Traffic Calming Practices & Procedures For Existing Neighbourhoods

VISION ZERO
LONDON ROAD SAFETY STRATEGY

2019
ACKNOWLEDGEMENTS

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2. Town of Oakville, ON, Canada
3. City of Toronto, ON, Canada
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5. City of Surrey, BC, Canada
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1. INTRODUCTION

1.1 Background

The City of London is responsible for ensuring roadways serve the needs of all transportation users such as cars, transit, pedestrians (including those with accessibility needs), cyclists, emergency vehicles and snow removal equipment. When the rules of the road are not followed, residents may no longer feel safe walking or riding their bikes on the street. In these cases, traffic calming measures may be needed to restore the street to its intended function in the neighbourhood.

Every year the City receives numerous complaints or concerns from residents regarding speeding, traffic volumes and/or cut through traffic in residential areas. The Transportation Planning & Design Division responds by investigating the need for neighbourhood traffic calming measures to potentially mitigate these unfavourable conditions.

While some residents perceive they already have the solutions to traffic issues in their neighbourhood, studies across North America have shown that using the wrong tool to address a traffic issue does not solve the problem, but may actually result in creating additional safety issues in the area. This document defines what is traffic calming and clarifies what is not traffic calming. The goal of introducing traffic calming is to create safe and attractive streets, promote walking, cycling and transit use, and improve the quality of life in residential neighbourhoods.

Temporary traffic calming measures are not part of this document. The City installs temporary traffic calming measures such as centerline speed reduction markers and rubber speed cushions on residential streets adjacent to major construction projects in order to reduce potential speed of diverted traffic. These temporary traffic calming measures are removed at the end of construction season before winter.

Traffic calming is a contentious subject and should be dealt with in a clear, concise and transparent process that will meet the needs and expectations of the community. This document outlines how investigations into traffic calming measures should be initiated and implemented based on the experience gained by the City of London and other North American municipalities over the last decade.

1.2 Vision Zero

Vision Zero promotes a culture shift and questions current attitudes toward road fatalities and injuries. Vision Zero states that no fatalities and serious injuries are acceptable. Achieving this aspirational goal requires shared responsibilities from road operators and users. City Council adopted the following Vision Zero Principles:
City of London – Traffic Calming Program

- No loss of life is acceptable
- Traffic fatalities and serious injuries are preventable
- We all make mistakes
- We are all physically vulnerable when involved in motor vehicle collisions
- Eliminating fatalities and serious injuries is a shared responsibility between road users and those who design and operate roads

The speed limit in School Zones has been reduced from 50 km/h to 40 km/h on all local and primary/secondary collector roads where schools are located. Reducing the speed limit at schools should improve safety for pedestrians and cyclists, and thus respond to Vision Zero Principles. Safer routes to and from school also encourages a more active lifestyle by addressing some of the safety concerns that parents and caregivers have with respect to students walking/cycling to school. Traffic calming measures in School Zones are not subject to the traffic calming process identified in this document. The City can install traffic calming measures in School Zones without the petition and survey requirements identified in this document.

1.3 Traffic Calming Purpose & Goals

The overall purpose of this document is to provide a comprehensive process that addresses local neighbourhood traffic issues in London. The program is intended to restore City streets, with an identified problem, to their intended function through applicable traffic calming measures, and hence, preserve and enhance the quality of London communities.

The specific goals of this traffic calming practices and procedures document are to develop an integrated set of objectives and procedures that will combine to form a set of overall working guidelines that will:

- Educate residents about traffic calming so they can make more informed decisions and also understand the rationale behind the City’s decision making process
- Provide a procedure that City officials and the general public are confident is an effective and fair tool in evaluating speeding and/or traffic volume problems
- Provide a standard format for dealing in a consistent manner with complaints regarding speeding and traffic safety concerns
- Create efficiencies in responding to resident traffic concerns
- Educate residents on how to create a safe and a pleasant roadway environment for residents, motorists, cyclists and pedestrians
- Encourage public involvement in the traffic calming activities
City of London – Traffic Calming Program

- Educate residents on pedestrian and cyclist safety

This program will also provide the guideline, procedure and criteria for the initiation, investigation and implementation of traffic calming measures within existing residential neighbourhoods. The practices and procedures will ensure safety concerns related to speeding and excessive volume are handled in a fair, transparent and efficient manner.

1.4 Eligible Streets

The London Plan introduced new street classification system. Secondary streets and Primary Collectors are referred to as Neighbourhood Connectors and Local Streets are now referred to as Neighbourhood Streets. Guidelines included in this program will be applied to as Neighbourhood Connectors and Neighbourhood Streets within residential neighbourhoods.

The practices and procedures do not apply to arterial roadways nor do they apply to anticipated future problems. This program only applies to identify operational issues within existing residential areas. While similar traffic related issues may exist on arterial roadways, the primary function of an arterial road is to move traffic efficiently to reduce the amount of traffic and speeds on lower classification streets. Therefore, traffic calming measures that may be appropriate for use on non-arterial roadways would not be suitable for use on arterial roadways.

1.5 What is Traffic Calming

Traffic calming, as defined by the Institute of Transportation Engineers (ITE) Subcommittee on Traffic Calming, 1997 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."

According to the Canadian Guide to Neighbourhood Traffic Calming, prepared by the Institute of Transportation Engineers (ITE) and the Transportation Association of Canada (TAC), December 1998 and the Canadian Guide to Traffic Calming (Second Edition-February 2018:

“The purpose of traffic calming is to restore streets to their intended function.”

The primary purpose of traffic calming is to reduce high traffic speeds within residential neighbourhoods and thus improving safety for all road users, especially active modes, and area residents.
1.6 What is Not Traffic Calming

Over the past 30 years, there has been a significant amount of knowledge gained through the implementation of successful projects to determine which traffic calming measures work and which traffic calming measures are not effective. All-way stop signs, children at play signs, posted speed signs, and rumble strips are all devices commonly mistaken for being traffic calming tools. Implementation of these devices to calm traffic is not recommended for the reasons listed below:

Unwarranted All-Way Stop Signs

- Results in higher speeds between stop signs, especially if drivers are frustrated by having to stop at a previous location with no pedestrians or vehicles
- Results in poor compliance with stop signs due to driver frustration, as low as 1% in some studies in the City of London
- Results in more frequent rear-end collisions caused by low percentage of motorists who actually do come to a complete stop
- Requires frequent police enforcement as some motorists’ compliance is low, which creates a pressure on enforcement resources and is ineffective in the long term
- Increases potential risk to pedestrians especially children and seniors crossing the intersection, since not all motorists approaching an intersection will stop
- Inconsistent application of all way stops can create motorists confusion, unexpected maneuvers and collisions

In light of the above, all-way stop signs should not be used as a tool to calm traffic. There are established criteria for all-way stop control based upon the numbers of pedestrians and vehicles sharing an intersection, the collision history and visibility. When these criteria are followed, risks are minimized and new safety concerns are not created. There have been numerous studies completed in North America which have validated all of the above findings.

‘Children at Play’ Sign

- ‘Children at Play’ signs can give parents a false sense of security since motorists often disregard these signs
- Children playing in the streets, while common place, is not condoned and prohibited in the Highway Traffic Act and the Traffic By-law
- Since children live on nearly every residential block, ‘Children at Play’ signs would need to be placed on every roadway
- Residential blocks with no signs might imply that no children live there, so it is acceptable to exceed the posted speed limit

Rumble Strip

A rumble strip is a raised pavement section that can be closely spaced along a roadway at regular intervals. Rumble strips are a road safety feature used to caution inattentive
motorists of potential danger. As the motorist travels over the rumble strips, the vehicle experiences both noise and vibration to alert the motorist.

They are typically installed along freeways and higher speed roadways to alert motorists that may begin to veer from the travel lane to the shoulder. Their purpose is to reduce the number of vehicles that depart the roadway; this is a common example of rumble strips used to enhance safety.

Rumble strips can also be installed across the travel lane itself when unusual conditions exist ahead. Rumble strips can be installed along the travel lanes of a higher speed roadway that contains an isolated all-way stop controlled intersection. A motorist may grow accustomed to traveling at a certain speed and otherwise may not expect to stop; the purpose of the rumble strip is to alert the driver.

Rumble strips should not be used as traffic calming measures. These measures become less effective over time as the motorists grow accustomed to them. Rumble strips also increase noise levels for nearby residents and commonly require additional maintenance.

1.7 Advantages and Disadvantages of Traffic Calming

Traffic calming, if used properly, will address identified operational traffic issues. It often also introduces some disadvantages to a residential neighbourhood that will impact area residents after the project is complete. Listed below are some of the advantages and disadvantages created or caused by traffic calming measures:

**Advantages**
- Reduced vehicle speeds
- Reduced traffic volumes
- Reduced number of cut through vehicles (motorists traversing a residential neighbourhood with no local destination)
- Improved neighborhood safety, especially for pedestrians and cyclists
- Reduced conflicts between roadway users
- Increase compliance with regulatory signs

**Disadvantages**
- May make it more difficult to get into and out of a neighbourhood every day
- Potential increase in emergency vehicle response time, although all traffic calming plans are reviewed to ensure there is no negative impact on emergency services
- May result in expensive solutions (time and resources)
- May shift or divert traffic onto other neighbouring streets
- Increased maintenance time and costs
- Adds visually unattractive warning signs to a residential area
May create dissention in neighbourhood with strong ‘for and against’ traffic calming opinions

1.8 Pedestrians & Traffic Calming

The principal purpose to reducing the speed of traffic in residential areas is to protect all vulnerable road users, such as pedestrians. Copied below is an excerpt from the Ontario Traffic Manual Book 15 - Pedestrian Crossing Treatments:

Pedestrians’ Rights and Responsibilities

Notwithstanding the distinction between controlled and uncontrolled crossings, the rights and responsibilities for pedestrians are recognized in the Highway Traffic Act:

1. In the absence of statutory provisions or bylaw, a pedestrian is not confined to a street crossing or intersection and is entitled to cross at any point, although greater care may then be required of him or her in crossing. However, pedestrians crossing the highway must look to ensure the crossing can be made safely or possibly be held responsible for any ensuing collision.

2. Pedestrians must exercise due care even when they are lawfully within a crossing and have right-of-way. It is not an absolute right and they must still exercise care to avoid a collision with a vehicle.

3. If there is a crosswalk at a signalized intersection, pedestrians have to walk within the crosswalk.

The above excerpt is stating whenever a pedestrian crosses a road they have a duty of care to themselves to cross when it is safe. It is important to remember under the Highway Traffic Act motor vehicles are only required to stop or yield to pedestrians at a controlled crossing such as traffic signals or pedestrian signals. At all uncontrolled crossings pedestrians must wait for a safe gap in traffic sufficient for them to cross before entering the road.

On January 1, 2016, Bill 31, the Transportation Statute Law Amendment Act (Making Ontario's Roads Safer) took effect. Bill 31 deals included amendment to the HTA to allow for new pedestrian crossing devices for low-speed and low-volume roads. The Province introduced three new pedestrian crossover (PXO) types. The new crossing treatment will allow pedestrians to cross with the right-of-way under a greater number of conditions than before, and will provide municipalities with additional solutions to increase pedestrian safety.

The new PXOs are a defined set of roadside signs and road pavement markings which form a new passive treatment to provide pedestrians the right-of-way when crossing the roadway where the treatment is installed.
When an area is studied for traffic calming, pedestrian crossing points are primary focus points where slowing traffic is particularly important. The installation of traffic calming measures such as speed cushions, raised crosswalks, raised intersections, or curb extensions do not change the rules of the Highway Traffic Act: however, pedestrians must still cross the road responsibly.
2. TYPES OF TRAFFIC CALMING

Traffic calming for the purpose of this program is broken into two categories:

i. Passive: Speed and display boards, on street parking, road line markings and/or signage.

ii. Physical: i.e. Intrusive treatments that modify the shape and/or form of the roadway forcing drivers to slow down.

2.1 Passive Traffic Calming

Passive traffic calming treatments are simple modifications in comparison to physical treatments. Passive modifications are intended to visually reduce effective lane widths for a motorist and, in most circumstances, re-allocate some of road space to cyclists and on-street parking. These treatments have proven to be capable of reducing 85th percentile operating speeds by up to 5 km/h in London and other municipalities.

Passive treatments are implemented on a proactive and reactive basis and are typically applied uniformly over the entire road section, unlike physical treatments which are best described as spot treatments. The modifications associated with passive calming treatments are typically well received by the public. Staff provides the public with advance notification, including a plan of the proposed modifications prior to implementation. This level of public interaction appears to work well for the application of passive traffic calming.

2.2 Physical Traffic Calming

Physical traffic calming can be broken down into three categories: vertical deflections, horizontal deflections and physical obstructions.

Vertical traffic calming measures provide an obstruction that vehicles are able to travel over. The change in pavement height (and sometimes pavement materials) can cause discomfort to the occupants of vehicles that are exceeding the design speed of the traffic calming measure.

Horizontal traffic calming tries to prevent vehicles from traveling in a straight line at excessive speeds by using measures such as raised islands and curb extensions.

Physical obstructions involve a full or partial closure of the road.

Examples of passive and physical traffic calming techniques are listed in Table 1. Appendix A provides a more detailed explanation of the traffic calming devices listed below, including the advantages and disadvantages.
Table 1- Applicability of Traffic Calming Measures in London

<table>
<thead>
<tr>
<th>Traffic Calming Technique</th>
<th>Measure may be Applicable on:</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Road Classification</td>
<td>Transit Route</td>
</tr>
<tr>
<td></td>
<td>Neighbourhood Street (Local Road)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neighbourhood Connector (Secondary Collector)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neighbourhood Connector (Primary Collector)</td>
<td></td>
</tr>
</tbody>
</table>

**Passive and Mitigating Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>YES</th>
<th>YES</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Entrance Sign</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Targeted Enforcement</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Speed Display (PEEP)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>On Street Parking</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Road Diet</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Physical Vertical Deflection**

<table>
<thead>
<tr>
<th>Measure</th>
<th>YES</th>
<th>YES</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Cushion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raised Intersection</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Raised Crosswalk</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Speed Table</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Speed Hump</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Physical Horizontal Deflection**

<table>
<thead>
<tr>
<th>Measure</th>
<th>YES</th>
<th>YES</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Curb Extension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curb Radius Reduction</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Neighbourhood Traffic Circle</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Centre Island Median</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>One-Lane Chicane</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Lateral Shift</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Roundabout</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Physical Obstruction**

<table>
<thead>
<tr>
<th>Measure</th>
<th>YES</th>
<th>YES</th>
<th>NO</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directional Closure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raised Median Through Intersection</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Right-In/Right-Out Island</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Intersection Channelization</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Diverter</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Full Closure</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
2.3 Streets That Qualify for Traffic Calming

Traffic calming will only be considered on local and collector “neighbourhood” streets and not on arterial roadways in the city. Through application of this program and by applying good engineering judgment, traffic calming measures, when deemed prudent, will be installed in a manner that will ensure they provide the most effective solutions while continuing to support the intended function of the roadway. For example, to ensure that transit service remains efficient on collector routes, curb radius reduction would not be recommended at locations where transit vehicles must turn right since curb radius reductions significantly impede the turning of larger transit vehicles.

Neighbourhood Streets (Local Roads)

The primary function of neighbourhood streets (local roads) is to provide access to adjacent properties. Local streets are not intended for use as through routes or as important links to move traffic within an area’s overall road network. An acceptable volume of traffic for a local road is up to 1,500 vehicles a day.

Neighbourhood Connectors (Secondary and Primary Collectors)

Neighbourhood Connectors (Secondary and Primary Collectors) typically carry traffic volume between 5,000 and 15,000 vehicles per day. These streets help circulate traffic within individual neighbourhoods, and link smaller local roadways to the larger road network, but are relatively short as compared to arterial roadways which may extend from one side of the city to the other. Primary collector roads carry traffic in larger neighbourhoods, distribute traffic between local road, secondary collector roads, and arterial roads, as well as connect between arterial roadways. Many neighbourhood connector roads may also carry transit.
3. PRACTICES AND PROCEDURES GUIDELINES

The following guidelines will be considered when investigating, selecting and implementing traffic calming measures. These guidelines will ensure that the appropriate measures are considered and the potential negative impacts are minimized. Following these guidelines will maximize the effectiveness of traffic calming while building community acceptance and support for the final recommendations.

Traffic calming measures will:

- Be considered when there is a demonstrated safety, speed or short-cutting traffic concern and acceptable alternative measures have been exhausted
- Include consideration as to whether an area-wide plan versus a street-specific plan is more suitable: an area wide plan should be considered if a street-specific plan would likely result in displacement of traffic onto adjacent streets
- Be predominantly restricted to two lane roadways or less (one lane of through traffic in each direction) and a posted speed limit no greater than 50 km/h
- Not impede non-motorized, active modes of transportation and be designed to ensure pedestrian and cycling traffic is unaffected
- Not unduly impede emergency and transit services access unless alternate measures are agreed upon
- Maintain reasonable automobile access to City roads
- Only be installed after Transportation Planning & Design staff has investigated existing traffic conditions and the necessary approvals have been received
- Be monitored; follow-up studies will be completed to assess effectiveness and the results will be communicated to the community if requested
4. TRAFFIC CALMING PROCESS

The following process will be used when proceeding with a request for traffic calming. An established and formal process for investigating roads provides consistency and equality in the determination of whether traffic calming is warranted in a given location. The process is illustrated in the flow chart shown in Figure 1.

Public Input

In order for traffic calming to achieve the goal of restoring residential streets to their intended purpose, community involvement and support is paramount. Throughout the process, residents are encouraged to participate in the development of a traffic calming plan suitable to the neighbourhood and the concerns within it. A general description of the process is provided below, followed by more detail in this section of the document.

Before an area is considered for traffic calming, a petition must be submitted to the City with the signatures and addresses of at least ten (10) separate households on the street of concern. The City wishes to ensure that there is minimum level of neighbourhood concern with traffic conditions, since traffic calming is not always favourable to all.

If signatures were received from ten or more separate households with proven interest in traffic calming, the traffic calming process starts by collecting the necessary traffic data, considering the obtained data with the Traffic Calming Point Assessment.

If enough points are awarded to warrant traffic calming, area residents will be asked by survey or at a Public Information Centre (PIC) for input on minor adjustments into a proposed physical traffic calming plan for the area.

In order for a traffic calming plan to be approved it must be circulated amongst all impacted area residents and must receive a majority response rate in favour from all residents surveyed before being considered for implementation.

The benefit of community involvement is that it generates support for a traffic calming program and assists in the implementation of a plan without significant opposition upon completion. Community involvement also enhances the credibility of the traffic calming program, particularly when it is eventually presented to Council for approval.

4.1 Process Initiation and Pre-Screening

Residents with traffic related concerns are instructed to submit their written request to investigate traffic calming within their neighbourhood to the City. Staff will then conduct a brief preliminary assessment to determine if the requested roadway meets the Initial Screening Criteria, shown in Table 2.
Figure 1 - Traffic Calming Process

Traffic Calming Request *  

Pre-Screen

Safety Problem

Traffic Calming Petition
Minimum 10 Separate Household Signatures

Collect Data
Volume, Speed, Other

Point Assessment

YES

Notify Initiators
No Further Action

NO

Notify Initiators
No Further Action

Passive Measures

Prepare Concept Plan and
Opinion of Probable Cost

YES

Meet with Neighborhood

NO

Finalize Concept Plan

Traffic Calming Ballot
51% in Favour

YES

Prepare Design Plans

NO

Prepare Design Plans

Complete Construction

Evaluate Results
Success?

YES

Finished

NO

Consider Modification or Removal

* Schools located on Neighbourhood Connectors/Streets automatically qualify
Table 2 – Traffic Calming Pre-Screening Process

*Completed during initial contact / review*

<table>
<thead>
<tr>
<th>1. Is the road a local or collector road?</th>
<th>PASS</th>
<th>FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Is the average daily traffic volume estimated to be more than 500 vehicles per day?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>3. Is the posted speed limit equal to or lower than 50 km/h?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>4. Is the road assumed (maintained) by the City?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>5. Is the adjacent land uses primarily residential?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>6. Does the street provide an obvious bypass to a major intersection?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>7. Is the road longer than 300m?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>8. Have no previous studies or assessments occurred within the past 36 months?</td>
<td>PASS</td>
<td>FAIL</td>
</tr>
</tbody>
</table>

If the road in question fails any of the 8 areas listed in the pre-screening it does not qualify for traffic calming, and the process does not continue forward.

It should be noted that School Zones are excluded from the traffic calming process identified in this document. Where schools have speed limit of 40 km/h, traffic calming plans will be prepared and residents of the street will be notified of the implementation plan.

4.1.1 Traffic Calming Ineligibility based on Pre-Screening

For locations not meeting the above-noted initial screening criteria, staff will consider front-line mitigating measures to address the neighbourhood traffic concerns. These methods could include tools such as the use of driver feedback boards, targeted police enforcement, sign installation and pavement marking modifications.

Front-line mitigating measures very rarely require public involvement such as surveys and public meetings. However, they may require monitoring and evaluation to assess
their effectiveness. Details regarding front-line mitigating measures are provided in Appendix ‘A’.

4.1.2 Traffic Calming Neighbourhood Petition

To initiate an evaluation for an eligible residential street, a petition showing the names, addresses, and signatures of at least ten (10) separate households with direct frontage on the street of concern must be provided to the City of London.

The petition must include the location, the nature of the problem, the time of the day when problems are most significant, as well as any suspected contributing factors. The name, address and contact information of the petition organizer are also necessary so a City staff member can follow up on the request for traffic calming. The petition process is required, as the City needs to be confident that there is some neighbourhood support for the initiative.

The City’s traffic calming program is intended to address long-term speeding issues. Therefore, traffic calming is not implemented where there is ongoing development and changing traffic patterns. Residents should only contact the City to request initiation of the evaluation process if traffic concerns persist once traffic patterns have had the opportunity to stabilize.

4.2 Data Collection

Once a successful petition is received, and it was established that there is support for traffic calming, the collection of data is scheduled based on a priority list. The City shall collect information and data along roadway(s) in the project as deemed necessary by Transportation Planning & Design staff to qualify and quantify the extent of the local traffic problem. The data collection may include any of the following:

- Vehicle volume count to determine 24-hour traffic
- Speed study to determine existing speed data
- Classification count to determine heavy vehicle traffic
- Collision data for the most recent three (3) years
- Study to quantify cut-through traffic, if necessary
- Existing roadway conditions (e.g. pavement condition, signing, marking)
- Pedestrian activity
- Presence of sidewalks on one or both sides of the road
- Presence of special pedestrian generators such as schools, seniors homes, playgrounds, etc. in the area
- History of traffic operations for the area within last 5 years
A review of the data will be completed using recognized engineering standards. Once collected and summarized, the data will be utilized in the point assessment system to determine a total point value. This assessment will be used to determine the need for traffic calming and assist in setting priority for locations of consideration.

4.2.1 Point Assessment System

The point assessment system is a screening process focused on the various attributes of a roadway in order to quantify its potential need for traffic calming. By means of assigning weighted points based on the severity of certain road attributes (e.g. 85th percentile speed), this process will bring to the forefront roadways requiring consideration while quantifying the current conditions. A point assessment system is provided in Appendix ‘C’.

The point assessment system will also be used to prioritize locations for consideration. Those locations with an extremely high point assessment will be given priority based on the quantitative nature of the point assessment system. Depending on funding availability, locations will be selected based on the point system with those locations with the highest points constructed first. If funding does not permit all locations to be constructed in one year, roadways will be carried forward to the next year when they will then be re-prioritized to include any new locations.

The point assessment establishes minimums to ensure the appropriate application of traffic calming. The minimums consider that traffic calming often creates challenges for road operations such as winter plowing, influences emergency services response times and service level, can be followed with resident dissatisfaction and incurs capital and ongoing operating costs. Additionally, the impact of new traffic calming devices is minimized if the current traffic conditions on a street are not excessive. The minimum number of points required to proceed with the investigation of traffic calming measures differs based on the classification of roadway. In keeping with the objective of restoring roadways to their intended function, local and collector roadways are designed and expected to convey varying levels of traffic volume. This, in turn, has a bearing on the minimum point value required to proceed, as traffic volume is a major consideration. Based on this, the following are minimum point values for each road type:

Neighbourhood Streets (Local roads) minimum: **35 points**

Neighbourhood Connectors (Collector roads) minimum: **52 points**

Should a location fail to meet these requirements, residents will be notified in writing and the investigation for traffic calming measures will discontinue. However, staff will continue to address the concerns of the residents by means of the front-line mitigating measures.
4.2.2 Traffic Calming Design Considerations

The data collected combined with site visits, historical information, future maintenance and construction plans, as well as resident feedback will be taken into consideration to determine potential traffic calming measures.

Appropriate traffic calming measures will be determined based on the list of traffic calming measures outlined in Appendix ‘A’ of this report. The traffic calming design could include one or more different types of traffic calming techniques. The proposed traffic calming measures will be in accordance with the design Guidelines found in the City of London Standards Document, The Canadian Guide to Neighbourhood Traffic Calming, engineering judgement and experience of staff.

The preferred design will first be presented to emergency and/or roadside operations services. It will then be presented at a public meeting. After any required modifications to the preferred design as a result of public input, a traffic calming survey will be delivered to affected residents.

4.3 Public Information Centre & Public Input Notice

Staff will host a Public Information Centre (PIC) to present the purpose, objectives and implementation process of traffic calming in general. The PIC notice will be circulated to all residents who have direct frontage or flankage of the street in question. Staff will then present and explain the rationale behind the specific preferred traffic calming design. The public meeting will provide residents with an opportunity to become involved in the process, learn more about the proposed traffic calming treatment(s) and to provide their feedback. Each plan will include a procedure to communicate with and engage the neighbourhood, in keeping with the Council Policy on Community Engagement and its principles.

4.4 Community Support Survey

Based on input received from the public at the public information meeting, the preferred design may be modified. The objective of the community support survey is to determine the level of support for the traffic calming design and to provide an opportunity for the most directly affected residents to oppose any modifications to the road. It is also intended to measure the support of the preferred design proposed to the residents.

4.4.1 Survey Scope

A survey will be delivered by mail to residents who live on the street being studied and at a minimum, will contain:

- A brief description of traffic calming, including its advantages and disadvantages
- The results of the traffic studies undertaken by staff
- A survey question asking if residents are in favour or opposed to the implementation of traffic calming measures in the identified location(s)
• The preferred traffic calming design
• A request for comments and feedback
• An indication that this is the final opportunity to modify and improve the preferred design to address any outstanding concerns and to incorporate resident input

4.4.2 Measuring Community Support

In order for the process to continue, a majority (minimum of 51%) of total surveys delivered must be returned to the City indicating they approve the future installation of the recommended traffic calming plan. This required level of support reinforces that community support is vital for the ultimate success of traffic calming. The confirmation of community support is important prior to implementing changes to existing neighbourhood recognizing that any safety or operational concerns are addressed on a proactive basis by staff upon their identification earlier in the process.

If this support rate is not met, the process will cease and a notification of failure to meet the community support levels will be sent to the residents on the mailing list.

4.5 Resident Notification

Residents will be notified that traffic calming has been either approved or not approved by the City on the subject roadway. The notice will be sent to the same mailing list used to deliver the traffic calming survey and any other persons having requested notification throughout the process.

4.6 Finalize Preferred Traffic Calming Plan

Using technical data, community feedback, and in keeping with the goals, objectives and principles set out in this document, staff will finalize the preferred traffic calming design to be put forward as the recommended preferred traffic calming plan. In finalizing the preferred traffic calming plan, general consideration will be given to the various aspects of road design such as utility placement, landscaping, sign requirement and drainage.

If, during the detailed design stage, limitations are identified which challenge the feasibility of the plan, alternatives will need to be considered. This may include alterations or a re-development of the preferred plan. If significant or major changes to the plan are required due to design constraints, agencies and residents on the mailing list will be consulted and notified of any changes. If staff believe that the required modifications to create the detailed design result in a significantly different final design from that which was presented to residents as part of the survey, staff may recommend additional agency consultation, another survey and/or public meeting.

4.7 Implementation of Traffic Calming Measures

Upon approval of the community, resident notification, and sufficient funding, traffic calming measures will be implemented. Residents will be notified of implementation
timelines through the contact mailing list. Where feasible, staff may decide it is beneficial to phase in the traffic calming plan through the use of temporary or removable traffic calming measures such as pavement markings. This will allow time to examine the impact of the measures and their effectiveness before committing funding to permanent treatments.

4.8 Evaluation and Monitoring

Traffic engineering staff will monitor the roadway to determine the effectiveness of the utilized measures and their impact on the surrounding road network. This information will be used in recommending similar measures in the future. In addition to conducting before and after speed studies the City will conduct studies to assess if the traffic calming plan has resulted in significant amounts of traffic diverting to adjacent, parallel streets in some cases. These after studies will be compared with the City’s ‘before’ studies to determine the change in traffic volume.

4.9 Removal of Traffic Calming Measures

Traffic calming devices may be removed, at the request of residents after 2 years provided that at least the same level of support exists to remove as was measured for installation.

A majority (minimum of 51%) of property owners within the impact area must indicate their approval by signing the neighbourhood-initiated Traffic Calming Removal Request. The signatures must come from households with direct frontage or flankage onto the section of roadway that has been identified as the location for the potential implementation of traffic calming measures, as defined by Traffic Engineering Staff. Each household is represented by one signature, regardless of the number of people in the household.

When Transportation staff receives a successful petition, a survey will be sent out to all the area residents who were initially surveyed. The survey will be delivered to the same residents as was initially done to gauge support for traffic calming. The survey must indicate majority of respondents surveyed agreeing to the removal to be deemed successful. Traffic calming measures must be installed for at least 2 years before starting the process to remove them. If traffic calming devices are removed, the subject street must wait at least 5 years before requesting a new traffic calming plan; at this point the approval process will start over.

If a request to remove a single traffic calming device, within an overall traffic calming plan, is received, all traffic calming devices will be considered for removal. Depending on circumstances, it could be possible to remove a single device constructed as part of an overall plan, however, in most cases all devices work together to be effective and to ensure that traffic is not diverted where it should not be. The City reserves the right to remove traffic calming measures if it determines that they are ineffective or unsafe, or if they have created a negative impact that cannot be corrected. The City will mail out a
notification and advertise in local newspapers informing of its decision to remove traffic calming measures.
Appendix A

Traffic Calming Techniques
PHYSICAL VERTICAL DEFLECTION

Vertical traffic calming measures provide an obstruction that vehicles are able to travel over. The change in pavement height (and sometimes pavement materials) can cause discomfort to the occupants of vehicles that are exceeding the design speed of the traffic calming measure. It should be noted that most vertical traffic calming measures are not preferred along roadways that are emergency vehicle routes or transit routes. To reduce the chances of potential liability issues, vertical traffic calming measures should be signed and marked in accordance with reference material provided by the Institute of Transportation Engineers (ITE) and the Transportation Association of Canada (TAC) as provided within the Canadian Guide to Traffic Calming - Second Edition, published in February 2018.

Vertical traffic calming measures typically perform better when they are installed in a series, as opposed to a single isolated measure. The deceleration and acceleration of a vehicle, while negotiating a series of vertical traffic calming measures, is dependent on the number and spacing of the installations.

The implementation of vertical traffic calming measures can result in some traffic diverting onto parallel streets. This essentially moves the cut-through problem instead of solving it. Consideration should be placed on the concept of improving the overall neighbourhood (not just improving the street).

Vertical traffic calming measures include speed humps, speed cushions, speed tables, raised crosswalks, and raised intersections.

Speed Cushion

Speed cushions are narrower speed humps that are typically installed in the center of each travel lane. Speed cushions typically are 1.9m in width. Speed cushions typically range in length between 2.0m and 4.0m metres, feature a width of 1.90m and their height is typically 0.075m. Passenger vehicles will traverse the speed cushions in the same manner as a speed hump. However, emergency vehicles are able to straddle the speed cushions due to their wider wheel track. Thus, response times for emergency vehicles are not increased as much (if at all).
Advantages:
- Less expensive than speed humps or speed tables.
- Effective in reducing vehicle speed
- Does not impact emergency vehicle response time as much as speed humps

Disadvantages:
- May increase noise and air pollution in neighbourhood
- Passenger vehicles with larger axle widths may be able to straddle the speed cushions
- May be damaged by snow plows

Raised Intersection

Raised intersections can be used as a traffic calming measure while also alerting drivers to the potential for pedestrians or vehicles at an intersection. The physical attributes are similar to a speed table in that each intersection approach elevates to a height of 0.08m over a length of 2.0m. The flat top, also similar to a speed table, is provided throughout the entire intersection.

Advantages:
- Provides a more visible pedestrian crossing
- Provides traffic calming along two roads
- Quicker response time for emergency vehicles than speed humps
- Effective in reducing vehicle speed, but not as well as speed humps
- Addition of brick or textured materials can improve aesthetics

Disadvantages:
- Very expensive compared to speed humps and speed tables
- More expensive than speed humps
- Increases response time for emergency vehicles
- Increases noise and air pollution in Neighbourhood
- Could create drainage impacts
- May be damaged by snow plows may be damaged by snow plows
Raised Crosswalk

Raised crosswalks have a similar shape to a speed table, but the flat top contains a striped pedestrian crosswalk. These measures should be elevated to a height that matches the adjacent sidewalk, typically 0.08m high, so that the raised crosswalk is flush with the curb or top of sidewalk elevation at each end. Raised crosswalks must be installed with the appropriate sidewalk transitions on both sides.

Advantages:

- Provides a more visible pedestrian crossing
- Quicker response time for emergency vehicles than speed humps
- Effective in reducing vehicle speed, but not as well as speed humps
- Addition of brick or textured materials can improve aesthetics
Disadvantages:

- More expensive than speed humps
- Increases response time for emergency vehicles
- Increases noise and air pollution in Neighbourhood
- May be damaged by snow plows

NOTE: Lack of sidewalk infrastructure may result in a raised crosswalk not being applicable in the City. Raised crosswalks can be constructed without the presence of sidewalks, as long as there are AODA-compliant pedestrian landing areas with detectable warning strips on both ends of the raised crosswalk.

**Speed Table**

Speed tables are flat-topped speed humps. Speed tables typically measure 0.08m in height, 7.0m in total length, with the raised flat portion being 3.0m long. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat top. Their long flat fields give speed tables higher design speeds than speed humps. The brick or other textured materials are usually used on the flat top to improve the appearance of speed tables, draw attention to them, reduce speed, and may enhance safety. Like speed humps, discomfort increases as the speed of the vehicle traveling over the hump increases. Speed tables are good for locations where low speeds are desired but a somewhat smooth ride is needed for larger vehicles.

Advantages:

- Quicker response time for emergency vehicles than speed humps
- Effective in reducing vehicle speed, but not as well as speed humps
- Addition of brick or textured materials can improve aesthetics

Disadvantages:

- More expensive than speed humps
- Increases response time for emergency vehicles
- Increases noise and air pollution in Neighbourhood
Speed Hump

Speed humps are raised areas of pavement which are rounded on top and placed across the entire street. Speed humps typically measure 0.08m in height and 4.0m in length. The height and length of the speed hump determines how fast it can be navigated without causing discomfort to the driver. Discomfort increases as the speed of the vehicle traveling over the hump increases.

Advantages:
- Low Cost
- Effective in reducing vehicle speed

Disadvantages:
- Increases response time for emergency vehicles
- Negative impact on Transit buses
- Increases noise and air pollution in Neighbourhood
- May be damaged by snow plows
**HORIZONTAL TRAFFIC CALMING MEASURES**

Horizontal traffic calming measures incorporate raised islands and curb extensions to prevent vehicles from traveling in a straight line at excessive speeds. Vehicles either slow down while maneuvering around the horizontal obstacle, or slow down due to the physical perception of a narrower roadway. To reduce the chances of potential liability issues, horizontal traffic calming measures should be signed and marked in accordance with reference material provided by the Institute of Transportation Engineers (ITE) and the Neighbourhood Traffic Calming (TAC).

The implementation of horizontal traffic calming measures can result in some traffic diverting onto parallel streets. This essentially moves the problem instead of solving the problem. Consideration should be placed on the concept of improving the Neighbourhood (not just improving the street).

Horizontal traffic calming measures include neighbourhood traffic circles, roundabouts, chicanes, lateral shifts, center medians, and curb extensions.

**Curb Extension**

Curb extensions reduce the roadway width at intersections and midblock locations, thereby reducing speeds when drivers experience the physical perception of a narrow roadway. Curb extensions offer the more important benefit of improving pedestrian safety by providing a refuge and shortening the crossing distance. The City has installed a number of curb extensions in the past 6 years and they have found to be very effective in school zones where they offer the third benefit of defining the parking area.

Advantages:

- Encourages a safer pedestrian environment by providing a shorter crossing distance and increased visibility
- Very effective in front of elementary schools in addressing pick-up, drop off parking issues
- Prevents parking too close to intersections keeping sight lines open
- Opportunity for landscaping and improved aesthetics
Disadvantages:

- Effectiveness is limited by the absence of vertical deflection and if traffic volumes are low
- Difficult for right-turning emergency vehicles
- Increased cost for maintenance of landscaping if it exists
- May require bicyclists to briefly merge with vehicular traffic

Curb Radius Reduction

The Curb radius reduction is the reconstruction of an intersection corner to a smaller radius. This measure effectively slows down right-turning vehicle speeds by making the corner ‘tighter’ with a smaller radius. A corner radius reduction may also improve pedestrian safety to a certain degree by shortening the crossing distance. This type of measure is acceptable primarily on neighbourhood roads and to a lesser extent on Connector roadways, its use is often limited to specific situations where the existing intersection geometry would allow the reconstruction. In addition, curb radius reductions should not be used on transit routes requiring a right turn.

Advantages:

- Shortens pedestrian crossing time
- Forces vehicles on approach to come to a full stop
Disadvantages

- Large axle vehicles are unable to negotiate the turn without driving over the sidewalk
Traffic Circle / Traffic Button / Mini-Roundabout

A traffic circle / traffic button / mini-roundabout are raised islands placed in intersections, forcing traffic to circulate around the raised middle island. The traffic circle is typically circular in shape and can include landscaping within the raised island. The raised island in the center of the intersection typically measures less than 10 meters in diameter. Neighbourhood traffic circles are typically controlled by YIELD signs on all approaches. Traffic circles prevent drivers from speeding through intersections by impeding the through movement. Neighbourhood traffic circles are most effective when there is vertical planting material in the center. This adds to its visibility to the driver and provides aesthetics to the Neighbourhood.

Advantages:

- Effective in reducing vehicle speed
- Can reduce severity of motor vehicle collisions
- Opportunity for landscaping and improved aesthetics

Disadvantages:

- Difficult for left-turning emergency vehicles
- Possible need for right-of-way, depending on size of raised island
- Increased cost/labor for maintenance of landscaping
**Center Island Median**

Center island medians are raised islands located along the centerline of a street that narrow the travel lanes at that location. The presence of a median, resulting in a smaller roadway width, reduces speeds when drivers experience the physical perception of a narrow roadway. The medians can be landscaped to provide visual amenity.

The median island can act as a “gateway” when placed at the entrance to a neighbourhood. A median island of adequate width can also be referred to as a “pedestrian refuge” if located at a crosswalk and the median is accommodating for pedestrians.

**Advantages:**
- If designed well, can have a positive aesthetic value
- Opportunity for landscaping and improved aesthetics

**Disadvantages:**
- Effectiveness is limited by the absence of vertical deflection
- May interrupt driveway access to adjacent properties
- Increased cost for maintenance of landscaping
Chicane

Chicanes are curb extensions that alternate from one side of the street to the other, creating S-shaped travel patterns. Raised landscaped islands or delineators are usually provided at both ends of a chicane in order to enhance the drivers awareness of the need for a lateral shift.

Along a section of roadway that contains a chicane, off-street parallel parking may be restricted along property frontages due to curb and gutter.

Advantages:

- Discourages high speeds by forcing horizontal deflection
- Easily negotiable by emergency vehicles
- Opportunity for landscaping and improved aesthetics

Disadvantages:

- Must be designed carefully to discourage drivers from deviating out of the appropriate lane
- Curb realignment and landscaping can be expensive, especially if there are drainage issues
- Increased cost for maintenance of landscaping

Lateral Shift

Lateral shifts can be described as one half of a chicane. Curb extensions or pavement markings are provided on otherwise straight streets that cause travel lanes to bend one way and then bend back the other way to the original direction of travel. With the appropriate degree of deflection, lateral shifts are one of the few measures that have been used on Connectors or even arterials. When high traffic volumes and high posted speed limits prevent the use of other traffic calming measures, lateral shifts can be considered.

Advantages:
• Can accommodate higher traffic volumes than many other traffic calming measures
• Discourages high speeds by forcing horizontal deflection
• Easily negotiable by emergency vehicles
• Opportunity for landscaping and improved aesthetics

Disadvantages:
• Must be designed carefully to discourage drivers from deviating out of the appropriate lane
• Curb realignment and landscaping can be expensive (pavement markings are less expensive)
• Increased cost for maintenance of landscaping
Roundabout

Unlike traffic circles, roundabouts are larger and typically require additional right-of-way. The central island diameter of a single-lane roundabout can measure between 20 and 40 meters. Roundabouts require raised splitter islands to channel approaching traffic to the right. Roundabouts are found primarily on arterial and Connector streets, often substituting for intersections that are controlled by traffic signals or all-way stop signs. More information on roundabouts can be found in “Roundabouts: An Informational Guide” prepared by the Federal Highway Administration (FHWA).

Advantages:

- Moderates traffic speed on an arterial, Connector, or neighbourhood road
- Enhanced safety compared to a traffic signal
- Less expensive to operate than a traffic signal
- Opportunity for landscaping and improved aesthetics

Disadvantages:

- May require major reconstruction of an existing intersection
- Increases pedestrian distance from one crosswalk to the next
- May be difficult for visually impaired pedestrian to navigate
- Increased cost for maintenance of centre island landscaping
Curb Face Sidewalk

A curb face sidewalk is a wider than normal sidewalk retrofitted into an older area of the City where putting a sidewalk in standard location would eliminate or damage a number of mature trees. The sidewalk is primarily built on the existing road bed, narrowing the road.

Advantages
- Removes the pedestrians from the road improving pedestrian safety.
- Narrowing the road will slow some drivers down.
- No trees need to be removed.

Disadvantages
- May have to eliminate on street parking.
• Expensive.
PHYSICAL OBSTRUCTION

Physical obstructions are the most severe traffic calming tool and are only used when it is determined a vertical or a horizontal measures won’t address the identified problem. The primary purpose of physical obstructions is to eliminating short-cutting traffic by stopping specific vehicle movements. It is important to note that physical obstructions are intended to deter motor vehicle traffic only and not to obstruct bicycle or pedestrian traffic. These types of measures are typically implemented at intersections, but may also be applied at some mid-block locations.

Obstructions range from those that have a relatively minor impact on vehicular access to those that severely restrict access such as a road closure. It is important to remember once the vehicle restricted movement is in place area residents have to live with it every day.

Directional Closures

Directional closures are created using a curb extension or other barrier that extends into the roadway, approximately as far as the centerline. This device obstructs one side of the roadway and effectively prohibits vehicles travelling in that direction from entering. Directional closures are especially useful for controlling non-compliance of one-way road sections and are compatible with other modes such as bicycles.

At all directional closures, bicycles are permitted to travel in both directions through the unobstructed side of the road; however, some directional closures have a pathway built through the device specifically for bicycles. Since their purpose is to prevent short-cutting traffic, directional closures are applicable for use on neighbourhood streets and minor Connectors, at their intersection with Connectors and arterials.

Advantages

- Directional closures typical result in about a 40% reduction in traffic volumes.
- There may also be a reduction in travel speeds around the intersection
- Eliminates right angle collisions

Disadvantages

- Restricts resident access to the neighbourhood; and
- May divert significant volume of traffic to parallel streets without traffic calming measures
Raised Median through Intersection

These devices may be used on the centerlines of neighbourhood and Connector roadways to prevent left-turn and through movements to and from intersecting streets. This type of device is especially effective at preventing short-cutting and through traffic while providing some secondary pedestrian safety benefits.

This is the device that was built at Cheapside and William a number of years ago to address a collision problem.

The advantages and disadvantages are the same as the directional closure.
Rights-In/Rights Out

Right-in/right-out islands are raised triangular islands located on an intersection approach to limit the side street to right turn in and out movements. Similar to a raised median through an intersection, this device is used primarily to restrict movements to and from an intersection roadway.

Right-in/right out islands may be considered only for use in locations where neighbourhood residential streets intersect another roadway of any class. The island needs to be designed properly or vehicles will drive left around it.

The advantages and disadvantages are the same as the directional closure.

Diverter

A diverter is a raised barrier placed diagonally across an intersection that forces traffic to turn and prevents traffic from proceeding straight through the intersection. Diversers can incorporate gaps for pedestrians, wheelchairs and bicycles and can be mountable by emergency vehicles. The purpose of a diverter is to obstruct short-cutting or through traffic.

Advantages

- Diverters can result in a 20% to 70% reduction in area-wide traffic volumes, depending on extent of diverters used.

Disadvantages

- Restricts resident access to the neighbourhood; and
- May divert significant volume of traffic to parallel streets without traffic calming measures.

**Full Closure**

A full closure is a barrier extending the entire width of a roadway, which obstructs all motor vehicle traffic along the roadway. A closure can change a four-way intersection to a three-way intersection, or a three-way intersection into a non-intersection. Gaps can be provided for cyclists and they are typically passable by emergency vehicles. The purpose of a full closure is to eliminate short-cutting or through traffic.

**Advantages**
- Eliminates all short-cutting or through traffic.
Disadvantages

- Restricts resident access to / from the neighbourhood; and
- May divert significant volume of traffic to parallel streets without traffic calming measure.
PASSIVE & MITIGATING MEASURES

Passive traffic calming measures do not require construction of physical modifications to the roadway. Passive traffic calming often results in lower cost and prevents constructing a more-permanent change to the roadway. Physical (vertical and horizontal) traffic calming measures will be considered by the City when either the passive measures have not alleviated the Neighbourhood concerns or the City determines the need for their installation.

Passive traffic calming measures include education, targeted speed limit enforcement, radar trailer placement, dynamic speed display signs, and speed legends.

**Education**

Activities that change people’s perceptions and help alter driver behaviour are most preferred. Meetings and workshops with neighbours and the City can help implement and direct traffic calming applications. Most traffic problems are a result of human behaviour. Through outreach programs and Neighbourhood watch programs such as the Active and Safe Routes to School program, residents can play a big part in spreading the information.

**Advantages:**

- Flexible in the duration of meetings, workshops, etc.
- Inexpensive compared to other alternatives

**Disadvantages:**

- Difficult to measure the effectiveness
- May take time to be effective
- Potential challenge in generating citizen participation

**Textured Pavement**

Textured pavement and stamped asphalt can be used alone as a traffic calming measure or in combination with other physical measures. Drivers typically slow down when crossing textured pavement due to vibration created by the pavement surface. However, this also creates considerable noise that may be a disadvantage for neighbours.
Advantages:
  • Pleasing visual aesthetics
Disadvantages:
  • Noise pollution
  • Higher cost
  • Not as effective in reducing speeds
Targeted Speed Limit Enforcement

The City, through the London Police, can provide targeted speed limit enforcement in response to identified operational issues. Targeted speed limit enforcement purpose is to make drivers more aware of their speed within a residential area. This measure typically only provides a temporary benefit, since speed limit enforcement is not available on a regular, on-going basis.

The London Police work with the Transportation Division of the City in addressing speeding issues within residential areas.

Advantages:

- Does not require time for design
- Does not slow emergency vehicles
- Effective in reducing speeds in a short timeframe
- Automated speed studies can determine best enforcement times

Disadvantages:

- Effectiveness may be temporary
- Expensive to maintain a continued program of enforcement
- Fines lower than enforcement cost
- Time and resources constrained
Speed Display (PEEP Boards)

A dynamic speed display sign performs the same function as a radar trailer, but is meant to be installed as a permanent device. Real-time speeds are relayed to drivers and flash when vehicle speeds exceed the posted speed limit. Dynamic speed display signs are typically placed in on a street for a period of 1 week. The City has two sets of mobile units which are rotated through a number of locations during the spring, summer and fall. A higher priority is placed on locations with younger or older pedestrians.

Advantages:

- Inexpensive
- Does not require time for design
- Does not slow emergency vehicles
- Effective in reducing speeds in a short timeframe

Disadvantages:

- Requires power source
- Only effective for one direction of travel
- Long-term effectiveness is uncertain
- Subject to vandalism
On Street Parking

All roads within residential areas are built wide enough to allow on street parking on at least one side of the road. Area residents often create the opportunity to speed by introducing No Parking zones. Eliminating parked vehicles from your street significantly increases the width of the road and will increase the speed of neighbourhood traffic. There have been studies done in North America which have shown the introduction of “No Parking Zones” increased the speed of traffic by 20%.

The City now warns all residents who request No Parking zones they run the risk of increasing the speed on their street. If a speeding problem is identified on your street the City may consider asking residents to consider reintroducing on street parking as a low cost way to address the problem.

Road Watch Program

The Road Watch Program is a community initiative that gives residents and visitors an opportunity to report dangerous and aggressive drivers to the police. Within the City of London, Police operate the Road Watch Program and Citizen Report Forms are available at all City of London Police Stations or they can be obtained at www.london.ca.
Road Diet

A road diet refers to using pavement markings to make the travel portion of the road narrower, typically introducing bike lanes and or parking lanes. Passive speed control measures such as pavement markings attempt to change the fundamental sensory information available to drivers to influence their speed behaviour. By adding markings to the road, drivers’ perceptions can be distorted creating the illusion that they are driving faster than they really are, persuading drivers to slow down. Additionally, the new road markings can serve as a warning sign; because these pavement patterns are mostly unfamiliar to road users, they violate driver expectancy causing motorists to decelerate.
Appendix B

Traffic Calming Petition Forms
Petition for Traffic Calming Measures

What is traffic calming?

The purpose of traffic calming is to alter driver behaviour so that vehicles travel at appropriate speeds on Neighbourhood Connectors (Collectors) and Neighbourhood Streets (Locals) that have a posted speed limit of 50 km/h or lower. Speed cushions are the most common form of traffic calming measures, because they are the most effective at reducing vehicle speeds.

Traffic calming is successful at reducing vehicle speeds where the majority of traffic is driving inappropriately. It is not intended for locations where there is ongoing construction and changing traffic patterns, or where only a few motorists are speeding. Police enforcement is the best solution in those cases.

What are the disadvantages of traffic calming?

Please be aware that traffic calming may increase both noise and air pollution, as vehicles slowdown in advance of a cushion and speed up upon traversing it.

We, the undersigned, request a traffic calming assessment on our street as detailed below:

Street: ____________________ from ____________________ to ____________________

Description of concerns:

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________
Please note that signatures from a minimum of ten (10) households are required to initiate a traffic calming evaluation. One signature per household.

<table>
<thead>
<tr>
<th>Name (please print legibly)</th>
<th>Address</th>
<th>Phone Number</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<tr>
<td>10.</td>
<td></td>
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</tr>
</tbody>
</table>

Petition organizer contact information:

<table>
<thead>
<tr>
<th>Petition organizer contact information:</th>
<th>Please submit a completed petition to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: _______________________________</td>
<td>By Mail: City of London</td>
</tr>
<tr>
<td>Phone: ______________________________</td>
<td>Transportation Division</td>
</tr>
<tr>
<td>E-mail: ______________________________</td>
<td>300 Dufferin Avenue</td>
</tr>
<tr>
<td>Address: ______________________________</td>
<td>P.O. Box 5035</td>
</tr>
<tr>
<td></td>
<td>N6A 4L9</td>
</tr>
<tr>
<td></td>
<td>By Email: <a href="mailto:trafficcalming@london.ca">trafficcalming@london.ca</a></td>
</tr>
<tr>
<td></td>
<td>By Fax: 519-661-4734</td>
</tr>
</tbody>
</table>
Traffic Calming Removal Request

Citizen Representative Information:

Name: ____________________________ Street Address: ____________________________

Telephone: ________________________ Email: ________________________________

Signature: _________________________ Date: _________________________________

The Citizen Representative is requesting that the City of London consider the removal of traffic calming measures along the following roads:

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>between</td>
<td>and</td>
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<tr>
<td></td>
<td>between</td>
<td>and</td>
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<tr>
<td></td>
<td>between</td>
<td>and</td>
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</tbody>
</table>

Select the concerns that apply and provide a brief description of the concerns:

- [ ] Speeding
- [ ] Traffic Volumes
- [ ] Cut-through traffic
- [ ] Crashes
- [ ] Pedestrian Safety
- [ ] Bicycle Safety
- [ ] Large Trucks
- [ ] Other

Please provide a brief description of your concerns:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
The undersigned concur with the request for the traffic calming measures made by the citizen representative. Only one signature per property is permitted. In order for this request form to be reviewed, a majority (minimum of 51%) response in favour is required from all property owners. Any signatures without valid addresses will be voided. This petition can only be circulated to homes contacted as part of the original traffic calming survey.

<table>
<thead>
<tr>
<th>Name</th>
<th>Street Address</th>
<th>Signature</th>
</tr>
</thead>
</table>

The Corporation of the City of London  
Office: 519-661-2500 Ext. 4580  
Fax: 519-661-4734  
trafficcalming@london.ca  
www.london.ca
Appendix C
Traffic Calming Point Assessment
# TRAFFIC CALMING POINT ASSESSMENT

<table>
<thead>
<tr>
<th>Location:</th>
<th>Date Compiled:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway Type:</td>
<td>☐ Neighbourhood Connector ☐ Neighbourhood Street</td>
</tr>
</tbody>
</table>

## Traffic Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
<th>Criteria</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Speed</td>
<td>0 to 35</td>
<td>5 points for every 2 km/h that the 85th percentile speed is greater than 10 km/h over the speed limit</td>
<td></td>
</tr>
<tr>
<td>1b High Speed</td>
<td>0 to 5</td>
<td>5 points if minimum of 5% of daily traffic exceeds posted speed by 15-20 km/h</td>
<td></td>
</tr>
<tr>
<td>2. Volume</td>
<td>0 to 20</td>
<td>Neighbourhood Roadways: 5 points for every 1,500 ADT Connector Roadways: 5 points for every 2,000 ADT</td>
<td></td>
</tr>
<tr>
<td>3. Short-Cutting Traffic</td>
<td>0 or 15</td>
<td>5 points if there is a presence of 25% or more short-cutting traffic, additional 5 points for every 10% increment above 25%.</td>
<td></td>
</tr>
<tr>
<td>4. Collisions</td>
<td>0 to 10</td>
<td>1 point for every 2 collisions/year over a 3 year period</td>
<td></td>
</tr>
</tbody>
</table>

## Road Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
<th>Criteria</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Sidewalks</td>
<td>0 or 10</td>
<td>10 points for no sidewalks with evidence of pedestrian activity, 5 points for sidewalks on only one side</td>
<td></td>
</tr>
<tr>
<td>6. Pedestrian Generators</td>
<td>0 to 15</td>
<td>5 points for each nearby* pedestrian generator such as a school, playground, community centre, libraries, retail centres, etc.</td>
<td></td>
</tr>
</tbody>
</table>

## Does the location meet the minimum requirements?  
☐ YES  ☐ NO

**Neighbourhood Street** = minimum 35 points / **Neighbourhood Connector** = minimum 52 points