

NEIGHBOURHOOD TRAFFIC MANAGEMENT PROCEDURES

CITY OF CAMPBELL RIVER



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1.0 Introduction

Local residential roads are multi-purpose roads that should be designed to balance the needs of pedestrians, cyclists and vehicles. On most roads, these uses coexist and people feel safe walking, cycling and driving on local roads. On some roads, the volume or the speed of traffic can detract from the livability of a neighbourhood and the implementation of traffic calming can help mitigate this.

Traffic calming is the combination of mainly physical measures that mitigate the negative effects of motor vehicle use by altering driver behaviour and improving conditions for non-motorized street users. They include measures such as vertical deflection, horizontal deflection, obstructions and signage. Some examples are speed humps, traffic circles and diverters.

Additional information may be found in the “Canadian Guide to Neighbourhood Traffic Calming,” published by TAC (Transportation Association of Canada) and ITE (Institute of Traffic Engineers). This policy is based on this guide.

2.0 Goals of Traffic Calming

Residential local roads should carry primarily local traffic and should allow for safe and convenient passage for pedestrians and cyclists. Traffic calming generally aims to achieve one of the four goals as detailed below.

Reduce Vehicular Speeds: Excessive vehicle speed creates a safety concern, as it doesn't allow drivers enough time to stop for a child at a crosswalk or a cyclist on the road. Speeds which are appropriate on arterial roads are often excessive on a local road, even though they have the same posted speed limit. High speeds detract from the livability of a neighbourhood and increase the risk to pedestrians and cyclists.

Discourage “Through” Traffic: Some neighbourhoods become “short-cuts” where non-local traffic uses local roads instead of collector or arterial roads and cuts through the area. This can lead to excessive speeds, noise, pollution, congestion and decrease the quality of living of residents who live on the street.

Minimize Conflicts Between Street Users: Local roads are meant to be shared between pedestrians, cyclists, motorists and others. Minimizing conflict between the different groups increases safety for all road users and encourages walking and cycling.

Improve the Neighbourhood Environment: By reducing vehicle speeds, lowering traffic volumes and decreasing conflict, a neighbourhood becomes a more pleasant place to live. This makes for healthier neighbourhoods and more livable communities.

In short, traffic calming aims to increase the safety and livability of a neighbourhood and can help promote “greener,” alternate modes of travel.

3.0 Principles of Traffic Calming

The following principles of traffic calming are meant to provide overall direction and guidance to the proper application of traffic calming measures.

Identify the actual problem: It is important to identify the actual problem, and to differentiate it from a perceived problem. Only when the true problem is identified can appropriate solutions be found. The actual problem is found by collecting data and by consulting with local residents who are often very familiar with traffic patterns in their area.

Quantify the problem: It is necessary to quantify the problem to determine the best solution. Does the problem exist all day or only during certain times of the year, or in certain directions? Data collection is necessary to ensure an accurate problem statement.

Consider improvements to the arterial road network: Traffic problems in neighbourhoods often result because the arterial network is congested. Most drivers short-cut through a neighbourhood for a reason, and that reason is often congestion on nearby arterial roads. Improving flow on arterial roads will often improve traffic conditions in neighbourhoods.

Apply traffic calming measures on an area-wide basis: To avoid moving the problem to another street or another neighbourhood, a defined area should be studied and reviewed. This area is usually bounded by arterials or geographic landmarks such as rivers or ravines.

Avoid restricting access and egress: Generally residents and businesses are more supportive of traffic calming measures that maintain their access into and out of a neighbourhood. Any diversionary measure should only be used as a last resort when all other measures have failed.

Use self-enforcing measures: Self-enforcing measures such as speed humps, diverters or traffic circles are much more effective than measures which require police enforcement such as speed limit signs or turn prohibition signs.

Do not impede non-motorized modes: The purpose of traffic calming is to calm motor vehicle traffic while improving conditions for other modes, such as pedestrians and cyclists. As such, traffic calming should be directed at vehicles, and should accommodate non-motorized modes.

Consider all services: Transit, emergency vehicles, garbage trucks and snow plows should be considered in the design of any traffic calming. Service providers often have concerns as to how their vehicles can safely and efficiently navigate through a traffic calmed area.

Monitor and follow-up: It is valuable to monitor the traffic calmed area to determine the effect of the traffic calming. It is also possible to implement temporary traffic calming measures and to observe their effectiveness before making them permanent.

Adhering to these principles will help create a successful traffic calming program with optimal results for all involved.

4.0 Traffic Calming Process

The following process should be employed for all traffic calming requests. This ensures a consistent approach. There are four main stages to a traffic calming project:

1. Initiate the study
2. Identify problems
3. Develop a plan
4. Implement the plan

The following is a more in-depth review of each stage.

4.1 Initiate the study

Activities undertaken at the beginning of a traffic calming study can determine whether or not the resulting plan will be successful.

Identify the need for a traffic calming study. This can include requests from residents, or ongoing monitoring from the City. Some preliminary measure of traffic volume and speed should be completed at this time.

Define the study scope and study area. Determine the limits of the study area by looking at predominant travel patterns and arterial roads or dividing geographic features.

Depending on the extent and nature of the traffic calming study, decide if the traffic calming study can be done in house with staff expertise or if a consultant should be hired. If a consultant is to be hired, City staff should develop a terms of reference.

If a consultant is hired, hold an initial meeting with the consultant and confirm scope of work, work program, schedule and budget. A study initiation meeting should be held immediately after project award with the selected consultant, and

municipal staff to ensure all parties are satisfied with and aware of the issues and scope of work.

Hold the first open house. Invitations to the open house should be sent directly to homes in the study area. The invitation should also include a page for residents to return with their comments. At the open house staff should review the traffic calming process and show some traffic calming measures. Solicit comments from the neighbourhood in terms of what they perceive the problem to be. An Advisory Committee comprising community representatives should be established to effectively involve the community. The Advisory Committee should include community representatives from different streets, with different perspectives (walkers, cyclists, drivers, physically challenged etc). The open house is another good indicator of public interest and support.

4.2 Identify problems

At the outset of a traffic calming study, it is important to clearly identify the magnitude and nature of traffic and transportation problems to be addressed.

Collect data. Data should be collected to identify, confirm and quantify the extent of any problems. This information will be used to identify appropriate traffic calming measures, and to establish “before” conditions for subsequent monitoring.

Quantify problems. Based on an analysis of the collected data, quantify the magnitude of reported problems, the duration, the direction and route of traffic and other key characteristics. This will aid discussion for finding the “best” solution and will justify the improvements.

Confirm the identified problems. Ensure that the descriptions of problems are consistent with the community’s perceptions. The results of the technical data collection and the quantification of problems should be discussed with the Advisory Committee to ensure that they agree with the problems.

4.3 Develop a Plan

Once problems have been identified and quantified, the next stage of the study involves developing the traffic calming plan.

Examine arterial streets. A cursory review of arterial network performance should be conducted, and any identified problems dealt with separately. If arterial performance is poor, improving it will improve conditions on the local roads.

Select potential traffic calming measures. Consider safety, access, cost and traffic conditions. Hold a workshop with the Advisory Committee to develop solutions. With the Advisory Committee, come up with one plan.

Present the plan to transit, emergency service providers and maintenance providers to solicit their input. Revise as necessary to satisfy all parties, including the Advisory Committee.

Measure community support for the traffic calming plan via a second open house. Residents should be asked if they support the plan as presented, with a “Yes,” “No,” or “Neutral” vote. If necessary, modify the plan to address additional problems and issues raised by the community.

Develop an implementation strategy. Prepare cost estimates and identify priorities, timing and staging of implementation.

Prepare final report and submit the final plan for approval to Council.

4.4 Implement the Plan

After the traffic calming plan has been approved, the final stage involves a feasibility check, design, implementation and monitoring. At this point in the process, municipal staff typically assume the lead.

Prepare designs. Construction drawings should be prepared based on technical guidelines found in the “Canadian Guide to Neighbourhood Traffic Calming,” 1998 by TAC / ITE. City staff or the consultant if one was hired will prepare the terms of reference for detailed design by a consultant.

Implement measures. The design consultant will budget and tender the traffic calming measures. The contractor will construct the traffic calming measures.

Monitor conditions. Collect “after” traffic data to determine if the measures are functioning as intended. If the traffic calming measures were temporary, collect data after installation, review in house or with the hired consultant, and hold a third open house. If the traffic calming measures were permanent, collect data based on complaints or if necessary.

5.0 Traffic Calming Measures

There are a variety of different traffic calming measures which may be used to reduce vehicles volumes, lower speeds, decrease conflicts and increase aesthetics. They can be grouped into four categories:

1. Vertical Deflection – Traffic calming measures which cause a vertical deflection of the vehicle generally reduces vehicle speeds and may also decrease volume. Examples are raised crosswalks, speed bumps and raised intersections.
2. Horizontal Deflection – Traffic calming measures which cause a horizontal deflection of vehicles generally discourage short-cutting of vehicles. Examples are chicanes, curb extensions and traffic circles.
3. Obstruction – Traffic calming measures which obstruct specific vehicle movements are typically used at intersections. They discourage or eliminate short-cutting or “through” traffic. Examples are partial closures, diverters and intersection channelization.
4. Signing – Installing signage such as stop signs, reduced speed signs or turn restriction signs are generally not an effective traffic calming measure, but are discussed in this policy.

5.1 Raised Crosswalk

A raised crosswalk is a marked pedestrian crosswalk at an intersection or mid-block 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.



Photo: Melissa Heidema

5.2 Raised Intersection

A raised intersection is an intersection, including crosswalks, constructed at a higher elevation than the adjacent roadways. The purpose of a raised intersection is to reduce vehicle speeds, better define crosswalk areas and reduce pedestrian – vehicle conflicts.



Photo: Livable Streets Network

5.3 Speed Humps

A speed hump is a raised area of roadway, which deflects both the wheels and the frame of the traversing vehicle. The primary purpose of a speed hump is to reduce vehicle speeds.



Photo: Richard Drdul

5.4 Textured Crosswalk

A textured crosswalk is a crosswalk incorporating a textured and/or patterned surface which contrasts with the adjacent roadway. The purpose is to better define the crossing location for pedestrians and to reduce pedestrian – vehicle conflict.



Photo: Melissa Heidema

5.5 Curb Bulges

Curb bulges are horizontal intrusions of the curb into the roadway resulting in a narrower section of roadway. The purpose of a curb extension is to reduce crossing distances for pedestrians, increase pedestrian visibility and prevent parking close to an intersection. The narrowing of the roadway may also reduce vehicle speeds.



Photo: Melissa Heidema

5.6 Curb Radius Reduction

A curb radius reduction is the reconstruction of an intersection corner with a smaller radius, usually in the 3.0 to 5.0m range. The purpose of a reduced curb radius is to slow right turning vehicles, reduce crossing distances for pedestrians and improve pedestrian visibility.



Photo: Richard Drdul

5.7 On Street Parking

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



Photo: Richard Drdul

5.8 Raised Median Island

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. If required, bicycle lanes can be included to prevent motorists from intruding into the path of cyclists. The purpose of a median island is to reduce vehicle speeds and to give a pedestrian refuge when crossing the road.



Photo: Richard Drdul

5.9 Traffic Circle

A traffic circle is a raised island located in the centre of an intersection, which requires vehicles to travel through the intersection in a counter-clockwise direction around the island. The turning path for left turning buses, long service vehicles and some emergency vehicles should be a factor in design. Traffic circles differ from roundabouts in that roundabouts are larger, have raised median islands on all approaches and may have more than one lane. When driving through a traffic circle, a motorist should yield to vehicles already in the intersection.



Photo: Richard Drdul

Traffic circles also provide the opportunity for landscaping. Landscaping can be “hard” or “soft.” The City’s Parks, Recreation and Culture Department has expressed a preference for hard landscaping, and the use of stamped concrete, coloured concrete or river rocks, as opposed to greenery.

5.10 Gateway Median

A gateway median is a treatment that indicates to motorists that they are leaving an arterial street and entering a residential neighbourhood. They can be physical roadway features such as landscaped islands, or coloured-textured pavement and they can include public artwork. The purpose is to send visual cues to drivers to alert them that they are entering a residential neighbourhood.



Photo: City of Bellevue, WA

5.11 Partial Closure

A partial closure is a curb extension or vertical barrier extending to approximately the centerline of a roadway, effectively obstructing (prohibiting) one direction of traffic. Bicycles should be permitted to travel through a directional closure in both directions. Directional closures are very successful at obstructing short cutting traffic.



Photo: Richard Drdul

5.12 Diagonal Diverter

A diagonal diverter is a raised barrier placed diagonally across an intersection that forces traffic to turn and prevents traffic from proceeding straight through the intersection. Diverters can incorporate gaps for pedestrians, wheelchairs and bicycles and can be mountable by emergency vehicles.



5.13 Intersection Channelization

Intersection channelization is the use of raised island located in an intersection to obstruct specific traffic movements and physically direct traffic through an intersection. Intersection channelization can improve pedestrian crossing safety by reducing crossing distances and providing refuge areas. Bicycles should be permitted to make all movements, including those prohibited to motor vehicles.



Photo: Melissa Heidema

5.14 Raised Median Through an Intersection

A raised median through an intersection is an elevated median located on the centerline of a two-way roadway through an intersection, which prevents left turns and through movements to and from the intersecting roadways. It can create a refuge for pedestrians and cyclists.



Photo: Richard Drdul

5.15 Right-In / Right-Out Island

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 should be permitted to make the prohibited movements. Variations include right-in / all-out and all-in / right-out.



Photo: Richard Drdul

5.16 Traffic Calmed Neighbourhood Sign

The “Traffic Calmed Neighbourhood” sign, if installed in conjunction with traffic calming measures, can reinforce to drivers that this area is traffic calmed. However, signing on its own does not provide much benefit for traffic calming. As such, it is not recommended to use signing alone to calm an area.



Photo: Richard Drdul

6.0 Measures Not Generally Recommended

While the following traffic calming measures are recognized in the “Canadian Guide to Neighbourhood Traffic Calming”, they are not recommended for use in Campbell River.

6.1 Chicane

A chicane is a series of curb extensions on alternating sides of the roadway, which narrow the roadway and require drivers to steer from one side of the roadway to the other to travel through the chicane. Typically, a series of at least three curb extensions is used. While one-lane chicanes have been successful at reducing vehicle volumes and vehicle speeds, they have higher maintenance costs, including snow clearing and street sweeping.

6.2 Rumble Strip

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. It is not a common traffic calming measure and creates additional noise for nearby residents.

6.3 Full Closure

A full closure is a barrier extending the entire width of a roadway, which obstructs all motor vehicle traffic movements from continuing along the roadway. They severely restrict resident access and may divert significant volumes to parallel streets. They should only be used as a last resort when other traffic calming measures have failed.

6.4 All-Way Stop Signs

The purpose of a stop sign is to indicate to drivers that they must stop their vehicles completely before entering the intersection area and must not proceed until it is safe to do so. Unwarranted and overused all-way stop signs create compliance problems, increase breaking / accelerating noise and increase speeds mid-block.

6.5 Other Signage

Except for the “Traffic Calmed Neighbourhood” detailed in 5.16, other signs are not recommended as a traffic calming measure. Examples are maximum speed signs, turn prohibited signs, one-way signs or through traffic prohibited signs. Without physical measures that restrict movements, signage is likely to be ignored, creating enforcement issues, and ultimately leading to a disrespect for all signs.

7.0 Budget and Implementation

Any traffic calming decision will come forward with a corresponding funding strategy for both the initial investment as well as the on-going maintenance.

Other municipalities were consulted to determine how traffic calming projects are funded elsewhere. The majority of municipalities in British Columbia fund traffic calming through general revenue. Some municipalities have unsuccessfully attempted to levy traffic calming costs through local improvement fees or local service areas; however, residents in a neighbourhood are often not responsible for traffic patterns in their neighbourhood and they perceive it unfair to be made to pay to improve the streets. The basic rationale for City-wide funded traffic

calming is further supported by the fact that most other road and transportation improvements are typically funded in this manner.

As City funding is limited, a means of prioritizing requests is needed. This prioritizing method includes data such as speed, volume, collisions, presence of nearby schools, presence of pedestrian generators, safe routes to school program, bicycle routes, transit routes and pedestrian facilities. See Appendix A for the prioritizing method.

It is also possible that a neighbourhood group comes forward willing to partially fund traffic calming in their neighbourhood. If this is the case, the implementation could be accelerated.

For each project, the Insurance Corporation of BC (ICBC) should be contacted to determine if there is any funding available. ICBC will typically fund a road improvement project if it can be proven that the improvement will result in a decrease in collisions, and consequently a decrease in ICBC claims. Since traffic calming usually involves low volume residential roads with existing low number of collisions, this method of funding will not be common.

8.0 Conclusion

In conclusion, neighbourhood traffic management has the potential to increase livability, decrease negative aspects of the car, promote walking and cycling, and improve the neighbourhood environment. The appropriate steps need to be taken to ensure that the needs of all user groups are identified and addressed. By following these procedures, the City will ensure that all traffic calming requests are dealt with in a fair and equitable manner.

This set of Neighbourhood Traffic Management Procedures is meant to be a living document that can be changed and adapted to different situations and standards as necessary.

Appendix A: Prioritizing Method

The following method prioritizes traffic calming requests. As City funding is limited, this prioritizing method will determine which projects receive funding first.

Criteria	Points	Basis for Point Assignment
Speed	0 to 50	85 th percentile speed on the primary road. 5 points for every kph that the 85 th percentile speed is over the posted speed limit, to be confirmed by Speed Watch.
Volume	0 to 50	Average daily traffic volumes (AADT). 1 point for every 100 vehicles based on traffic count data.
Collisions	0 to 25	Average number of collisions in the past 3 years, based on ICBC reports. 5 points will be allocated for each collision in the average year.
School zone	0 to 10	5 points for each school zone (usually reduced to 30km/hr) along the primary road
Presence of pedestrian generators	0 to 15	5 points assigned for each public facility (such as park, community centre, high school) that generates a significant number of pedestrians on the primary road
Safe routes to school program	0 to 5	5 points assigned for a safe route to school on the primary road
Bicycle routes	0 to 5	5 points assigned if the primary road is a designated bicycle route
Transit routes	0 to 5	5 points if the primary street accommodates transit service
Pedestrian facilities	0 to 5	5 points assigned if there is no continuous sidewalk on at least one side of the primary road
Total possible points	170	