELINES FOR

SCHOOL AND PLAYGROUND

ZONES AND AREAS

Version 2

Date of Issue: December 2007

FOREWORD

The purpose of the Guidelines for School and Playground Zones and Areas document is to promote uniformity in the establishment and the signing and marking of School and Playground Zones and Areas in Alberta.

Section 107 of the Alberta Traffic Safety Act, revised in May 2003, prescribes a maximum speed limit of 30 kilometres per hour within School and Playground Zones, in both urban and rural environments. By bylaw, a municipality may prescribe a lower maximum speed limit than that prescribed under the Act but the speed limit so prescribed shall not be lower than 20 kilometres per hour. A municipality can also set the time periods when the speed limit in School Zones is in effect. A municipality cannot modify the effective period established under the Act for Playground Zones. Traffic control devices are used to mark the beginning and end of School and Playground Zones.

The previous version of these Guidelines, having the same name, was published in 2004. These Guidelines further refine the best practices laid out in the previous version, which built on the principles of the preceding guidelines (entitled Signing and Marking of School Zones and Playground Zones, published in 1988) and prescribed a set of actions that is consistent with the Traffic Safety Act and the accompanying Use of Highway and Rules of the Road Regulation. They also generally adhere to the principles of the Manual of Uniform Traffic Control Devices for Canada (MUTCDC). The revised Guidelines (Version 2) include:

- Incorporation of refinement to the systematic, objective and quantitative procedure for assessing the need for a School Zone, a Playground Zone, a School Area or a Playground Area as documented in the Transportation Association of Canada School and Playground Areas and Zones: Guidelines for Application and Implementation, October 2006;
- Clarification of the description of specific criteria to be considered in the assessment;

The Guidelines reflect the current best practices and are consistent where possible with neighbouring Provinces. They will continue to evolve to reflect future best practices and any future changes in the Traffic Safety Act or the Regulations. Any feedback is welcomed and may be sent to the Director of Highway Operations, Technical Standards Branch, Alberta Infrastructure and Transportation, 4999-98 Avenue, Edmonton, Alberta, T6B 2X3.

Moh Lali, P. Eng.
Director, Highway Operations
Technical Standards Branch

ACKNOWLEDGEMENT

The original version of this Guide was prepared as a joint effort by Hamilton-Finn Road Safety Consultants Ltd., Alberta Infrastructure and Transportation and a Steering Committee consisting of several Alberta Road Authorities. The Hamilton-Finn Consultant team consisted of:

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Sany R. Zein, President;

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D3 SCHOOL AND PLAYGROUND ZONES AND AREAS

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D3 SCHOOL AND PLAYGROUND ZONES AND AREAS

D3.1 Introduction

D3.1.1 Background

The Alberta Traffic Safety Act states that the speed limit in School and Playground Zones throughout the province is 30 km/h. By bylaw, a municipality may prescribe a lower maximum speed limit than that prescribed under the Act but the speed limit so prescribed shall not be lower than 20 km/h. A municipality can also set the time periods when the speed limit in School Zones is in effect. A municipality cannot modify the effective period established under the Act for playground zones.

The Manual of Uniform Traffic Control Devices for Canada allows for the creation of School and Playground Areas, without reduced speed zones. The purpose of this document is to provide a set of uniform guidelines towards the establishment of and the signing and marking of School and Playground Zones and areas in both rural and urban environments. The preparation of the Guidelines included consultation with road authorities and stakeholders around the Province. Application of the Guidelines form part of a more comprehensive strategy for providing safe operations for motorists and children near schools and playgrounds, supported by the road authority, the school, the parent group and the enforcement agency.

This document prescribes guidelines for the:

- Establishment of School Zones and Areas
- Establishment of Playground Zones and Areas
- Signing and Marking of School Zones and Areas
- Signing and Marking of Playground Zones and Areas

The guidelines are intended as a tool for practitioners, including Alberta Infrastructure and Transportation and the municipalities, municipal districts and counties within the Province.

D3.1.2 Reference Documents

These Guidelines are intended to support and supplement the following documents:

- Alberta Traffic Safety Act ("The Act" - May 2003)
- Rules of the Road Regulations ("The Regulations" – May 2003)
- Manual of Uniform Traffic Control Devices for Canada ("the MUTCDC" - 1998)

D3.1.3 Definitions

The key definitions in the Guidelines, further to the definitions in the Act, are as follows:

School

Schools are educational institutions that are attended primarily by children. This includes elementary schools, middle schools, junior high schools and high schools. No distinction is made between public and private schools.

Playground

Playgrounds are recreational facilities utilized primarily by children. This includes outdoor playgrounds with play equipment, sports fields, ball diamonds, tot lots and indoor or enclosed facilities such as skating rinks and swimming pools.

Zone (School Zone or Playground Zone)

A section of roadway adjacent to a school or

playground that is denoted by School Area or Playground Area signage and a 30 km/h speed limit sign.

Area (School Area or Playground Area)

A section of roadway adjacent to a school or playground that is denoted by School Area or Playground Area signage only.

D3.2 Establishment of School and Playground Zones and Areas

D3.2.1 Introduction

School and Playground Zones and Areas should be used sparingly, and in accordance with these Guidelines. Zones and Areas should not be provided in an attempt to increase the safety of crossing the roadway; other devices have been developed and should be applied for such a purpose.

The WC-1 and WC-3 signs of the MUTCDC are to be provided to warn motorists of the presence of a school or playground, respectively, and hence the possibility of children entering the roadway. These signs denote the start of a School or Playground Area. These signs are depicted in FIGURE 2.1.

WC-1 (School Area)

WC-3 (Playground Area)

FIGURE 2.1 SCHOOL AND PLAYGROUND AREA SIGNAGE (MUTCDC)

It may be advisable in certain circumstances to provide a reduced speed limit together with the School Area or Playground Area sign. A speed limit sign (MUTCDC RB-1) placed below the WC-1 or WC-3 denotes the start of a School Zone or Playground Zone.

WC-1 and RB-1 (School Zone)

C-3 and RB-1 (Playground Zone)

FIGURE 2.2 SCHOOL AND PLAYGROUND ZONE SIGNAGE

D3.2.2 Use of these Guidelines

These Guidelines represent an objective and quantitative engineering tool to assess the need for a School or Playground Zone or Area. They are to be treated as such, and must be considered along with stakeholder concerns and other factors, including sound engineering judgment. School or Playground Zones and Areas are not to be provided in place of physical features that are designed to reduce speeds (and are typically more effective in doing so).

These Guidelines are NOT to be used to determine the need for crosswalks (marked, signalized or patrolled). The need for such devices can be assessed using the Pedestrian Crossing Control Manual, published by the Transportation Association of Canada. While School or Playground Zones and Areas can potentially improve safety for children crossing the road, their primary objective is to warn motorists of the possibility of unexpected or unintentional children entering onto the roadway at undefined crossing locations.

A procedure was developed in which the need for a School or Playground Zone or Area could be evaluated for candidate roadways, according to a set of predefined criteria. The first street in each direction from the school or playground could be considered a candidate roadway. Therefore, there could be up to four candidate roadways for a school or playground located within a single block.

Where a school and playground are located adjacent to one another, the need to designate a Zone or Area for each facility should be reviewed separately, based on the fronting segment of the roadway. The same applies for a playground on the school grounds, unless the utilization of the playground is closely tied to school operations, accessed only from the school and used only during school hours.

Once a Zone or Area is found to be required, it should be implemented using the appropriate signing and marking plans provided in these Guidelines. The use of the appropriate plan will depend on whether the warranted zone is for a school or playground (or both), whether it is located in an urban or rural environment, and whether there is an intersection within the zone or area.

D3.2.3 Establishment of School Zones and Areas

School Areas (warning signs) can be considered for roadways near Elementary and Middle schools, where there is a possibility of children entering the roadway. School Areas are generally discouraged for High Schools, Post Secondary Institutions and Pre-Schools, due to the widespread recognition of their limited effectiveness for these age groups.

School Zones (reduced speed limits near schools) are generally discouraged along "walk-to-school routes" away from the school vicinity, and on roadways where any of the following conditions exist:

- School is located on an arterial road or expressway / freeway;
- School grounds are fully fenced;
- School is located an appreciable distance from the roadway;
- The roadway does not have a school entrance; and
- The length of the school frontage is minimal (e.g. less than 50 metres).

The factors to be considered in the establishment of School Areas and Zones are:

- School Type
- Road Classification
- Fencing Characteristics
- Property Line Separation
- Location of School Entrance
- Location of Sidewalks

These criteria are described and illustrated as follows, along with some of the possible descriptions and how they influence the need for a school zone. These criteria are to be evaluated according to the procedure presented following the criteria descriptions.

The procedure is applicable for both residential and non-residential areas.

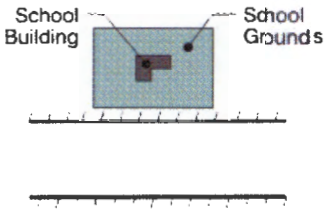
FIGURE 2.3 SCHOOL CRITERIA DESCRIPTIONS

1. School Type

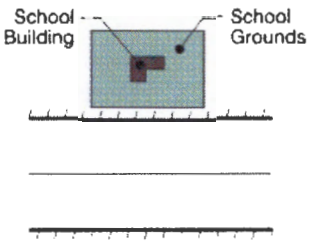
Elementary Middle/Jr.High High

Children of Elementary school age, when without parental supervision, are typically considered to be the most vulnerable due to their limited abilities to understand and anticipate vehicular traffic movements and their tendency to accidentally enter the roadway. Children of high school age are typically better able to understand traffic and to control their own movements. School Zones or Areas are unnecessary at post-secondary institutions.

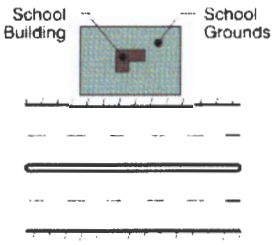
2. Road Classification



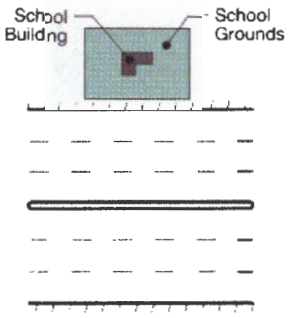
Local



Collector



Arterial



Expressway / Freeway

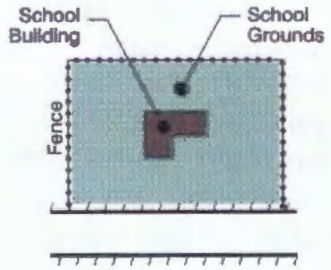
The design classification system used in the Geometric Design Guide for Canadian Roads (TAC 1999) separates roads on the basis of differences in land service and traffic service. The terms "rural" and "urban" refer to the predominant characteristics of the adjacent land use and not only to jurisdictional boundaries or features of typical cross sections. The road

classification criteria for the evaluation procedure that follows are consistent with the design classification system described in the Geometric Design Guide for Canadian Roads.

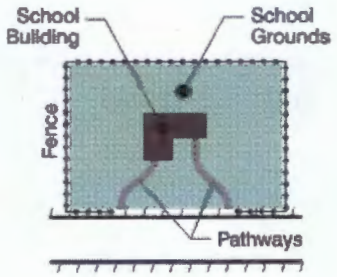
Arterial roads and expressways / freeways are typically multi-lane roads that carry high volumes of traffic, including trucks, and have posted speed limits of 50 km/h or greater. Collector roads are usually narrower and lower in traffic volumes, and provide direct frontage to developments including schools. Local roads are often still narrower, and are designed for lower speeds.

School Zones should be avoided on expressways / freeways and arterial roads. They can appear to motorists as contradicting the roadway function, and hence may be unexpected and disrespected. School Zones can sometimes appear to provide children and parents a false sense of security on a potentially hazardous roadway.

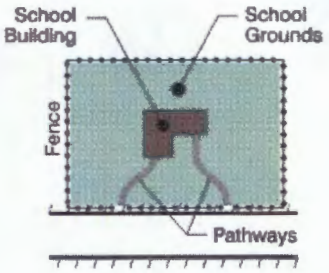
3. Fencing



Fully Traversable



Partially Traversable



Non-Traversable

Fencing can significantly reduce the need for a School Zone, acting as a physical barrier that can prevent errant movements onto the roadway.

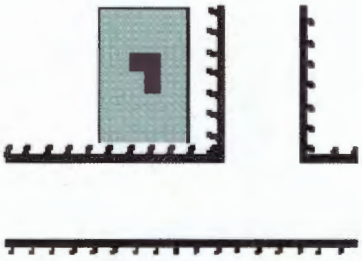
The effectiveness of fencing depends on its traversability, i.e. how easily it can be bypassed or traversed.

The traversability of fencing is governed by: extent of fencing between the roadway and the school, the effectiveness of the school's internal pathway system in guiding children to a safe opening in the fence, and the height and type of fencing. Post and cable type fencing or other low-height fencing, and fencing that contains openings or is easily damaged or mounted is more traversable.

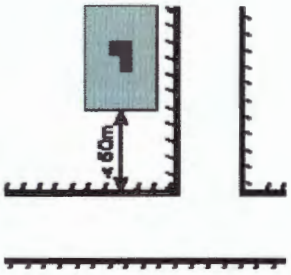
Fully traversable describes fencing that is absent or easily traversed. Partially traversable can describe fencing that is low-mounted or has several openings (or, for example, widely spaced trees). Non-traversable describes high-mounted fencing with limited openings at defined points.

Appendix A illustrates some examples of fencing related to schools.

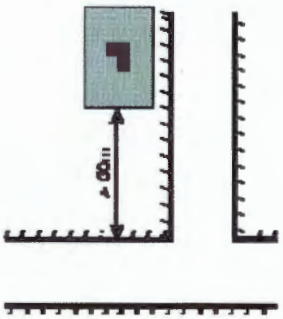
4. Property Line Separation



Abuts Road



Less than 50 metres



Greater than 50 metres

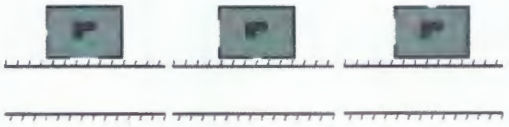
A school typically abuts at least one roadway. If the school is located near an intersection, it may also be located close to an intersecting roadway.

When the need for a school zone on the intersecting roadway is assessed, the separation between the property line of the school and the roadway should be considered. The separation influences the likelihood of children entering the roadway, particularly if it is unfenced.

A roadway that is separated from the school grounds by only a sidewalk or fence is said to abut the roadway. A school that is separated from the intersecting roadway may or may not be within 50 metres.

If it is located within 50 metres, there is a greater likelihood that children may enter the roadway. The school property line represents the most objective indication of the point where school activity involving children begins. If it is known that the property line is located well before the activity begins, then the latter can be used.

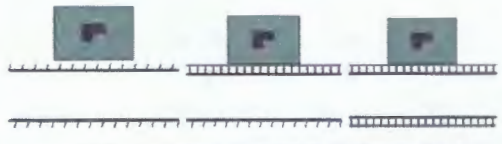
5. School Entrance



Main **Secondary** **None**

A school entrance can be a driveway to the school, the closest point along the road to the school's main door, or a designated on-street pick-up and drop-off area. The school entrance becomes a focal point of congestion and pedestrian activity, including vehicle turning movements at the driveway, manoeuvres within the parking lot, stoppages on the roadway and children crossing the road, particularly during pick-up and drop-off times. Where a school has multiple access points from the road, the activity is typically concentrated at one entrance, referred to as the main entrance. A secondary entrance, if it exists, typically has far less activity than the main entrance.

6. Location of Sidewalks



None (or non-school side) **School Side** **Both Sides**

The purpose of sidewalks is to provide safe conveyance of children between the school grounds or opening in the fence and a defined crossing point on the roadway, or to provide a link to the surrounding sidewalk network further from the school grounds. If sidewalks are provided between the school and the roadway, children are less likely to walk in the roadway. In rural areas, while raised curb sidewalks are rarely provided, wide shoulders or unpaved pathways or walkways are assumed to serve the same function as a sidewalk (although shoulders are not provided for this purpose).

A procedure was developed to systematically consider these six criteria, in order to establish the need for a School Zone or School Area. The procedure assigns a Maximum Point Value (MPV) to each criterion, reflecting its relative importance. It also assigns a weighting factor (WF) to each selection, with the higher values indicating a greater need for an Area or Zone. The result of the scoring is a total score, out of 100.

The worksheet to be completed is shown in TABLE 2.1. The procedure is as follows:

1. For each criterion, select the description that best represents the conditions of the subject roadway. Multiply the associated weighting factor by the maximum point value and enter the product in the far right column.
2. Add up the scores entered for each criterion. Enter the sum at the bottom of the far right column.
3. Using the Worksheet Results Matrix (TABLE 2.2), identify the need for a School Zone, a School Area or neither. Borderline cases should be carefully reviewed. In all

cases, engineering judgment, local conditions and community input should be considered.

4. Review the feasibility of providing new facilities or improving existing ones to reduce the need for a zone.
5. Identify, review and implement the signing and marking plan associated with the result.

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T =
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F =
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C =
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L =
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E =
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S =
TOTAL SCORE (sum of T,F,C,L,E and S)					

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

D3.2.4 Establishment of Playground Zones and Areas

Playground Zones or Areas can be considered for play facilities used by children where there is a possibility of them entering the roadway. These include lots with play equipment and outdoor or indoor athletic facilities such as sports fields, ball diamonds, tot lots and skating rinks.

Playground Areas (warning signs) can be considered for playgrounds near the roadway, where there is a possibility of children entering the roadway. Playground Areas are generally discouraged for any other recreational uses and for walking routes to playgrounds that are not adjacent to the playground property itself.

Playground Zones (reduced speed limits near playgrounds) are generally discouraged along roadways where any of the following conditions exist:

- Playground is located on an arterial roadway or expressway / freeway
- Playground or field is fully fenced
- Playground is located an appreciable distance from the roadway
- The Playground entrance is not located along the subject roadway

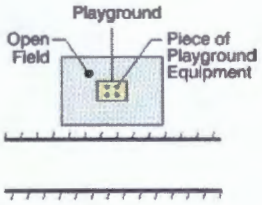
The factors to be considered in the establishment of Areas and Zones are:

- Playground Type
- Road Classification
- Fencing Characteristics
- Property Line Separation
- Location of Playground Entrance
- Location of Sidewalks

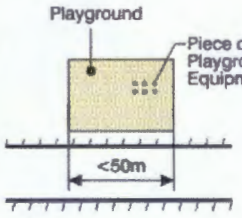
These criteria are described as follows, along with some of the possible descriptions and how they influence the need for a Playground Zone. The illustrations attempt to generically depict the more common arrangements for playground facilities, but do not cover all possible layouts. The procedure is applicable for both residential and non-residential areas.

FIGURE 2.4 PLAYGROUND CRITERIA DESCRIPTIONS

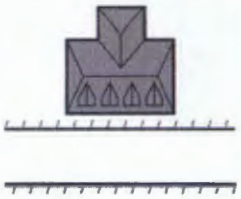
1. Playground Type



Field with children's playground



Narrow Frontage



Indoor/Enclosed

The Playground Type reflects the likely level of utilization of the playground facility and its exposure to the roadway.

Playgrounds that have more equipment (higher capacity), that are part of a field and that are not enclosed are more likely to warrant a reduced speed zone.

Outdoor facilities include play areas with play equipment, sports fields, ball diamonds, basketball courts, tot lots and sand boxes. Enclosed and indoor facilities can include lacrosse boxes, skating rinks and swimming pools.

The need for playground areas or zones increases with the likely exposure of children to traffic, which in turn is a function of the capacity of the playground. This can be estimated according to the capacity of the playground equipment provided in the playground.

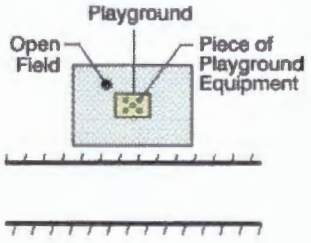
Single-unit equipment is defined as a standalone piece, not connected with other equipment. Several single-unit pieces of equipment are often combined into one custom playground equipment. Commercial playground equipment manufacturers typically specify the number of play activities, suitable age range and capacity (number of children) for custom equipment. Where it is not specified, the capacity of the playground equipment should be judged based on the content, safety, and likely maximum usage during normal use.

Appendix B illustrates some examples of playground equipment.

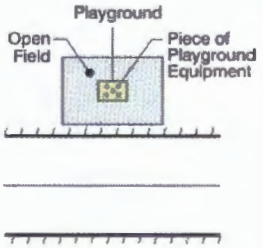
Where specific and special local conditions apply, there may be a need to provide a playground area or zone in the absence of playground equipment. The need should be evaluated on a case-by-case basis, such as by conducting a survey of the number of children using the open space or playing field. The road jurisdiction should document the specific reasons so as not to allow all local grass fields to become candidates for playground areas or zones.

The scoring system presented following the criteria descriptions attempts to systematically consider all of these features: the capacity (number of children), street frontage, how the facility is enclosed, the presence of a field, and the likely combinations.

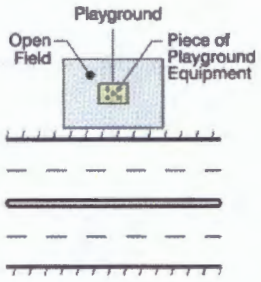
2. Road Classification



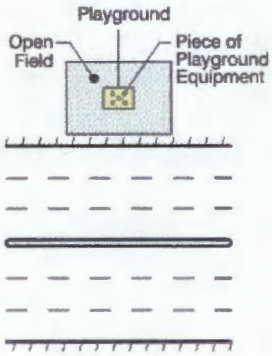
Local



Collector



Arterial



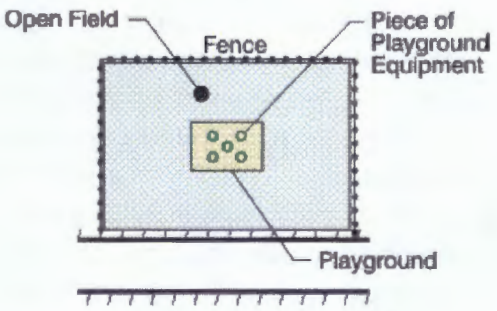
Expressway / Freeway

The design classification system used in the Geometric Design Guide for Canadian Roads (TAC 1999) separates roads on the basis of differences in land service and traffic service. The terms "rural" and "urban" refer to the predominant characteristics of the adjacent land use and not only to jurisdictional boundaries or features of typical cross sections. The road classification criteria for the evaluation procedure that follows are consistent with the design classification system described in the Geometric Design Guide for Canadian Roads.

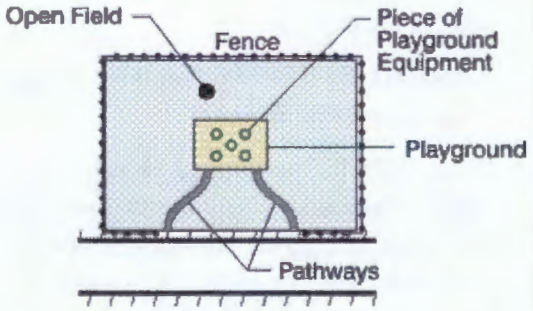
Arterial roads and expressways / freeways are typically multi-lane roads that carry high volumes of traffic, including trucks, and have posted speed limits of 50 km/h or greater. Collector roads are usually narrower, lower in traffic volumes and have direct frontage to developments including playgrounds. Local roads are often still narrower, and are designed for lower speeds.

Playground Zones should be avoided on higher roadway classifications. They can appear to motorists as contradicting the roadway function, and hence may be unexpected and disrespected. They can sometimes provide children and parents a false sense of security on a potentially hazardous roadway.

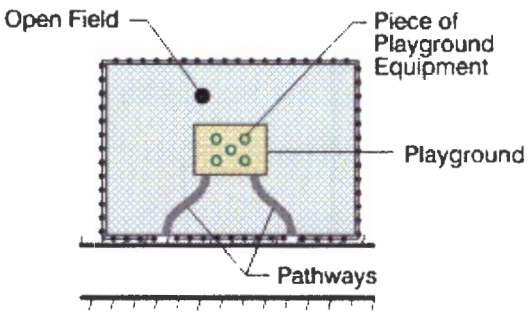
3. Fencing



Fully Traversable



Partially Traversable



Non-Traversable

The presence of fencing can significantly reduce the need for a Playground Zone. Fencing acts as a physical barrier that prevents errant movements of children onto the roadway. For the purpose of this evaluation, fencing can be defined as any type of physical barrier between the play facility and the roadway. The effectiveness of fencing depends on its traversability, i.e. how easily it can be bypassed or traversed.

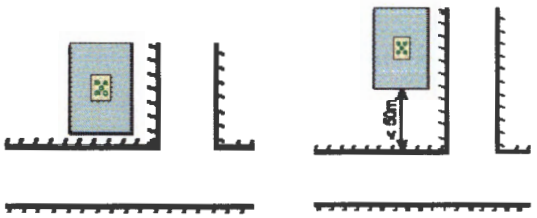
The traversability of fencing is governed by: extent of fencing between the roadway and the playground, the effectiveness of the playground's internal pathway system in guiding children to a safe opening in the fence, and the height and type of fencing. Low-height fencing (such as post and cable type), and fencing that has openings (such as widely spaced trees) or is easily damaged or mounted is considered more traversable.

Fully traversable fencing can include fencing that is absent or easily traversable. Partially traversable can describe fencing that is low-mounted or has several openings. Non-traversable describes high-mounted fencing with no openings or occasional openings at defined points (for example, dense hedges).

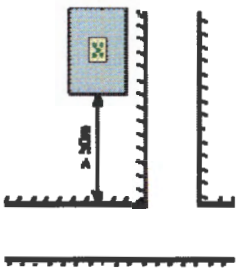
If a play area with equipment is the focal point of activity within a much larger field, it may also be appropriate to consider the presence of fencing around the play area itself, particularly if fencing is not provided along the roadside.

Appendix C illustrates some examples of fencing related to playgrounds.

4. Property Line Separation



Abuts Roadway **Less than 50 metres**



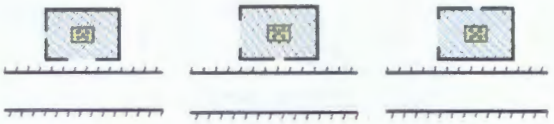
Greater than 50 metres

A playground often abuts at least one roadway. It may also be close to an intersecting roadway. The separation between the property line of the playground and the intersecting roadway influences the likelihood of children entering the roadway, particularly in the absence of fencing.

For a playground with play equipment, the distance between the play equipment itself and the roadway should also be taken into consideration. A roadway that is separated from the playground by only a sidewalk or fence is said to abut the roadway. A playground that is separated from the roadway by other land use may or may not be located within 50 metres.

If a play area with equipment is the focal point of activity within a much larger field, it may also be appropriate to consider the separation between the roadway and the play area itself. While the property line represents the most objective indication of the point where activity involving children begins, if it is known that the property line is located well before the activity begins, the distance between the intersecting roadway and the point where playground activity involving children begins may be considered for the evaluation procedure.

5. Playground Entrance



Main **Secondary** **None**

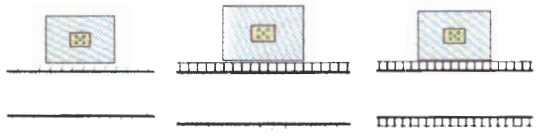
A playground entrance can be a driveway to the playground, the closest point along the road to an indoor facility's main door, or a designated on-street pick-up and drop-off area. The playground entrance can become a focal point of congestion and pedestrian activity. The activity includes vehicle movements at the driveway and within the parking lot and stoppages on the road, particularly during special events.

Where a playground has multiple access points from the road, the activity is typically concentrated at one entrance, referred to as the main entrance. A secondary entrance, if it exists, typically has less activity than the main entrance.

For a playground that is situated behind a school and can only be accessed from the front of the school, the playground can be said to have no entrance from any of the surrounding roadways.

For playgrounds that are unfenced between the play area and the roadway it can be said to have a main entrance along the subject roadway.

6. Location of Sidewalks



None (or non-playground side) | Playground Side | Both Sides

The purpose of sidewalks is to provide safe conveyance of children between the playground or opening in the fence to a defined crossing point on the roadway, or a link to the surrounding sidewalk network further from the playground. If sidewalks are provided between the playground and the roadway, children are less likely to walk in the roadway. In rural areas, while raised curb sidewalks are rarely provided, wide shoulders or unpaved pathways or walkways typically serve a similar function (although shoulders are not provided for this purpose).

A procedure was developed to systematically consider these six criteria, in order to establish the need for a Playground Zone or Playground Area. The procedure assigns a Maximum Point Value (MPV) for each criterion, reflecting its relative importance. It also assigns a Weighting Factor (WF) to each selection, with the higher values indicating a greater need for a Playground Area or Zone. The result of the procedure is a total score, out of 100.

The worksheet to be completed is shown in TABLE 2.3. The procedure is as follows:

1. For each criterion, select the description that best represents the conditions of the subject roadway. Multiply the associated weighting factor by the maximum point value and enter the product in the far right column.
2. Add up the scores entered for each criterion. Enter the sum at the bottom of the far right column.
3. Using the Worksheet Results Matrix (TABLE 2.4), identify the need for a playground area, a playground zone or nothing. Borderline cases should be carefully reviewed. In all cases, engineering judgment, local conditions and community input should be considered.
4. Review the feasibility of providing new facilities or improving existing ones to reduce the need for a zone.
5. Identify, review and implement the signing and marking plan associated with the result.

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T =
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F =
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C =
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L =
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E =
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S =
TOTAL SCORE (sum of T,F,C,L,E and S)					

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

D3.3 Signing and Marking for School and Playground Zones and Areas

D3.3.1 General Considerations

Once a School or Playground Zone or Area is established, it should be signed and marked in a way that is consistent with the desired objectives and the roadway context.

The beginning of all School and Playground zones and areas should be clearly indicated, according to the Manual of Traffic Control Devices for Canada. For school or playground zones denoted by flashing beacons (as described in the Act) similar signing and marking rules will apply. For flashing zones, the times of effectiveness of the zone will be indicated instead by a sign that reads "when flashing" below the warning sign. The proper signing and marking for School and Playground Zones and Areas is described as follows:

School and Playground Areas

All School Areas are to be marked with the School Area sign (WC-1 of MUTCDC) and Playground Areas with the Playground Area sign (WC-3 of MUTCDC). The signs should be posted at a distance that allows for adequate perception and reaction time for motorists. No specific signage is required at the end of a school or playground area.

School and Playground Zones

In addition to the appropriate Area warning sign, all School and Playground Zones are to be marked with a:

- Reduced speed limit sign. The RB-1 speed limit sign should be installed directly below the Area warning sign, several metres in advance of the property line, to give motorists an opportunity to slow to 30 km/h prior to the start of the zone.
- Sign denoting the end of the zone. At the end of the zone, an RB-1 sign will re-instate the original speed limit. It should be provided several metres downstream of the desired end of zone location, such that motorists are unlikely to accelerate prior to leaving the zone. Alternately, for local roads only, an END SCHOOL ZONE or END PLAYGROUND ZONE sign can be provided. While this deviates from the MUTCDC, it can be considered in exceptional cases where there is deemed to be a greater risk of vehicles accelerating to an unsafe speed at the end of the zone.

Further signing details are provided specifically for School Zones and Areas in Section D3.3.2, for Playground Zones and Areas in Section D3.3.3, for adjacent School and Playground Zones in Section D3.3.4, and for zones through intersections in Section D3.3.5.

Some of the additional considerations that will affect the signing and pavement marking details for both School and Playground Areas and Zones are as follows. SAMPLE signing and marking plans are provided for different combinations of these factors, in DRAWINGS TCS-D-301 to TCS-D-311.

Urban / Rural Context:

The urban/rural context influences the probability and expectation of encountering a reduced speed zone, and hence a motorist's ability to react in a safe and timely manner. On rural roads, a significant speed reduction is less likely to be expected and tolerated. A rural road is typically located outside a municipality, in a less built-up area. Rural roads in Alberta adjacent to schools or playgrounds are typically two-lane highways with speed limits of

80 km/h or 100 km/h, and sometimes are located along the main street through smaller municipalities. Urban roads adjacent to schools or playgrounds are typically located within larger municipalities and are more densely developed. They are likely to have a lower speed limit and contain traffic signals and more pedestrian activity.

Speed Limit:

The speed limit of the subject roadway dictates the location of the required signs and pavement markings for the zone. The speed limit is used to determine the required perception and reaction time for all School and Playground Areas, and the additional braking distance required for the Zones. The required distances were calculated based on the stopping sight distance requirements published in the Geometric Design Guide for Canadian Roads (Transportation Association of Canada, 1999). The distances before and after the property line (or point representing the beginning and end of the pedestrian activity) are denoted by "d" on the enclosed plans and are given for 10 km/h speed limit increments. These sight distances should be provided wherever practicable, preferably without extending through intersections.

Speed transition should be provided further upstream of the speed limit ahead sign. In general, a speed limit reduction of greater than 30 km/h is discouraged without a transition zone. For roads posted at 70 km/h or more:

1. A 30 km/h Speed Limit Ahead sign should be provided in advance of the zone.
2. A transition zone of 50 km/h or 60 km/h should be provided well in advance of the Speed Limit Ahead sign.
3. Oversized signs should be used.
4. Within school zones on rural roads, pavement markings that read "SCHOOL", for added emphasis.

Roadway Cross Section:

The sample signing and marking plans show roads with a four lane cross-sections for urban areas and two-lane cross-sections for rural areas. While these represent a common scenario, similar signing rules apply for different lane combinations in a similar environment. Along wide roadways, divided roadways and one-way roads, signs should also be provided on the left side of the road, to overcome sign shadowing and be more conspicuous to motorists in the nearest lane. The details of the pavement markings through school and playground zones should be implemented in accordance with the Alberta Infrastructure and Transportation Highway Pavement Marking Guide (March 2003).

For undivided, two-way, two-lane roads (except local roads), a double-yellow centre-line should be marked. This should extend from the start to the end of the zone, to limit passing within the zone. Signs restricting passing can also be provided for emphasis.

D3.3.2 Guidelines for School Zones and Areas

School Areas:

At the start, the WC-1 sign (MUTCDC), fluorescent yellow-green in colour, should be provided. The MUTCDC indicates that all new installations are to use the yellow-green sign and all existing installations are to be converted by January 2005.

School Zones:

All School Zones should display (in addition to the above guidelines for School Areas):

- RB-1 (full-size speed limit sign) below the WC-1 sign, displaying 30 km/h;
- RB-1 (full-size speed limit sign) at the end of the zone, reinstating the original speed limit (or alternatively, on local roads only, the END SCHOOL ZONE sign, yellow in colour);
- SCHOOL pavement markings in rural areas; and
- The times effectiveness, if these are different from the Regulations of the Traffic Safety Act. The hours MAY still be displayed if they are identical to the hours in the Act. Some indication of the applicable days should also be shown, or "SCHOOL DAYS". The days and times can be displayed either on a tab below the speed limit sign, or on the speed limit sign itself. To accommodate this, the RB-1 sign can be elongated or the spacing or text can be marginally reduced. Both sample designs are shown in FIGURE 3.1. On roads with speed limit of 70 km/h or greater, the separate tab should be provided for added visibility.

SAMPLE signing and marking plans for School Areas and Zones are provided in DRAWINGS TCS-D-301 through TCS-D-305, for different road class and land use scenarios.

FIGURE 3.1 SAMPLE OPTIONS FOR DISPLAYING THE TIMES OF EFFECTIVENESS WITH THE RB-1 SIGN

D3.3.3 Guidelines for Playground Zones and Areas

Playground Areas:

At the start of the zone, Playground Areas should contain the WC-3 sign (MUTCDC), yellow in colour.

Playground Zones:

All Playground Zones should contain (in addition to the above guidelines for Playground Areas):

- RB-1 (full size speed limit sign) below the WC-3 sign, displaying 30 km/h;
- RB-1 at the end of the zone, reinstating the original speed limit (or alternatively, for local roads only, the END PLAYGROUND ZONE sign, yellow in colour);
- The hours of effectiveness (mandatory if different from the Act and optional if same as the Act). The hours can be displayed either on a tab below the speed limit sign, or on the speed limit sign itself. To accommodate the hours on the RB-1 sign, the sign can be elongated or the speed limit indication can be marginally reduced;
- On rural roads with speed limit of 70 km/h or greater, the separate tab should be provided for enhanced visibility.

SAMPLE signing and marking plans for Playground Zones are provided in DRAWINGS TCS-D-306 through TCS-D-310 for various scenarios.

D3.3.4 Guidelines for Adjacent School and Playground Zones and Areas

Schools and playground are frequently located adjacent to one another. In these cases, if it is established that a School Zone and a Playground Zone are necessary for the adjacent fronting sections of the same roadway, then only a single zone should be provided, in order to convey a simple and unambiguous message to motorists. In general, it is suggested that a Playground Zone be installed, to provide coverage over a more extended period of the school day as well as on non-school days. For playgrounds for which the utilization and access is closely tied to the school operation, a School Zone can be considered to cover both the school and the playground.

A SAMPLE signing and marking plan for a school adjacent to a playground is shown in DRAWING TCS-D-311.

These guidelines can also be provided for a school that is located near but not immediately adjacent to a playground.

Where two schools are located adjacent to or within several hundred metres of one another, and it is established that both require School Zones, then again it is suggested that a single zone be provided.

The same principles apply to adjacent School and Playground Areas. If it is determined that one facility requires a Zone while an adjacent facility requires an Area, one Zone should be provided for both.

D3.3.5 Guidelines for School and Playground Zones or Areas Through Intersections

School and playgrounds are sometimes located at or near intersections. Where this is the case, the need for a School or Playground Zone can be evaluated for each adjacent roadway, according to the preceding guidelines. Where it is established that a zone is required on one of the roadways and not on the cross street, motorists on the cross street and approaching from the other side of the intersection may still need to be informed of the upcoming School or Playground Zone. Similarly, motorists leaving the zone by turning at the intersection will need to be informed that they are departing the zone. Sample illustrations are shown as DRAWING TCS-D-305 for School Zones and in DRAWING TCS-D-310 for Playground Zones. In the sample, the facility is located on the corner of an intersection, the Zone is established on the uncontrolled roadway, and the intersecting street is STOP-controlled. In other cases, the zone may be located on the controlled street or near a signalized intersection. The signing and marking requirements for each of these three scenarios is briefly described as follows:

Zone or Area on Uncontrolled Approach

On the intersecting and opposing streets, install the standard start of zone signage as follows:

- On STOP controlled approaches: several metres in advance of the intersection to provide for adequate stopping sight distance.
- On uncontrolled approaches: at least 50 metres in advance of the intersection, in order to avoid braking from occurring close to or in the intersection.
- On all the departure legs of the intersection and at the end of the school or playground, provide the RB-1 sign to reinstate the original speed limit (or the END ZONE sign on local roads).

Zone or Area on STOP-controlled Approach

In general, similar rules will apply. However, the zone may have to start or end more than 50 metres from the intersection if the school property extends further.

Zone or Area on Signalized Approach

It is strongly discouraged to continue a school or playground zone through a signalized intersection. If a zone must be provided through a signalized intersection, similar rules will apply as for the STOP controlled intersections.

If a zone is provided through any intersection, signs should be installed with particular caution, to avoid from distracting drivers from the intersection traffic control and from causing visual obstructions to pedestrian and vehicular traffic at the intersection.

In all cases, the intent is to avoid surprising drivers by introducing a Zone immediately after an intersection, whereby vehicles turning into the Zone may miss the start-of-zone signs. If a zone can start close to the intersection but still be readily visible to turning drivers, there may be no need to sign the cross street.

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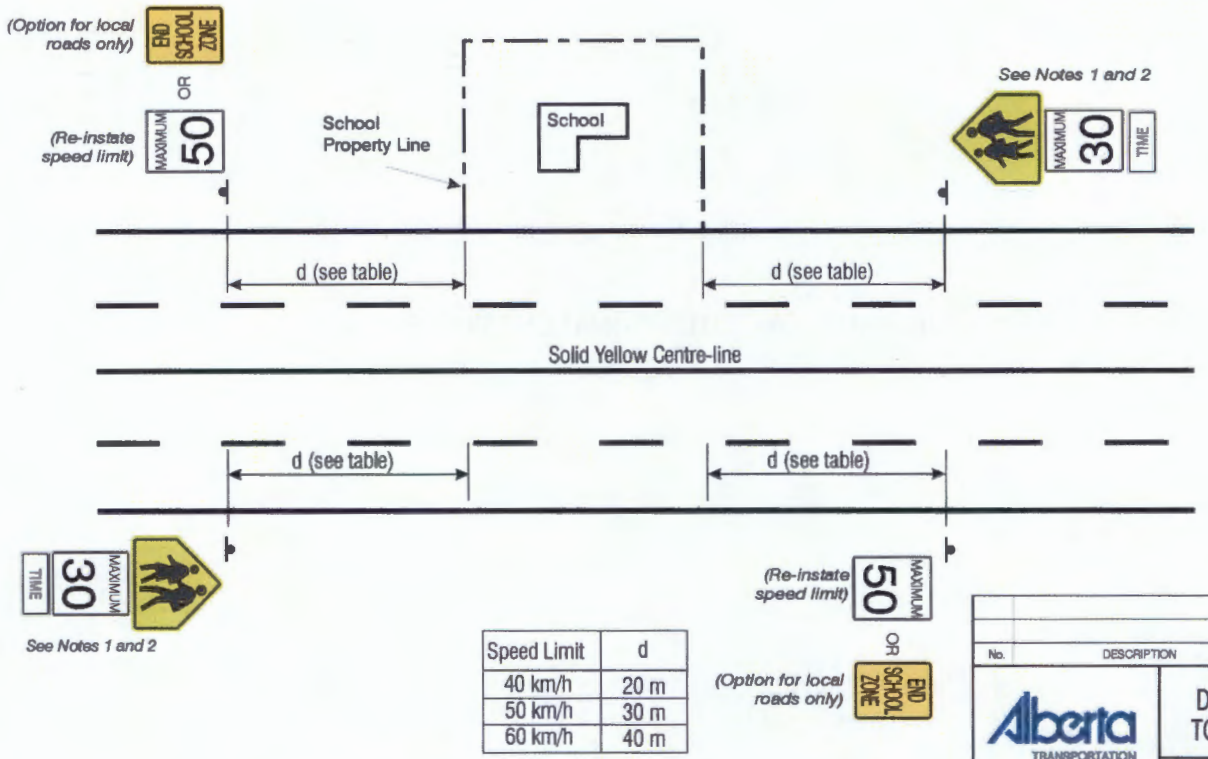

Speed Limit	d
40 km/h	20 m
50 km/h	30 m
60 km/h	40 m

Note 1: Time SHALL be shown if different from the Act, otherwise it MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 sign itself

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-301

Date: MAY 2004

SCHOOL ZONE ON URBAN ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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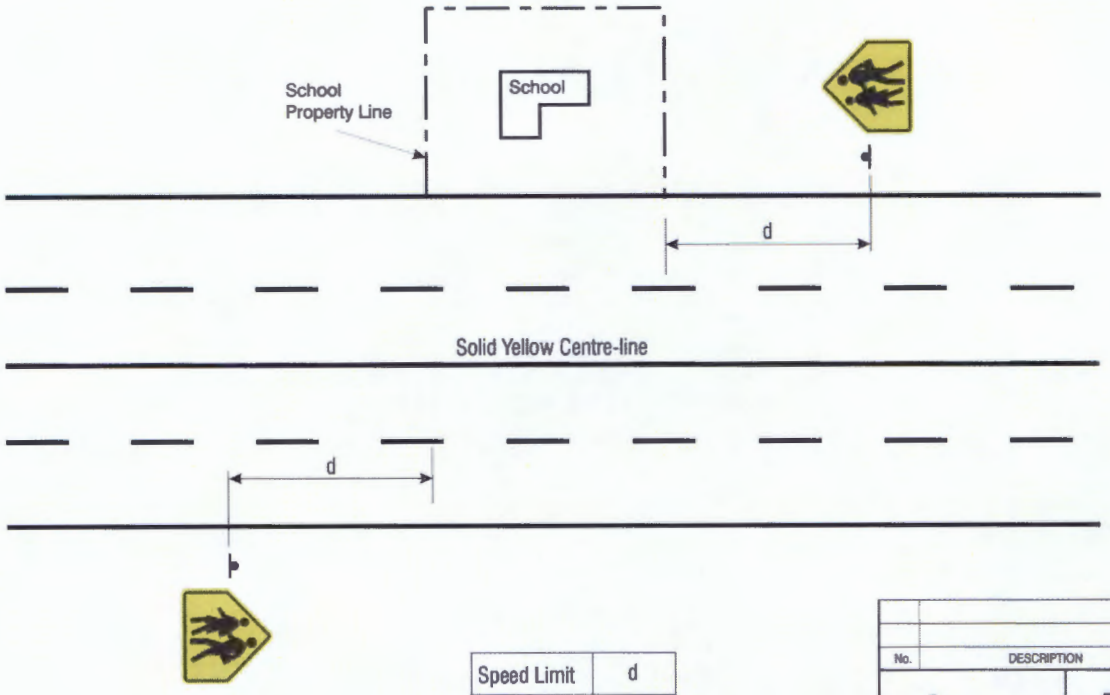

Speed Limit	d
40 km/h	10 m
50 km/h	20 m
60 km/h	30 m
70 km/h	40 m
80 km/h	50 m

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-302

Date: MAY 2004

SCHOOL AREA ON URBAN ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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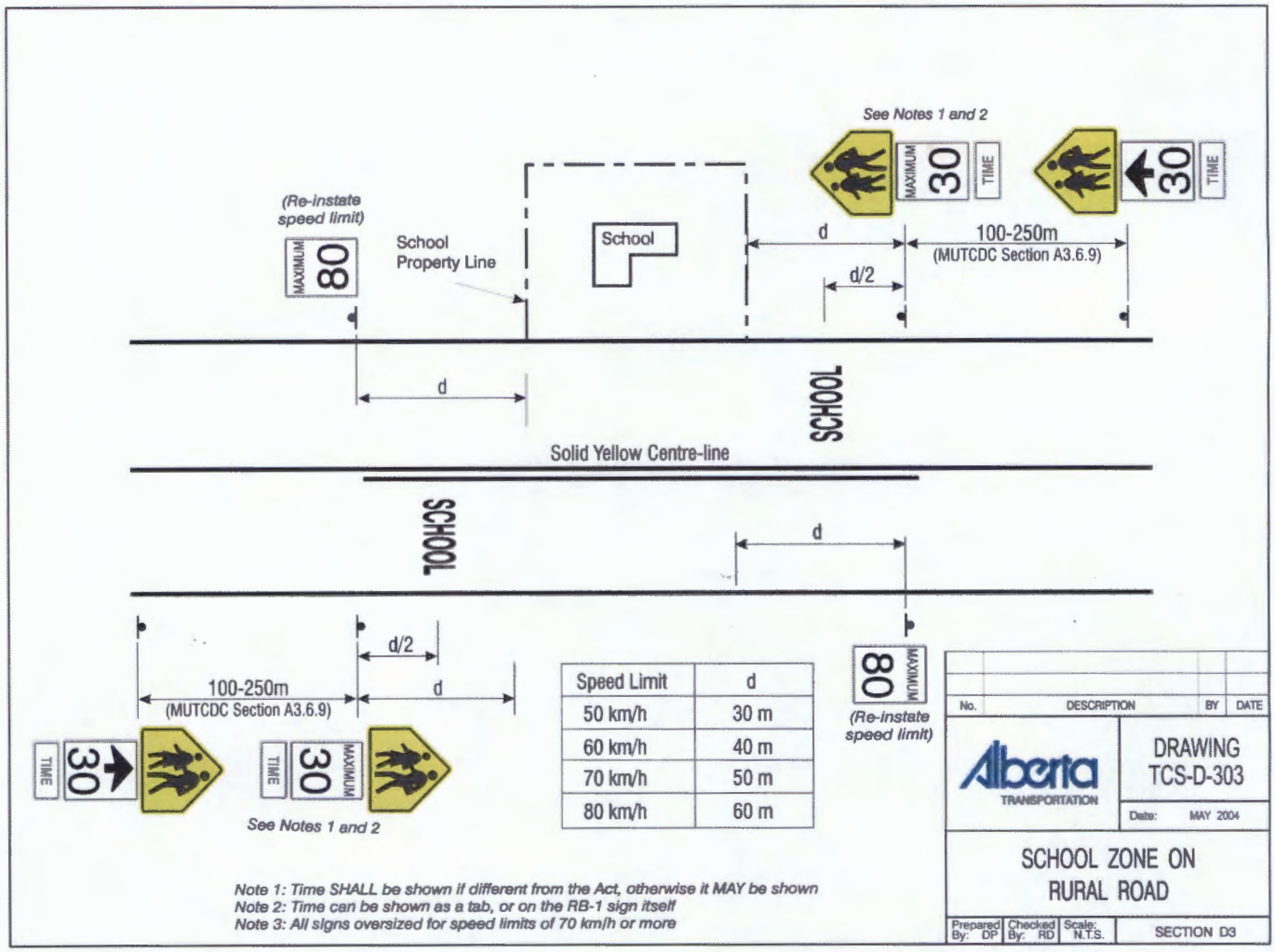

Speed Limit	d
50 km/h	30 m
60 km/h	40 m
70 km/h	50 m
80 km/h	60 m

Note 1: Time SHALL be shown if different from the Act, otherwise it MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 sign itself
Note 3: All signs oversized for speed limits of 70 km/h or more

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-303

Date: MAY 2004

SCHOOL ZONE ON RURAL ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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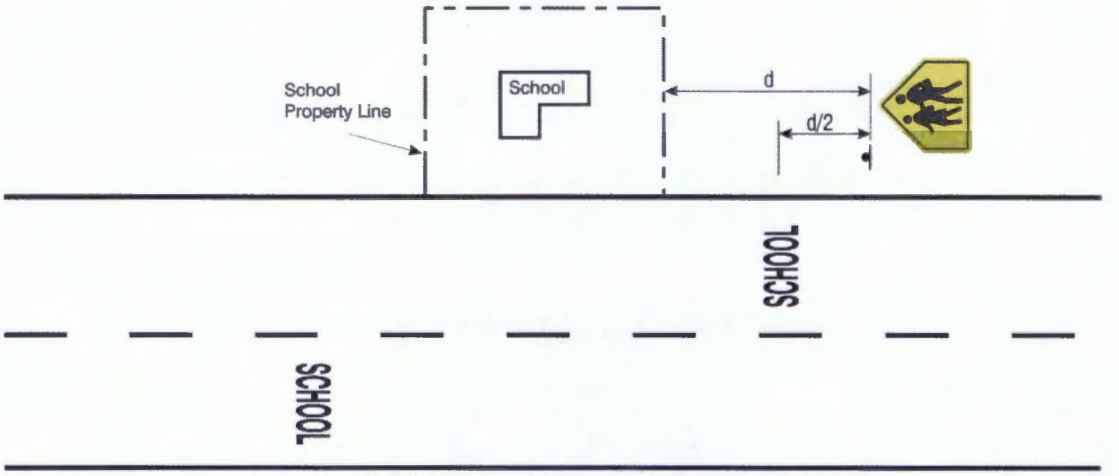

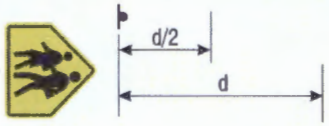

Speed Limit	d
50 km/h	20 m
60 km/h	30 m
70 km/h	40 m
80 km/h	50 m
90 km/h	60 m
100 km/h	70 m

Note: All signs oversized for speed limits of 70km/h or more

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-304

Date: MAY 2004

SCHOOL AREA ON RURAL ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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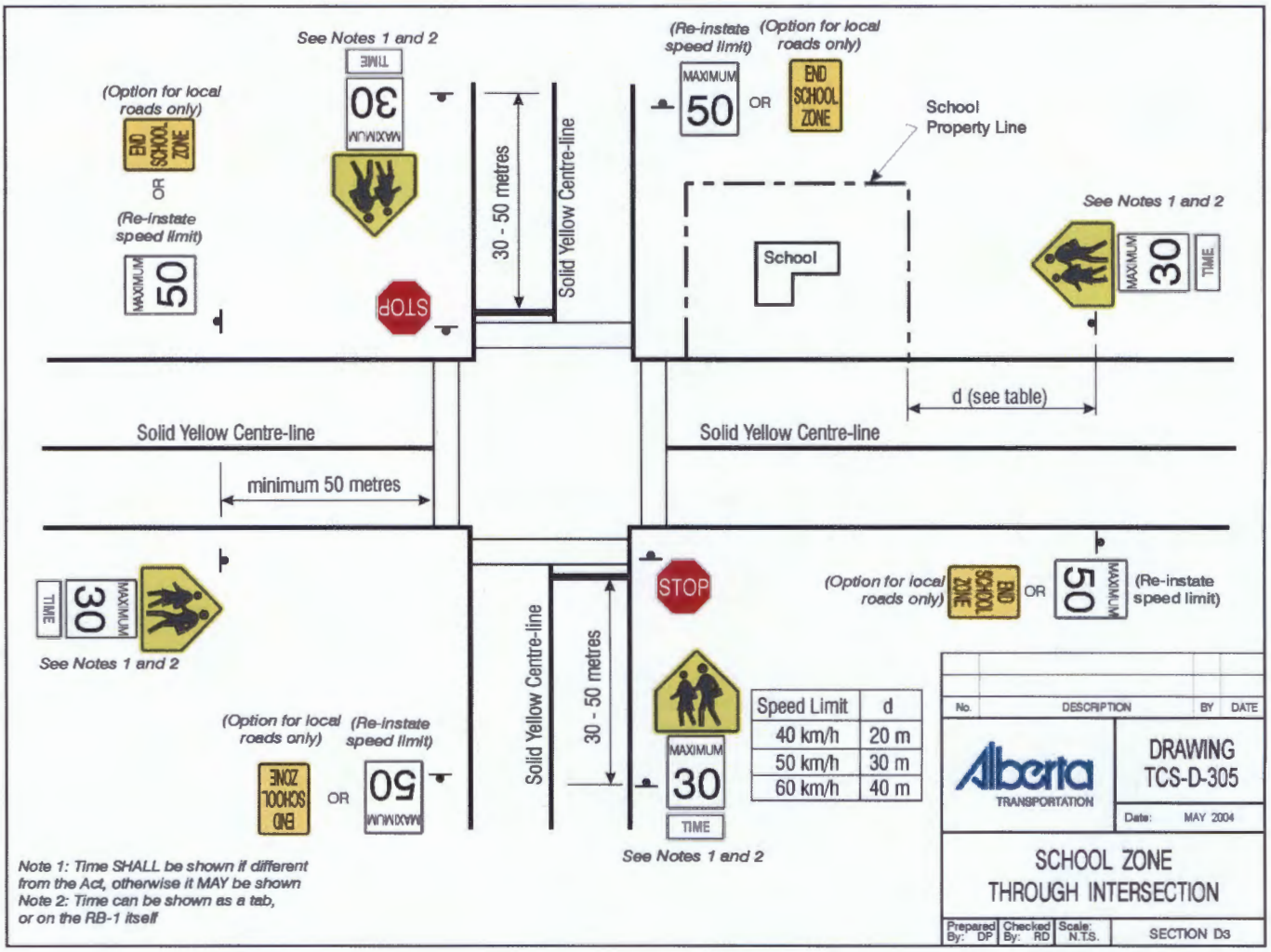
See Notes 1 and 2
(Option for local roads only)
END SCHOOL ZONE
OR
(Re-instate speed limit)
MAXIMUM 50
MAXIMUM 30
TIME
STOP
30 - 50 metres
Solid Yellow Centre-line
(Re-instate speed limit)
(Option for local roads only)
MAXIMUM 50
OR
END SCHOOL ZONE
School Property Line
School
See Notes 1 and 2
MAXIMUM 30
TIME
d (see table)
Solid Yellow Centre-line
Solid Yellow Centre-line
minimum 50 metres
TIME
MAXIMUM 30
See Notes 1 and 2
STOP
(Option for local roads only)
END SCHOOL ZONE
OR
MAXIMUM 50
(Re-instate speed limit)
Solid Yellow Centre-line
30 - 50 metres
(Option for local roads only)
END SCHOOL ZONE
OR
(Re-instate speed limit)
MAXIMUM 50
MAXIMUM 30
TIME
See Notes 1 and 2
Speed Limit | d
40 km/h | 20 m
50 km/h | 30 m
60 km/h | 40 m
Note 1: Time SHALL be shown if different from the Act, otherwise it MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 itself
No. | DESCRIPTION | BY | DATE
Alberta TRANSPORTATION
DRAWING TCS-D-305
Date: MAY 2004
SCHOOL ZONE THROUGH INTERSECTION
Prepared By: DP
Checked By: RD
Scale: N.T.S.
SECTION D3

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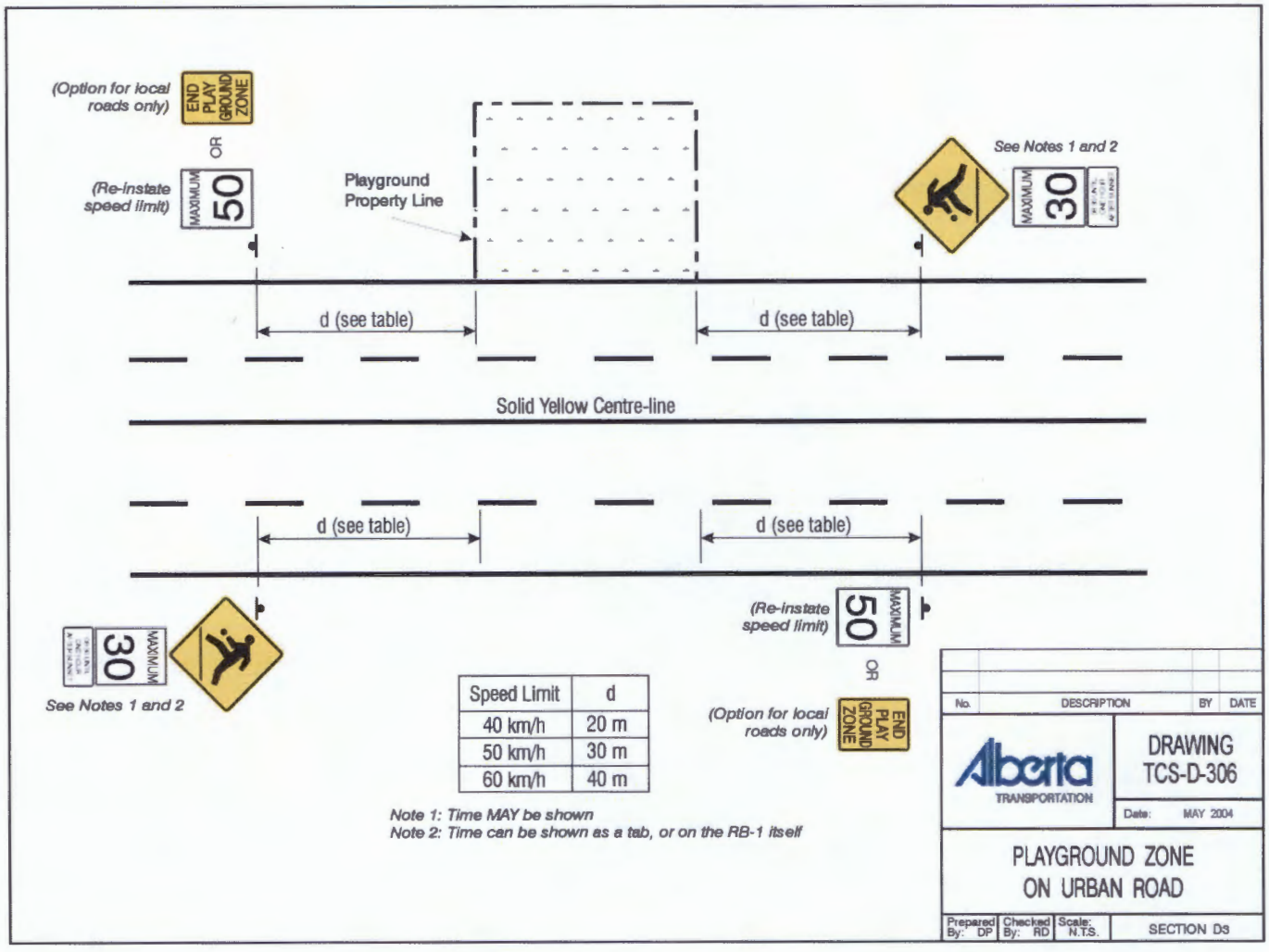

Speed Limit	d
40 km/h	20 m
50 km/h	30 m
60 km/h	40 m

Note 1: Time MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 itself

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-306

Date: MAY 2004

PLAYGROUND ZONE ON URBAN ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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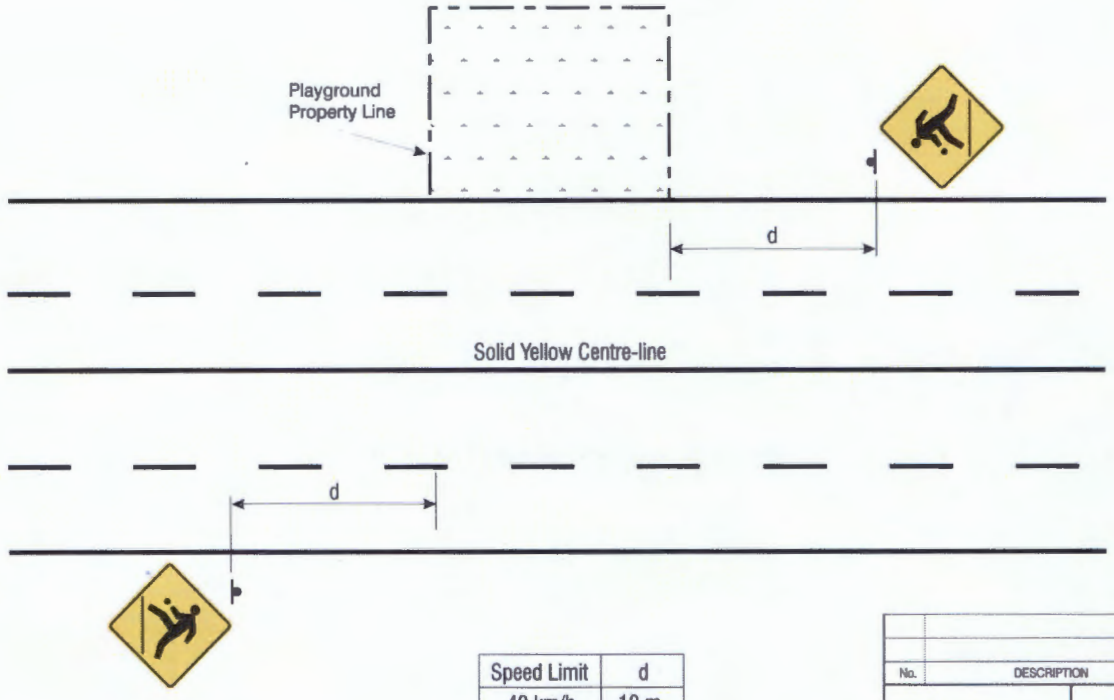

Speed Limit	d
40 km/h	10 m
50 km/h	20 m
60 km/h	30 m
70 km/h	40 m
80 km/h	50 m

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-307

Date: MAY 2004

PLAYGROUND AREA ON URBAN ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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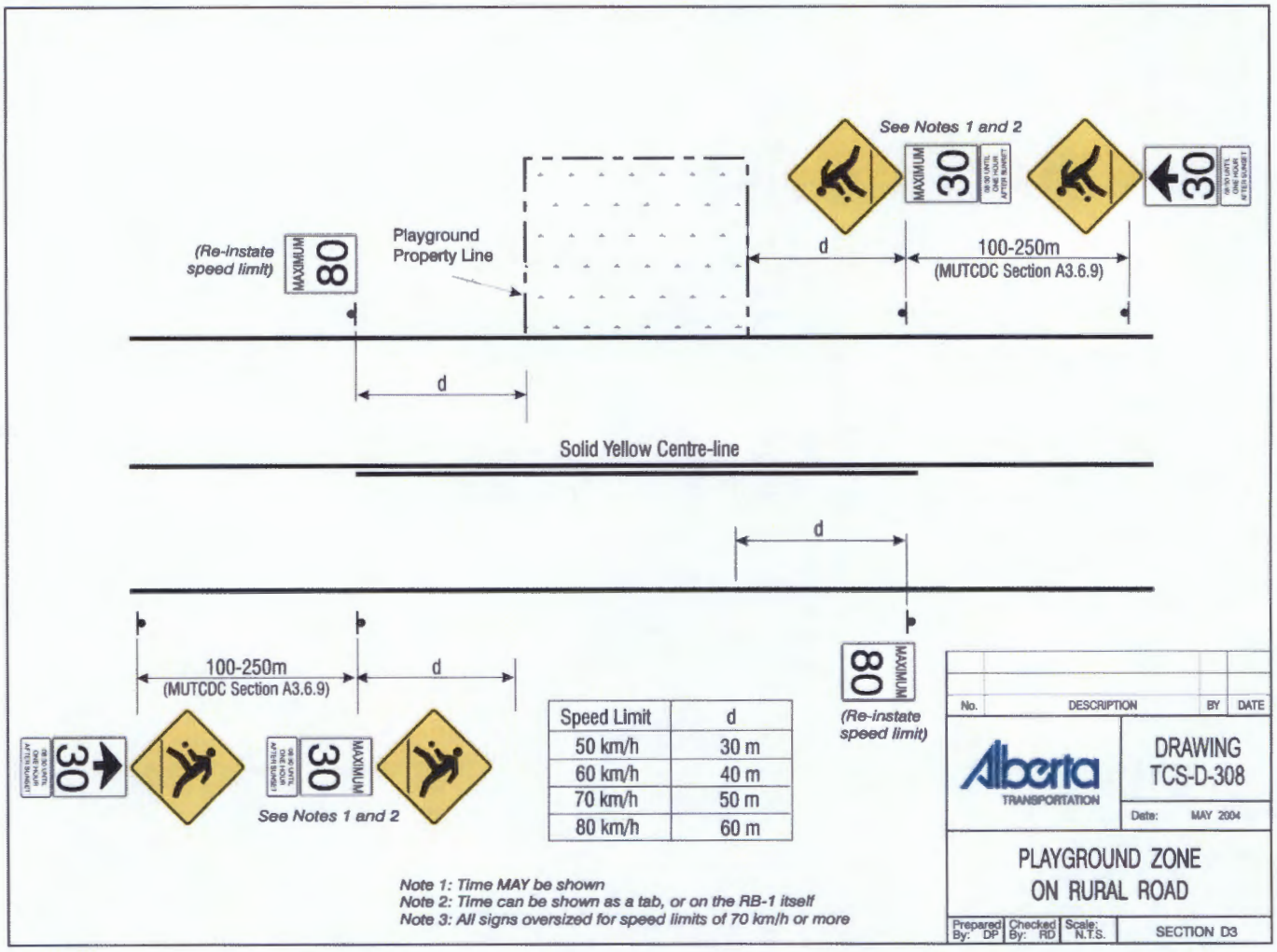

Speed Limit	d
50 km/h	30 m
60 km/h	40 m
70 km/h	50 m
80 km/h	60 m

Note 1: Time MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 itself
Note 3: All signs oversized for speed limits of 70 km/h or more

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-308

Date: MAY 2004

PLAYGROUND ZONE ON RURAL ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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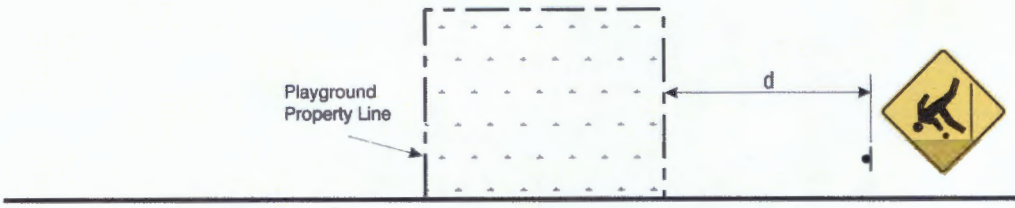

Speed Limit	d
50 km/h	20 m
60 km/h	30 m
70 km/h	40 m
80 km/h	50 m
90 km/h	60 m
100 km/h	70 m

Note: All signs oversized for speed limits of 70 km/h or more

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-309

Date: MAY 2004

PLAYGROUND AREA ON RURAL ROAD

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

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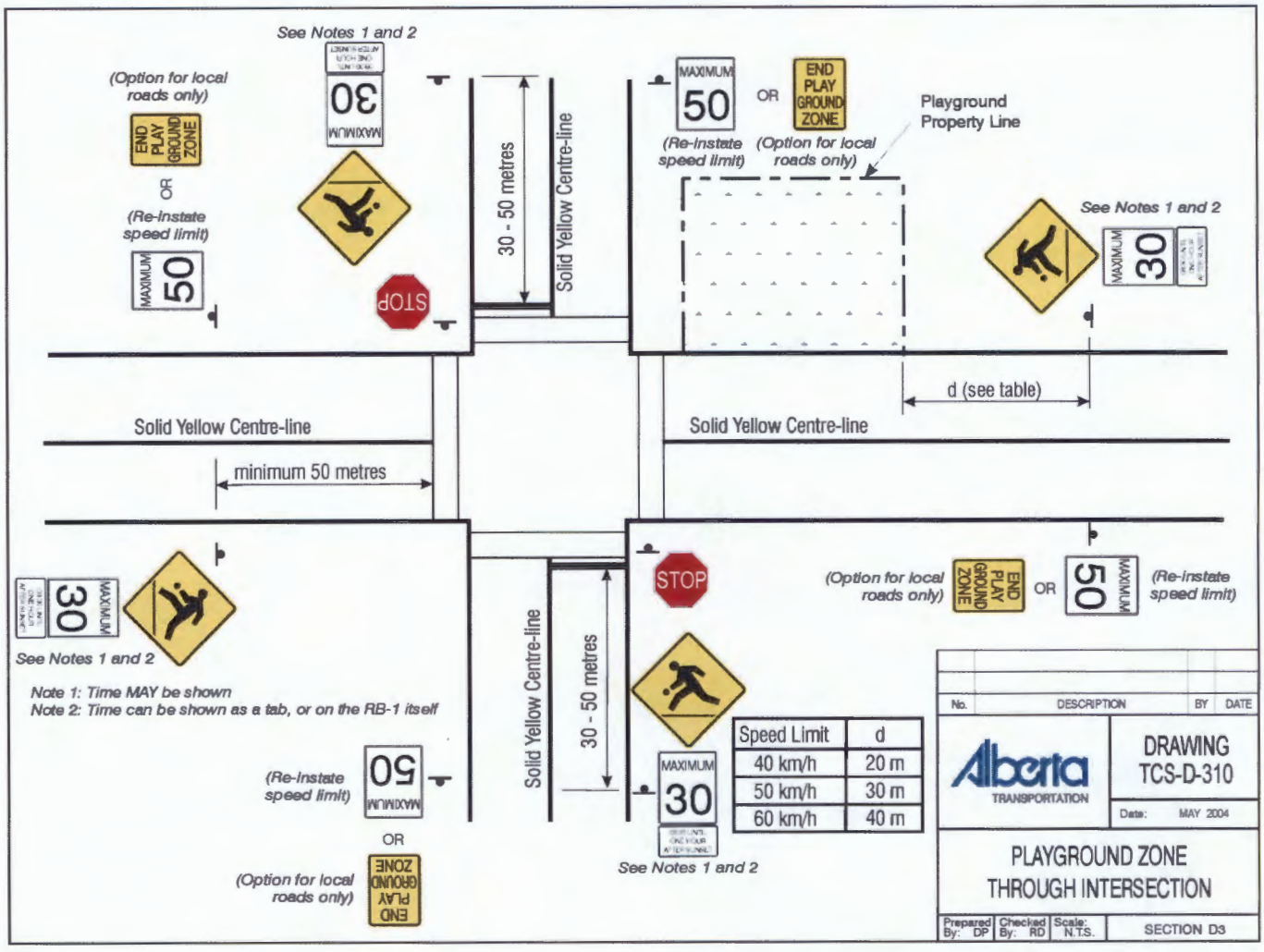
See Notes 1 and 2
(Option for local roads only)
END PLAY GROUND ZONE
OR
(Re-instate speed limit)
MAXIMUM 50
MAXIMUM 30
STOP
30 - 50 metres
Solid Yellow Centre-line
MAXIMUM 50
OR
END PLAY GROUND ZONE
(Re-instate speed limit)
(Option for local roads only)
Playground Property Line
See Notes 1 and 2
MAXIMUM 30
d (see table)
Solid Yellow Centre-line
minimum 50 metres
Solid Yellow Centre-line
MAXIMUM 30
See Notes 1 and 2
Note 1: Time MAY be shown
Note 2: Time can be shown as a tab, or on the RB-1 itself
(Re-instate speed limit)
MAXIMUM 50
OR
(Option for local roads only)
END PLAY GROUND ZONE
Solid Yellow Centre-line
30 - 50 metres
STOP
MAXIMUM 30
See Notes 1 and 2
(Option for local roads only)
END PLAY GROUND ZONE
OR
MAXIMUM 50
(Re-instate speed limit)
Speed Limit | d
40 km/h | 20 m
50 km/h | 30 m
60 km/h | 40 m
No. | DESCRIPTION | BY | DATE
Alberta TRANSPORTATION
DRAWING TCS-D-310
Date: MAY 2004
PLAYGROUND ZONE THROUGH INTERSECTION
Prepared By: DP | Checked By: RD | Scale: N.T.S. | SECTION D3

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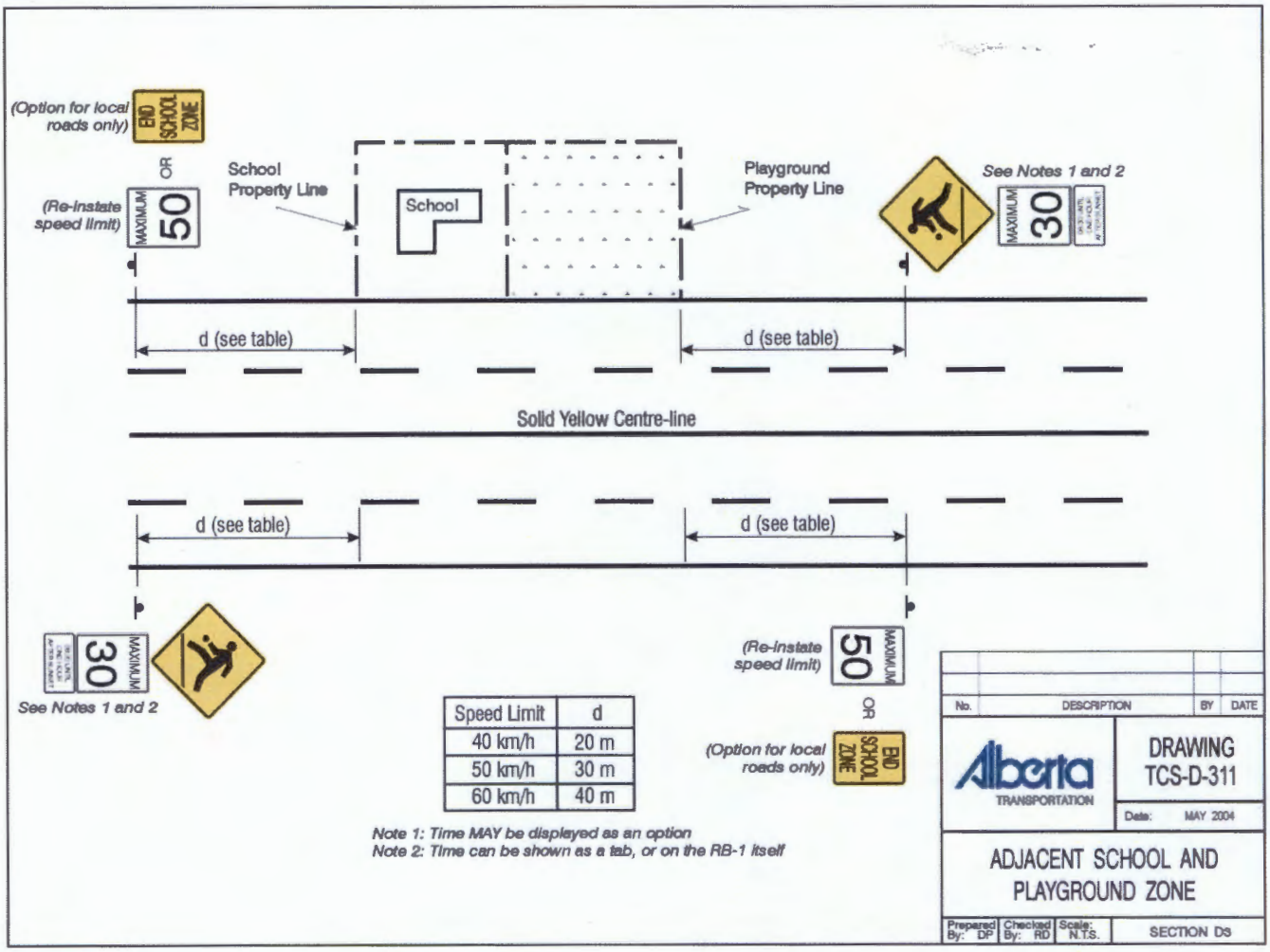

Speed Limit	d
40 km/h	20 m
50 km/h	30 m
60 km/h	40 m

Note 1: Time MAY be displayed as an option
Note 2: Time can be shown as a tab, or on the RB-1 itself

No.	DESCRIPTION	BY	DATE

Alberta TRANSPORTATION

DRAWING TCS-D-311

Date: MAY 2004

ADJACENT SCHOOL AND PLAYGROUND ZONE

Prepared By: DP	Checked By: RD	Scale: N.T.S.	SECTION D3

APPENDIX A – Examples of Fencing Related to Schools

		• School zone • Entrance and frontage of school along a 2-lane collector • No fencing along frontage on abutting roadway, fully traversable with pathways to entrance • Non-traversable fencing around school yard
		• School zone adjacent to highway, rural setting with posted speed limit of 70 km/h • Non-traversable fencing • Grass area between roadway and fencing
		• School zone along a 2-lane collector • School parking lot enclosed within fencing with limited openings, low traversability between parking lot and sidewalk • Grass area between sidewalk and roadway • Non-traversable fencing between parking lot and school playground

APPENDIX A – Examples of Fencing Related to Schools (Continued)

		• School zone in a small community • "SCHOOL" pavement marking and advance warning sign installed • Low-mounted non-traversable fencing along the school ground
		• School zone along fronting roadway (undivided local road) • Fencing along the school boundary, non-traversable • Roadway and fencing separated by unpaved shoulder or grass and spaced trees

APPENDIX B – Examples of Playground Equipment

Examples of Playground Equipment Type	
	
Single Rider (Accommodates 1 child)	2-Seat See Saw (Accommodates 2 children)
	
Slide (Accommodates 3 children)	Swing Bay (Accommodates 4 children)

APPENDIX B – Examples of Playground Equipment (Continued)

Examples of Custom Equipment

Accommodates 5-10 children

Accommodates 15-20 children

Accommodates 20-25 children

APPENDIX B – Examples of Playground Equipment (Continued)

Accommodates 30-35 children

Accommodates 40-45 children

APPENDIX C – Examples of Fencing Related to Playgrounds

		• Playground zone on a 4-lane arterial road • 4+ separate custom equipment • Enclosed by low traversability fencing, grass area between road and sidewalk
		• Playground area along local road • 3 separate custom equipment • No fencing • Pathway provided from sidewalk to playground area
		• Playground area adjacent to school on a 2-lane collector • 5+ custom equipment, also include outdoor sports fields facility • Cable fencing (partially traversable), grass area between sidewalk and playground facilities

APPENDIX C – Examples of Fencing Related to Playgrounds (Continued)

		• Playground zone on a 2-lane collector • Cable fencing (partially traversable) along road side, grass area between roadway and playground equipment
		• Playground zone • Separate single-unit equipment • Frontage along local cul-de-sac, fencing along sidewalk with limited openings, low traversability • Cable fencing along back alley, easily traversable
		• Playground zone on a 2-lane collector • 1 large custom equipment • High mounted fencing with limited openings, non-traversable

APPENDIX C

Emergency Access Signal Accounts (Nationwide)

6 Special Applications

6.1 Emergency Traffic Signals

An emergency traffic signal is a special traffic control signal that assigns the right-of-way to fire trucks and other vehicles providing emergency services. An emergency traffic signal is typically located at the access to a fire station. Emergency traffic signals shall not be used at roundabouts.

6.1.1 Basis for Installation

- An emergency traffic signal may be installed at a location that does not meet other traffic signal warrants.
- Generally the fire station should be located either adjacent to the highway or no more than one block from the intersection.
- Either of the following criteria should be met:

  a) The highway volumes should meet or exceed the minimum vehicular volume signal warrant as shown below:

Table 6-1: Minimum ADT for Emergency Traffic Signal

	Standard Warrant	70% Warrant*
2-lane highway	8,850	6,200
4-lane highway	10,600	7,400

* May be used when posted speed exceeds 40mph or within an isolated community with a population less than 10,000.

  b) The sight distance from the normal stop position at the fire station exit should be less than that shown below:

Table 6-2: Minimum Highway Sight Distance for Emergency Traffic Signal

Speed (mph)	Minimum Sight Distance (ft)
20	120
25	160
30	210
35	260
40	320
45	380
50	450
55	520

2012 Traffic Flow Map

CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT
Transportation Division
Average Weekday Daily Traffic on Major Streets

Note: This traffic flow map is intended to be a general representation of traffic volumes on major streets in a given year. Traffic volumes shown are based on a variety of sources without seasonal variation adjustments and may reflect prevailing conditions including construction and operating conditions in place during the year.

The numbers on this map are two way traffic total on each street section, which are rounded and sometimes averaged. Actual traffic and counts can vary along a road segment.
All traffic is derived from most recent traffic counts that may have been taken from 2001 to 2012 inclusive.
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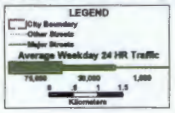


The City of Calgary

2013 Average Daily (24hr) Weekday Traffic Volume

THE CITY OF
CALGARY
TRANSPORTATION PLANNING

Average daily weekday traffic (ADWT) is the average number of vehicles in 24 hours adjusted for seasonal variation to represent the average weekday. The numbers on this map are two-way totals.

This traffic flow map is intended to be a general representation of traffic volumes across the city. Traffic volumes shown are based on the last 2 years of data from a variety of sources and may reflect prevailing conditions including detours and operating conditions in place during the current map year.

The City of Calgary provides this information in good faith but provides no warranty, nor accepts any liability arising from any incorrect, incomplete or misleading information or its improper use. If you have questions, require clarification or would like more details on this data please call 311.

0 0.5 1 2 3 4 Kms

Date: Mar 2014
File: traffic-flow-city-2013.mxd

APPENDIX D

Priority Projects

DRAFT Priority 1

Location	Cross Street	Description	Challenges	Opportunity	Type	Benefit	Context	Comments	Place Name
104 Street	98 Avenue	Ped Crossing	Midblock	Traffic Calming/Extra Crossing/Sidewalk	Paint/Geometrics	Pedestrians	Openspace/Institution	No Sidewalk Lot 9710 to 9817	Morinville Tug Toto Trail
104 Street	Lots 9817	South of Hwy 642	RB - 14R	Remove RB-14R	Signage	Auto	Openspace/Residential	Improper Signage	
104 Street	99 Avenue	Playground	WC-3	TCS-D-307 (Area)	Signage	Auto	Openspace/Residential	Lion Park and Champlain Park should be treated as one park	Lions Park
104 Street	99 Avenue	Playground	WC-3	TCS-D-307 (Area)	Signage	Auto	Openspace/Residential	Lion Park and Champlain Park should be treated as one park	Champlain Park
99 Street	99 Avenue	Playground	WC-3	WC-3	Signage	Auto/Pedestrians	Openspace/Residential	Consistency Check, Speed, Warning	Rotary Park
97 Street	95 Avenue	Playground	WC-3	Remove playground signs	Signage	Auto/Pedestrians	Openspace/Residential	Over signed based on context	Grandin Heights Park
96 Avenue	96 Street	Playground	WC-3	Remove playground signs	Signage	Auto/Pedestrians	Openspace/Residential	Over signed based on context	Grandin Heights Park
Morinville Drive	98 Avenue	School	WC-1	TCS-D-301 (Zone)	Signage	Auto/Pedestrians	Openspace/Residential	Sign spacing	Notre Dame Elementary School
98 Avenue	95 Street	Playground	WC-3	Remove playground signs	Signage	Auto/Pedestrians	Openspace/Residential	Over signed based on context	Belle Park
99 Avenue	95 Street	Playground	WC-3	Remove playground signs	Signage	Auto/Pedestrians	Openspace/Residential	Over signed based on context	Belle Park
100 Avenue	Alley Access	Alley	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Commercial	Fronting onto arterial	St. Jean Baptiste Church
101 Avenue	97 Street N	School	Signage Standards	TCS-D-302 (Area)	Signage	Auto/Pedestrians		Not signed	Morinville Community High School
102 Avenue	103 St and 101A St	School	Signage Standards	TCS-D-305 (Zone)	Signage	Pedestrians	Residential/School	Sign within 50m of intersection;	G.P. Vanier Elementary School
102 Avenue	103 St and 101A St	School	Signage Standards	TCS-D-301 (Zone)	Signage	Pedestrians	Residential/School	Sign spacing	G.P. Vanier Elementary School
103 Avenue	103 St and 101A St	School	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Residential/School	Proximity to school	G.P. Vanier Elementary School
103 Avenue	103 St and 101A St	School	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Residential/School	Proximity to school	G.P. Vanier Elementary School
104 Avenue	103 St and 101A St	School	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Residential/School	Proximity to school	G.P. Vanier Elementary School
101A Street	104 Avenue	Playground	Signage Standards	Combine treatment with GPV Elementary	Signage	Auto/Pedestrians		G.P. Vanier Elementary School signage will govern the start and end limits	Meadow Diamonds
107 Street	108 Avenue	Playground	Signage Standards	TCS-D-307 (Area)	Signage	Auto/Pedestrians		Not signed	Bob Foster Park
102 Avenue	Sunnydale Road	Playground	Signage	Convert to RA-1 (Stop)	Signage	Pedestrians	Openspace/Residential	Improve Safety	Sunnydale Park
Sunnydale Road	102 Avenue	Playground	Signage Standards	TCS-D-310 (Zone)	Signage	Auto/Pedestrians	Openspace/Residential	Improper Signage	Sunnydale Park
87 Street	86 Street	Playground	Signage Standards	Remove Signage	Signage	Auto/Pedestrians	Openspace/Residential	Surrounded by houses	Sunnydale Park
Sunnydale Road	86 Street	Playground	Signage Standards	TCS-D-306 (Zone)	Signage	Auto/Pedestrians	Openspace/Residential	Improper Signage	Sunshine Lake Park
83 Avenue	95A St	Playground	Signage Standards	TCS-D-307 (Area)	Signage	Auto/Pedestrians	Openspace/Residential	Improper Signage	East South Glens Park
81 Avenue	95A St	Playground	Signage Standards	TCS-D-307 (Area)	Signage	Auto/Pedestrians	Openspace/Residential	Improper Signage	East South Glens Park
82 Avenue	97 Street	Playground	Signage Standards	TCS-D-307 (Area)	Signage	Auto/Pedestrians	Openspace/Residential	Improper Signage	West South Glens Park

DRAFT Priority 2

Location	Cross Street	Description	Challenges	Opportunity	Type	Benefit	Context	Comments	Place Name
97 Avenue	107 St and 104 St	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Openspace/Recreational	Traffic controls mixed	
99 Avenue	99 Street	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Openspace/Residential	Proximity to park	
95 Avenue	97 Street	Approach Signage	All-way stop	Paint or traffic circle	Marking/Geometrics	Auto/Pedestrians	Openspace/Residential	Provide ped crossing at this location	
95 Avenue	97 Street	Ped Crossing	Midblock	Align with intersection	Signage/Markings	Auto/Pedestrians	Openspace/Residential	Adjacent to Grandin Heights Park	
97 Street	96 Avenue	East of 100th Street	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Pedestrians	Openspace/Residential	Proximity to park	
Morinville Drive	FRONTING STREETS	Approach Signage	Yield (RA-2)	Use RA - 1 (Stop)	Signage	Auto/Pedestrians	Residential/School	Proximity to school	
100 Avenue	107 ST	Signage	Placement	Relocate RA-4L and RA-4R	Signage	Auto/Pedestrians	Commercial	Signage improper placement	
100 Avenue	99A Avenue	Ped Crossing	Crossing Location	Remove	Signage/Markings	Auto	Commercial	Proximity to other crossing location	
100 Street	101 Avenue	Ped Crossing	Crossing Location	Relocate crossing to 101 Ave	Signage/Paint	Auto/Pedestrians	Institutional	Consistency Check, Speed, Warning	Adjacent to the Fire Department
104 Street	101 Avenue	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Commercial	101 Avenue is consistency "Stop" ctrl	
105 Street	101 Avenue	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Commercial	101 Avenue is consistency "Stop" ctrl	
106 Street	101 Avenue	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Commercial	101 Avenue is consistency "Stop" ctrl	
94 Street	106 Avenue	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Residential	Proximity to school	George H Primeau Jr. High School
Sunnydale Road	FRONTING STREETS	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Openspace/Residential	Potential development trigger	
Sunnydale Road	104 Avenue	Ped Crossing	Crossing Location	Consistent Application	Signage/Markings	Auto/Pedestrians	Openspace/Residential	Close proximity, incomplete s/w, x-walk to nowhere at 86 St	
100th Street Svc Rd	90 Avenue	Industrial	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto	Industrial	Safety for commercial vehicles	
100th Street Svc Rd	87 Avenue	Industrial	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto	Industrial	Safety for commercial vehicles	

DRAFT Priority 3

Location	Cross Street	Description	Challenges	Opportunity	Type	Benefit	Context	Comments	Place Name
102 Street	99 Avenue	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Residential	Need to determine mode priority	
102 Street	98 Avenue	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Residential	Need to determine mode priority	
101 Street	99 Avenue	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Residential	Need to determine mode priority	
101 Street	98 Avenue	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Residential	Need to determine mode priority	
101 Street	97 Avenue	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Pedestrians	Residential	Need to determine mode priority	
97A Avenue/97 Street	FRONTING STREETS	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Residential	Need to determine mode priority	
100 Avenue	101 Street	Playground	Signage	Information Sign	Signage	Auto/Pedestrians		No change in sign layout	Baptiste Park
105 Ave	97 Street	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Auto/Pedestrians	Residential	Potential development trigger	
104 Ave/95 St	FRONTING STREETS	Approach Signage	Yield (RA-2)	Convert to RA-1 (Stop)	Signage	Auto/Pedestrians	Residential	Potential development trigger	
104 Avenue	97 Street	Approach Signage	Yield (RA-2)	Convert to stop or traffic circle	Signage/Geometrics	Auto/Pedestrians	Residential	Potential development trigger	
104 Avenue	98 Street	Approach Signage	Signage	Relocate sign post	Signage	Auto/Pedestrians	Residential	Check sign placement consistency	

APPENDIX E

100th Street/101st Avenue – Potential Traffic Calming Measures


Increase landscape
Street banner
Placemaking
Speed "bump"
Landscape boulevard
& sidewalk
Curb Extension
Textured crossing

APPENDIX F

School and Playground Analysis

Belle Park - All surrouding roads

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 3
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 2
TOTAL SCORE (sum of T,F,C,L,E and S)					35

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Champlain Park - 104 St

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 10
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					53

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

East South Glens Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					68

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Grandin Height Park - All surrounding roads

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					40

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Lake Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 10
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					48

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Lions Park - 104 St

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					63

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Morinville Rotary Park - 99 Ave

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 10
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 3
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					83

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Morinville Rotary Park - 99 St

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 3
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					70

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Morinville Rotary Park - 99a Ave

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					100

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Skyline Ball Diamond Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 10
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 2
TOTAL SCORE (sum of T,F,C,L,E and S)					37

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Splash Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 5
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 0
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 2
TOTAL SCORE (sum of T,F,C,L,E and S)					17

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

St. Jean Baptiste park - 100 Ave

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 10
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 5
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					38

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Sunnydale Park - 102 Ave

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					95

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Sunnydale Park - Sunnydale Road

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 0
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					85

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Sunshine Lake Park - 86 St

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					90

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Sunshine Lake Park - Sunnydale Road

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground Type	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
Playground Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					90

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

West South Glens Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 30
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					85

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

Sunshine Lake Park - Sunnydale Road

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 5
TOTAL SCORE (sum of T,F,C,L,E and S)					90

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

West South Glens Park

TABLE 2.3 PLAYGROUND ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAX. POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
Playground **T**ype	40	Frontage	Playground Capacity (number of children)	N/A	
		≥ 50 m	16 or more	1.0	
			5 to 15	0.75	
			1 to 4	0.4	
			No play equipment: sports field or open field only	0.2	
		< 50 m	Any facilities	0.2	T = 30
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable/Indoor Facility		0.1	F = 20
Road **C**lassification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector	Local	0.75	
		Collector	Collector	0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property **L**ine Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
Playground **E**ntrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None (or non-playground side)		1.0	
		Playground side		0.4	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					85

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.4 PLAYGROUND ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 – 80	PLAYGROUND AREA
81 – 100	PLAYGROUND ZONE

G. P. Vanier Elementary School - 101 a St

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 5

TOTAL SCORE (sum of T,F,C,L,E and S)	82

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

G. P. Vanier Elementary School - 101 Ave

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 5
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 3
TOTAL SCORE (sum of T,F,C,L,E and S)					88

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

George H. Primeau Jr. High School - Grandin Dr.

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 16
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					66

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

Morinville Community High School - 100 Ave

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 10
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 5
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					38

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

Morinville Community High School - 100 Ave

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 8
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 20
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 20
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 3
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 3
TOTAL SCORE (sum of T,F,C,L,E and S)					64

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

Notre Dame Elementary School - Morinville Dr.

TABLE 2.1 SCHOOL ZONE INPUT WORKSHEET

INSTALLATION CRITERION	MAXIMUM POINT VALUE (MPV)	DESCRIPTION		WEIGHTING FACTOR (WF)	SCORE (MPV * WF)
School Type	40	Elementary		1.0	
		Middle / Junior High		0.4	
		High School		0.2	
		Post Secondary / College / University		0.0	T = 40
Fencing	20	Fully Traversable		1.0	
		Partially Traversable		0.5	
		Non-Traversable		0.1	F = 2
Road Classification	20	Urban Land Use	Rural Land Use		
		Local		1.0	
		Minor Collector Collector	Local Collector	0.75 0.5	
		Major Collector / Minor Arterial	Arterial	0.25	
		Major Arterial / Expressway	Freeway*	0.0	C = 15
Property Line Separation	10	Abuts Roadway		1.0	
		Within 50 metres		0.5	
		Further than 50 metres		0.0	L = 10
School Entrance	5	Main Entrance / Multiple Secondary Entrances		1.0	
		Secondary Entrance		0.6	
		None		0.0	E = 5
Sidewalks	5	None or non-school side		1.0	
		School side		0.6	
		Both sides		0.0	S = 0
TOTAL SCORE (sum of T,F,C,L,E and S)					72

* All major provincial highways shall be treated as "Freeway" for the purpose of assignment of the weighting factor for the "Road Classification" under "Rural Land Use".

TABLE 2.2 SCHOOL ZONE RESULTS MATRIX

TOTAL SCORE	AREA OR ZONE?
0 – 40	Nothing
41 - 64	SCHOOL AREA
65 - 80	SCHOOL AREA or SCHOOL ZONE*
81 – 100	SCHOOL ZONE

*Local conditions must be considered in detail in order to determine the appropriate treatment. Wherever possible, mitigation measures should be explored that would reduce the score so that marginal school zones can be avoided. The reasons for the final decision should always be documented.

Morinville Transportation Study

Council Presentation

Chun Man

October 28th, 2014

URBAN systems

Study Objectives

- Address Community Safety Through Transportation Improvements:
  - Develop Stop or Yield Intersection Consistency
  - Develop Crosswalk Application Consistency
  - Develop Consistent School and Playground Signage Layout

URBAN systems

Methodology

- Reviewed traffic signage layout
- Reviewed crosswalk locations
- Reviewed existing data and reports
- Reviewed applicable industry guidelines
- Identify priority projects

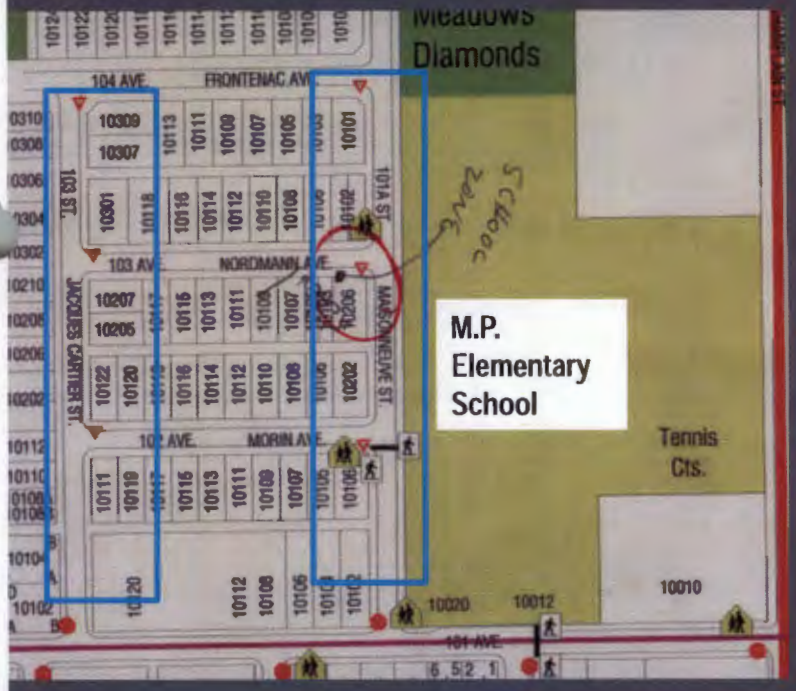
URBAN systems

Problem Definition

- 3 Primary Problems:
  - Traffic Signage and Pavement Markings
  - Road Design/Geometry
  - Guiding Documents

URBAN systems

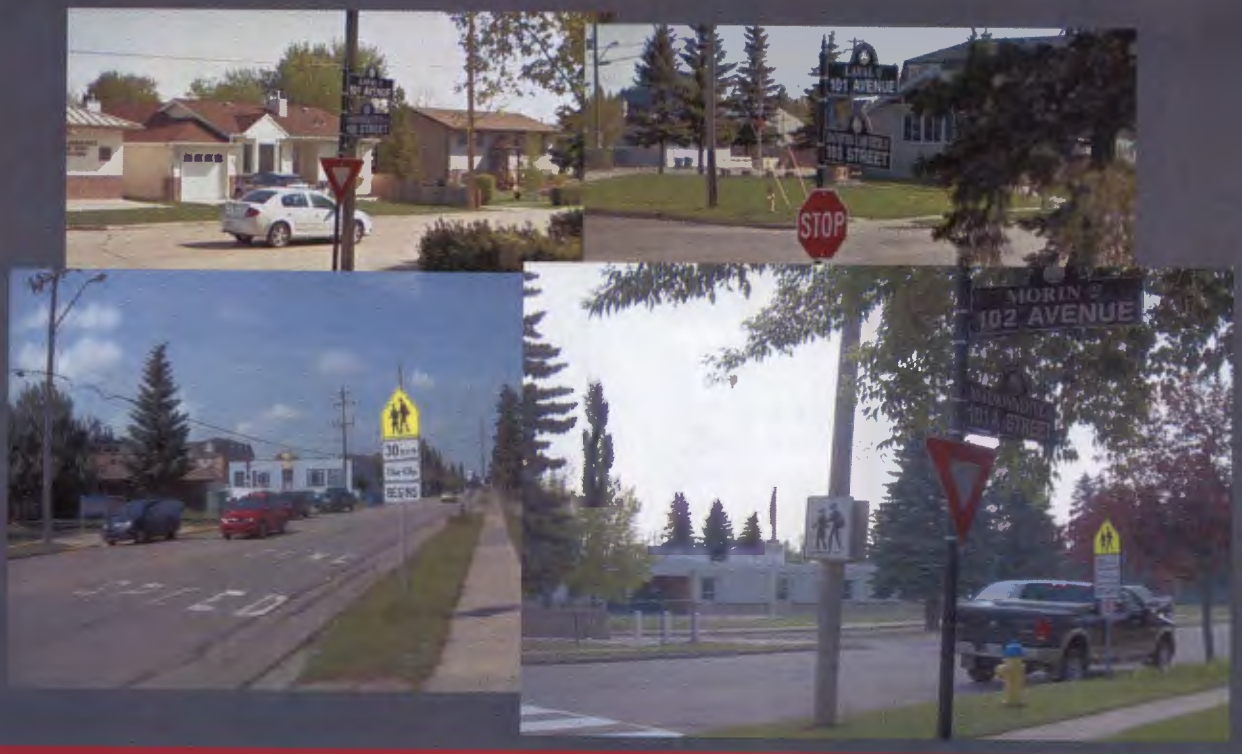
Signage and Pavement Markings
Signage



- George Primeau Middle School
- Notre Dame Elementary School
- Morinville Community High School
- Other Education Facilities

URBAN systems

Signage and Pavement Markings



URBAN systems

Existing Conditions
Signage & Crosswalk

URBAN systems

Road Design/Geometry
Speed Data

- West of 100th Street on 100th Avenue

URBAN systems

Road Design/Geometry
Speed Data

- East of 100th Street on 100th Avenue

URBAN systems

Existing Conditions

- North of 100th Avenue on Grandin Drive

URBAN systems

Existing Conditions

- South of 100th Avenue on Grandin Drive

URBAN systems

Road Design/Geometry
Engineering Standards

3.3.2 All horizontal curves shall be designed to meet the following minimum design requirements:

Street Classification	Design Speed (km/h)	Minimum Radius of Curvature
Local	60	90 metres
Minor Collectors	60	90 metres
Major Collectors	60	130 metres
Industrial	60	130 metres
Arterial	70	450 metres

*Municipal Engineering Standards – Bylaw No. 28/2003

URBAN systems

Road Design/Geometry
Engineering Standards

20 km/hr

30 km/hr

40 km/hr

50 km/hr

URBAN systems

Road Design/Geometry
Engineering Standards

*Manitoba Public Insurance

URBAN systems

Road Design/Geometry
Context Awareness

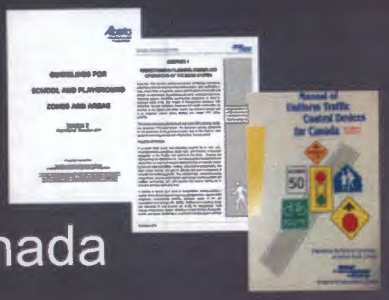
URBAN systems

Core Improvements

- *School and Playground Zone and Areas*
- *Pedestrian Crossing Control (Crosswalks)*
- *Intersection Control*
- *Speed Reduction Measures*

URBAN systems

Recommendations



- Apply industry standards
  - Alberta Transportation
  - Transportation Association of Canada
- Context Sensitive Design
  - Apply standards based on specific users and places
  - Local standards must be adopted and applied on similar corridors

URBAN systems

Traffic Calming Example

URBAN systems

Traffic Calming Example

URBAN systems

Traffic Calming Example

100th Street

100th Avenue

- Coeur de Morinville

URBAN systems

Traffic Calming Example

- Highway 642 FPS

URBAN systems

Priority Criteria

Created based on:

- Vulnerable Users
- Land Use Types
- Roadway Characteristics
- Consistent Application

URBAN systems

Priority Projects

- ***Priority 1***
  - Corridors & intersections with vulnerable users
  - School and playground speed enforcement
  - Areas with regulatory sign issues

URBAN systems

Priority Projects

- ***Priority 2***
  - High pedestrian activity (ie: retail, commercial, church, etc)
  - Intersections with close proximity to schools
  - Evaluate requirement for existing playground signs (O&M)

URBAN systems

Priority Projects

- ***Priority 3***
  - Improve user expectations (Coeur de Morinville)
  - Improve signage layout
  - Re-evaluate crosswalk locations (O&M)

URBAN systems

Moving Forward

- Current Phase
  - Finalize technical report

URBAN systems

Moving Forward

- Additional Phase
  - Develop project timeline
  - Update engineering standards
  - Safe walking routes
  - Update 2004 Transportation Master Plan
  - Prioritize corridors based on expected users
  - Conduct parking study
  - Develop traffic calming system to address Town's needs
  - Develop policy to enforce Town standards

URBAN systems

Enhancing Community Safety Through Transportation Improvements

URBAN systems