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Corporate Policy

Section:	Engineering & GIS	
Sub-Section:		
Title:	Neighbourhood Traffic Management Policy	

RELATED POLICIES

Number	Title

APPROVALS

POLICY APPROVAL:	AMENDMENT APPROVAL:	SECTION AMENDED
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NEIGHBOURHOOD TRAFFIC MANAGEMENT POLICY

This Neighbourhood Traffic Management Policy provides clear direction on the types of traffic management measures to be considered in Vernon, and appropriate circumstances for their use. Refer to Table 4.1 for a summary of measures. Traffic management includes Traffic Calming, which is just one of the measures that can address existing traffic issues on residential and low volume collector roads. Traffic management measures are usually appropriate for area wide traffic issues such as short cutting and speeding, etc. "Other Issues," identified in Section 3.2 do not generally warrant traffic management measures.

There are currently over 38,000 residents in Vernon and limited staff resources to investigate traffic issues, complete traffic studies and implement trial or permanent traffic management measures. This policy identifies a process for responding to traffic issues so that communities with the most severe traffic issues will be dealt with on a priority basis.

Section 3.3, "Neighbourhood Initiatives," highlights some of the resources available to help individuals and communities address their own traffic issues. Some of the initiatives include a speeding awareness program, portable educational signs, trip reduction programs and plain language publications that address frequently asked traffic questions. One of the most cost-effective approaches to address traffic concerns is the reduction or elimination of auto trips. The City's website <http://www.vernon.ca/transportation/index.html> has information on alternative forms of transportation including; walking, cycling, transit and carpooling. The City encourages individuals to promote these transportation alternatives at home, at work and in the community.

The City of Vernon is committed to ongoing improvement and welcomes your comments regarding this Neighbourhood Traffic Management Policy.

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1 INTRODUCTION

This document presents the Neighbourhood Traffic Management Policy for the City of Vernon. The material in this document provides guidance regarding activities involved in identifying and implementing traffic management, as well as technical information regarding the design and construction of traffic management devices. This policy is intended to address existing situations, and is not intended to be a design guideline for new subdivision construction. Though the provision of traffic management measures at the onset of new development as part of that design is encouraged.

The primary intent of the Neighbourhood Traffic Management Policy is to address concerns which residents, Council and staff have regarding negative impacts of traffic on local neighbourhood streets. Guidelines are also presented for applying traffic management measures on collector and arterial roads to mitigate the negative impacts of traffic, while still maintaining the ability of these roads to effectively transport goods and people.

Most complaints are either regarding speeding or the volume of traffic. Speeding is defined as exceeding posted speed limits or driving too fast for the conditions. This is a behaviour that some drivers engage in without recognizing the risks or seriously considering the consequences. According to the US National Highway Traffic Safety Administration (NHTSA), the consequences of excessive speed include the following:

- Greater potential for loss of vehicle control, which may result in a crash;
- Reduced effectiveness of occupant protection equipment;
- Increased stopping distance after the driver perceives a danger;
- Increased degree of crash severity leading to more fatalities and disabling injuries;
- Unexpected economic and even psychological implications of a speed-related crash; and
- Increased fuel consumption and cost.

The most serious consequences of speeding are the fatalities and serious injuries that result from crashes.

The volume of traffic on a road is often reported as being excessive. However, it may have just been slowly increasing over time and is not actually excessive for a road of that classification. The traffic volume should be judged against its classification, its physical size and local conditions such as grades and facilities for pedestrians and cyclists.

1.1 ROAD CLASSIFICATIONS

Roads have different functions and characteristics. Consequently, different criteria are used to evaluate issues on the differing road classifications. Traffic issues on arterial roads, higher-volume collector roads and industrial roads, for example, are addressed on an individual project basis as described in Section 3.2.

Highways are roads that provide for continuous vehicle travel through the Province as part of the Ministry of Transportation & Infrastructure's highway network and are under their control. Highway 97 and 6 are the only Highways in Vernon.

Arterial roads are designed for the efficient movement of people and goods through and around a city. Typically connecting larger population centres or activity centres and has managed points of access (intersections and driveways). They connect to collector and local roads with only limited direct access to individual properties. Traffic signal technology and signage are the only appropriate methods of traffic management for Arterial roads.

Collector roads are designed to connect the local roads within residential, commercial and industrial areas to the arterial roads. They have more points of access and form continuous routes. Traffic Management on low volume collector roads (below 1,500 vehicles per day) is limited to traffic signal technology, signage and horizontal measures. Between 1,500 and 3,000 vehicles per day horizontal measures may be used depending on the road geometry.

Local roads provide direct access to the properties within the residential, commercial or industrial areas. The structure and streetscape of these roads is integral to the character of the neighbourhoods they service. They are not intended for continuous travel. Traffic Management measures most often applied to local roads include route management, vehicle path management, signage, horizontal or vertical measures or combinations thereof.

A map showing these classifications and Emergency Routes can be found in Appendix 1.

1.2 WHAT IS NEIGHBOURHOOD TRAFFIC MANAGEMENT?

Most streets in Vernon are considered safe and pleasant streets along which to drive, walk or bicycle, and along which to live. However, on some residential streets vehicles being driven at inappropriate speeds or large volumes numbers of drivers using a street as a short cut, can create conflicts among the various road users and detract from the safety and liveability of the

street. If these conflicts are severe enough, residents and others may consider that their streets are less safe or that their neighbourhood is less liveable.

Street Safety (and perceived safety) is a major quality of life concern, especially for families with children. Guaranteeing street safety, like reducing crime, is a key factor in attracting and retaining residents to a city.

In these cases traffic management measures, often called traffic calming, in residential streets can offer a means of resolving certain traffic and safety problems, and preserving and enhancing neighbourhood liveability. Traffic management includes a range of techniques which are used to influence motorist behaviour and deter undesirable driving practices. Typically, involving physical devices constructed in a road such as curb extensions and may also include regulatory changes such as turn prohibitions and horizontal measures.

The Institute of Transportation Engineers has developed a definition of traffic calming which sums this up:

Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users.

The Transportation Association of Canada defines traffic calming as:

Traffic calming involves altering motorist behaviour on a single street or on a portion of a street network. It also includes traffic management, which involves changing traffic routes or flows within a neighbourhood... traffic calming is intended to achieve one or more of the following objectives:

- Reduce vehicle speeds...
- Discourage through traffic...
- Minimize conflicts between street users...
- Improve the neighbourhood environment.

1.3 WHY A POLICY IS NEEDED

As in most urban municipalities, traffic can become a concern in some neighbourhood streets in Vernon with some motorists avoiding arterial roads and taking short-cuts. As a result, residents can become concerned about vehicle volumes, speeds and for the safety of pedestrians, cyclists and motorists on their streets.

Many municipalities have responded to these concerns by implementing traffic management measures intended to discourage, obstruct or slow vehicles. Although most municipalities have been successful with traffic calming efforts, in some municipalities some measures have

created more problems than they have solved. Typically, this has happened when traffic calming measures have been applied in a piecemeal manner, without an overall policy or plan, and without consideration of the implications of traffic calming.

To avoid this staff have developed this Neighbourhood Traffic Management Policy to address traffic problems, the public is engaged as part of the process, to ensure that funds are spent cost-effectively, that problems are resolved, and that no new problems are created in the process.

1.4 SCOPE OF NEIGHBOURHOOD TRAFFIC MANAGEMENT MEASURES

The focus is to address traffic and safety problems on city streets. This means, for example that those residential streets with above average numbers of accidents, particularly those involving pedestrians and cyclists, large numbers of vehicles travelling at inappropriate speeds or excessive numbers of drivers taking short-cuts. There are other uses of traffic management measures which are not encompassed by this policy, including:

- 1) New developments. Design of roads in new development is regulated by the Subdivision and Development Servicing Bylaw. Developers sometimes wish to include traffic management measures and calming devices in new developments, either as a means of preventing traffic problems from occurring in future, to mitigate known impacts of development, or as an aesthetic enhancement. Their use in new developments may be appropriate, provided that they would not unduly affect access for emergency vehicles, transit, trucks and other vehicles, and would not create safety concerns. Although the planning process described in Section 3 of this policy document would not apply in this case, the technical guidelines described in Sections 4 are encouraged be applied to any new developments.
- 2) Future problems. Measures should generally only be used for existing traffic problems. Using them to address potential future problems should only be considered as part of an area-wide plan as a means of avoiding problems which might be created by new road connections or traffic diverting from other streets as a result of measures implemented on those streets. In some cases, traffic management measures which have no significant negative implications, such as curb extensions, can be used to prevent future problems.
- 3) Long term project-related works. Traffic issues sometimes arise as a result of road construction and other transportation projects. Temporary measures may be used as part of these long term projects, during construction to mitigate impacts of detoured traffic or congestion. Although the planning process described in Section 3 of this policy document would generally not apply to project-related works, the applicability guidelines described in Section 4 should be applied to any devices proposed as part of transportation projects.

1.5 TRAFFIC MANAGEMENT RESOURCES

Vernon's Neighbourhood Traffic Management Policy was developed based on a review of policies and programs in the following Okanagan communities: Kelowna, Salmon Arm, Enderby,

Coldstream, Peachland, Summerland and Penticton. It was also based on a review of the City of Calgary's policy which was developed following a review of the following Canadian and U.S. communities: Vancouver, BC; Toronto, ON; West Sacramento, CA; North Vancouver, BC; Seattle, WA; Boulder, CO; Delta, BC; Bellevue, WA; Santa Fe, NM; Coquitlam, BC; Portland, OR; Fairfax, VA; Saanich, BC; Palo Alto, CA; Arlington, VA; Kelowna, BC; Berkeley, CA; Asheville, NC; Whistler, BC; Ventura, CA and Mobile, AL.

2 GOALS

This section describes the goals and means of achieving these goals with specific objectives and principles. These provide the basis for developing other aspects of the Neighbourhood Traffic Management Policy, which is detailed in subsequent sections.

2.1 GOALS AND OBJECTIVES

Residents, elected officials, City staff, RCMP and other members of the public wish to achieve two key goals in undertaking neighbourhood traffic management in Vernon:

Safety

Traffic management measures can make streets safe for all road users. Many conflicts and collisions which occur on local streets are the result of inappropriate speeds and traffic volumes. Research has shown that specific traffic management devices can reduce collisions by 30% to as much as 90%.

Liveability

They can help to preserve and enhance the liveability of a neighbourhood by minimizing the negative impacts of traffic.

It is intended that these goals be pursued in a manner which is consistent with the City's transportation and land use plans. This means that measures are primarily applied to improve safety, with the benefits of improved liveability while maintaining the effectiveness of the whole transportation road network, particularly arterial and collector roads.

Objectives to achieve the goals of improving safety and liveability include:

- 1) **Discourage through traffic on local streets.** Local neighbourhood streets are primarily intended for access to properties, not for getting from one destination to another across the city. Relocating this traffic back on to the collector and arterial roads, which have been designed for this purpose, will reduce the potential for conflicts in local roads and would contribute to returning these roads back to their residential nature.
- 2) **Minimize conflicts between all street users.** Reducing conflicts among all road users helps to improve safety by reducing the frequency of conflicts.
- 3) **Reduce vehicle speeds.** The lower the vehicle speed, the lower the severity of any injuries for all parties involved, should a collision occur. Drivers should drive at a speed

appropriate to the surroundings. However, some drivers do not. Certain traffic management measures can reduce vehicle speeds to make them more appropriate for neighbourhood streets. Given the nature of winter weather in Vernon and the need to accommodate snow ploughs and emergency service vehicles, horizontal rather than vertical measures will be the primary measure. Regulatory measures involving signs only typically only provide a short term solution, but can be useful as education.

- 4) **Enhance the neighbourhood environment.** Creating an environment with appropriate vehicle volumes and speeds helps to enhance the liveability of a neighbourhood by reducing the dominance of non-local traffic. This also reduces the inventory of works required to be maintained by the City and thus the financial tax burden on residents

Another important objective, although not directly related to the goals of improving safety and liveability, is to allocate funds cost-effectively. Ensuring that the costs of measures are minimized and that the most cost-effective solutions are implemented will mean that more initiatives can be pursued for the available budget.

2.2 NEIGHBOURHOOD TRAFFIC MANAGEMENT PRINCIPLES

The information presented in subsequent sections of this document provides guidelines regarding the applicability, location and design of specific measures. To provide overall direction and guidance in the application of measures, this section identifies several “principles” of traffic management / calming which are relevant to all traffic measures. These principles are equally relevant in addressing isolated, localized issues at a single intersection or on a single road, as well as addressing a range of issues within an area. Applying these principles in Vernon will maximize the effectiveness of resulting neighbourhood traffic management, and will help to avoid mistakes which others have made. Applying these principles will also help to build neighbourhood support, rather than opposition, by ensuring that plans meet the neighbourhood’s true needs.

- 1) **Involve the neighbourhood**

Residents, businesses and others who live and work in a neighbourhood should be involved in neighbourhood traffic management. Involving the neighbourhood and all users builds support, without which complaints after its installation are harder to resolve. Involving a broad cross-section of the neighbourhood as well as key stakeholders, reduces the potential influence of special interest groups who might otherwise unduly influence the proposals. If the neighbourhood is not adequately involved in the process residents and others in a neighbourhood might oppose it, regardless of its technical merit, because they feel they were not properly informed or consulted.

- 2) **Identify the real problem**

Frequently, the perceived nature of a traffic problem is substantially different from the real problem. In some cases, the difference is so great that a solution intended to eliminate the perceived problem might make the real problem worse. For example,

residents often mention both “traffic volume” and “speeding” as problems on their streets, but in many cases the problem is one or the other. It is important to identify the real problem, to ensure the appropriate measure is selected. If the real problem is speeding but a measure to reduce traffic volume is implemented this can actually encourage speeding as there will now be fewer cars on the street to slow down for. If the root cause of a problem is a distance away from where the problem generates complaints, this would best be treated by a measure closer to the source.

3) Quantify the problem

Some problems are more significant than other problems. Some problems are all-day problems, whereas other problems occur only at certain times, in certain seasons or in certain directions. Some reported problems are not really problems at all, just that a change has occurred, sometimes over a number of years, though the residents feel the traffic levels they first experienced should be reinstated. In order to ensure that appropriate and necessary measures are implemented, it is essential that the extent of the issues are quantified. This means collecting data such as traffic volumes, accident data, counts of pedestrians and cyclists.

4) Consider improvements to the major road network first

Normally, no one short cuts through a neighbourhood without a reason. There are a wide range of low-cost options available to improve operations on major roads, including fine-tuning signal timings, adding turn bays, and implementing turn prohibitions and parking restrictions. Improvements to the major road network should be considered first, as these would improve the efficiency of those major streets and might avoid or reduce the need for measures on neighbourhood streets.

5) Use self-enforcing measures

These are measures which have a 24-hour effect and do not require RCMP enforcement to be effective. For example: median islands should be used instead of all-day turn prohibitions; horizontal measures should be used instead of just lowering the speed limits through signage. Measures that can be ignored such as a signage banning turns should be used only at intersections with major roads, where high visibility and the presence of others discourages motorists from ignoring these measures.

6) Target automobiles and heavy trucks only

The purpose of implementing measures is to affect private automobiles and heavy trucks, but not other modes of transportation or emergency services. Consequently, measures should be designed to not impede emergency and service vehicles and permit scheduled transit buses, cyclists and pedestrians to pass through. This does not prevent the use of traffic measures on emergency and transit routes, but these should be kept to a minimum and be of a type suited to those vehicles.

7) **Monitor conditions**

Staff will aim to undertake surveys six months after their implementation after traffic levels have settled. This will enable staff to assess the effectiveness of the works and refine future installations to take advantage of this local knowledge

3 PLANNING

This section describes a typical process of preparing and implementing neighbourhood traffic management measures in the City. Measures can be implemented on most local streets and even some low volume collector roads. However, different approaches need to be used to address the different issues.

Traffic issues can be grouped into five categories, as described below. The first two categories: isolated and area-wide issues are addressed through neighbourhood traffic management, as described in Section 3.1. Other traffic issues are addressed as described in Section 3.2.

1) **Isolated issues**

In some areas of the City traffic calming issues will arise in isolated, localized locations. Examples include pedestrian safety at intersections adjacent to schools, speeding in playground zones and conflicts at marked crosswalks. These issues can be addressed individually, on an isolated basis where there are no other issues or only a few other issues within the same area, and where there would be no chance of creating new problems or exacerbating other existing problems in the surrounding area.

2) **Area-wide issues**

In some areas of the City there may be a range of traffic issues on many streets within an area. In these cases, it is not appropriate to address each issue on an isolated basis, as a traffic calming solution intended to address one problem would likely create or exacerbate problems on adjacent streets. Instead, in this situation traffic solutions must be developed on an area-wide basis, considering all issues within an area.

3) **Operational issues**

Some traffic issues can be addressed without the need for traffic management measures. Some traffic issues require an operational solution, and can be addressed through existing City procedures. Typically, these involve problems that affect traffic movement, road safety and parking. Examples of traffic operational issues include: sight distance problems created by on-street or in the boulevard parking or vegetation; operational problems at signalized intersections; parking problems; roadway geometric issues and enforcement issues. In all cases, operational issues should be addressed only where they can be resolved without creating new problems or exacerbating other existing problems in the area.

4) **Project-related issues**

In some cases traffic detouring to avoid a road construction project, a special event, building construction or other projects might affect traffic on adjacent streets and create traffic issues. In these cases, they should be addressed as part of the temporary traffic management plans for that project.

5) **Non related issues**

Some traffic issues might not require or be appropriate to address with a traffic management measure. These include, for example, speeding and safety issues on arterial roads and collector roads, issues associated with special events and educational issues such as drinking and driving.

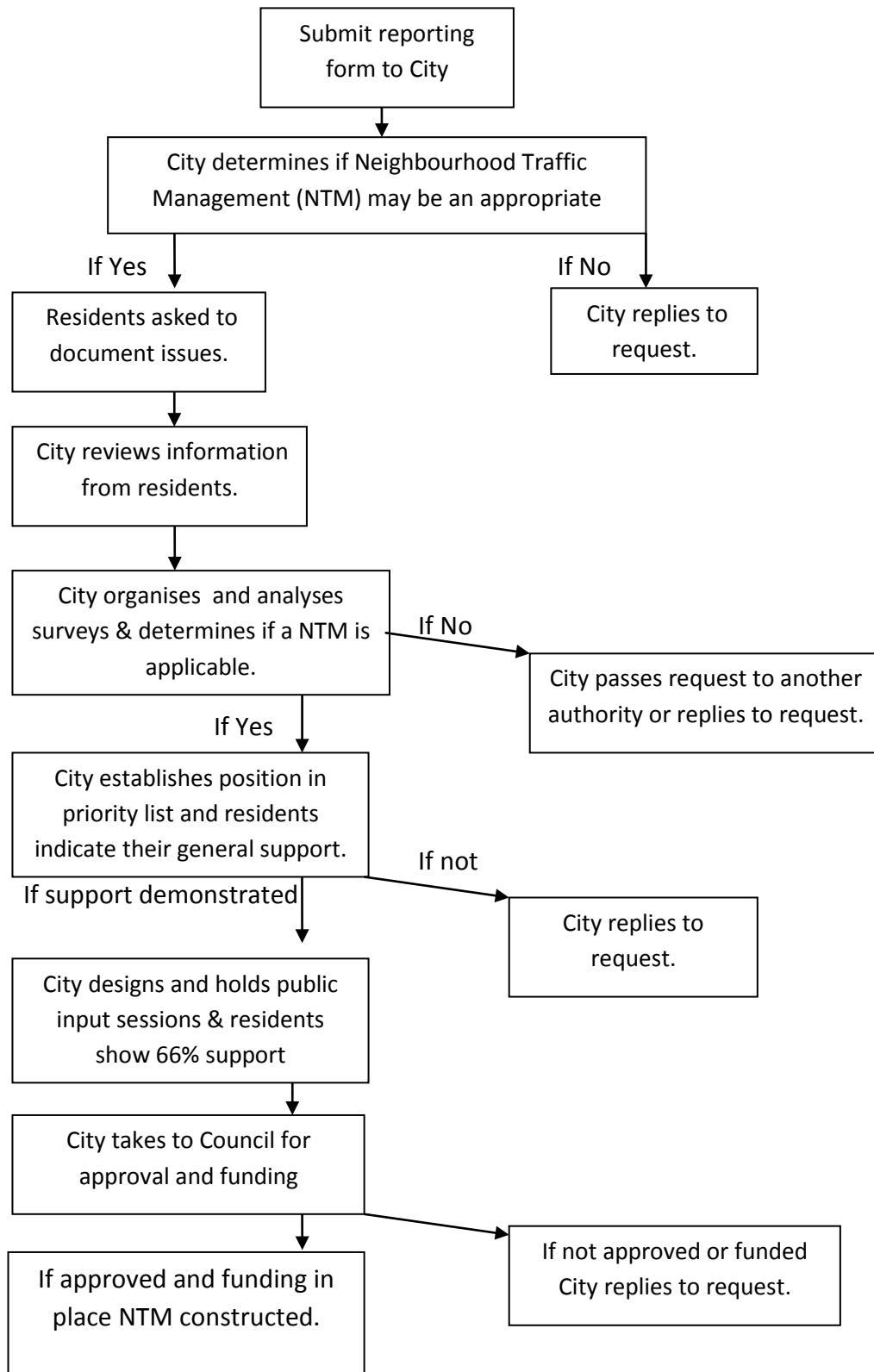
3.1 PROCESS FOR RESPONDING TO ISSUES

This section describes a process for responding to reported traffic issues, and prioritizing those issues which require measures. Figure 3.1 illustrates the process of responding to reported traffic issues. Other issues are addressed as described in Section 3.2. In the course of preparing proposals, staff will consult with staff in Emergency Services, Operations and Planning and will circulate proposed plans to others departments for review as appropriate.

3.1.1 SCREENING

Screening of requests and complaints is the first step in responding to reported traffic issues. Screening is undertaken for several reasons:

- 1) To determine whether the reported traffic concern is one which should be addressed by a traffic management measure or requires another response.
- 2) To identify the specific characteristics of the issue(s) location, time of day, duration and the numbers, type and speed of vehicles etc.
- 3) To determine whether others in the neighbourhood agree that there is a problem and to determine whether there is support for action to address the reported issue(s).



To ensure that City staff and resources are directed to those issues for which action is necessary and appropriate. The screening process involves the following three activities:

1. Document the issue.
2. Determine the appropriate response.
3. Determine support for further action.

The screening process is then followed by evaluation and prioritization activities, as described in Section 3.1.2.

DOCUMENT THE ISSUE

In order to effectively address a traffic issue, it is important that the issue be accurately described. Otherwise, a measure might be developed that does not address the true issue, or is too restrictive than is needed. For this reason, a means of reporting and documenting traffic issues is required. It is expected that some issues will be reported via this process which do not require a traffic management solution. In this event, these issues will be forwarded to the appropriate City department or external agency.

The simplest and most effective means of documenting issues is to use a reporting form. Residents would be asked to provide their names and contact information for follow-up, and where possible obtain endorsements from their neighbourhood association or a councillor.

Information requested on the reporting form would include a description of the location, magnitude, duration, times of day and other characteristics of the problem(s). In addition, residents would be asked to categorize issue(s) as to whether they consider it to be about:

- Pedestrian safety
- Other safety (motorists, cyclists, etc.)
- Speeding
- Short-cutting traffic
- Other (parking, etc.)

DETERMINE THE APPROPRIATE RESPONSE

Once an issue has been reported and documented, the next stage of the screening process is for staff to determine which of the following responses is appropriate for the issue. In many cases, traffic issues can be addressed quickly without requiring a traffic management / calming solution.

A traffic management response is appropriate where there are one or more identifiable traffic or safety issues which can be effectively addressed with the appropriate measure. The screening process should continue to the next activity, which involves determining majority support for action.

In some cases, issues will be relatively isolated. These issues are typically limited to one or two blocks of one or two streets, with no reported issues on nearby streets, and can be addressed in

isolation from other issues. In other cases, there will be several reported issues within a connected area. In this latter case, these issues should not be treated as isolated problems, but rather should be grouped together and treated on an area-wide basis.

In some cases, it would not be appropriate to respond to a reported issue with a traffic management / calming solution. Instead, other responses would be more appropriate, including:

- **Operational response.** Operational issues can be addressed without requiring neighbourhood traffic management measures, and the remainder of the screening process does not apply.
- **Project related response.** Traffic management / calming issues related to specific projects should be addressed through the project. Examples might include issues related to new developments, issues along a major road corridor, issues related to road network development, issues resulting from traffic diverted by a road construction project, and issues associated with special events. Reported issues should be directed to the appropriate City department or external agency responsible for the project.
- **Pending Road Project.** If the issues raised not critical to address imminently for safety reasons and are expected to be removed or substantially altered by a pending road project in the next five years, then no further action will be taken until its completion and its full effects can be accurately measured.
- **Other response.** Issues for which a traffic management solution would not be required nor would be appropriate should be directed to the appropriate City department or external agency. These might include, for example, issues related to land use, commercial operations, road maintenance, transit service, utilities, and bylaw enforcement.
- **No further action.** For issues for which no actions are determined to be required, a closure letter should be sent describing the reasons why no further action is being taken.

DETERMINE SUPPORT FOR FURTHER ACTION

It is important to determine whether there is a significant level of support within the neighbourhood for action to address the issue. This helps to avoid situations where residents might consider the solution more of a problem than the issue it is designed to address. It also helps to avoid City staff spending time and funds to respond to a reported issue that is only considered a problem by a small number of people.

At this stage in addressing reported issues, it is not necessary to demonstrate majority (66%) support within the neighbourhood for the solution. But, it is necessary to demonstrate that a sufficient number of people within the neighbourhood who are affected by the reported issue and who would be affected by the solution, consider it should proceed further. Consequently, a sufficient level of neighbourhood support is required. Affected households are typically those within the block(s) of the street(s) where problems are reported, as well as all households within one block of the block(s) where problems are reported.

Residents would be responsible for documenting neighbourhood support, rather than City staff. The simplest means of indicating neighbourhood support is a form which lists the addresses of

all affected households, and includes space for names, addresses and signatures of the residents.

3.1.2 EVALUATION AND PRIORITIZATION

After the screening process has been completed and neighbourhood support has been demonstrated, the next step for the City is to evaluate and prioritize the issues. This involves assigning a numerical rating to an issue based on a set of evaluation criteria, and then determining the relative priority of all reported issues based on their ratings.

The evaluation and prioritization process ensures that the neighbourhood with the most serious and most extensive issues are addressed first depending on staffing and funding availability.

TRAFFIC ISSUES

Table 3.1 summarizes evaluation criteria for traffic issues. Issues are evaluated according to criteria which reflect the goals of neighbourhood traffic management described in Section 2, specifically safety and liveability, as well as objectives of reducing speed and short-cutting volume, and minimizing conflicts between road users. Neighbourhood support is also considered in the evaluation, as a basis for assigning higher priority to areas with higher levels of neighbourhood support. Because the number, type and extent of issues will vary from one area to another comparisons are difficult to make. Therefore minimum threshold criteria have been established and where a street or area exceeds those they will then be further quantified and given a rating to allow for prioritisation. Each criterion is evaluated on a subjective basis, depending on the relative importance of each criterion. In each case, a higher score represents a more significant issue. In all cases, worst case conditions are to be considered in evaluating the issues. See Table 3.1 for evaluation criteria. Priorities will be re-evaluated on an annual basis, to account for changes in traffic and road conditions, and to incorporate additional data not currently available.

Table 3.1 Evaluation Criteria - Neighbourhood Traffic Management

Criteria	Threshold Criteria	Measurement	Weighting
Safety	Three injury accidents reported to ICBC or RCMP in the previous three years of data.	Number of injury accidents involving non motorists reported to ICBC or RCMP in the previous 3 years of data. 1 point per accident per location, to a maximum of 5.	0 to 5
Traffic speed	The 85 percentile speed over the posted speed limit is 10 km/h for local roads and 15 km/h for collector roads.	1 point for each km/h that the 85 percentile speed is above 60km/h on local roads and 65 km/h on collector road with a posted speed, to a maximum of 4.	0 to 4

Criteria	Threshold Criteria	Measurement	Weighting
Traffic volume	1,000 vehicles per day or 120 vehicles per peak hour for local roads. 2,500 vehicles per day or 300 vehicles per peak hour on collector roads.	1 point for each 250 vehicles per day above the respective daily threshold or per 20 above the respective peak hour threshold to a maximum of 4.	0 to 4
Through Traffic	20 percent on local roads and 60 on collector roads of all the traffic is through traffic.	1 point for each 5 percent of all traffic being through traffic above 20% on local and 60 % on collectors up to a maximum of 4.	0 to 4
Nature of area	Street has at least ten properties that are within an area that the Official Community Plan (OCP) designates as: Low, Medium or High Density Residential; Hillside or Small Lot Residential.		0 or 2
Pedestrian facilities		Street has no sidewalks or other means of separating pedestrians from motorised vehicles.	0 to 2
Bike facilities		Street has no painted bike lanes or other means of separating cyclists from motorised vehicles.	0 or 1
Nearby senior or youth pedestrian/ bike destinations		Street is within 500 metres walking distance of a seniors facility or a day care, pre-school, elementary or high school or other facility used by large numbers of people walking / cycling.	0 or 3

3.1.3 IMPLEMENTATION

The process is carried out to a set timetable to coincide with budget and construction times. Once a neighbourhood or isolated location scores at least 12 points of the 25 available and is identified as the highest priority according to the evaluation process described in Section 3.1.2. City staff will determine the appropriate measures to address the identified issues. Table 3.2 summarizes the steps involved.

Table 3.2 Process and Timing of Neighbourhood Traffic Management

Activity		Month
Stage 1 Issue / Concern identification	<ul style="list-style-type: none"> • First survey and open house • Identify traffic concerns • Collect and analyse traffic and accident data • Establish goals and objectives 	<ul style="list-style-type: none"> • February – Year 1 • March • April / May • June
Stage 2 Neighbourhood Traffic Management	<ul style="list-style-type: none"> • Identify potential measures • Develop proposals • Determine neighbourhood support • Review proposals and identify any changes • Final design completed 	<ul style="list-style-type: none"> • July • August • September • October • Mid November
Stage 3 Council approval	<ul style="list-style-type: none"> • Present proposal to Council for approval and adoption • Identify funding source and timelines • Inform neighbourhood of outcome 	<ul style="list-style-type: none"> • December • Jan - Mar – Yr 2 • May / June
Stage 4 Project implementation	<ul style="list-style-type: none"> • Arrange for construction to coincide with funding availability 	<ul style="list-style-type: none"> • July to October
Stage 5 Review	<ul style="list-style-type: none"> • Review traffic and accident data, six months to eighteen months after construction. 	<ul style="list-style-type: none"> • April - September – Yr 3

3.2 OTHER ISSUES

Although the majority of measures will likely be implemented on local streets and occasionally low-volume collector roads, following the process described in Section 3.1, there are other situations in which it may be desirable to implement measures. This section describes other approaches to implementing traffic management measures in the City.

- **Lanes.** The City has a blanket 20km/h speed limit in force on all lanes. As the vast majority of lanes are used by residents only accessing their own properties traffic measures will not be implemented in lanes.
- **New developments.** Frequently, developers propose measures as features in new developments, to improve aesthetics, to prevent speeding or as warranted through the

Transportation Impact Assessment (TIA) process. In all cases, these devices should conform to the guidelines for applicability and design presented in Sections 4 of this document. Permits and other agreements between the City and developer should also address the issue of the responsibility for and costs of any on-going maintenance needs. If it is identified through the development review process or in a Transportation Impact Assessment (TIA) for a development, that it will lead to significant traffic problems in adjacent streets then the development should fund and implement the agreed measures prior to the development being occupied.

3.3 NEIGHBOURHOOD INITIATIVES

This section identifies a range of initiatives which individuals and neighbourhood groups can undertake as a means of addressing traffic issues. The intent of these initiatives is to help communities help themselves. Together with any actions undertaken by the City, these initiatives result in a balanced response to local traffic issues. Experience in other communities has shown that information, education, and awareness initiatives can affect motorists' behaviour and can reduce speeding, short-cutting and other traffic problems. Individuals and neighbourhood groups can work with the RCMP and City staff and other agencies, and through these agencies can access services and resources at no or little cost. Examples of initiatives which neighbourhood members can undertake are described below. These initiatives can be expanded over time, and new initiatives developed to further enable individuals and neighbourhood groups to assist in addressing traffic issues.

- **Neighbourhood publications.** Neighbourhood newsletters, web sites, billboards, bulletins and the similar publications and information materials can be used to highlight traffic concerns and encourage more appropriate behaviour among motorists.
- **Neighbourhood events.** Neighbourhood Plans, public meetings and open houses involving residents and stakeholders can be an effective means of identifying traffic issues and options available to deal with problems.
- **Safe Communities Speed Watch Operations.** Through this Safe Communities Program, Citizens Patrol volunteers operate a traffic calming / education program that uses a portable speed display board connected to a radar unit to caution motorists of their speeds. The board displays the speed motorists are driving, and is intended to be a passive educational tool to encourage motorists to drive at or below the posted speed on neighbourhood streets. At times they operate in conjunction with the RCMP to add an enforcement element to this Operation.
- **Vehicle Activated Speed Limit Advisory Sign.** This City program involves placing an educational sign at identified locations for a six week period. These signs are a passive educational tool targeted to motorists, indicating the posted speed. The locations will be established annually by staff, following consultation with the RCMP, to be on roads with a known speeding issue and where Neighbourhood Traffic Management measures can not be utilised.
- **Lane speed limit signs.** The speed limit in lanes in the City is 20 km/h, as established in City bylaws. Although the City does not typically sign alleys, where an alley speeding problem exists, and is verified by traffic data or the RCMP, the City will make available laminated

alley speed limit signs that can be posted temporarily for a six week period as a passive educational tool.

- **Trip reduction initiatives.** A wide range of initiatives can be used to reduce vehicle trips and the amount of traffic on all streets. Examples include carpool programs, work at home arrangements, car-sharing initiatives, flex time and compressed workweek arrangements with employers and use of the pedestrian and bike networks for walking and cycling trips. Many of these initiatives also have significant health, environment and economic benefits. Information regarding these initiatives is available through the City of Vernon website, www.carpool.ca

LIAISON WITH RCMP

Communications with the RCMP through neighbourhood meetings and direct liaison can be an effective means of addressing local traffic issues. In many communities, police services have found that policing efforts planned and executed in consultation with the neighbourhood are better able to target neighbourhood traffic issues. RCMP officers can be assigned to assist in addressing traffic, parking and safety issues in and around schools. In all cases, to make the best use of police resources, information regarding traffic and safety issues provided to the RCMP should be detailed, and should identify the times, locations and nature of the traffic issues.

LIAISON WITH SCHOOLS

City staff work with schools to implement School Travel Plans, working with the individual school staff and Parent Advisory Committees to identify concerns and develop a plan that incorporates the 3 E's of road safety "Education, Engineering and Enforcement". Residents can raise issues associated with nearby schools with City staff for inclusion in this process.

LIAISON WITH BUSINESSES AND INSTITUTIONS

Many neighbourhoods include not only residential dwellings but also commercial business and institutions. Sometimes, commercial and institutional traffic can be a problem on streets in the residential portion of a neighbourhood. In neighbourhoods in other communities where this has been the case, individuals and neighbourhood groups have worked with business and institutions to develop workable solutions to traffic problems. In many cases, businesses and institutions did not realize that traffic, which they generated was causing a problem in the neighbourhood. Even though residents may have complained among themselves or to City staff, residents had not directly contacted the businesses or institutions generating the traffic. Direct communication between residents, businesses and institutions is often the best way to draw attention to the traffic issues and subsequently identify and implement solutions agreeable to all parties. It may be advisable to include City staff in discussions and initial contacts to provide additional information.

4 TRAFFIC MANAGEMENT MEASURES

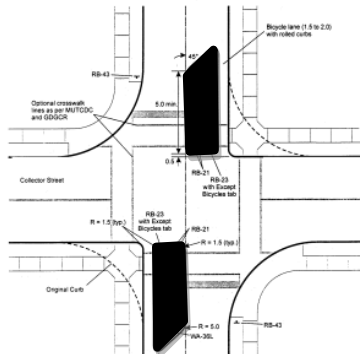
This section identifies traffic management measures, including those referred to as traffic calming measures, which are appropriate for use in Vernon, and ones which are not. For those

measures which are appropriate for use in Vernon, information is provided regarding the conditions in which each measure should be used.

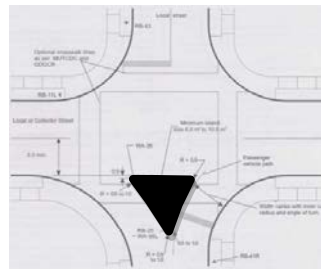
Neighbourhood traffic management projects may include only one of the measures listed or a selection of several of them. The measure selected depends on the issue that needs addressing.

4.1 ROUTE MANAGEMENT

- Directional closures and right-in/right-out islands should only be used at intersections with major roads. At other locations, there is typically not sufficient traffic nor adequate on-street activity to deter motorists from circumventing the devices.

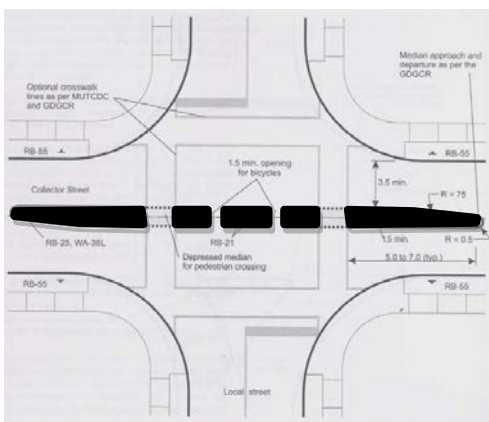


Directional Closure



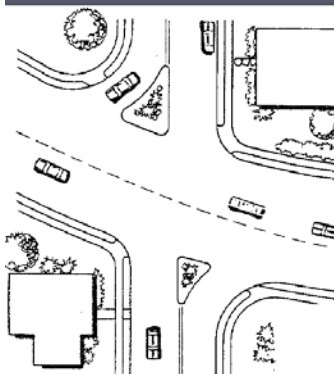
Right in / right out island

- Raised median islands through intersections can be used to obstruct through movements and left turns to and from local streets, and in extreme conditions may be considered on low-volume collector roads with less than approximately 1,500 vehicles per day.



Raised median island

- Intersection channellization - which describes the use of channelization to obstruct specific movements - can be used on all roads.

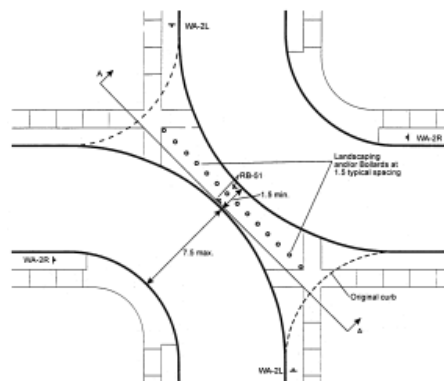


Intersection Channelization

- Diverters will only be used at intersections of two local streets, and will not be used on transit routes or primary emergency routes. Diverters will be designed to be passable by pedestrians, cyclists and emergency vehicles with minimum delay.



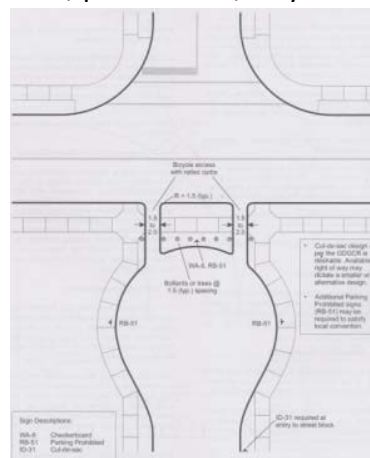
Diverters



- Full closures will only be considered as the very last resort, as they restrict access for residents and others travelling to and from locations within a neighbourhood. Less restrictive measures should be considered first, as in many cases these can achieve the same results, without the severe impacts associated with a full closure. If a full closure is to be implemented, through access should be maintained for emergency vehicles, pedestrians, bicycles and transit vehicles.



Full Closures



4.2 VEHICLE PATH MANAGEMENT

The principle behind managing the path of vehicles is to slow the vehicles down such that these residential streets become a calmed shared environment. Rather than having separate areas of street designated for specific users i.e. motorised vehicles get the asphalt in a straight line and pedestrians get the sidewalks on the edges, the street is treated as one shared area. They are identified by marked and signed entry treatments indicating to drivers that this is a slow vehicle environment. By the strategic placement of parked vehicles, street furniture or trees (which can also be for surface water treatment) the street changes from being a straight through corridor designed to promote vehicle speeds to one where the vehicles have to reduce their speed and share the environment with the other users and neighbours. These often include areas used by children playing in summer and for snow storage in winter.



Vehicle Path Management

In Vernon there are a number of residential streets that do not currently have sidewalks or separated pedestrian facilities, but do have an asphalt surface. Residents concerned that they might hold up the passing traffic often park as far off the travel lanes as possible, sometimes, completely in the boulevard. This has the effect of giving the traffic no reason to slow down. This then leads to residents only occupying the street for the least amount of time possible. Should suitable locations in Vernon see inappropriate vehicle speeds then they could, by the implementation of an entry treatment and signs, and strategically placed parking, create a new vehicle path, marked out in road paint at a relatively low cost. Should a more permanent means altering the vehicle path be desired then chicanes can be installed as seen below in Ottawa.



Cambridge Street (northern section), Ottawa – Google Street View

4.3 TECHNOLOGY AND SIGNAGE

Regulatory signs are generally not effective as speed reduction measures, but can be effective education tools.

- Stop, Yield and Maximum Speed signs are not be used in the City as traffic calming measures. Stop, Yield and Maximum Speed signs are intended only for traffic control purposes. The unwarranted use of these signs has been shown to have little effect on vehicles speeds and volumes, and results in increased non-compliance with traffic regulations. Not only is the original problem not addressed, but it increases local residential expectations and creates a new enforcement problem.
- Turn prohibitions, through movement prohibitions and one-way signage should only be used where it is not desirable to implement physical devices to obstruct these movements. Use of signage without accompanying obstructions can create an enforcement problem, and can be costly in terms of police resources.

4.4 HORIZONTAL MEASURES

Horizontal measures can create a visual or actual reduction of the travel lanes for traffic. The extreme reductions require a motorist to steer around them. Devices which result in minimal deflection of a vehicle path, such as curb extensions and median islands, can be used on all roads. Devices which require significant deflection, such as chicanes, will only be used on local streets.

- Curb extensions can be used on all roads, the width of the opening between opposing curb extensions can be as narrow as 6.0 metres, depending on road classification and site-specific geometric conditions. On major roads and on collector roads with more than approximately 2,500 vehicles per day, the width of the travel lane adjacent to a curb extension should be at least 3.2 metres, and should be 4.3 metres where cyclists share the travel lane with traffic. Curb extensions can be used at intersections and at mid-block locations, and can be used in combination with median islands.



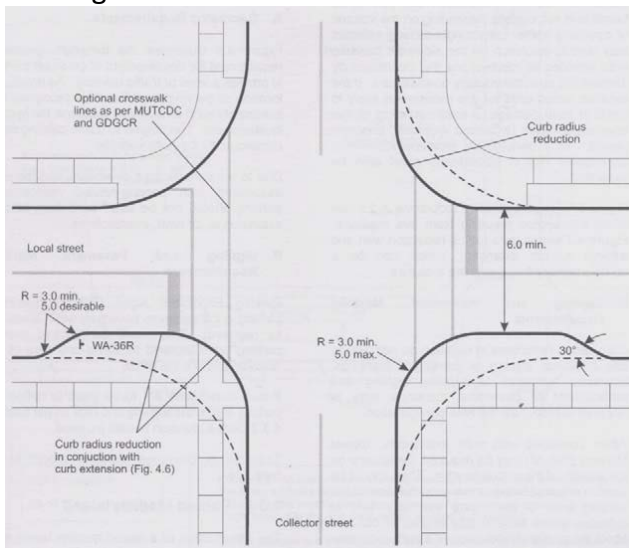
Curb Extension

- Median islands can be used on all roads where there is sufficient road width to incorporate an island at least 1.5 metres wide. Median islands can be used at intersections and at mid-block locations, and can be used in combination with curb extensions.

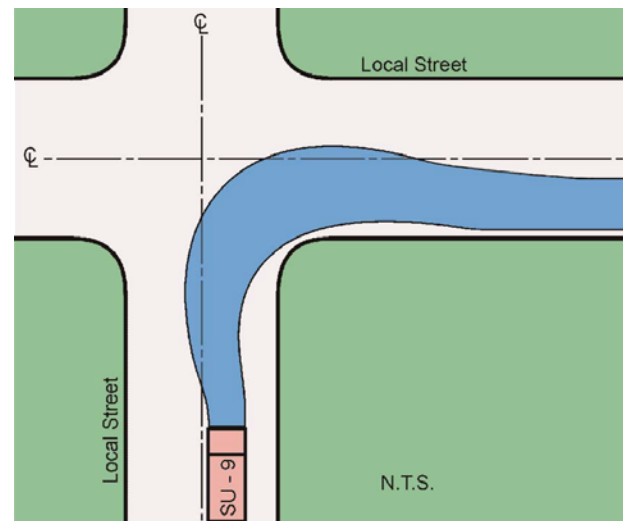


Median Islands

- Corner radii should be as small as possible, in order to maximize safety for pedestrians. Small radii reduce the crossing distance for pedestrians, increase the visibility of pedestrians to motorists, and reduce the speeds of turning vehicles, thereby reducing the likelihood and consequences of a collision with a pedestrian. corner radii should be designed only to accommodate a single-unit truck, except in locations where there are frequently larger trucks turning. At intersections where one or both roads is a local street, it is acceptable for single-unit trucks to cross to the left side of a local street to complete a turn. This means that smaller corner radii can be used. intersections utilized by transit and other larger vehicles must accommodate those vehicle turning radii and may utilize additional drop curbing and road marking or other measures in between the two to impede passenger vehicles.



Corner radii



- Chicanes should be used only on local streets with traffic volumes of at least 1,000 vehicles per day, and with a peak period directional split within the range of 50/50 to 65/35. At lower traffic volumes or more lopsided directional splits, the effects of a one-lane chicane in deterring short-cutting traffic and slowing vehicles are reduced.



Chicane

- Parking is an inexpensive and effective form of traffic calming, and consequently on-street parking should not be prohibited on local streets 7 metres or greater in width and where width permits on low-volume collector roads. On other collector roads and on major roads, on-street parking should only be permitted where there is a minimum of 2.4 metres available for on-street parking, plus a minimum of 3.2 metres for the adjacent travel lane.

4.5 VERTICAL MEASURES

Vertical measures are those which create vertical motion in a vehicle when it is driven over. Vertical measures will only be considered on local streets in the Historic Downtown Core.

- Raised crosswalks should be used only on local streets in the downtown core at intersections and in midblock locations. Raised crosswalks can be combined with horizontal deflection measures such as curb extensions and/or median islands.



Raised Crosswalk

Photo Source: Corporation of Delta, Tim Murphy

- Sidewalk extensions should be used only on local streets. Sidewalk extensions can be used at intersections with other local streets, collector roads or major roads.

- Rumble strips are effective when used to alert motorists to potentially hazardous situations. Experience has shown that rumble strips have no effect on vehicle speeds or volumes, however, the noise and vibration created by rumble strips is significant. Consequently, rumble strips will not be used as a neighbourhood traffic management measure.
- Raised / Plateau intersections have been used to raise the profile of an intersection aimed at benefitting pedestrians crossing or as a downtown gateway features. However, when downtown they need to be transit and emergency services friendly, so the effect on vehicle speeds and traffic volumes can be minor at best. Given the high cost of retrofitting raised intersections on existing roadways, raised intersections will not be used in the downtown core on local roads as a speed reducing measure, but as a pedestrian feature. Raised / plateau intersections will not be used outside the downtown core, or on any collector or arterial roads. And will not be installed without consultation with the emergency services.



Raised / Plateaux Intersection

Photo Source: Corporation of Delta, Tim Murphy

Table 4.1 Traffic Management Measures for Use in Vernon

	Road Classification				Other routes	
	Arterial	Collector	Low Volume Collector	Local	Emergency Route	Transit Route
Route Management						
• Raised through median	X	X	✓	✓	X	X
• Right in / right out island	X	X	✓	✓	X	X
• Intersection						
• Channelisation	✓	✓	✓	✓	✓	✓
• Diverter	X	X	X	✓	X	X
• Directional closure	X	X	X	✓	X	X
• Full Closure	X	X	X	✓	X	X

	Road Classification				Other routes	
	Arterial	Collector	Low Volume Collector	Local	Emergency Route	Transit Route
Vehicle Path Management <ul style="list-style-type: none"> • Gateway / Entry surface treatment • Gateway / Entry signage • Parking to create non linear vehicle path 	X ✓*	X ✓*	X ✓*	✓ ✓*	X ✓*	X ✓*
Technology and Signage <ul style="list-style-type: none"> • School/ playground zone/area signs • Vehicle Activated Signs (VAS) showing speed limit • Prohibited turns 	✓ X X	✓ ✓ X	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ X	✓ ✓ X
Horizontal Measures <ul style="list-style-type: none"> • Chicane • Curb extensions • Curb radius reduction • On street parking • Raised median island 	X ✓ ✓ ✓* ✓	X ✓ ✓ ✓* ✓	X ✓ ✓ ✓* ✓	✓ ✓ ✓ ✓* ✓	X ✓ X ✓* ✓	X ✓ X ✓* ✓
Vertical Measures <ul style="list-style-type: none"> • Raised crosswalk • Raised intersection • Speed hump • Rumble strips 	X X X X	X X X X	X X X X	✓** ✓** X X	✓** ✓** X X	✓** ✓** X X

✓* = Subject to road width and purpose of road design

✓** = Historic Downtown core only on local roads, after consultation with emergency services.

GLOSSARY

Access	Access refers to modes of transportation which are permitted to enter or exit an area or pass a specific location (such as with a median island incorporating gaps to permit bicycle access), or specific movements which are permitted at an intersection (such as right turn access only).
Channelization	Separation of vehicle movements at an intersection into defined paths through the use of physical roadway features and signs, most often at an island.
Chicane	A series of curb extensions on alternating sides of a roadway which narrow

	the roadway and require drivers to yield to oncoming traffic and steer from one side of the roadway to the other to travel through the chicane.
Conflict	A collision or near-collision which requires evasive action on the part of one or more persons. Conflicts may occur between two motorists, between a motorist and cyclist, between a motorist and pedestrian, and between a cyclist and pedestrian.
Corner radius	Construction of an intersection corner using a smaller radius, reduction typically less than 8m.
Curb Extension	The curb is extended into the travel lane to either provide a shorter crossing distance and place pedestrians in full view of approaching traffic or to narrow the travel lanes as part of horizontal traffic measures.
Deflection	A change in the course or path of a vehicle as the result of a physical feature of a roadway.
Device	A physical feature of the roadway, constructed for the purpose of affecting the movement of motor vehicles, bicycles and/or pedestrians.
Directional closure	A curb extension or vertical barrier extending to approximately the centreline of a roadway, effectively obstructing and preventing traffic movement in one direction.
Divert	To redirect traffic, typically through the use of physical obstructions in the roadway and/or regulatory signs.
Drop curb	A section of a concrete curb in which the height of the vertical face has been reduced. Typically at pedestrian crossings or driveways.
Flat Top Plateau(x)	A vertical traffic measure that has ramps up to and down from a flat top plateau that enables a bus / large truck to have both front and back wheels on the flat area at the same time. Used for raised pedestrian / cycle crossings or as transit friendly calming.
Full closure	A barrier extending across the entire width of a roadway, which obstructs and prevents all motor vehicle traffic from continuing along the road.
Geometry	When referring to roadway design, geometry refers to the physical characteristics and dimensions of parts of the road.
Guideline	A recommended practice, method or value for a specific design feature, but not a requirement.
Horizontal Traffic Measures	Measures that reduce the width of the travel lanes to create a pinch point or chicane.
Intersection channelization	Raised islands located in an intersection, used to obstruct specific traffic movements and physically direct traffic through an intersection.
Jurisdiction	An agency or authority with responsibility and control for specific actions within a defined area or certain road networks.
Landscaping	Plants, shrubs, trees and other vegetation.
Major road	A road for which the primary function is to provide for vehicle movement. Typically, major roads are multi-lane roads.
Measure	A physical device, regulation or action which affects the movement or speed

	of motor vehicles, bicycles and/or pedestrians.
Median island	See raised median island
Mode	A means of transportation. Examples of modes of transportation include automobile travel, transit, cycling and walking.
Neighbourhood	A cohesive area defined by geographic features, the street network or socio-economic characteristics. With respect to neighbourhood traffic management, neighbourhood boundaries are often defined by the collector or arterial road network and geographic barriers.
Parking restriction	Prevents vehicles from being parked in specific locations, at specific times, or for specific types of vehicles.
Plan	A formulated and sufficiently detailed description of how an objective or numbers of objectives are to be accomplished. A neighbourhood traffic management plan typically describes measures to be used, where they are to be located, in what order and at what times they will be implemented, and how the costs of the measures will be funded.
Raised crosswalk	A marked pedestrian crosswalk at an intersection or mid-block location constructed at a higher elevation, normally the top of the curb, than the adjacent roadway on a flat top plateau.
Raised intersection	An intersection - including crosswalks - constructed at a higher elevation, normally the top of the curb, than the adjacent roads.
Raised median	A raised island located on or near the centreline of a two-way road.
Raised median through intersection	A raised island located on or near the centreline of a two-way road, extending through an intersection, which prevents left turns and through movements to and from the intersecting roadway.
Regulation	A prescribed rule, supported by legislation.
Retrofit	The reconstruction of a road or other transportation facility with physical changes from what currently exists.
Right-in/right-out	A raised triangular island at an intersection which obstructs left Island turns and through movements to and from the intersecting street or driveway.
Roll-over curb	A concrete curb in which the face is sloped or curved away from the vertical, which is easily mounted by vehicles.
Rumble strips	Raised bars or grooves closely spaced at regular intervals on the roadway that create both noise and vibration.
Self-enforcing	A measure which does not require RCMP enforcement in order to be effective.
Short-cutting	Traffic which is travelling through a neighbourhood to avoid using the arterial road, or to make use of a more direct route.
Sidewalk extension	A sidewalk continued across a local street intersection, creating an appearance similar to a driveway.
Signalized	An intersection at which traffic signals have been installed, to control vehicle movements on all approaches, or to stop traffic so that pedestrians may cross.
Speed table /	A raised area of a road, which deflects both the wheels and chassis of a

plateau(x)	traversing vehicle.
85 percentile Speed (85%ile)	The speed at which 85 percent of traffic travels at or below on that road. 15 Percent of traffic on that road exceeds the 85 percentile speed.
Stakeholder	An individual or organization with an interest in transportation issues in a neighbourhood or specific location e.g. residents associations, chamber of commerce, BC Transit, school Parent Advisory Committees.
Standard	A value for a specific design feature, which practice or theory has shown to be appropriate where the prevailing circumstances are normal, and where no unusual constraints influence the design.
Traffic calming	The combination of measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized users.
Turn prohibition	A regulation prohibiting a left turn or right turn at an intersection.
Vertical Traffic Measures	Measures that alter the height of the travel lane surface e.g. for raised intersections & crosswalks.
Volume	Traffic volume is a measure of the number of vehicles on a section of road or make a particular movement during a specified time period. Most often, traffic volumes are indicated as vehicles per hour during the peak hour or vehicles per 24-hour period.

