LANARK COUNTY

Speed Management Policy

June 2024

Contents

Appendices

Figures

1 Introduction

1.1 Overview

The **Lanark County Speed Management Policy** is intended to support the municipality in identifying locations experiencing excessive speeding by motor vehicle drivers and provide guidance on the application of speed management measures, including speed limit changes and traffic calming initiatives. The policy is intended to improve safety for all road users, reduce incidents of aggressive driving, and improve livability for community residents.

1.2 Policy Scope

The Lanark County Speed Management Policy:

- Describes the basis for setting speed limits on County Roads;
- Defines the minimum criteria needed to explore speed management measures on County Roads;
- Provides a flowchart to illustrate policy application, identifying the steps to be followed in responding to concerns about speeding motorists on County Roads; and
- Outlines a list of speed management measures (the "Toolkit"), including traffic calming, for urban hamlets and rural areas of the County; and

The policy features:

- A consistent, objective process for reviewing, evaluating, and responding to requests for speed management measures on County Roads;
- A methodology and criteria for determining if speed management is appropriate for a given County Road and prioritizing locations being considered for measures; and
- A procedure for monitoring and assessing the effectiveness of speed management measures after installation.

The policy incorporates best practices in speed management (including traffic calming) with local context to provide an appropriate, efficient, and flexible framework for addressing speed- and traffic-related inquiries received by the County. It supplements and customizes guidance contained in the Transportation Association of Canada (TAC) publications *Speed Management Guide*[1], *Canadian Guidelines for Establishing Posted Speed Limits*[2], *Canadian Guide to Traffic Calming*[3], and *Geometric Design Guide for Canadian Roads*[4] and Ontario Traffic Manual (OTM)

[1] Transportation Association of Canada (TAC), *Speed Management Guide*, (Ottawa, ON; 2016).
[2] TAC, *Canadian Guidelines for Establishing Posted Speed Limits*, (Ottawa, ON; 2009).
[3] TAC, *Canadian Guide to Traffic Calming*, 2nd ed., (Ottawa, ON; 2018).
[4] TAC, *Geometric Design Guide for Canadian Roads*, (Ottawa, ON; 2017).

Book 5 – Regulatory Signs[5] and *Book 6 – Warning Signs*[6], with considerations specific to Lanark County.

The policy also reflects applicable provincial legislation including the *Highway Traffic Act* (HTA) and *Accessibility for Ontarians with Disabilities Act* (AODA). The planning, design, and implementation of speed management measures must comply with relevant provisions of these and other pertinent statutes.

1.3 Definitions

The Lanark County Speed Management Policy uses the following terms as defined in or adapted from the *Speed Management Guide*, *Canadian Guide to Traffic Calming*, OTM *Book 5 – Regulatory Signs*, HTA, and Lanark County Sustainable Communities Official Plan[7]:

- **Built-up Area** – An area along a highway not situated in a designated Settlement Area but with frontage consisting of dwellings, businesses, schools, or churches that occupies:
  - 50% or more of the road property frontage for at least 200 m on one side, or for at least 100 m if on both sides; or
  - Where no more than 200 m of the highway separates the areas described above.
- **Design Speed** – The speed selected for the purposes of determining the various geometric design features of a roadway.
- **85th Percentile Speed** – The speed at which 85% of vehicles are travelling at or below.
- **95th Percentile Speed** – The speed at which 95% of vehicles are travelling at or below.
- **Operating Speed** – The speed at which a driver can travel on a highway under prevailing weather and traffic conditions.
- **Posted (Speed) Limit** – The maximum lawful vehicular speed for a particular location as displayed on a regulatory sign, in multiples of 10 km/h.
- **Settlement Area** – Towns, villages, and hamlets shown on Schedule A (Land Use Designations) of the Lanark County Sustainable Communities Official Plan.
- **Speed Zone** – A section of road with a specified speed limit.
- **Statutory Speed Limit** – Also known as the "default speed limit", the maximum lawful speed established by the HTA that applies to a class or category of roads in the absence of a posted speed limit.
- **Traffic Calming** – The process and measures applied by road authorities to address concerns about the behaviour of motor vehicle drivers travelling on streets within their jurisdictions.

[5] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 5 – Regulatory Signs*, (Toronto, ON; 2021).
[6] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 6 – Warning Signs*, (Toronto, ON; 2001).
[7] Lanark County, *Sustainable Communities Official Plan*, (Perth, ON: Lanark County, 2012).

- **Transitional Speed Zone** – A section of road used to introduce a speed limit reduction, typically 20 km/h or more.
- **Urban Entrance** – An entrance located along any portion of a County Road that is constructed with any of the following features: curb, gutter, sidewalk, and/or storm sewer.
- **Urban Road Allowance** – A County road allowance located within the boundaries of a Settlement Area. typically characterized by the presence of street lighting and in most but not all cases curb and gutter.

1.4 Traffic Advisory Working Group

Application of the Lanark County Speed Management Policy assumes the formation of a **Traffic Advisory Working Group**. The committee, comprised of staff from the County, constituent Local Municipalities, and the Ontario Provincial Police, is intended to provide an on-going forum to discuss speed enforcement needs, recommended Community Safety Zone and speed limit changes, potential traffic calming measures, and other traffic-related matters on County Roads. Representatives from the Leeds, Grenville, and Lanark District Health Unit, the Ministry of Transportation, and other emergency service providers (i.e., fire and ambulance) may also be invited to participate.

2 Basis for Speed Limits and Speed Management

2.1 Policy Rationale

Road authorities enact laws establishing speed limits to protect the public and set norms for acceptable driving behaviour. Their primary purpose is to inform drivers of the maximum operating speed permitted on that segment of the roadway. The posted speed limit also dictates behaviour that is subject to sanctions and ought to be fair in the context of traffic law.

Studies show that speeding is a significant contributing factor to severe injury and fatal collisions.[8] In general, as the speed at impact increases, so does the severity of injury.[9] Higher speeds not only escalate the risk of more catastrophic collisions, but also increase the probability of a collision happening in the first place. Vehicles travelling at higher speeds require a greater distance to stop and have less manoeuvring space to avoid a collision.[10]

Speed regulations help motorists select safe operating speeds for the prevailing conditions. Regulations also aid in reducing speed differential, which can increase collision risk. Studies have found that roads with large variations in vehicle speeds tend to experience higher collision rates than ones with small differences.[11]

The maximum safe speed at any location generally reflects road geometry, traffic demands, and the surrounding environment. The selection of a posted speed limit must also consider legislative provisions, enforcement considerations, public understanding, ease of implementation, capital and maintenance costs, and adherence to recognized engineering guidelines and practices.

Drivers tend to understand and respect the classification, function, and physical characteristics of a roadway when the posted speed limit and operating speeds are aligned.

2.2 Regulatory Framework in Ontario

Section 128 of the HTA establishes the regulatory framework for setting speed limits in Ontario. Subsection 1 states, in part, that no person shall drive a motor vehicle at a rate of speed greater than:

- 50 km/h on a roadway within a Built-up Area; or
- 80 km/h on a highway not within a Built-up Area.

[8] US Department of Transportation, National Highway Traffic Safety Administration, *An Analysis of Speeding-Related Crashes: Definitions and the Effects of Road Environments*, (2009).
[9] World Health Organization, *Managing Speed*, (2017), 5.
[10] TAC, "Driver Behaviour and Capabilities" in *Speed Management Guide*, (Ottawa: TAC, 2016).
[11] TAC, "Speed Differential/Variance" in *Speed Management Guide*, (Ottawa: TAC, 2016).

These provisions, known as the statutory speed limits, apply for all County Roads without MAXIMUM SPEED signs (Rb-1 or Rb- 1A) posted.

Subsection 2 permits municipal councils to pass by-laws prescribing rates of speed that differ from the statutory speed limit on roads under their jurisdiction. The speed limit set must be less than 100 km/h and denoted with MAXIMUM SPEED signs.

In 2017, the provincial government added subsection 2.1 through an amendment to the HTA introduced under the *Safer School Zones Act, 2017*. This change allowed municipalities to prescribe rates of speed lower than 50 km/h for all roads within a designated area without posting signs along each roadway with the reduced limit. A municipality can now post gateway speed limit signs at entry and exit points to a designated area and all streets within that area assume the same speed limit.

Subsection 5 permits municipal councils to pass by-laws prescribing lower rates of speed on roads adjoining schools. The speed limit reduction can be in effect for only specified times and dates if denoted by the municipality.

Per subsection 6, a municipality can set lower speed limits for vehicles passing over identified bridges. Further, subsection 6.1 allows for reduced speed limits on roads with grades of six percent (6%) or higher. The municipality can also prescribe specific classes of vehicles for the grade restriction in its enabling by-law.

2.3 Speed Limits on County Roads

The statutory speed limit provisions of the HTA apply to all roads under the County's jurisdiction except for any sections designated in the Consolidated Traffic By-law No. 2022-34, which regulates speed limits on County Roads.

3 Speed Limit Policy

3.1 Guidelines for Determining Posted Speed Limits

The County will apply the methodology set out in the *Canadian Guidelines for Establishing Posted Speed Limits* in determining posted speed limits on County Roads. The recommended practices contained in the guidebook should be applied with sound engineering judgment.

When determining the ideal speed using the methodology, the County will apply the Arterial Road classification.

3.2 Posted Speed Limits in Rural Areas

The County will maintain the statutory 80 km/h speed limit on all County Roads outside the Official Plan Settlement Areas[12].

The County may reduce speed limits on "rural" road sections satisfying the **Speed Limit Change Warrant** in **Section 4.4** of this policy. On road sections with unfavourable geometric characteristics and design speeds of 80 km/h or less, the County will set the speed limit at or below the speed dictated by the geometric condition, but no less than 50 km/h. Depending on length of the design feature, the County may install warning signs before changing the speed limit per OTM *Book 6 – Warning Signs*.

3.3 Posted Speed Limits in Urban Areas

The County will maintain the statutory 50 km/h speed limit on all County Roads within the Official Plan Settlement Areas and any Built-up Areas outside these designations, except where By-law No. 2022-34 specifies a different speed limit for the subject road section.

The County may reduce speed limits on "urban" road sections satisfying the **Speed Limit Change Warrant** in **Section 4.4** of this policy. On road sections with unfavourable geometric characteristics and design speeds of 50 km/h or less, the County will set the speed limit at or below the speed dictated by the geometric condition. Depending on length of the design feature, the County may install warning signs before changing the speed limit per OTM *Book 6 – Warning Signs*.

3.4 Transitional Speed Zones

The County will implement transitional speed zones on County Roads where the speed limit changes by more than 20 km/h. The zones should measure at least 1.0 km in length for speed limits of 70 km/h or higher. The County may specify shorter transitional speed zones for lower posted speed limits, but typically not less than 500 m in length.

[12] Access Schedule A at https://www.lanarkcounty.ca/en/doing-business/resources/documents/SCOPAmend.No.5JAN2017.pdf

When introducing speed limit reductions of 20 km/h or more (e.g., from 80 km/h to 50 km/h), the County will specify transitional speed limits in intervals of 20 km/h maximum (e.g., from 80 km/h to 70 km/h or 60 km/h to 50 km/h).

The physical characteristics of the transitional speed zone should guide drivers to lower their speeds; the road cues and posted speed limit should provide a uniform message. Land use changes, physical measures, and/or signing/pavement markings should accompany transitional speed zones to emphasize and reinforce the speed limit reduction. Example treatments include:

- Regulatory and warning signs and messages (e.g., MAXIMUM SPEED AHEAD, TRAFFIC SIGNALS AHEAD);
- Gateway treatments such as place defining town name displays, flags and banners, suitable landscaping, and displays of public art; and/or
- Community and trailblazer signs guiding road users to local attractions that naturally warn drivers of an urban environment ahead.

Refer to OTM *Book 5 – Regulatory Signs* for guidance on placing speed limit signs in transitional speed zones.

4 Speed Management Program

4.1 Approach

The Lanark County Speed Management Policy is intended to promote consistency in the application of speed limits, reduce the variation between operating speeds and posted limits, and provide a structured process for considering changes to the roadway environment to promote speed limit compliance. The aim is to influence drivers to adopt operating speeds that offer mobility without unduly compromising safety, in alignment with the speed limit in effect.

If a significant discrepancy exists between the posted speed limit and current operating speeds, the County will explore speed management measures to address incongruities. Strategies used by the County as part of its **Speed Management Program** to encourage compliance include education, enforcement, designation of special areas of concern (e.g., Community Safety Zones), speed limit changes, and/or traffic calming.

4.2 Screening Criteria for Speed Management Measures

The County may consider speed management measures at locations on the County Road network satisfying the **Speed Management Program Screening** in **Appendix B**. These locations include road sections:

- Within 500 m of a designated School Zone or Community Safety Zone, or other location of special consideration (e.g., school, seniors' centre or residence, playground, hospital, other areas of high pedestrian activity);
- Where the 85th percentile speed exceeds the current speed limit:
  - On County Roads within the Official Plan Settlement Areas or any Built-up Areas outside these designations; or
  - By 10 km/h or more on all other County Roads.

  Motorists travelling above this speed are typically considered to be exceeding the safe and reasonable speed for road and traffic conditions and the surrounding environment; and/or
- Where the 95th percentile speed exceeds the current speed limit by 20 km/h or more. A significant difference between the 85th and 95th percentile speeds can indicate a high prevalence of high-end speeders or opportunities to speed.

As described in **Chapter 5**, locations satisfying the screening will undergo a more detailed technical assessment before the County will consider implementing speed management measures on the subject road section. The County may also deny requests not meeting the requirements.

4.3 Community Safety Zones

Section 214.1 of the HTA gives municipalities the authority to designate a Community Safety Zone if Council believes public safety is of special concern on that part of the roadway. Fines for traffic-related offences in a Community Safety Zone are doubled on conviction.

Achieving the level of deterrent inferred by a Community Safety Zone designation requires a commitment to increased enforcement, which limits the number of zones that can be in effect at any given time. For this reason, the County will consider designating a Community Safety Zone only if the subject road section satisfies the **Community Safety Zone Warrant** in **Appendix C**, which comprises the following four justifications:

Justification 1: Areas of Special Consideration

The County will only implement Community Safety Zones in areas of special consideration obvious to the road user. Such locations include elementary and secondary schools, seniors' centres and residences, playgrounds, and hospitals.

Justification 2: Identified Safety Concern

The County will only implement Community Safety Zones in locations of identified safety concern, based on either:

- **Collision History** – Collision ratio less than 1:900 (collisions per year to average annual daily traffic (AADT)) averaged over 36 consecutive months; or
- **Risk Assessment** – Identified safety concerns exist.

Justification 3: Other Applicable Measures/Devices Tried

The County will only implement Community Safety Zones where other warranted countermeasures have been tried and found to be unsuccessful (i.e., failed to reduce the collision ratio to less than 1:900). Other potential countermeasures, not previously applied, should also be considered before designating a Community Safety Zone. The measures should address identified collision types and contributing circumstances. Enforcement without the implementation of a Community Safety Zone is another potential countermeasure and should be considered prior to designation.

Justification 4: Ability to Enforce

The County will only implement Community Safety Zones if sufficient resources exist to provide enforcement at initial designation and periodically thereafter (i.e., does not assume daily enforcement for the entire six months). For this reason, the maximum number of Community Safety Zones implemented in the County will be determined in consultation with the Ontario Provincial Police through the Traffic Advisory Working Group.

In addition to the four justifications, the County will also consider the following guidelines in designating a Community Safety Zone:

- **Size:** The legislation does not specify limits on the size of a Community Safety Zone. The size will depend on the nature of the safety issue(s). For example, a zone could encompass all streets surrounding a particular site or alternatively, only a section of a street fronting an area of special consideration.
- **Duration:** The legislation also does not specify duration for a Community Safety Zone. If possible, the zone should be removed once the specific problem is addressed.
- **Time Period:** The by-law designating the Community Safety Zone must specify the hours, days, and months the designation is in effect. This will vary by location, depending on the site and nature of the safety issue(s) to address.

All four justifications must be met to warrant a Community Safety Zone. If the warrant is met, County staff will recommend that a Community Safety Zone be established. If approved by County Council, the County will:

- Amend the pertinent by-law(s) and install the required signage to enact the Community Safety Zone;
- Distribute notices/information brochures, at least one week in advance of implementation, to places of public gathering within or immediately adjacent to the newly designated Community Safety Zone; and
- Prepare a media release and post information on the County's website explaining the location and limits of the Community Safety Zone and the consequences associated with committing a violation in the zone.

4.4 Speed Limit Changes

The County will consider modifying the posted speed limit only if the subject road section satisfies the **Speed Limit Change Warrant** in **Appendix D**. The warrant requires two of the following four criteria to be met:

- The current speed limit differs from the suggested speed limit determined using the *Canadian Guidelines for Establishing Posted Speed Limits* (per **Section 3.1**) by 10 km/h or more.
- Site-specific geometric constraints defined in the *Geometric Design Guide for Canadian Roads* (such as reduced sight distance or curve radii) do not match the current speed limit.
- The 85th percentile speed differs from the current speed limit:
  - On County Roads within the Official Plan Settlement Areas or any Built-up Areas outside these designations; or
  - By 10 km/h or more on all other County Roads.

- The Environmental Factor Score is 30 points or more (out of a maximum of 50 points).

The length of the potential speed zone should also exceed 500 m for posted speed limits of 70 km/h or less and 1,000 m for posted speed limits of more than 70 km/h.

Where the warrant is met, County staff will recommend a change in posted speed limit to County Council based on the suggested speed limit determined using the *Canadian Guidelines for Establishing Posted Speed Limits* method. If the Environmental Factor Score is:

- Less than 30 points, the recommended speed limit will equal the suggested speed limit; or
- 30 points or more, the recommended speed limit will be 10 km/h less than the suggested speed limit.

If approved by County Council, the County will amend the pertinent by-law and install the required signage to enact the revised speed limit.

4.5 Education and Enforcement

The County may undertake education and/or enforcement programs, either as a stand-alone initiative or the first step in an overall strategy, to address motor vehicle speeding concerns on County Roads. These programs require no physical changes to the roadway, can be less expensive to undertake, and are usually faster to implement than other measures. As noted in **Subsection 4.6.2**, the County will typically carry out education and/or enforcement before installing physical traffic calming if such a trial has not been conducted.

Most speed management programs have an effective, highly visible educational component comprising communications and outreach. These initiatives typically support other speed management measures and may form part of a broader strategy, at both the County-wide and specific road section levels.

While police enforcement is not a viable long-term solution in most cases, some limited initial staffed enforcement with occasional follow-up visits may be adequate to manage the speeding concern. Automated speed enforcement may provide a potential future opportunity but is not currently used in Lanark County.

The **Traffic Calming Toolbox** in **Appendix F** lists the education and enforcement measures applicable in Lanark County (also see **Subsection 4.6.3**).

4.6 Traffic Calming

Definition and Description

The *Canadian Guide to Traffic Calming* describes traffic calming as "the process and measures applied by road authorities to address concerns about the behaviour of motor vehicle drivers travelling on streets within their jurisdictions."[13]

Traffic calming measures may be applied in locations experiencing excessive motor vehicle speeds with the goal of enhancing road safety and community livability, particularly for vulnerable users like pedestrians and cyclists. Traffic calming may also be used to address disproportionate volumes of shortcutting traffic, although application for this purpose is not the focus of this Policy.

When used properly, traffic calming can help reduce motor vehicle speeds. Other benefits include reducing:

- The risk and severity of motor vehicle collisions;
- Conflicts between roadway users;
- Pedestrian crossing distances and times; and
- Traffic volumes and shortcutting.

Traffic calming measures for speed management can be broadly categorized into two groups:

- **Physical Measures** – Primarily vertical and horizontal deflections in the roadway that influence or force motorists to travel at lower speeds. Also includes treatments that narrow the road, alter its surface, or restrict access.
- **Non-Physical Measures** – Tools and strategies aimed at modifying driver behaviour without changing the roadway features. Often described as education and enforcement (see **Section 4.5**).

Most physical traffic calming measures are "self-enforcing" in nature, which reduces the need for police enforcement to ensure compliance.

While traffic calming offers several potential benefits, physical measures can cause unintended consequences, like:

- Increased emergency vehicle response times;
- Reduced or impeded access and egress from neighbourhoods by motor vehicle;
- Shifting or diverting of traffic volumes and/or speeding concerns onto other roadways;
- Increased maintenance costs, including snow clearing and curbside waste collection; and

[13] TAC, *Canadian Guide to Traffic Calming*, 2nd ed., (Ottawa: TAC, 2018),1.

- Increased vehicle emissions and/or noise pollution.

Careful consideration and proper planning, design, and implementation are key to a successful traffic calming plan.

Application

The County may consider applying physical traffic calming measures at locations on County Roads satisfying the **Traffic Calming Screening** in **Appendix E**. These locations include road sections:

- Where an adequate trial of education and/or enforcement (i.e., non-physical traffic calming per **Section 4.5**) has been undertaken to reduce speeds;
- With two-lane cross-sections;
- Not serving as a designated truck route and/or emergency vehicle route (ambulance, fire, police services) unless exempted by the County;
- Without unique or local considerations affecting the installation of traffic calming measures; and
- With a Locational Factor Score of 50 points or more (out of a maximum of 80 points).

In most cases, the County will undertake education and/or enforcement before installing physical measures if a trial has not been conducted.

If a trial of education and/or enforcement undertaken in the past three years has failed to produce the desired results or non-physical measures are inappropriate under the circumstances, the County may proceed to install physical traffic calming measures on County Roads satisfying the screening criteria. The County may also initiate physical traffic calming on County Road (re)construction projects where safety and/or speeding concerns are anticipated to (re)occur upon (re)opening the road to traffic.

Where the installation of physical measures is deemed the preferred course of action, the County will:

- Avoid impeding non-motorized travel (pedestrian and cyclist movement) when designing the traffic calming plan;
- Assess the impacts to all emergency services (i.e., Fire Service, Paramedic Services, and Ontario Provincial Police) and consult with these agencies in preparing the traffic calming plan. This will typically occur through the Traffic Advisory Working Group; and
- Monitor outcomes and conduct follow-up studies to assess plan effectiveness after implementing the traffic calming plan and share the results with Council and the community as appropriate.

Traffic calming measures may not be appropriate in every situation and, if considered, should ensure the equitable and consistent treatment of all County Road users following the guidance in this document.

Lanark County Council has final approval on all traffic calming measures and may deny any plan at its discretion.

Recommended Measures

The **Traffic Calming Toolbox** in **Appendix F** provides information on the traffic calming measures applicable for use on Lanark County Roads. The Toolbox:

- Includes a description and photo of each treatment;
- Notes the applicability (e.g., rural or urban road) and effectiveness of different measures;
- Describes the recommended process for selecting traffic calming treatments from the list of potential measures; and
- Provides indicative costs and general design guidance for each measure.

Not all traffic calming measures are appropriate under all circumstances. Applying the Toolbox consistently will help the County select the most suitable measure(s) to address the identified issue(s) and avoid undesirable consequences.

Trial Installations

The County will typically trial new traffic calming plans for a period of up to 24 months using temporary/seasonal measures before installing the features permanently. Undertaking a trial enables the County to:

- Better understand the plan implications before investing in a permanent installation, thereby allowing for refinement of the design prior to final implementation;
- Avoid or defer the initial capital cost of more expensive traffic calming plans;
- Gauge community reaction to the plan concept in operation prior to final installation; and
- Retain flexibility to remove traffic calming measures seasonally.

After evaluating the trial installation, the County will decide whether to implement the approved traffic calming plan with permanent materials.

In certain circumstances, the County may move forward with permanent installation without a trial after considering the possible negative aspects of using temporary/seasonal measures, which can include:

- Lower relative aesthetic value;
- On-going operational costs and/or additional operational resource requirements;
- Requirements for seasonal installation and removal;
- Potential to have similar or higher overall costs than permanent installations;
- Potentially lower effectiveness than permanent materials; and
- Quicker degradation of roadway surfaces (specifically where measures are anchored into existing road surfaces).

Removal

The County may remove traffic calming measures deemed ineffective, posing a safety risk, or creating unintended consequences that cannot be rectified easily at its discretion. The County will notify affected parties if considering changes to the approved traffic calming plan.

The County may also remove traffic calming measures at the request of neighbouring property owners. A petition signed by at least 51% of owners directly fronting the subject road section is required to initiate the process. Owners can request removal only after the approved traffic calming plan has been in place for at least one year.

If the petition requests elimination of only part of an approved traffic calming plan, the County may remove all measures if the remaining features will not achieve the intended effect.

Once removed, neighbouring residents must wait at least more three years before submitting a new request for speed management measures on the subject road section. This provision does not apply to non-physical traffic calming measures.

Regulatory Signs Not Used for Traffic Calming

The County will not consider the installation of new regulatory signs for the sole purpose of traffic calming. Traffic control devices in this category include arbitrary posted speed limits and unwarranted all-way stop controls. These devices are not intended for this purpose, as noted in the *Canadian Guide to Traffic Calming* and OTM *Book 5 – Regulatory Signs*.

<u>Posted Speed Limits</u>

Posted speed limits should match the expectation of drivers for a given roadway and its surrounding area. Following the guidelines set out in this Speed Management Policy, instead of setting maximum rates of speed subjectively, will provide more consistent and credible posted limits on County Roads.

All-Way Stop Controls

OTM *Book 5 – Regulatory Signs* states that the purpose of a stop sign is to assign right-of-way between vehicles approaching an intersection from different directions when traffic signals are not warranted or not yet installed. The guidebook explicitly recommends that all-way stop control not be used to protect pedestrians (particularly school children), control speeds, and/or deter through traffic movement in a residential area.

Like posted speed limits, indiscriminate use of all-way stops can lead to increased driver delay and frustration, greater speeding between intersections, increased noise from vehicle acceleration, increased emissions from vehicles forced to stop and idle, and/or reduced compliance with all-way stop control at the subject location and in general. Even when justified, all-way stops can increase the risk of certain collision types, most notably rear-end crashes.

4.7 Mitigation Measures for Pedestrian-Vehicle Conflicts on Rural Roads

In locations where Community Safety Zones, speed limit changes, and traffic calming are not currently warranted or may be inappropriate, the County may consider the following measures to help mitigate pedestrian-vehicle conflicts on rural roads:

- Mowing and grading unpaved shoulders;
- Installing "Share the Road" signs in conjunction with warning signs to alert motorists of the presence of pedestrians. Consider sign placement as follows:
  - Near major routes where there are higher volumes of entering traffic;
  - At locations where sight distance and expectancy of encountering a pedestrian may be limited (e.g., in advance of curves, both horizontal and vertical);
- Educating drivers and pedestrians on safe walking practices (consistent with **Section 4.5** and the **Traffic Calming Toolbox** in **Appendix F**);
- Requesting targeted police enforcement (consistent with **Section 4.5** and the **Traffic Calming Toolbox** in **Appendix F**); and/or
- Hard surfacing (paving) shoulders when reconstructing/rehabilitating roads, where appropriate and feasible.

5 Speed Management Review Process

The Lanark County Speed Management Policy can be described as a "set of instructions" or process for responding to requests for speed management measures on County Roads. **Figure 5.1** depicts the seven-step review process, which is described in further detail as follows.

5.1 Step 1 – Review Initiation

The review process begins with a written request for speed management measures to the Lanark County Public Works Department using the **Request for Speed Management Measures Form** in **Appendix A**. The submission must identify the requester and specify the subject road section and nature of the speeding concern. Council members can also submit requests on behalf of constituents.

5.2 Step 2 – Initial Screening

The County will conduct an initial screening of the request to determine if the subject road section meets the criteria for speed management measures per **Section 4.2** of this policy. Requests for measures received for roads not under the County's jurisdiction will be referred to the responsible road authority.

The County will only consider measures at locations where:

- A prior request has not been denied within the preceding two years, unless new information is brought forward; and
- Speed management measures (including traffic calming) have not been removed within the preceding three years.

As part of the initial screening, the County will conduct a speed survey for the subject road section over a period of at least seven consecutive days to determine the 85th and 95th percentile speeds. The timing for data collection will depend on available resources. The County will collect the data during relevant time periods (e.g., during the school year in front of schools). The County will typically collect the data required to complete the initial screening in the spring, summer, and/or fall season.

If the initial screening does not satisfy the minimum requirements for speed management measures, the County will notify the requester and explain why the request was denied and the investigation stopped. After this, the County will not entertain new requests for speed management measures on the subject road section for at least two years. Data collected will be distributed to the Local Municipality regardless of the outcome of the initial screening. The County, at its sole discretion, may complete a follow-up speed survey within 12 months to confirm the findings of the initial screening.

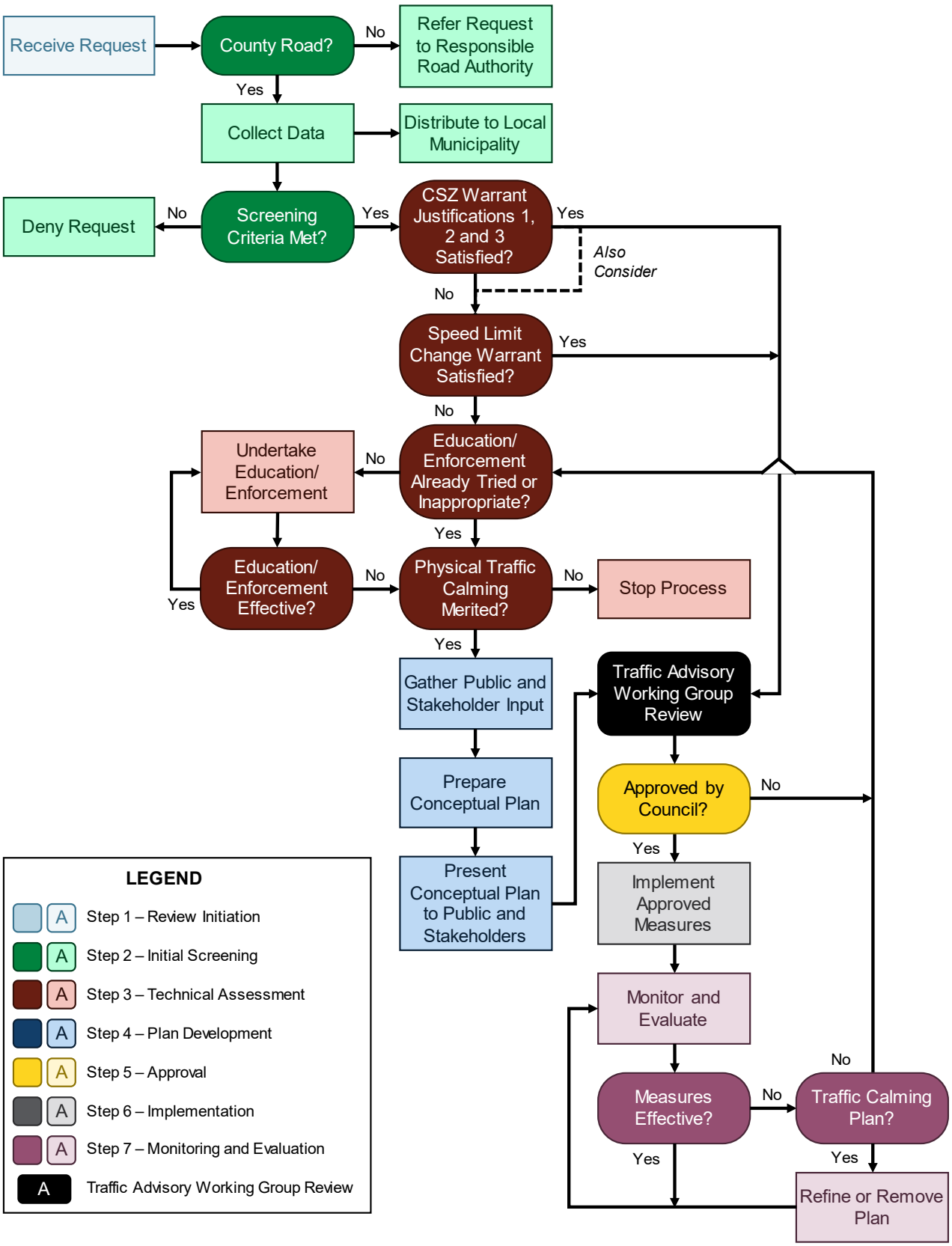


FIGURE 5.1: SPEED MANAGEMENT REVIEW PROCESS

5.3 Step 3 – Technical Assessment

For requests meeting the initial screening requirements in Step 2, the County will complete a technical assessment to determine the preferred speed management measures. The assessment comprises up to four stages, beginning with Stage 1 to determine if a Community Safety Zone is warranted. If a Community Safety Zone already exists, the assessment proceeds to Stage 2.

After completing the technical assessment, the County will notify the requester of the investigation findings and whether (additional) speed management measures are recommended.

The following summarizes the four-staged assessment:

Stage 1 – Community Safety Zone Designation

If the initial screening identifies the subject road section as a candidate for a Community Safety Zone, the County will assess the merit of designation based on the warrant set out in **Section 4.3** of this policy.

If Justifications 1, 2, and 3 of the Community Safety Zone Warrant are satisfied, the Traffic Advisory Working Group will consider the location and offer feedback on potential effectiveness and implementation considerations for Justification 4. If supported, the assessment moves to Stage 2, as prevailing conditions may still justify further speed management measures to complement the Community Safety Zone. If a speed limit change is not merited after further assessment in Stage 2, the review process skips to Step 5 for Council to consider approval of the recommended Community Safety Zone designation.

If the warrant is not satisfied, the assessment still moves to Stage 2 for consideration of a speed limit change.

Stage 2 – Speed Limit Change

The County will assess the merit of changing the speed limit for the subject road section, and determine the recommended posted limit if justified, based on the warrant described in **Section 4.4** of this policy.

If the Speed Limit Change Warrant is satisfied, the Traffic Advisory Working Group will consider the recommendation and offer feedback on potential effectiveness and implementation considerations. The review process then skips to Step 5 for Council to consider approval of the recommended speed limit change.

If the warrant is not satisfied, the assessment moves to Stage 3 for consideration of education and/or enforcement measures.

Stage 3 – Education and Enforcement

The County will undertake education and/or enforcement per **Section 4.5** of this policy if such measures were not previously tried or are inappropriate under the circumstances. Implemented

measures will continue until found ineffective in consultation with the Traffic Advisory Working Group.

If education and/or enforcement measures were previously tried, inappropriate, and/or found ineffective in the past three years, the process moves to Stage 4 for consideration of physical traffic calming.

Stage 4 – Physical Traffic Calming Measures

The County will assess the merit of installing physical traffic calming measures on the subject road section based on the screening described in **Subsection 4.6.2** of this policy. Implementation priority, if justified, will also be determined.

If the Traffic Calming Screening is not satisfied, the process stops. After this, the County will not entertain new requests for speed management measures on the subject road section for at least three years.

5.4 Step 4 – Plan Development

Development Process

For requests meeting the technical assessment requirements in Stage 4 of Step 3, the County will develop a traffic calming plan consistent with the guidance contained in **Subsection 4.6.3**.

To begin, the County will consult with the public and stakeholders to confirm traffic issues, identify candidate speed management measures, and note potential implementation challenges/opportunities. The County will then prepare a conceptual traffic calming plan (or options, if appropriate) based on the input received and engage the public and stakeholders again to obtain feedback on the concept(s). Further refinement and engagement continue as needed, until County staff presents the recommended plan to County Council for approval in Step 5.

Community Engagement

As noted above, community engagement is an integral part of developing a traffic calming plan – from problem identification, to plan preparation, to monitoring the installation. The consultation process helps foster support (and reduce opposition) for potential traffic calming measures and ultimately aids in ensuring a positive outcome.

The County will maintain a dedicated webpage on its website explaining the Speed Management Policy, including information about the review process and potential measures, how to initiate an investigation, and studies currently underway.

No single method of community engagement is suitable for all situations. For individual studies, the County will employ a variety of techniques to engage the public, such as workshops, online presentations, community meetings, and mailouts, as deemed appropriate.

More complex and contentious issues typically require greater levels of public education and outreach. Throughout the process, the following principles should be applied in engaging the community in developing a traffic calming plan:

- Involve the public and stakeholders early and frequently in the process, within available staff resources.
- Identify areas of agreement as early as possible in the process and concentrate resources on areas of contention, aiming to build consensus as the study progresses.
- Clearly define what is (and is not) within the project scope.
- Present relevant technical information and data to allow informed input.
- Provide convenient and accessible methods for interested parties to participate and offer feedback.
- Explain how public feedback influences the decision-making process, including why specific suggestions are (or are not) included.

Adherence to these basic principles will ensure that traffic calming plan development is undertaken in a manner that is consistent with the needs and aspirations of all parties.

There may be instances when traffic calming measures are warranted but interested parties have conflicting opinions on the preferred approach to addressing the identified speeding concerns. In these circumstances, the County may need to conduct additional community engagement and/or outreach with potentially impacted parties to resolve the situation.

The County will communicate with the public throughout the traffic calming plan development, primarily through the Speed Management Policy webpage described above. The webpage will present all study-related information and facilitate online engagement efforts. The County may also include these communications on its social media feeds and in local newspapers, as appropriate. Distribution methods will depend on the study area size and nature.

5.5 Step 5 – Approval

County staff will present the recommended speed management measures (with priority ranking for traffic calming plans) and potential funding sources, if needed, to County Council for approval. Prioritization of traffic calming plans will be based on the point score calculated through the technical assessment (Stage 4 of Step 3) and estimated implementation costs.

County Council may suggest changes to the recommended measures for a traffic calming plan (e.g., cost, design, funding source), which would be incorporated prior to implementation.

If County Council does not approve the recommended measures for implementation, the review process **may** return to Stage 3 of Step 3 for consideration of education and/or enforcement as a strategy to address identified speeding concerns **or** be stopped. If stopped, the County will not entertain new requests for speed management measures on the subject road section for at least three years.

5.6 Step 6 – Implementation

If approved in Step 5, the County will install the approved speed management measures (with any alterations specified by County Council) subject to available resources and other priorities.

Further budget approval may be required to finance the installation of a traffic calming plan. The County may also need to prepare detailed design and tender documents to facilitate construction and inform the public and stakeholders prior to permanent installation. In most cases, the County will install traffic calming plans with trial measures for a period of up to 24 months to assess effectiveness before committing to permanent installation per **Subsection 4.6.4**.

5.7 Step 7 – Monitoring and Evaluation

Following implementation, the County will monitor the subject road section and evaluate the effectiveness of the speed management measures. The scope of the monitoring and evaluation program should be consistent with the investigations conducted prior to installation to allow "before/after" or "cause/effect" comparisons. At a minimum, the program should include a speed survey for the subject road section over a period of at least three consecutive days to determine the 85th and 95th percentile speeds post implementation.

The *Canadian Guidelines for Establishing Posted Speed Limits* recommends that road authorities conduct a review of motor vehicle operating speeds, traffic operations, and safety performance approximately six to 12 months after a posted speed limit is modified. This helps determine whether the posted limit accurately reflects driver expectations and desired operating speeds.

For Community Safety Zones and/or speed limit changes, the review process may return to Stage 3 of Step 3 for consideration of education and/or enforcement and/or Stage 4 of Step 3 for consideration of physical traffic calming to complement the traffic control device installation(s) if these measures alone do not address identified speeding concerns.

The County may remove a Community Safety Zone or relocated to another warranted location if driver behaviour has not changed after six months. Six months under increased fines is considered adequate time to create a lasting effect. Other countermeasures will likely be required as may be identified through the review process.

For traffic calming plans, impact on the surrounding road network may also need to be assessed. Potential studies may include traffic counts (to determine changes in volumes) and/or origin-destination surveys (to estimate the volume of traffic diverting to adjacent streets). The evaluation should also consider winter operating conditions.

The County may refine or remove traffic calming measures deemed ineffective, posing a safety risk, causing unintended consequences, or no longer considered appropriate (e.g., removal of a Community Safety Zone if a school is closed). County Council must approve the removal of any approved speed management measures.

Appendix A

Request for Speed Management Measures

Where are you requesting speed management measures for (be as specific as possible with road name and limits)?

_____

Which of the following applies to you?

- ☐ I live on this street.
- ☐ I work on this street.
- ☐ My kids go to school on this street.
- ☐ I live nearby and use this street frequently for commuting, cycling, or walking.
- ☐ Other (please specify): _____

Is there a specific time of day when speeding is an issue?

- ☐ Morning
- ☐ Noon
- ☐ Afternoon
- ☐ Evening
- ☐ Overnight
- ☐ All day

Are there any other traffic issues concerning you about the street in question?

- ☐ Vehicle volumes
- ☐ Cut-through traffic
- ☐ Pedestrian and cyclist safety
- ☐ Collisions
- ☐ Other (please specify): _____

Name: _____ Date: _____

Email: _____ Phone: _____

Preferred method of contact (check one): ☐ Email ☐ Phone

Would you like to share any other comments? _____

_____

_____

Appendix B

Speed Management Program Screening

Use this checklist with **Section 4.2** of the **Lanark County Speed Management Policy** when considering a request for speed management measures on a **County Road**. If the subject road is not under County jurisdiction, the request will be referred to the responsible road authority.

Road Name & Section Limits: _____

Date Inquiry Received: _____

Date Review Completed: _____

Name of Reviewer: _____

Road Environment: ☐ Urban ☐ Rural Current Speed Limit: _____ km/h

85th Percentile Speed: _____ km/h 95th Percentile Speed: _____ km/h

Criteria	Speed management measures may be considered if:	Satisfied?
All Criteria Must be Met:		
1. Not Previously Requested	A prior request for speed management measures has not been denied in the preceding two years, unless new information is brough forward.	☐
2. Measures Removed	Speed management measures (including traffic calming) have not been removed in the preceding three years.	☐
At Least One Criteria Must be Met:		
3. Location of Special Consideration	The subject road section is within 500 m of: a) A designated School Zone or Community Safety Zone OR b) Other location of special consideration (e.g., school, seniors' centre or residence, playground, hospital)	☐ ☐
4. 85th Percentile Speed	The 85th percentile speed exceeds the current speed limit: a) On County Roads within the Official Plan Settlement Areas or any Built-up Areas outside these designations OR b) By 10 km/h or more on all other County Roads.	☐
5. 95th Percentile Speed	The 95th percentile speed exceeds the current speed limit by 20 km/h or more.	☐

Screening Recommendation:

If Screening Satisfied (check all that apply):	
Proceed with Technical Assessment	☐
Investigate Community Safety Zone if Criteria 3.b) met	☐
If Screening Not Satisfied:	
Deny request	☐

Appendix C

Community Safety Zone Warrant

Use this checklist with **Section 4.3** of the **Lanark County Speed Management Policy** when considering designating a Community Safety Zone on a County Road.

Road Name & Section Limits: _____

Date Inquiry Received: _____

Date Review Completed: _____

Name of Reviewer: _____

Road Environment: ☐ Urban ☐ Rural Current Speed Limit: _____ km/h

Adjacent Land Uses: ☐ Elementary or Secondary School ☐ Community Playground
☐ Seniors' Centre or Residence ☐ Hospital ☐ Other

Pedestrian Activity: ☐ High (≥ 50 peds per hour) ☐ Low (< 50 peds per hour)

Shoulder Width _____ m (n/a for no shoulder)

Qualifying Collisions (see Note 1 below): _____ AADT (defined below): _____

Violation Rates: ☐ High ☐ Low

Other Countermeasures: ☐ Tried and Successful ☐ Tried and Unsuccessful ☐ Not Tried

Justification 1 – Area of Special Consideration:

Criteria	A Community Safety Zone may be considered if:	Satisfied?
At Least One Criteria Must be Met:		
1. Adjacent Land Use	The subject road section is adjacent to an elementary or secondary school, seniors' centre or residence, community playground, or hospital.	☐
2. Pedestrian Activity	The subject road section has high pedestrian activity and/or pedestrians must walk on a shoulder or sidewalk less than 1.5 m wide.	☐
Justification 1 Criteria Satisfied?		☐

Justification 2 – Identified Safety Concern:

Criteria	A Community Safety Zone may be considered if:	Satisfied?
At Least One Criteria Must be Met:		
1. Collision Ratio	The ratio of collisions per year to AADT (collision ratio) is less than 1:900 averaged over 36 consecutive months.[1]	☐
2. Risk Factor	a) The subject road section experiences unusually high violation rates based on field observations and/or local law enforcement AND	☐
	b) The **Risk Factor Score** from the table below is 15 points or more.	☐
Justification 2 Criteria Satisfied?		☐

Note: 1. Only collisions with a causal factor related to one of the *Highway Traffic Act* violations identified in the Community Safety Zone legislation (Section 214.1) should be included.

Risk Factor Score:

Factor	Value	Factor Scoring			Score
		High (3 Points)	Moderate (2 Points)	Low (1 Point)	
Current Speed Limited (km/h)	See above	≥ 70	60	≤ 50	
Difference Between 85th Percentile Speed and Current Speed Limit (km/h)		> 15	5-15	< 5	
Average Annual Daily Traffic Volume (AADT)	See above	> 8,000	2,000-8,000	< 2,000	
Number of Vehicle Travel Lanes		6	4	2	
Highest Hourly Truck Volume		> 100	50-100	< 50	
Highest Hourly Pedestrian Volume		> 50	20-50	< 20	
Number of Intersections and Commercial Driveways (per km)		> 10	4 to 10	< 4	
Geometric Constraints	☐ Alignment ☐ Visibility ☐ No Sidewalk/ Cycling Facility ☐ Other	1 to 4 points assigned based on staff review			
				Total Score	

Justification 3 – Other Applicable Measures/Devices Tried

Criteria	A Community Safety Zone may be considered if:	Satisfied?
One Criteria Must be Met:		
1. Other Countermeasures	Other warranted countermeasures tried and found to be unsuccessful (i.e., failed to reduce the collision ratio to less than 1:900).	☐
Justification 3 Criteria Satisfied?		☐

Justification 4 – Ability to Enforce

Criteria	A Community Safety Zone may be considered if:	Satisfied?
One Criteria Must be Met:		
1. Enforcement Resources	The local police service has sufficient resources to provide the necessary enforcement based on input from the Traffic Advisory Working Group.	☐
Justification 4 Criteria Satisfied?		☐

Warrant Recommendation:

If Warrant Satisfied (All Four Justifications Met):	
Designate Community Safety Zone	☐
If Warrant Not Satisfied:	
Consider speed limit change	☐

Appendix D

Speed Limit Change Warrant

Use this checklist with **Section 4.4** of the **Lanark County Speed Management Policy** when considering a request to change the speed limit.

Road Name and Limits: _____

Date Inquiry Received: _____

Date Review Completed: _____

Name of Reviewer: _____

Road Environment: ☐ Urban ☐ Rural Current Speed Limit: _____ km/h

Geometric Constraints: ☐ Yes ☐ No

85th Percentile Speed: _____ km/h Road Segment Length: _____ km

Residential Entrances: _____ Qualifying Collisions (see Note 1 below): _____

Education/Enforcement: ☐ Tried and Effective ☐ Tried and Ineffective ☐ Not Tried

Criteria	A speed limit change may be considered if:	Satisfied?
At Least Two Criteria Must be Met		
1. Suggested Speed Limit	The suggested speed limit determined using the Transportation Association of Canada *Canadian Guidelines for Establishing Posted Speed Limits* (TAC Method) differs from the current speed limit by 10 km/h or more. TAC Method Suggested Speed Limit: _____ km/h assuming the Arterial Road classification when determining the ideal speed using the methodology.	☐
2. Geometric Constraints	Site-specific geometric constraints (such as reduced sight distance or curve radii) do not match the current speed limit.	☐
3. Operating Speed	The 85th percentile speed differs from the current speed limit: a) On County Roads within the Official Plan Settlement Areas or any Built-up Areas outside these designations OR b) By 10 km/h or more on all other County Roads.	☐

Criteria	A speed limit change may be considered if:	Satisfied?
4. Environment Characteristics	The **Environmental Factor Score** from the table below is 30 points or more.	☐
All Criteria Must be Met		
5. Potential Speed Zone Length	The length of the potential speed zone would exceed 500 m for TAC Method Suggested Speed Limit of 70 km/h or less and 1,000 m for TAC Method Suggested Speed Limit of more than 70 km/h.	☐

Environmental Factor Score:

Factor	Value	Factor Scoring	Maximum Points	Score
Pedestrian/ Cycling Activity		5 points for each adjacent pedestrian and/or cycling generator (e.g., school, seniors' centre or residence, playground, hospital, park, recreation centre/arena, library, shopping centre, place of worship)	25	
Pedestrian Facilities	☐ Yes ☐ No	5 points if no sidewalks or multi-use paths	5	
Cycling Facilities	☐ Yes ☐ No	5 points for designated cycling facilities	5	
Collision History	See above	1 point for each qualifying collision[1] over the last 36 months	5	
Residential Frontage		5 points for primarily residential frontage (> 10 entrances per km)	5	
Settlement Area	☐ Yes ☐ No	5 points if within a Settlement Area designation (Towns, Villages, and Hamlets) on Schedule A (Land Use Designations) of the Lanark County Sustainable Communities Official Plan	5	
		Total Score	**50**	

Note: 1. Includes all collisions along the subject road section except for collisions involving animals.

Warrant Recommendation:

If Warrant Satisfied:	
Change speed limit to TAC Method Suggested Speed Limit if the **Environmental Factor Score** is less than 30 points	☐
Change speed limit to TAC Method Suggested Speed Limit less 10 km/h if the **Environmental Factor Score** is 30 points or more (but not less than 40 km/h)	☐
Recommended Speed Limit: ☐ 40 km/h ☐ 50 km/h ☐ 60 km/h ☐ 70 km/h ☐ 80 km/h	
If Warrant Not Satisfied (check one):	
Consider physical traffic calming if education and/or enforcement already tried and found ineffective or inappropriate under the circumstances	☐
Undertake education and/or enforcement if not already tried	☐

Appendix E

Traffic Calming Screening

Use this checklist with **Section 4.6** of the **Lanark County Speed Management Policy** when considering physical traffic calming measures on a County Road for speed management purposes.

Road Name and Limits: _____

Date Inquiry Received: _____

Date Review Completed: _____

Name of Reviewer: _____

Road Environment: ☐ Urban ☐ Rural Current Speed Limit: _____ km/h

Education/Enforcement: ☐ Tried and Effective ☐ Tried and Ineffective ☐ Not Tried

Number of Lanes: _____ Route: ☐ Truck ☐ Emergency Vehicle

85th Percentile Speed: _____ Qualifying Collisions (see Note 1 below): _____

Criteria	Physical traffic calming may be considered if:	Satisfied?
All Criteria Must be Met		
1. Adequate Trial of Other Solutions	An adequate trial of education and/or enforcement has been undertaken to reduce speeds.	☐
2. Number of Lanes	The subject road section is two-lanes.	☐
3. Designated Route	The subject road section does not serve as a designated truck route and/or emergency vehicle route (ambulance, fire, police services) unless exempted by the County.	☐
4. Unique or Local Considerations	The subject road section does not have any unique or local considerations affecting the installation of physical traffic calming measures.	☐
5. Locational Characteristics	The **Locational Factor Score** from the table below is 50 points or more.	☐

Locational Factor Score:

Factor	Value	Factor Scoring	Maximum Points	Score
Speed Differential		1 point for every 1 km/h the 85th percentile speed exceeds the posted speed limit	25	
Excessive Speed		5 points if the 95th percentile speed exceeds the posted speed limit by 20 km/h	5	
Environmental Factor from Speed Limit Change Warrant:				
Pedestrian/ Cycling Activity		5 points for each adjacent pedestrian and/or cycling generator (e.g., school, seniors' centre or residence, playground, hospital, park, recreation centre/arena, library, shopping centre, place of worship)	25	
Pedestrian Facilities	☐ Yes ☐ No	5 points if no sidewalks or multi-use paths	5	
Cycling Facilities	☐ Yes ☐ No	5 points for designated cycling facilities	5	
Collision History	See above	1 point for each qualifying collision[1] over the last 36 months	5	
Residential Frontage		5 points for primarily residential frontage (> 10 entrances per km)	5	
Settlement Area	☐ Yes ☐ No	5 points if within a Settlement Area designation (Towns, Villages, and Hamlets) on Schedule A (Land Use Designations) of the Lanark County Sustainable Communities Official Plan	5	
		Total Score	**80**	

Note: 1. Includes all collisions along the subject road section except for collisions involving animals.

Screening Recommendations:

If Screening Satisfied:	
Proceed with traffic calming plan development	☐
If Warrant Not Satisfied:	
Deny request	☐

Appendix F

Traffic Calming Toolbox

F.1 Overview of the Toolbox

This **Traffic Calming Toolbox** provides a comprehensive "toolkit" of traffic calming strategies, measures, and designs. The Toolbox reflects the latest practices in traffic calming, feedback from County staff during policy development, and considers the local context and resources of Lanark County.

The Toolbox is based principally on information contained in the 2018 edition of the Transportation Association of Canada's (TAC) *Canadian Guide to Traffic Calming* (the Guide). [14] This foundational publication serves as the source of most traffic calming guidance in the Lanark County Speed Management Policy, including the list of potential traffic calming techniques set out below and the detailed profiles of the applicable measures contained in **Attachment 1**.

F.2 List of Potential Traffic Calming Measures

The Guide identifies a broad range of potential traffic calming techniques for use in Canada, organizing the measures into the following 11 general categories (in alphabetical order):

- Access Restrictions
- Education
- Emerging Technologies
- Enforcement
- Gateways
- Horizontal Deflection
- Pavement Markings
- Roadway Narrowing
- Shared Space
- Surface Treatments
- Vertical Deflection

These measures can be broadly categorized into two groups:

- **Physical Measures** – Primarily vertical and horizontal deflections in the roadway that influence or force motorists to travel at lower speeds (and/or select an alternate route if shortcutting traffic is the primary concern). Also includes treatments that narrow the road, alter its surface, or restrict access.
- **Non-Physical Measures** – Tools and strategies aimed at modifying driver behaviour without changing the roadway features. Often described as education and enforcement.

From the overall catalogue of options presented in the Guide, the County identified a shortlist of applicable traffic calming measures for potential use on Lanark County Roads, as described in the following section.

[14] Transportation Association of Canada, *Canadian Guide to Traffic Calming*, 2nd ed., (Ottawa; TAC, 2018).

F.3 Applicable Traffic Calming Measures

Overview

Attachment 1 details the list of applicable traffic calming measures. The Toolbox includes a description and photo of each treatment and an overview of typical applicability, potential benefits, and other implementation considerations.

The list of applicable measures captures a range of approaches to traffic calming. **Table F.1** provides a simplified, visual comparison of the different measures, highlighting their potential applicability, indicative costs, and design guidance.

The Toolbox combines the latest and best practices in traffic calming with consideration of local context. Building on guidance contained in the Guide, it outlines a range of techniques that can be used to address different types of problems (i.e., speed, collisions, pedestrian conflicts, shortcutting traffic, etc.) in various contexts (i.e., on different road classifications, and in urban versus rural roadside environments, etc.). Information provided includes the advantages and disadvantages of each measure and its effectiveness based on available research. This helps to avoid the undesirable outcomes of selecting an inappropriate measure(s) for a particular application.

Indicative Costs

Table F.1 provides indicative costs, where available, for trial (temporary) and permanent installations of the traffic calming measures identified. The range of costs for permanent placement cited in Column 5 (Indicative Cost, Low) and Column 6 (Indicative Cost, High) were sourced primarily from the Institute of Transportation Engineers (ITE) *Traffic Calming Fact Sheets*[15], with adjustments to reflect Canadian dollars and inflation (from 2017 to 2022 dollars). Other municipal traffic calming guidelines[16] were also referenced in deriving the permanent installation indicative costs. Costs are not provided for site-specific (e.g., road diet) and primarily operational measures (e.g., targeted education campaign and fixed speed enforcement), as denoted by "n/a".

For trial installations, the indicative costs noted in **Table F.1** (Indicative Cost, Trial) were estimated based on quotes from vendors/manufacturers. The prices were factored up to account for installation and removal following the trial, if applicable. Costs are not provided in cases where trial installations are unlikely (e.g., raised intersection, any measure primarily signing or pavement marking), as denoted by "n/a".

[15] Institute of Transportation Engineers, *Traffic Calming Fact Sheets*, Accessed September 27, 2022 from https://www.ite.org/technical-resources/traffic-calming/traffic-calming-measures

[16] City of Toronto, *Traffic Calming Guide for Toronto*, 2016. Accessed September 27, 2022 from https://www.toronto.ca/wp-content/uploads/2017/11/97d0-2016-Traffic-Calming-Guide_March2017.pdf

TABLE F.1: POTENTIAL TRAFFIC CALMING MEASURES

	Measure	Applicability			Indicative Cost[1]			Design Details[2]
		Local or Collector	Urban Arterial	Rural Arterial	Low	High	Trial	
1. Education								
1.1	Active and Safe Routes to School Program	●	●	●	n/a	n/a	n/a	n/a
1.2	Speed Display Devices	●	●	●	$4,000	$7,500	n/a	n/a
1.3	Targeted Education Campaign	●	●	●	n/a	n/a	n/a	n/a
1.4	Vehicle Activated Signs	●	●	●	$2,000	$12,000	n/a	n/a
1.5	Oversized Speed Limit Signs	●	●	●	$1,000	$2,000	n/a	OTM 5
2. Enforcement								
2.1	Fixed Speed Enforcement	●	●	●	n/a	n/a	n/a	n/a
2.2	"Speed Watch" Program	●	●	●	n/a	n/a	n/a	n/a
3. Pavement Markings								
3.1	Converging Chevrons	●	▲	●	$10,000	$20,000	n/a	n/a
3.2	Dragon's Teeth	●	▲	●	n/a	$4,000	n/a	n/a
3.3	Full-lane Transverse Bars	●	▲	●	n/a	$4,000	n/a	n/a
3.4	On-Road 'Sign' Pavement Markings	●	●	●	$150 (per symbol)	$200 (per symbol)	n/a	OTM 11
3.5	Peripheral Transverse Bars	●	▲	●	n/a	$4,000	n/a	4.6.1
4. Surface Treatment								
4.1	Sidewalk Extension/ Textured Crosswalk	●	▲	✕	$12,000	$30,000	n/a	4.5.1
4.2	Transverse Rumble Strips	▲	✕	●	$3,000	$4,000	n/a	n/a
5. Roadway Narrowing								
5.1	Curb Extension	●	●	✕	$3,000	$50,000	$10,000	4.4.1
5.2	Lane Narrowing	●	▲	✕	$12,000	$20,000	n/a	OTM 11
5.3	On-Street Parking	●	▲	✕	$12,000	$20,000	n/a	4.4.2
5.4	Raised Median Island	●	▲	✕	$3,000	$125,000	$8,000	4.4.3
5.5	Road Diet[3]	●	●	✕	n/a	n/a	n/a	4.4.4
5.6	Vertical Centreline Treatment	●	✕	●	$2,500 (per km)	$4,000 (per km)	n/a	OTM 6

TABLE F.1: POTENTIAL TRAFFIC CALMING MEASURES

	Measure	Applicability			Indicative Cost[1]			Design Details[2]
		Local or Collector	Urban Arterial	Rural Arterial	Low	High	Trial	
6. Gateways								
6.1	Gateways[4]	●	●	●	$10,000	$50,000	$5,000	n/a
7. Horizontal Deflection								
7.1	Lateral Shift	●	▲	✕	$16,000	$62,500	$25,000	n/a
7.2	Traffic Button/	●	✕	✕	$3,000	$50,000	$10,000	4.3.4
	Traffic Circle/ Mini-Roundabout	●	✕	▲	$20,000	$125,000	$15,000	
8. Vertical Deflection								
8.1	Raised Crosswalk	●	✕	✕	$5,000	$20,000	$10,000	4.2.1
9. Access Restriction								
9.1	Right-in/Right-out Island	●	▲	✕	$3,000	$50,000	$5,000	4.7.6
10. Emerging Technologies and Measures								
10.1	Optical Illusion Pavement Markings	●	▲	✕	$150 (per symbol)	$200 (per symbol)	n/a	n/a

Legend:

● Applicable ▲ Use with Care ✕ Not Appropriate

Notes:

1. See **Section F.3** for explanation of indicative costs and sources.
2. See **Section F.3** for explanation of design details and sources.
3. Measure is site-specific. Implemented as part of road reconstruction or new development.
4. To be used in conjunction with other traffic calming measures. Typically considered for new development.

The indicative costs cited in **Table F.1** provide order of magnitude estimates for planning purposes, but should be applied with caution given the many factors affecting actual implementation costs, such as:

- Width of roadway(s);
- Corner radii;
- Existing infrastructure and utilities (e.g., catch basins, maintenance holes, utility poles, streetlights);
- Dimensions of proposed feature(s) (e.g., island size, length of extensions, width/height of raised feature);
- Quantity (e.g., number of signs, length of pavement markings, numbers of signals);
- Property acquisition (if required);
- Landscaping;
- Labour and materials;
- Design and contingency.

Closer to implementation, the County will typically estimate permanent and trial installation costs based on more detailed design plans and current unit/benchmark prices derived from recent construction contracts.

Design Guidelines

The County will generally follow the design guidance provided in Chapter 4 of the Guide when implementing the traffic calming measures identified in **Table F.1**. Column 8 (Design Details) denotes the relevant section to consult in the guidebook. The TAC *Geometric Design Guide for Canadian Roads*[17] may also be referenced in the design process.

In a few instances, the table refers to the Ontario Traffic Manual (OTM) for guidance pertaining to signing or pavement marking treatments. References are not provided for measures without available guidance (e.g., lateral shift) or for non-physical measures (e.g., fixed speed enforcement), as denoted by "n/a".

F.4 Selecting Measures

The following outlines the typical decision process for selecting measures from the Toolbox. As noted above, other factors can also influence the measure(s) selected.

Step 1

Determine if the subject road section is a candidate for traffic calming measures per **Section 4.6** of the Speed Management Policy.

[17] Transportation Association of Canada, *Canadian Guide to Traffic Calming*, 2nd ed., (Ottawa, ON; 2018).

Step 2

Identify the list of potentially applicable traffic calming measures based on roadway classification and environment.

Step 3

Confirm and rank (based on severity) the primary issue(s) to be addressed through the traffic calming plan. Potential issues include:

- Speeding (typically primary)
- Shortcutting traffic
- Pedestrian crossings
- Vehicle and pedestrian/cyclist conflicts
- Heavy vehicles

Step 4

Shortlist the measures that address the issue(s) from the initial list assembled in Step 2.

Step 5

Focus on/eliminate measures that would/would not be appropriate under the following conditions:

- School Zones and Community Safety Zones
- Active transportation routes
- Adjacent to park
- High pedestrian generators, particularly more vulnerable users
- Adjacent land uses (residential versus non-residential)
- Planned reconstruction
- Noise to surrounding neighbourhood
- Applicability for temporary installation

Step 6

Confirm measures can be implemented under current roadway conditions. Factors to consider include:

- Existing intersections and control
- Midblock pedestrian/cyclist crossings and control
- Cross-section width
- Need for on-street parking
- Roadway alignment (i.e., horizontal and vertical curvature)
- Grade
- Block Length
- Driveway density

- Pavement condition and materials
- Drainage
- Utilities and street furniture (e.g., benches, poles, boxes)
- Streetlighting

Attachment 1

Traffic Calming Measures for Use in Lanark County

1. EDUCATION

1.1 Active and Safe Routes to School Program

Description and Purpose

A community-based program that promotes the use of active transportation for daily trips to school while addressing traffic safety issues.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – n/a
Engineering Study Required – No

Potential Traffic Calming Benefits

Speed Reduction	☐
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Other Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	☐
Vehicle Parking	☐
Street Maintenance	☐

☐/☐	No Benefit/Impact
◘/◘	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

1. EDUCATION

1.2 Speed Display Devices

Description and Purpose

A speed display device is an interactive sign that displays vehicle speeds as oncoming motorists approach. Vehicle speed is captured using radar and can trigger the display board to show when vehicles approach at predetermined undesirable speeds. Can be used upstream of fixed speed enforcement.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	◘
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	◘
Vehicle Parking	☐
Street Maintenance	■

☐/☐	No Benefit/Impact
◘/◘	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

1. EDUCATION

1.3 Targeted Education Campaign

Description and Purpose

Targeted education campaigns are initiatives to raise awareness of road safety issues. Education campaigns can address multiple types of driver awareness. In some cases, these will be an integral component of an overall strategic road safety program.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $-$$$
Timeline – n/a
Engineering Study Required – No

Potential Traffic Calming Benefits

Speed Reduction	☐
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Other Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	☐
Vehicle Parking	☐
Street Maintenance	☐

☐/☐	No Benefit/Impact
◘/◘	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

1. EDUCATION
1.4 Vehicle Actuated Signs (VAS)

Description and Purpose

Vehicle actuated signs are electronic roadside warning signs equipped with radar speed detectors and illuminated display.

Vehicle activated signs are like speed feedback signs but instead of showing the speed of the vehicle, the speed is used to activate a symbol displaying the actual hazard ahead when a predetermined speed threshold is exceeded. Otherwise, the sign shows no message.

The purpose is to alert drivers with the aim that they reduce their travel speed as they approach specific conditions or hazards ahead.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	▣
Natural Environment	□

Other Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□	No Benefit/Impact
▣/▣	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

1. EDUCATION

1.5 Oversized Speed Limit Signs

Description and Purpose

Oversized speed limit signs may be used where extra emphasis is required, such as an unusual speed limit, a change in speed limit in rural areas, high traffic volume, high violation rates, or lower sign conspicuity.

Per Ontario Traffic Manual *Book 5 – Regulatory Signs*, oversized signs will be:

- 90 cm x 120 cm for Rb-1A (MAXIMUM SPEED with KM/H)
- 30 cm x 90 cm for Rb-7t (KM/H tab) and Rb-84t (BEGINS tab)
- 90 cm x 165 cm for Rb-3 (MAXIMUM SPEED with KM/H and BEGINS)
- 90 cm x 150 cm for Rb-5A (MAXIMUM SPEED AHEAD with KM/H)

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – Primarily rural
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – No

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Other Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	□

□/□	No Benefit/Impact
■/■	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

2. ENFORCEMENT

2.1 Fixed Speed Enforcement

Description and Purpose

Fixed (or targeted) speed enforcement involves employing additional police enforcement in locations when speed, collision, citation, resident comments, or other sources of information suggest that the site is unusually hazardous due to illegal driving practices.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $$$
Timeline – Temporary
Engineering Study Required – No

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	▣
Vehicle Parking	□
Street Maintenance	■

□/□	No Benefit/Impact
▣/▣	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

2. ENFORCEMENT
2.2 Speed Watch Program

Description and Purpose

The placement of speed display devices (see Measure 9.2) that measure the speed of passing vehicles as they pass. Run by local police services, volunteers and residents are involved to help monitor traffic and record license plates of vehicles travelling at excessive speeds. Letters may be sent to registered owners of these vehicles altering them of their excessive speeding.

The speeds of vehicles can also be stored and analyzed. If there is excessive speeding in the area, municipalities can create a plan for further speed limit enforcement or traffic calming.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – No

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	■
Vehicle Parking	□
Street Maintenance	□

□/□	No Benefit/Impact
■/■	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

3. PAVEMENT MARKINGS

3.1 Converging Chevrons

Description and Purpose

Converging chevrons are pavement markings painted in the shape of a forward-facing V pointing in the roadway travel direction. They can be spaced close together or painted thinner to create the illusion that a vehicle's speed is increasing. This is done to alert the driver of the need to reduce speed.

Applicability

- **Road Class** – Local Streets, Collector Roads, Urban and Rural Arterials
- **Roadway Cross-Section** – Urban and rural
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

3. PAVEMENT MARKINGS
3.2 Dragon's Teeth

Description and Purpose

Dragon's teeth are a series of triangular pavement markings along the edge of the travelled lanes. They may be painted with increasing size to give the impression of roadway narrowing. They provide a visual change of the roadway and alert drivers that they are entering a rural community.

Applicability

- **Road Class** – All classes
- **Roadway Cross-Section** – all cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	☐
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	☐
Vehicle Parking	☐
Street Maintenance	☐

☐/☐	No Benefit/Impact
☐/☐	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

3. PAVEMENT MARKINGS

3.3 Full-lane Transverse Bars

Description and Purpose

Full-lane transverse bars are a series of parallel pavement markings which extend across the majority of the travelled lane width. The series of markings may be placed closer together with distance to create the illusion that a vehicle's speed is increasing to alert the driver of the need to reduce speed.

Applicability

- **Road Class** – All classes
- **Roadway Cross**-Section – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	▣

□/□ No Benefit/Impact
▣/▣ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

3. PAVEMENT MARKINGS

3.4 On-Road Sign Pavement Markings

Description and Purpose

On-road 'sign' pavement markings provide information that would typically be shown to drivers through signage but are painted on the roadway to provide a larger image, and one that is directly in the driver's line of sight. Some examples could be speed limit, 'SLOW', 'Stop ahead, etc.

Applicability

- **Road Class** – All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

3. PAVEMENT MARKINGS

3.5 Peripheral Transverse Bars

Description and Purpose

Peripheral transverse bars are a series of parallel pavement markings along the edge of the travelled lane widths. The series of markings may be placed closer together with distance to create the illusion that a vehicle's speed is increasing. This is done to alert the driver's awareness of the need to reduce speed. Peripheral transverse bars are similar to full-lane transverse bars but require less maintenance of pavement markings.

Applicability

- **Road Class** – All classes
- **Roadway Cross**-Section – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

4. SURFACE TREATMENT

4.1 Sidewalk Extension/ Textured Crosswalk

Description and Purpose

A sidewalk extension is a sidewalk continued across a local street intersection at the level of the roadway. Textured/patterned elements that contrast the roadway can be incorporated into the sidewalk extension.

The purpose of a sidewalk extension is to visually enhance a pedestrian crossing location so drivers become more aware of its presence. It is not intended to indicate whether drivers or pedestrians are required to yield (traffic must comply with local or provincial regulations governing the type of pedestrian crossing system being enhanced by the sidewalk extension / textured crosswalk).

With a sidewalk extension/textured crosswalk the continuation of the surface and enhanced visual/tactile identification of the crosswalk area emphasizes pedestrian priority.

Applicability

- **Road Class –** Local Streets, Collector Roads, Urban Arterials
- **Roadway Cross-Section** – Urban, sidewalks on both sides
- **Speed Limit** – 50 km/h or less
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	■
Natural Environment	■

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	■
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

4. SURFACE TREATMENT
4.2 Transverse Rumble Strips

Description and Purpose

Transverse rumble strips are raised buttons, bars or grooves closely spaced at regular intervals on the roadway that create both noise and vibration in a moving vehicle.

The purpose of a rumble strip is to alert motorists to a traffic control device which is associated with unusual or changing conditions ahead. Rumble strips are sometimes incorrectly used in a standalone mode as a speed control device.

With rumble strips, motorists are alerted by minor vertical deflection of vehicle wheels and audible warning created as vehicles wheels pass over.

Applicability

- **Road Class –** Local Streets, Collector Roads, Rural Arterials
- **Roadway Cross-**Section – Urban and rural (usually one lane per direction)
- **Speed Limit –** All speed limits
- **Average Daily Traffic –** All volumes

Cost – $
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	■
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING
5.1 Curb Extension

Description and Purpose

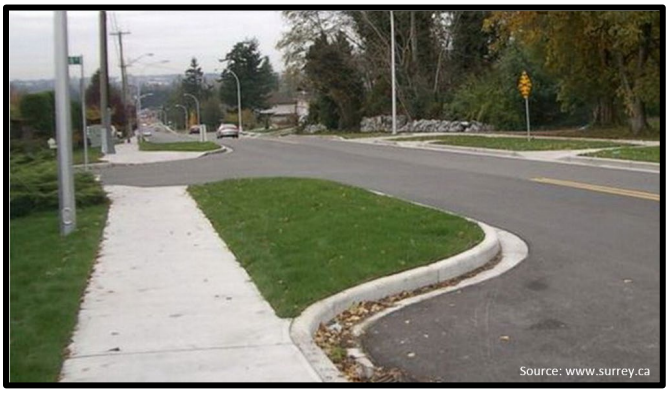
A curb extension (also known as neckdown, choker, curb bulb, or bulb-out) is a horizontal intrusion of the curb into the roadway resulting in a narrow section of roadway. The curb is extended on one or both sides of the roadway to reduce its width to as a little as 6.0 m for two-lane, two-way traffic. In urban environments, it is possible to implement curb extensions by removing existing parking spaces.

The purpose of a curb extension is to reduce vehicle speeds, reduce crossing distance for pedestrians, increase visibility of pedestrians, and prevent parking close to an intersection.

Applicability

- **Road Class** – Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – 60 km/h or less
- **Average Daily Traffic** – All volumes

Cost – $$-$$$
Timeline – Permanent
Engineering Study Required – Yes



Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	■

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	■
Traffic Enforcement	□
Vehicle Parking	■
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING

5.2 Lane Narrowing

Description and Purpose

Lane narrowing is the process of reducing lane widths using pavement markings or other features (for example, bicycle lanes, street beautification programs, pavement texture).

The intention is for drivers to perceive the roadway to be less comfortable at higher speeds due to the narrowing of the lanes and ultimately reduce operating speeds.

Applicability

- **Road Class** – Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – 60 km/h or less
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	■
Traffic Enforcement	□
Vehicle Parking	■
Street Maintenance	□

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING
5.3 On-Street Parking

Description and Purpose

On-street parking is the reduction of the roadway width available for vehicle movement by allowing motor vehicles to park adjacent and parallel to the curb. Angled parking is not appropriate as a traffic calming measure, due to the increased potential for conflicts.

The effect of using on-street parking to narrow the effective roadway space is to reduce vehicle speeds and to reduce possible short-cutting or through traffic.

Applicability

- **Road Class** – Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – 50 km/h or less
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	■

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	■
Cycling Use	■
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING
5.4 Raised Median Island

Description and Purpose

A raised median island is an elevated median constructed on the centerline of a two-way roadway to reduce the overall width of the adjacent travel lanes.

The purpose of a raised median island is to reduce vehicle speeds and to reduce pedestrian–vehicle conflicts.

Applicability

- **Road Class** – Local Streets, Collector Roads, Urban and Rural Arterials
- **Roadway Cross-Section –** Urban and rural, two-lane
- **Speed Limit –** 60 km/h or less
- **Average Daily Traffic –** All volumes

Cost – $$-$$$
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	■
Natural Environment	□

Implementation Considerations

Local Vehicle Access	■
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	■
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING
5.5 Road Diet

Description and Purpose

A road diet is a reconfiguration of a roadway where the number of travelled lanes and/or effective width of the road is reduced to allocate the reclaimed space for other uses, such as widen sidewalks, turning lanes, bus lanes, pedestrian refuge islands, bike lanes, parking, etc.

Typically, a Road Diet involves converting an existing four-lane, undivided roadway segment to a three-lane segment consisting of two through lanes, a centre two-way left-turn lane, and two bicycle lanes. However, other conversions are possible, such as 4-lane to 5-lane, 2-lane to 3-lane, 3-lane to 3-lane, and 5-lane to 3-lane.

Applicability

- **Road Class** – Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – 60 km/h or less
- **Average Daily Traffic** – All volumes

Cost – $ - $$
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	■
Natural Environment	■

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	▣
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	□

□/□ No Benefit/Impact
▣/▣ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

5. ROADWAY NARROWING
5.6 Vertical Centreline Treatment

Description and Purpose

The use of vertical treatments such as flexible post-mounted delineators or raised pavement markers to create a centre median. This could be used to give drivers a perception of lane narrowing and create a sense of constriction.

Flexible post-mounted delineators are similar in appearance to bollards. They are commonly used in work zones, high-occupancy vehicle (HOV) lanes, and on-ramp exits to direct vehicles or prevent certain movements.

Applicability

- **Road Class** – All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit –** 80 km/h or less
- **Average Daily Traffic –** All volumes

Cost – $
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	□

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
■/■ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

6. GATEWAYS

Description and Purpose

Gateways are the combination of traffic calming devices, that help to provide an entry or "gateway" which identifies transitional zones such as between commercial/rural areas and urban/rural residential zones, villages, or hamlets.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	□
Natural Environment	▣

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	□
Cycling Use	□
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	■

□/□ No Benefit/Impact
▣/▣ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

7. HORIZONTAL DEFLECTION

7.1 Lateral Shift

Description and Purpose

A lateral shift in a roadway occurs where an otherwise straight section is redesigned using pavement markings or curb extensions to create a curvilinear alignment (a 'jog') in the roadway like a chicane. This effect can also be achieved with the use of a central island.

A lateral shift causes drivers to have to negotiate the alignment and increases awareness aimed at reducing vehicle speeds.

Applicability

- **Road Class** – Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – 50 km/h or less
- **Average Daily Traffic** – All Volumes
- **Grade** - < 8%

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	☐
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	☐
Vehicle Parking	■
Street Maintenance	☐

☐/☐	No Benefit/Impact
■/■	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

7. HORIZONTAL DEFLECTION

7.2 Traffic Button/Traffic Circle/Mini-Roundabout

Description and Purpose

A traffic button/traffic circle/mini-roundabout is an island located at the centre of an intersection, which requires vehicles to travel in a counter-clockwise direction around the island.

Mini-roundabouts are designed in accordance with full-size roundabout design principles incorporating splitter islands and deflection of vehicles on all approaches, except that they have a smaller diameter and traversable islands. A traffic circle is typically smaller than a mini-roundabout and does not have splitter islands on the approaches. A traffic button is like a traffic circle. However, the former is typically made of coloured asphalt while the latter is landscaped.

The turning radius for left-turning trucks, buses, or emergency vehicles may require a diameter which would be larger than the intersection space available. Consequently, vehicles may turn left in front of the traffic circle or mount the centre raised island rather than travelling around the measure.

Yield traffic control is recommended.

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Applicability

- **Road Class** – Local Streets and Collector Roads
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit –** 50 km/h or less
- **Average Daily Traffic** – < 1500 vpd

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	▣
Conflict Reduction	■
Natural Environment	■

Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	▣
Cycling Use	▣
Traffic Enforcement	□
Vehicle Parking	▣
Street Maintenance	▣

□/□	No Benefit/Impact
▣/▣	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

8. VERTICAL DEFLECTION

8.1 Raised Crosswalk

Description and Purpose

A raised crosswalk is a marked pedestrian crosswalk at an intersection or midblock location constructed at a higher elevation than the adjacent roadway.

The purpose of a raised crosswalk is to reduce vehicle speeds, improve pedestrian visibility, and reduce pedestrian–vehicle conflicts.

Applicability

- **Road Class** – Local Streets and Collector Roads
- **Roadway Cross-Section** – Urban, sidewalk on at least one side of road
- **Speed Limit** – 50 km/h or less
- **Average Daily Traffic** – All volumes
- **Grade** – ≥ 1%, but ≤ 8%

Cost – $ to $$
Timeline – Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	■
Volume Reduction	□
Conflict Reduction	◘
Natural Environment	◘

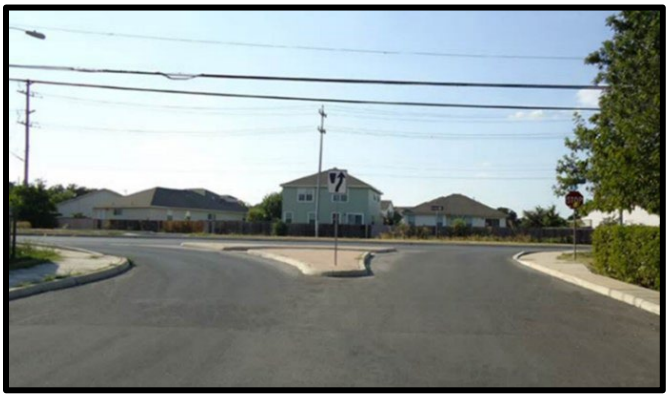
Implementation Considerations

Local Vehicle Access	□
Emergency Vehicle Response	◘
Cycling Use	◘
Traffic Enforcement	□
Vehicle Parking	□
Street Maintenance	◘

□/□ No Benefit/Impact
◘/◘ Minor Benefit/Impact
■/■ Substantial Benefit/Impact

9. ACCESS RESTRICTIONS

9.1 Right-In/Right-Out Island



Description and Purpose

A right-in / right-out island is a raised triangular island at an intersection approach which obstructs left turns and through movements to and from the intersecting street or driveway.

Bicycles are typically permitted to make left turns and through movements from the side street, either through gaps or depressions in the island, or by travelling around the island.

The purpose of a right-in / right-out island is to obstruct short-cutting or through traffic.

Applicability

- **Road Class –** Local Streets, Collector Roads and Urban Arterials
- **Roadway Cross-Section** – Urban
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $-$$
Timeline – Temporary or Permanent
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	☐
Volume Reduction	■
Conflict Reduction	▣
Natural Environment	▣

Implementation Considerations

Local Access	▣
Emergency Vehicle Response	▣
Cycling Use	▣
Traffic Enforcement	▣
Vehicle Parking	☐
Street Maintenance	▣

☐/☐	No Benefit/Impact
▣/▣	Minor Benefit/Impact
■/■	Substantial Benefit/Impact

10. EMERGING TECHNOLOGIES AND MEASURES

10.1 Optical Illusion Pavement Markings

Description and Purpose

Optical illusion pavement markings use colours and shading to create an optical illusion in an attempt to influence drivers to reduce their speed.

Applicability

- **Road Class –** All classes
- **Roadway Cross-Section** – All cross-sections
- **Speed Limit** – All speed limits
- **Average Daily Traffic** – All volumes

Cost – $
Timeline – Temporary or Required
Engineering Study Required – Yes

Potential Traffic Calming Benefits

Speed Reduction	◘
Volume Reduction	☐
Conflict Reduction	☐
Natural Environment	☐

Other Implementation Considerations

Local Vehicle Access	☐
Emergency Vehicle Response	☐
Cycling Use	☐
Traffic Enforcement	☐
Vehicle Parking	☐
Street Maintenance	◘

☐/☐	No Benefit/Impact
◘/◘	Minor Benefit/Impact
■/■	Substantial Benefit/Impact