

# **GUIDELINES FOR SCHOOL AND PLAYGROUND ZONES AND AREAS**

**Version 2**

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## 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.

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## ACKNOWLEDGEMENT

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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.

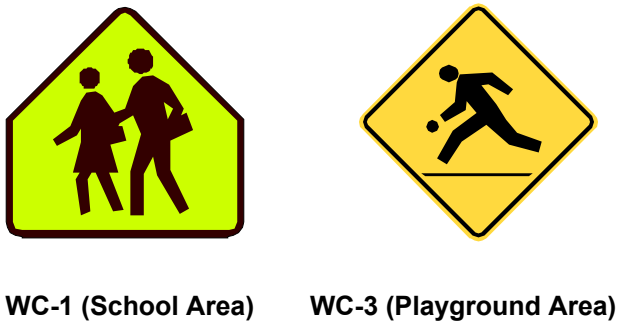


FIGURE 2.1 SCHOOL AND PLAYGROUND AREA SIGNAGE (MUTCDC)

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.



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**



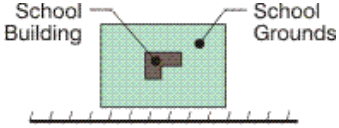
**Middle/Jr.High**



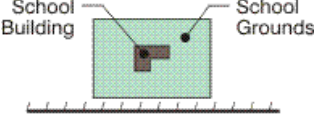
**High**

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.

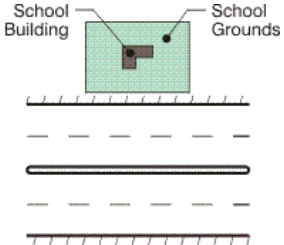
**2. Road Classification**



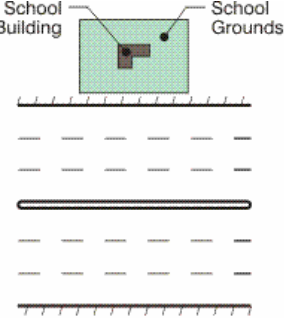
**Local**



**Collector**



**Arterial**



**Expressway / Freeway**

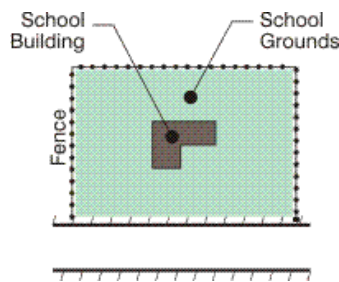
The design classification system used in the Geometric Design Guide for Canadian Roads (TAC 1999) separates roads on the basis of differences in land service and traffic service. The terms “rural” and “urban” refer to the predominant characteristics of the adjacent land use and not only to jurisdictional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

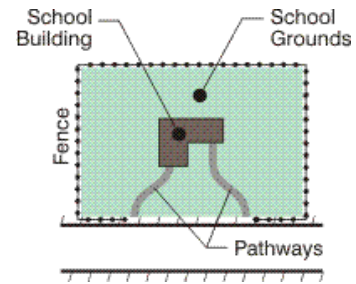
Arterial roads and expressways / freeways are typically multi-lane roads that carry high volumes of traffic, including trucks, and have posted speed limits of 50 km/h or greater. Collector roads are usually narrower and lower in traffic volumes, and provide direct frontage to developments including schools.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

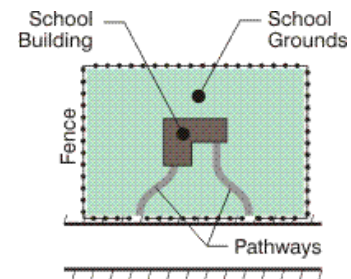
**3. Fencing**



**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.

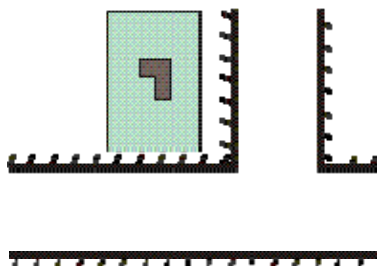
The effectiveness of fencing depends on its traversability, i.e. how easily it can be bypassed or traversed.

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.

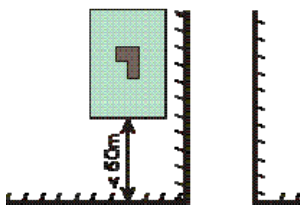
Fully traversable describes fencing that is absent or easily traversed. Partially traversable can describe fencing that is low-mounted or has several openings (or, for example, widely spaced trees). Non-traversable describes high-mounted fencing with limited openings at defined points.

Appendix A illustrates some examples of fencing related to schools.

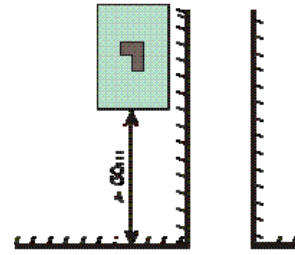
**4. Property Line Separation**



Abuts Road



Less than 50 metres



Greater than 50 metres

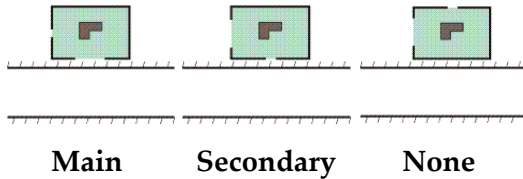
A school typically abuts at least one roadway. If the school is located near an intersection, it may also be located close to an intersecting roadway.

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**



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.

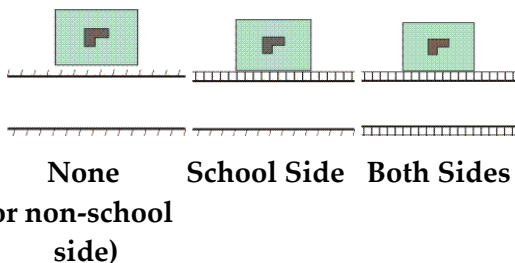
school grounds or opening in the fence and a defined crossing point on the roadway, or to provide a link to the surrounding sidewalk network further from the school grounds. If sidewalks are provided between the school and the roadway, children are less likely to walk in the roadway. In rural areas, 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

**6. Location of Sidewalks**



The purpose of sidewalks is to provide safe conveyance of children between the

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 <u>T</u> ype              | 40                        | Elementary                                   |                 | 1.0                   | T =              |
|                                  |                           | Middle / Junior High                         |                 | 0.4                   |                  |
|                                  |                           | High School                                  |                 | 0.2                   |                  |
|                                  |                           | Post Secondary / College / University        |                 | 0.0                   |                  |
| F <u>e</u> ncing                 | 20                        | Fully Traversable                            |                 | 1.0                   | F =              |
|                                  |                           | Partially Traversable                        |                 | 0.5                   |                  |
|                                  |                           | Non-Traversable                              |                 | 0.1                   |                  |
| Road <u>C</u> lassification      | 20                        | Urban Land Use                               | Rural Land Use  |                       | C =              |
|                                  |                           | Local  |                 | 1.0                   |                  |
|                                  |                           | Minor Collector                              | Local Collector | 0.75<br>0.5           |                  |
|                                  |                           | Major Collector / Minor Arterial             | Arterial        | 0.25                  |                  |
|                                  |                           | Major Arterial / Expressway                  | Freeway*        | 0.0                   |                  |
| Property <u>L</u> ine Separation | 10                        | Abuts Roadway                                |                 | 1.0                   | L =              |
|                                  |                           | Within 50 metres                             |                 | 0.5                   |                  |
|                                  |                           | Further than 50 metres                       |                 | 0.0                   |                  |
| School <u>E</u> ntrance          | 5                         | Main Entrance / Multiple Secondary Entrances |                 | 1.0                   | E =              |
|                                  |                           | Secondary Entrance                           |                 | 0.6                   |                  |
|                                  |                           | None   |                 | 0.0                   |                  |
| <u>S</u> idewalks                | 5                         | None or non-school side                      |                 | 1.0                   | S =              |
|                                  |                           | School side                                  |                 | 0.6                   |                  |
|                                  |                           | Both sides                                   |                 | 0.0                   |                  |

|                                      |  |
|--------------------------------------|--|
| 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<br>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:

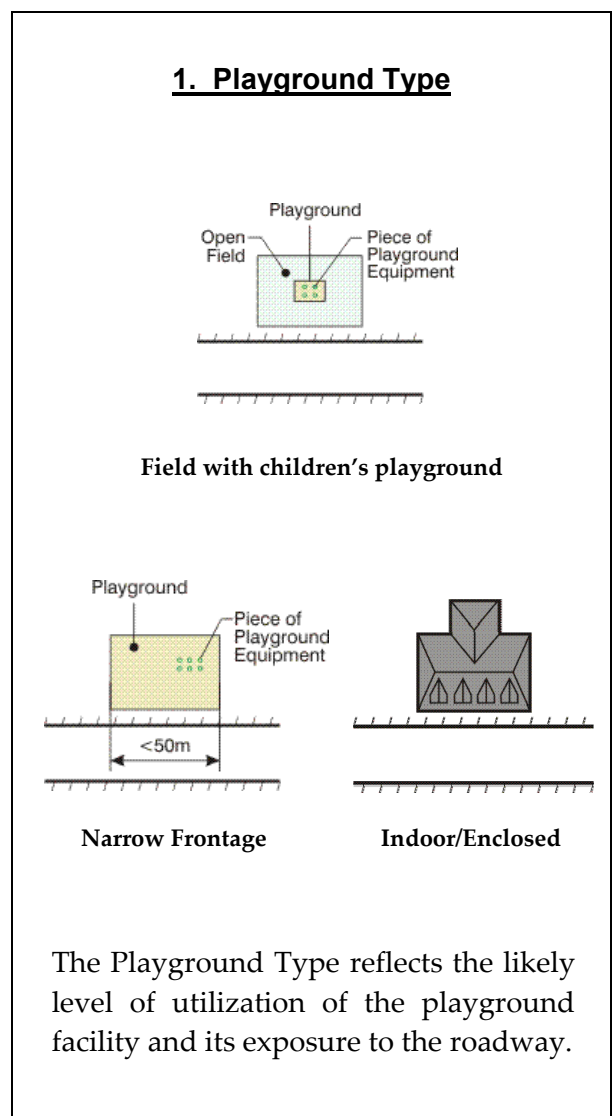
- Playground is located on an arterial roadway or expressway / freeway
- Playground or field is fully fenced
- Playground is located an appreciable distance from the roadway
- The Playground entrance is not located along the subject roadway

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**



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.

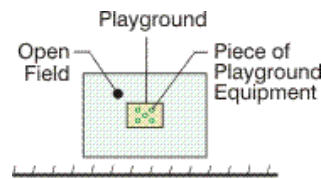
Appendix B illustrates some examples of playground equipment.

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

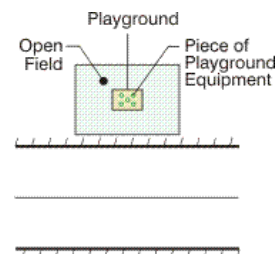
children using the open space or playing field. The road jurisdiction should document the specific reasons so as not to allow all local grass fields to become candidates for playground areas or zones.

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.

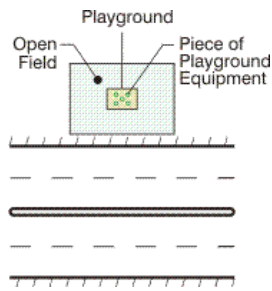
**2. Road Classification**



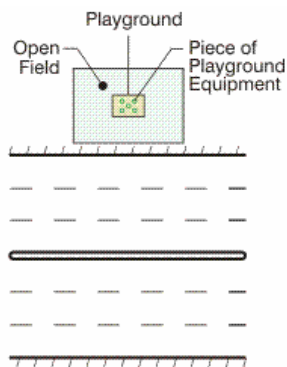
**Local**



**Collector**



**Arterial**



**Expressway / Freeway**

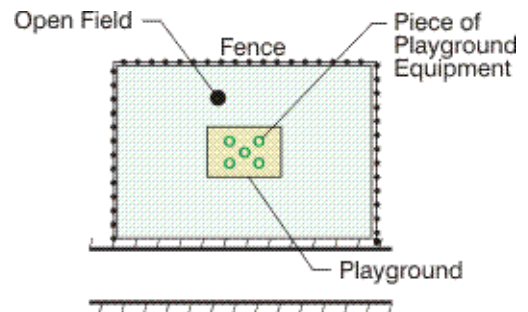
The design classification system used in the Geometric Design Guide for Canadian Roads (TAC 1999) separates roads on the basis of differences in land service and traffic service. The terms “rural” and “urban” refer to the predominant characteristics of the adjacent land use and not only to jurisdictional 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,

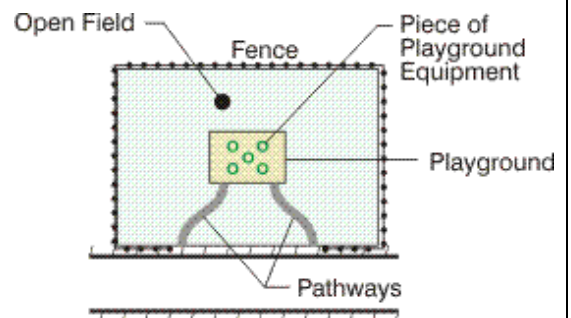
including trucks, and have posted speed limits of 50 km/h or greater. Collector roads are usually narrower, lower in traffic volumes and have direct frontage to developments including playgrounds. Local roads are often still narrower, and are designed for lower speeds.

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.

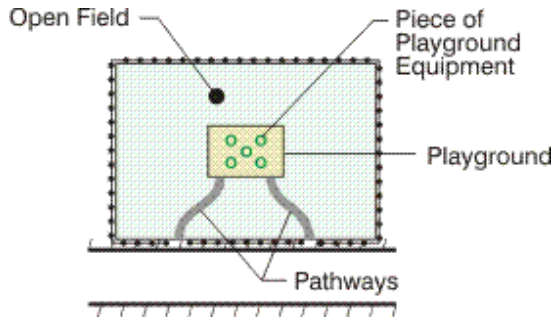
**3. Fencing**



**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.

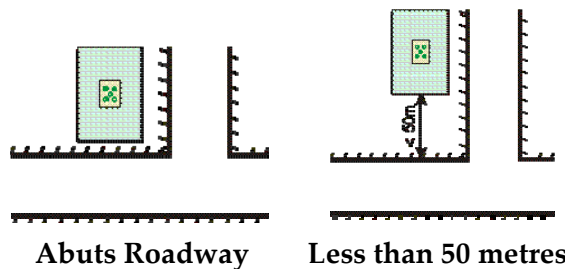
Fully traversable fencing can include fencing that is absent or easily traversable. Partially traversable can describe fencing that is low-mounted or has several openings. Non-traversable describes high-mounted fencing with no

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.

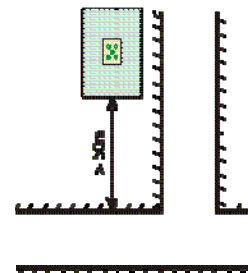
Appendix C illustrates some examples of fencing related to playgrounds.

**4. Property Line Separation**



**Abuts Roadway**

**Less than 50 metres**



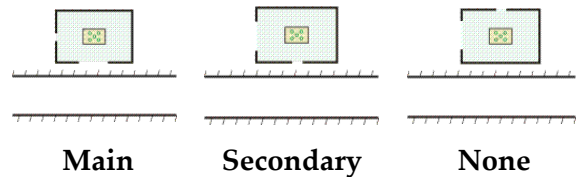
**Greater than 50 metres**

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



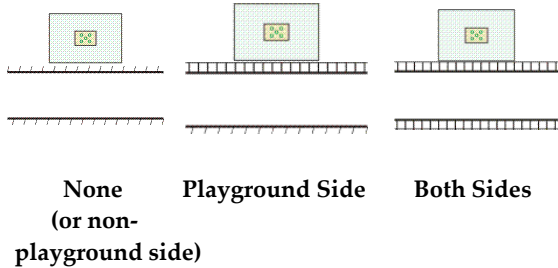
A playground entrance can be a driveway to the playground, the closest point along the road to an indoor facility's main door, or a designated on-street pick-up and drop-off area. The playground entrance can become a focal point of congestion and pedestrian activity. The activity includes vehicle movements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



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 <u>T</u> ype          | 40                     | Frontage                                     | Playground Capacity (number of children)           | N/A                   | T =              |
|                                  |                        | ≥ 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  |  |                       |                  |
| <u>F</u> encing                  | 20                     | Fully Traversable                            |  | 1.0                   | F =              |
|                                  |                        | Partially Traversable                        |  | 0.5                   |                  |
|                                  |                        | Non-Traversable/Indoor Facility              |  | 0.1                   |                  |
| Road <u>C</u> lassification      | 20                     | Urban Land Use                               | Rural Land Use                                     |                       | C =              |
|                                  |                        | 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                   |                  |
| Property <u>L</u> ine Separation | 10                     | Abuts Roadway                                |  | 1.0                   | L =              |
|                                  |                        | Within 50 metres                             |  | 0.5                   |                  |
|                                  |                        | Further than 50 metres                       |  | 0.0                   |                  |
| Playground <u>E</u> ntrance      | 5                      | Main Entrance / Multiple Secondary Entrances |  | 1.0                   | E =              |
|                                  |                        | Secondary Entrance                           |  | 0.6                   |                  |
|                                  |                        | None   |  | 0.0                   |                  |
| <u>S</u> idewalks                | 5                      | None (or non-playground side)                |  | 1.0                   | S =              |
|                                  |                        | Playground side                              |  | 0.4                   |                  |
|                                  |                        | Both sides                                   |  | 0.0                   |                  |

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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(Option for local roads only)



OR

(Re-instate speed limit)



School Property Line

School

See Notes 1 and 2



d (see table)

d (see table)

Solid Yellow Centre-line

d (see table)

d (see table)



See Notes 1 and 2

(Re-instate speed limit)



OR



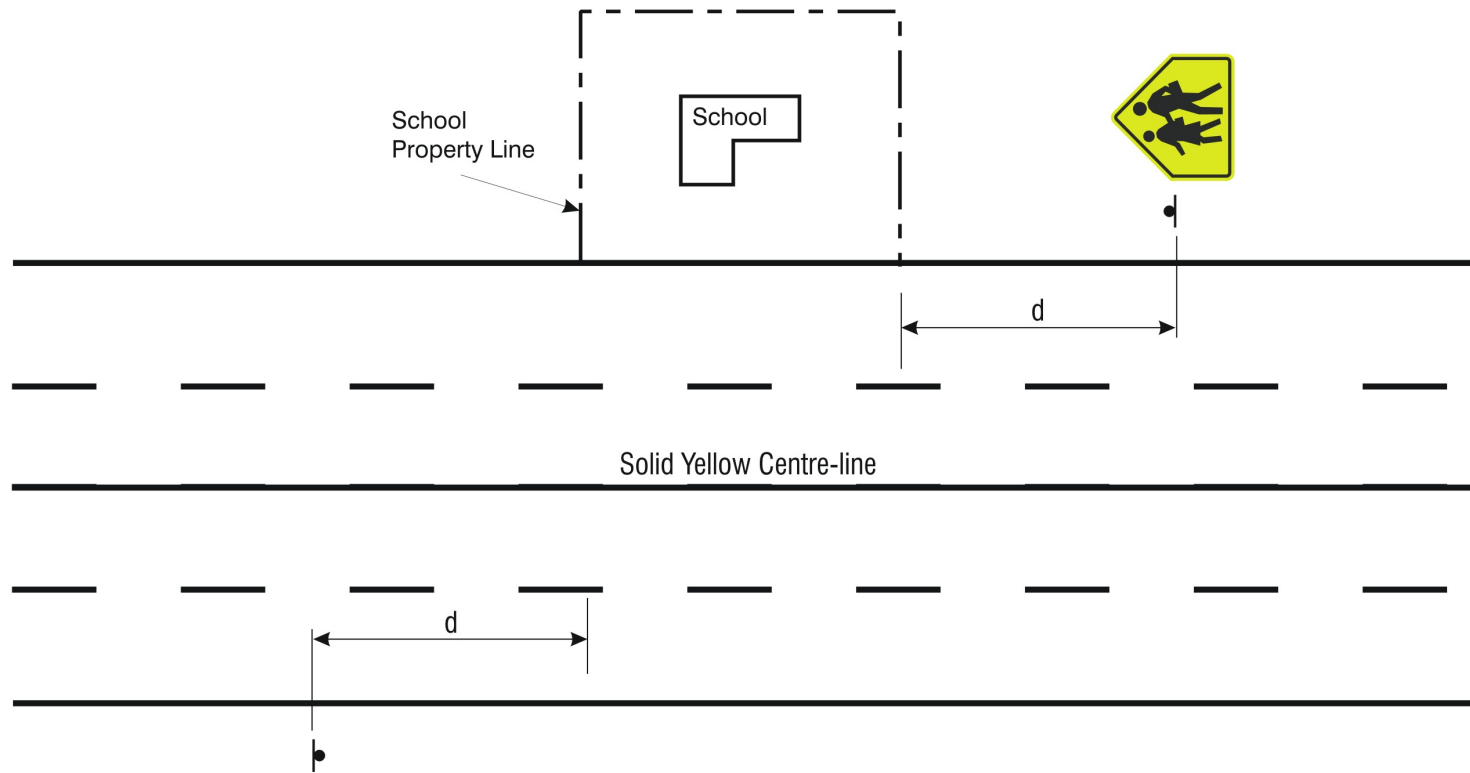
(Option for local roads only)

| 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       |
|                              |                | DRAWING<br>TCS-D-301 |            |
|                              |                | Date: MAY 2004       |            |
| SCHOOL ZONE ON<br>URBAN ROAD |                |                      |            |
| Prepared By: DP              | Checked By: RD | Scale: N.T.S.        | SECTION D3 |

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School Property Line

School




d

Solid Yellow Centre-line

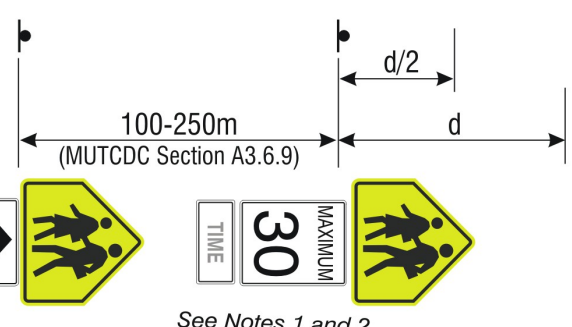
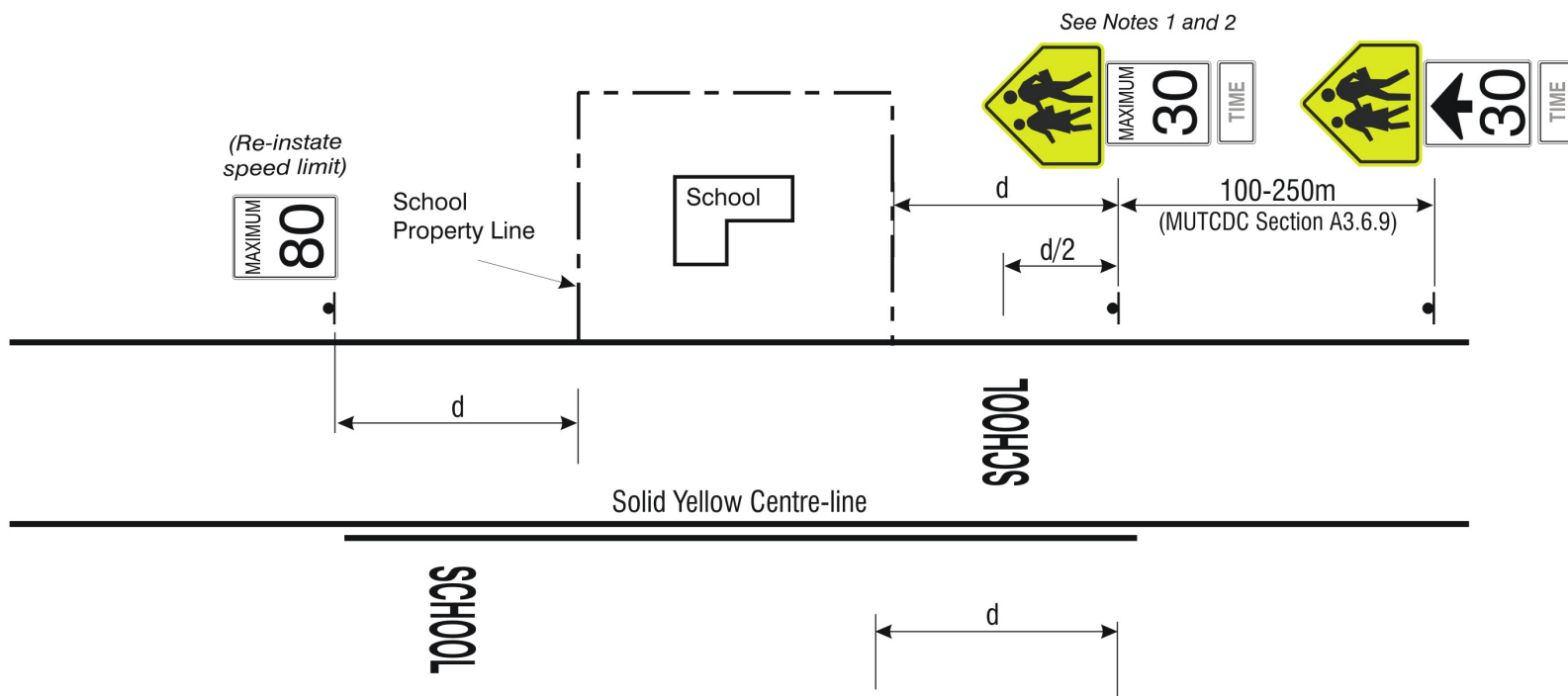
d



| 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       |
|---|----------------|-------------------|------------|
|   |                |                   |            |
|  |                | DRAWING TCS-D-302 |            |
|   |                | Date: MAY 2004    |            |
| <b>SCHOOL AREA ON URBAN ROAD</b>  |                |                   |            |
| Prepared By: DP   | Checked By: RD | Scale: N.T.S.     | SECTION D3 |

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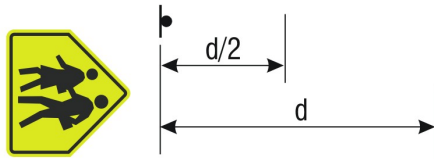
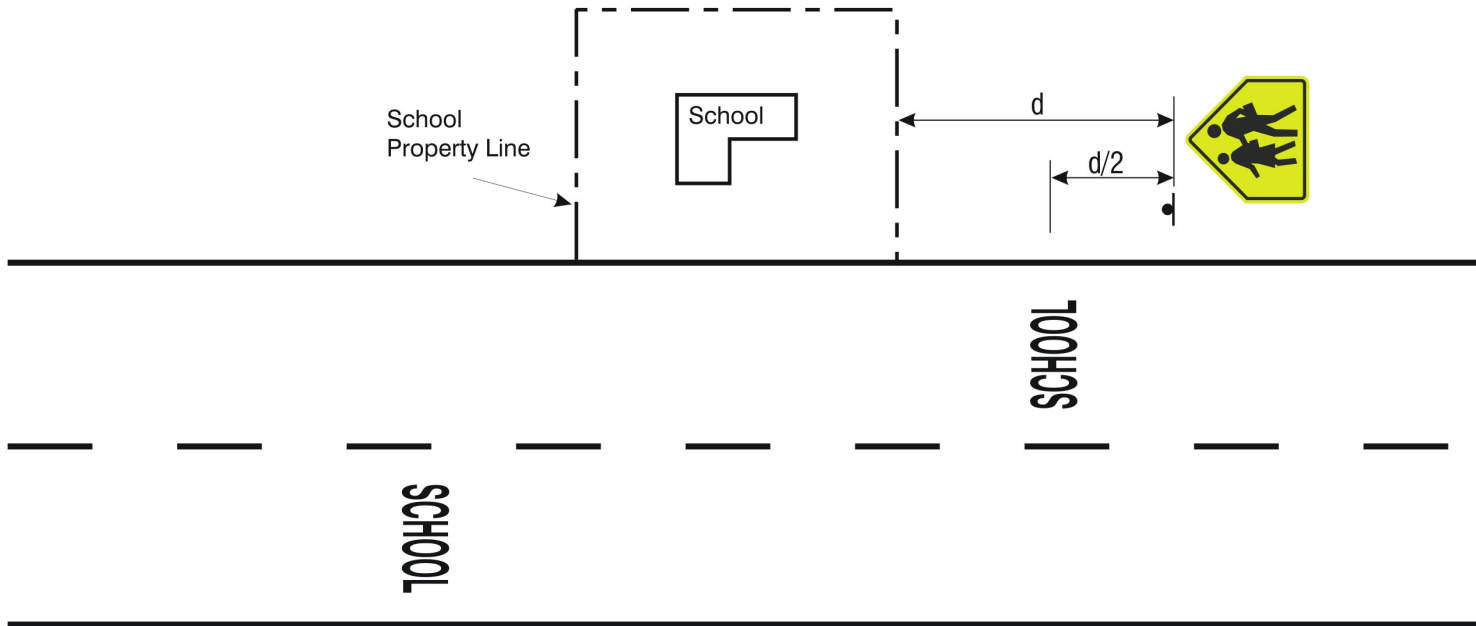


| Speed Limit | d    |
|-------------|------|
| 50 km/h     | 30 m |
| 60 km/h     | 40 m |
| 70 km/h     | 50 m |
| 80 km/h     | 60 m |

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       |
|                                  |                | DRAWING<br>TCS-D-303<br>Date: MAY 2004 |            |
| <b>SCHOOL ZONE ON RURAL ROAD</b> |                |  |            |
| Prepared By: DP                  | Checked By: RD | Scale: N.T.S.                          | SECTION D3 |

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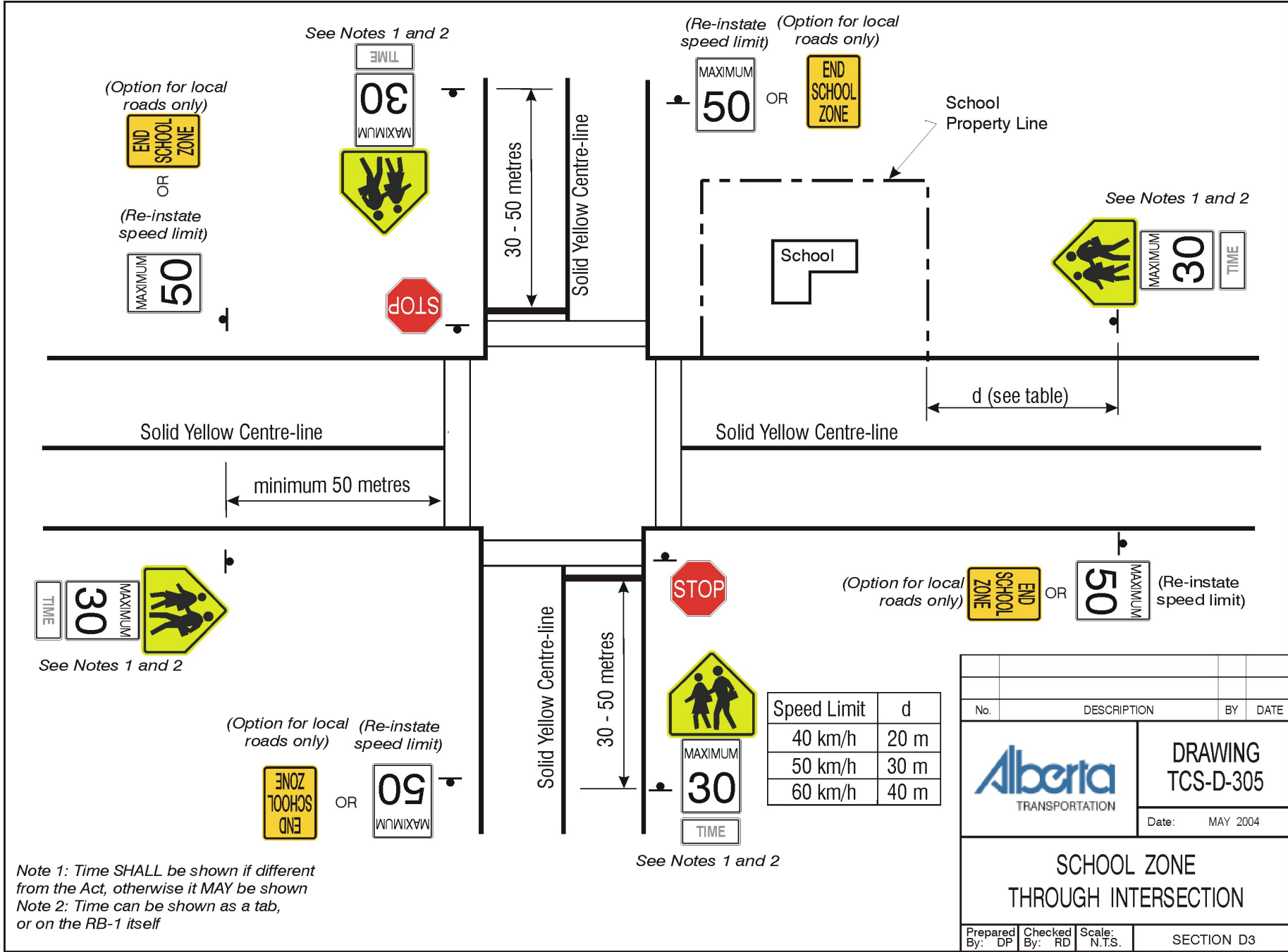
| Speed Limit | d    |
|-------------|------|
| 50 km/h     | 20 m |
| 60 km/h     | 30 m |
| 70 km/h     | 40 m |
| 80 km/h     | 50 m |
| 90 km/h     | 60 m |
| 100 km/h    | 70 m |

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


| No.                              | DESCRIPTION    | BY                | DATE       |
|----------------------------------|----------------|-------------------|------------|
|                                  |                |                   |            |
|                                  |                | DRAWING TCS-D-304 |            |
|                                  |                | Date: MAY 2004    |            |
| <b>SCHOOL AREA ON RURAL ROAD</b> |                |                   |            |
| Prepared By: DP                  | Checked By: RD | Scale: N.T.S.     | SECTION D3 |

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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       |
|  |                | <b>DRAWING</b><br><b>TCS-D-305</b> |            |
|   |                | Date: MAY 2004                     |            |
| <b>SCHOOL ZONE THROUGH INTERSECTION</b>   |                |                                    |            |
| Prepared By: DP   | Checked By: RD | Scale: N.T.S.                      | SECTION D3 |

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(Option for local roads only)

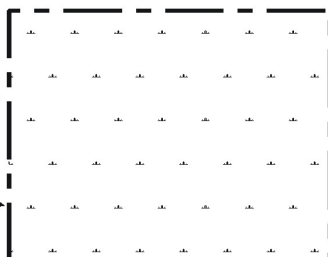


OR

(Re-instate speed limit)



Playground Property Line



See Notes 1 and 2



d (see table)

d (see table)

Solid Yellow Centre-line

d (see table)

d (see table)



See Notes 1 and 2

(Re-instate speed limit)



OR

(Option for local roads only)



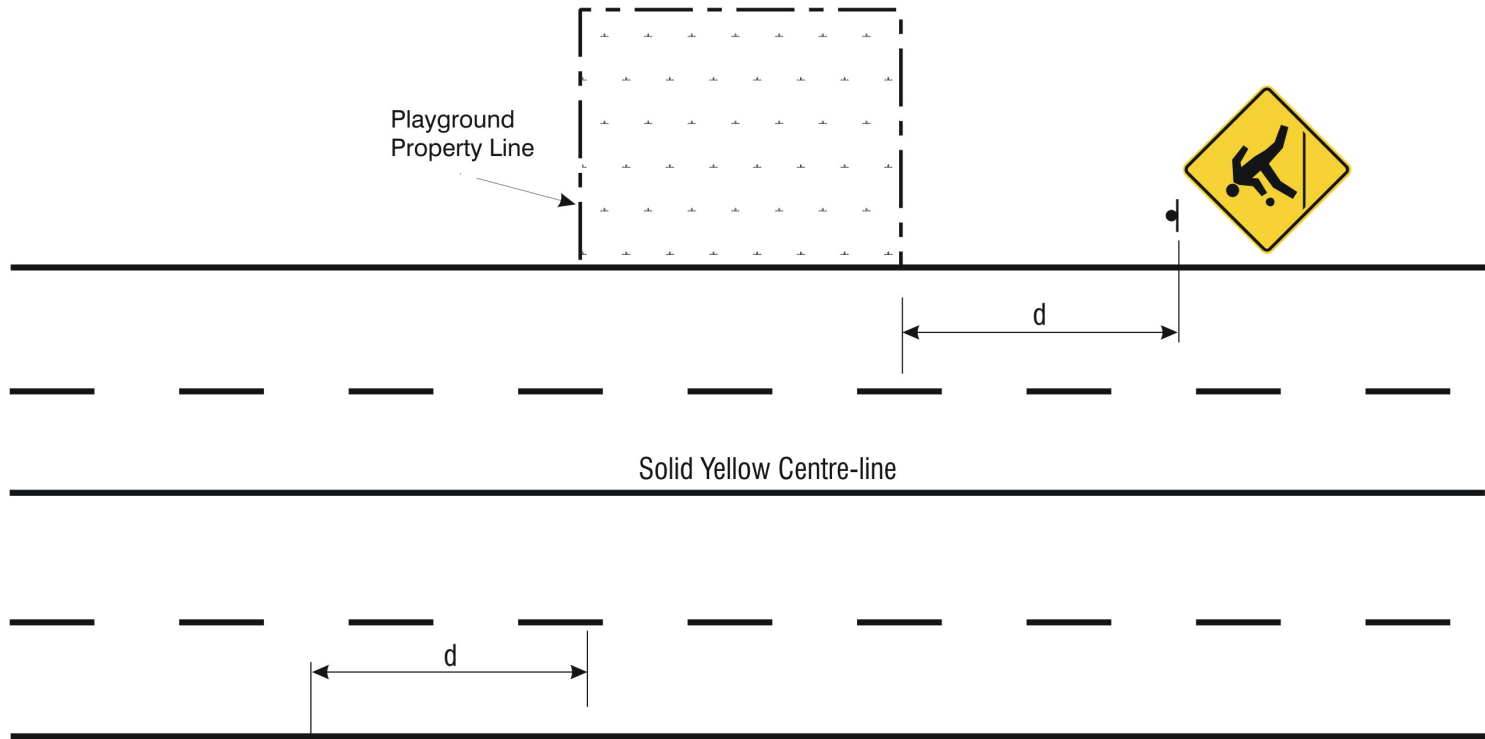
| Speed Limit | d    |
|-------------|------|
| 40 km/h     | 20 m |
| 50 km/h     | 30 m |
| 60 km/h     | 40 m |

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       |
|                               |                | DRAWING TCS-D-306 |            |
|                               |                | Date: MAY 2004    |            |
| PLAYGROUND ZONE ON URBAN ROAD |                |                   |            |
| Prepared By: DP               | Checked By: RD | Scale: N.T.S.     | SECTION D3 |

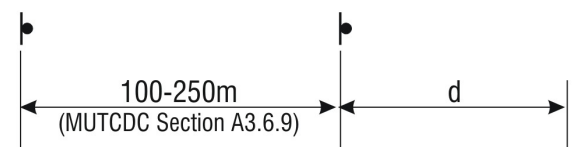
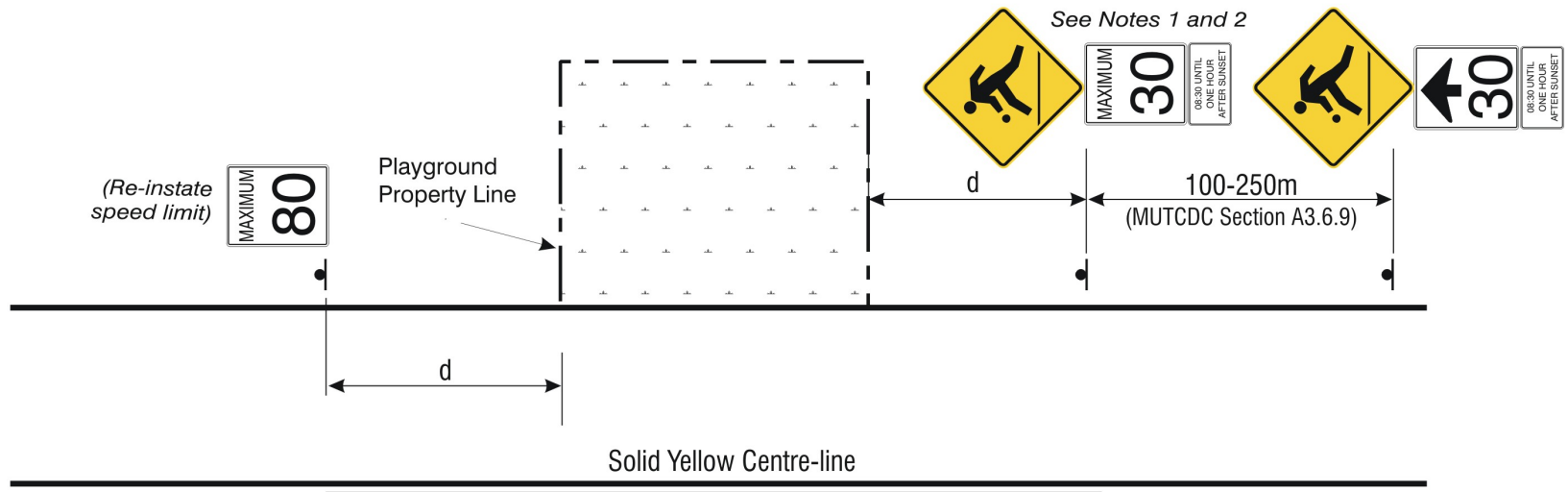
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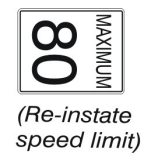
| Speed Limit | d    |
|-------------|------|
| 40 km/h     | 10 m |
| 50 km/h     | 20 m |
| 60 km/h     | 30 m |
| 70 km/h     | 40 m |
| 80 km/h     | 50 m |

|   |                |                                    |            |
|---|----------------|------------------------------------|------------|
| No.   | DESCRIPTION    | BY                                 | DATE       |
|  |                | <b>DRAWING</b><br><b>TCS-D-307</b> |            |
|   |                | Date: MAY 2004                     |            |
| <b>PLAYGROUND AREA</b><br><b>ON URBAN ROAD</b>  |                |                                    |            |
| 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 |

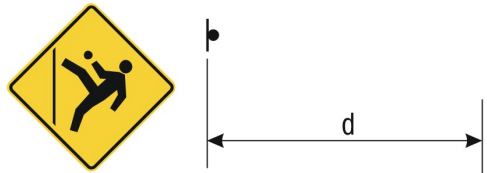
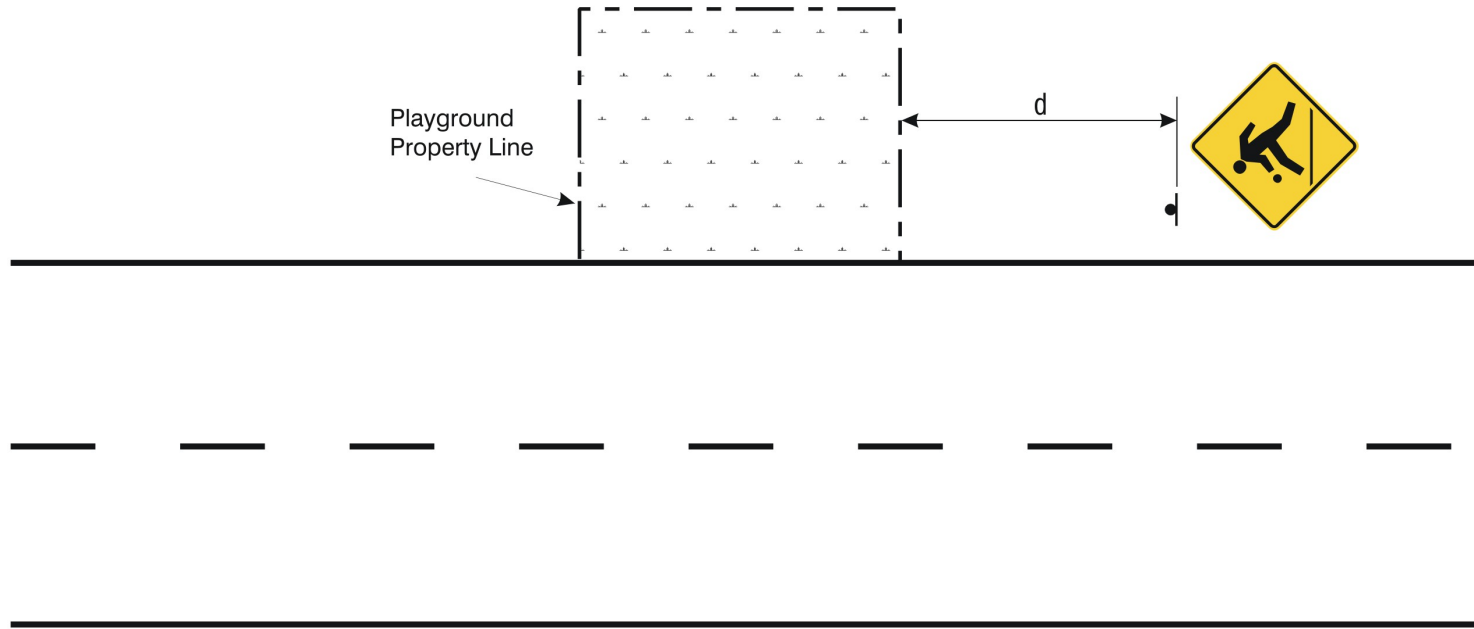


Note 1: Time MAY be shown  
 Note 2: Time can be shown as a tab, or on the RB-1 itself  
 Note 3: All signs oversized for speed limits of 70 km/h or more

|   |                |  |            |
|---|----------------|--|------------|
| No.   | DESCRIPTION    | BY                                     | DATE       |
|   |                | DRAWING<br>TCS-D-308<br>Date: MAY 2004 |            |
| <b>PLAYGROUND ZONE<br/>         ON RURAL ROAD</b> |                |  |            |
| Prepared By: DP                                   | Checked By: RD | Scale: N.T.S.                          | SECTION D3 |


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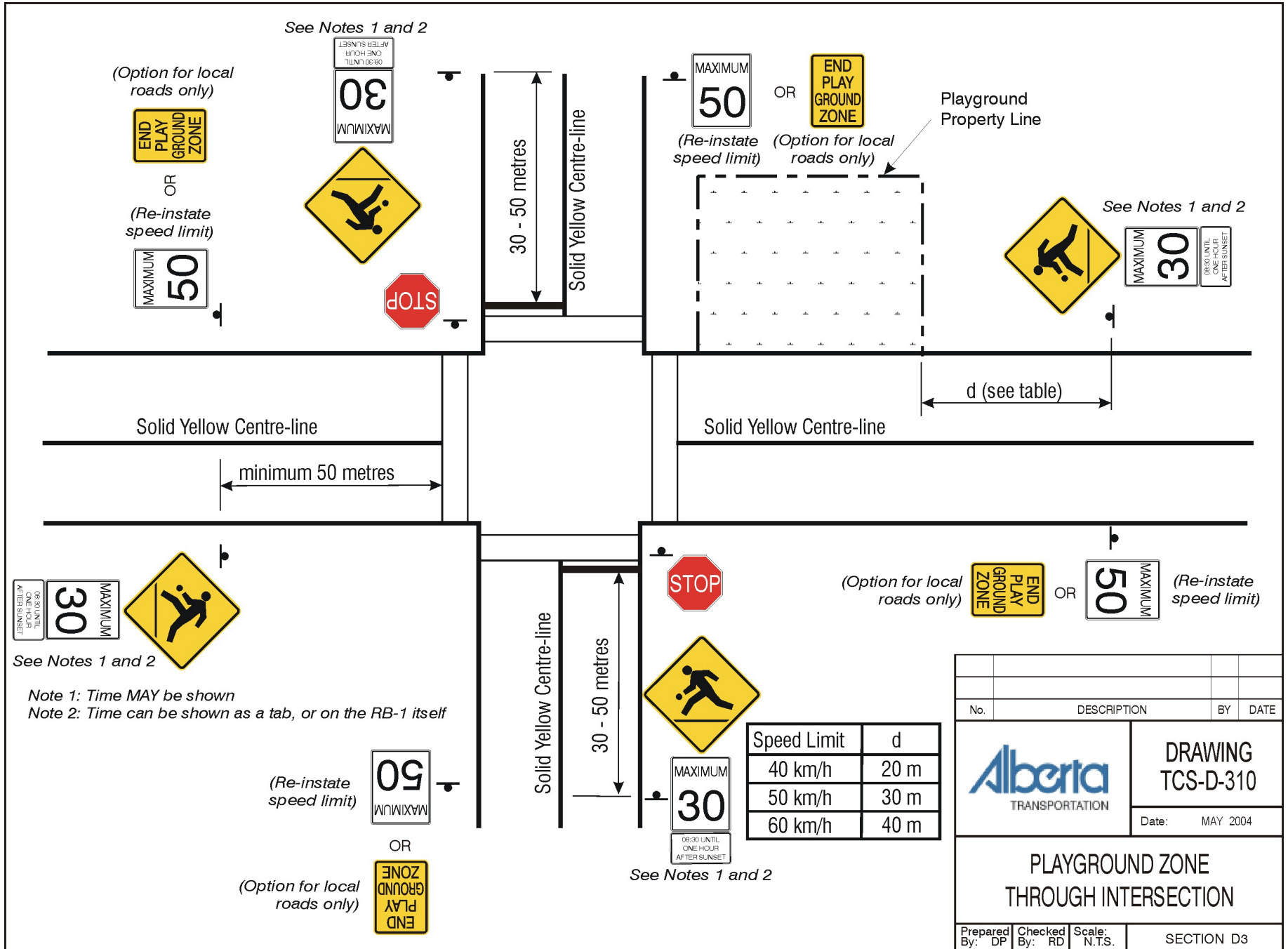


| Speed Limit | d    |
|-------------|------|
| 50 km/h     | 20 m |
| 60 km/h     | 30 m |
| 70 km/h     | 40 m |
| 80 km/h     | 50 m |
| 90 km/h     | 60 m |
| 100 km/h    | 70 m |

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

|   |                |                                    |            |
|---|----------------|------------------------------------|------------|
| No.   | DESCRIPTION    | BY                                 | DATE       |
|  |                | <b>DRAWING</b><br><b>TCS-D-309</b> |            |
|   |                | Date: MAY 2004                     |            |
| <b>PLAYGROUND AREA</b><br><b>ON RURAL ROAD</b>  |                |                                    |            |
| Prepared By: DP   | Checked By: RD | Scale: N.T.S.                      | SECTION D3 |

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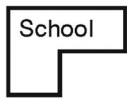
(Option for local roads only)



(Re-instate speed limit)



School! Property Line



Playground Property Line



See Notes 1 and 2



d (see table)

d (see table)

Solid Yellow Centre-line

d (see table)

d (see table)



See Notes 1 and 2



(Re-instate speed limit)



(Option for local roads only)



| 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       |
|                                     |                | 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<br>(Accommodates 1 child)   | 2-Seat See Saw<br>(Accommodates 2 children)   |
|  |  |
| Slide<br>(Accommodates 3 children)   | Swing Bay<br>(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)

|   |  |  |
|---|--|--|
|    |    | <ul style="list-style-type: none"> <li>• Playground zone on a 2-lane collector</li> <li>• Cable fencing (partially traversable) along road side, grass area between roadway and playground equipment</li> </ul>  |
|    |    | <ul style="list-style-type: none"> <li>• Playground zone</li> <li>• Separate single-unit equipment</li> <li>• Frontage along local cul-de-sac, fencing along sidewalk with limited openings, low traversability</li> <li>• Cable fencing along back alley, easily traversable</li> </ul> |
|  |  | <ul style="list-style-type: none"> <li>• Playground zone on a 2-lane collector</li> <li>• 1 large custom equipment</li> <li>• High mounted fencing with limited openings, non-traversable</li> </ul>   |